

**The Enclosed Document Is Provided For Your Convenience.**

**Please Email ALL Questions:**  
**[MailTo:ContractAdministration@TampaGov.net](mailto:ContractAdministration@TampaGov.net)**

City of Tampa  
Contract Administration Department  
306 E. Jackson St. #280A4N  
Tampa, FL 33602  
(813)274-8456

CITY OF  
TAMPA, FLORIDA

NOTICE TO BIDDERS, INSTRUCTIONS TO BIDDERS  
PROPOSAL, BID BOND, FORM OF NOTICE OF AWARD,  
AGREEMENT, PERFORMANCE BOND AND  
SPECIFICATIONS

FOR

**Contract 18-C-00027**

# **Palma Ceia Remote Storage Tank Refurbishment**

City of Tampa  
CONTRACT ADMINISTRATION DEPARTMENT  
TAMPA MUNICIPAL OFFICE BUILDING  
306 E. JACKSON STREET - 4<sup>TH</sup> FLOOR NORTH  
TAMPA, FLORIDA 33602

DECEMBER 2018

CITY OF TAMPA  
CONTRACT ADMINISTRATION DEPARTMENT  
306 E. Jackson Street 280A4N  
Tampa, FL 33602

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**BID NOTICE MEMO**

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**Bids will be received no later than 1:30 p.m. on the indicated Date(s) for the following Project(s):**

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**CONTRACT NO.:** 18-C-00027; Palma Ceia Remote Storage Tank Refurbishment

**BID OPENING:** 1:30PM, Tuesday, January 29, 2019 **ESTIMATE:** \$1,142,000 **SCOPE:** The project comprises furnishing all labor, materials and equipment to replace altitude and isolation valves, install plug valves and linestops, replace safety, floor and access features, interior and exterior surface preparation and painting, replace exterior fence, with all associated work required for a complete project in accordance with the Contract Documents. **PRE-BID CONFERENCE:** 2:00PM, Tuesday, January 8, 2019. Attendance is not mandatory, but recommended.

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Bids will be opened in the 4th Floor Conference Room, Tampa Municipal Office Building, 306 E. Jackson Street, Tampa, Florida 33602. Pre-Bid Conference is held at the same location unless otherwise indicated. Plans and Specifications and Addenda for this work may be examined at, and downloaded from, [www.demandstar.com](http://www.demandstar.com). Backup files are available at <http://www.tampagov.net/contract-administration/programs/construction-project-bidding>. Email Questions to: [contractadministration@tampagov.net](mailto:contractadministration@tampagov.net) .

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NOTICE TO BIDDERS  
CITY OF TAMPA, FLORIDA  
Contract 18-C-00027; Palma Ceia Remote Storage Tank Refurbishment

Sealed Proposals will be received by the City of Tampa no later than 1:30 P.M., January 29, 2019 in the 4<sup>th</sup> Floor Conference Room, Tampa Municipal Office Building, 306 E. Jackson Street, Tampa, Florida, there to be publicly opened and read aloud.

The proposed work is to include, but not be limited to, furnishing all labor, materials and equipment to replace altitude and isolation valves, install plug valves and linestops, replace safety, floor and access features, interior and exterior surface preparation and painting, replace exterior fence, with all associated work required for a complete project in accordance with the Contract Documents.

The Instructions to Bidders, Proposal, Form of Bid Bond, Agreement, Form of Public Construction Bond, Specifications, Plans and other Contract Documents are posted at DemandStar.com. Backup files may be downloaded from <http://www.tampagov.net/contract-administration/programs/construction-project-bidding>. One set may be available for reference at the office of the Contract Administration Department, Municipal Office Building, Fourth Floor North, City Hall Plaza, Tampa, Florida 33602.

Each Proposal must be submitted on the Proposal form included in the Specifications and must be accompanied by a certified check or cashier's check on a solvent bank or trust company in compliance with Section 255.051, Florida Statutes, made payable to the City of Tampa, in an amount of not less than five per cent of the total bid, or a Bid Bond, of like amount, on the form set forth in the Contract Documents, as a guarantee that, if the Proposal is accepted, the Bidder will execute the Proposed Contract and furnish a Public Construction Bond within twenty (20) days after receipt of Notice of Award of Contract.

To be eligible to submit a proposal, a Bidder must hold the required and/or appropriate current license, certificate, or registration (e.g. DBPR license/certificate of authorization, etc.) in good standing at the time of receipt of Bids. **Per Section 489.131, Florida Statutes, Proposals submitted for the construction, improvement, remodeling, or repair of public projects must be accompanied by evidence that the Bidder holds the required and/or appropriate current certificate or registration, unless the work to be performed is exempt under Section 489.103, Florida Statutes.**

The City of Tampa reserves the right to reject any or all Bids and to waive any informalities in the Bid and/or Bid Bond. Acceptance or rejection of Proposals will be made as soon as practicable after the Proposals are received, but the City reserves the right to hold Proposals for ninety (90) days from the date of Opening.

Bid Protest Procedures: Unless subsequently indicated otherwise, in a revised posting on the Department's web page for Construction Project Bidding, the City of Tampa intends to award the referenced project to the lowest bidder listed in the tabulation posted on or about the date of Bid Opening. A bidder aggrieved by this decision may file a protest not later than 4:30 P.M., five (5) business days from the first posting thereof, pursuant to City of Tampa Code Chapter 2, Article V, Division 3, Section 2-282, Procurement Protest Procedures. Protests not conforming therewith shall not be reviewed.

Pursuant to Section 2-282, City of Tampa Code, during the solicitation period, including any protest and/or appeal, NO CONTACT with City officers or employees is permitted from any bidder or proposer, other than as specifically stated in this solicitation and as follows:  
Director of the Contract Administration Department (CAD)  
Contracts Management Supervisor, Jim Greiner  
Contract Officer, Jody Gray  
City legal department

Any Requests For Information must be submitted by email to [ContractAdministration@tampagov.net](mailto:ContractAdministration@tampagov.net)

A person or affiliate who has been placed on the convicted vendor list following a conviction for a public entity crime may not submit a bid on a contract to provide any goods or services to a public entity, may not submit a bid on a contract with a public entity for the construction or repair of a public building or public work, may not submit bids on leases of real property to a public entity, may not be awarded or perform work as a contractor, supplier, subcontractor, or consultant under a contract with any public entity, and may not transact business with any public entity in excess of the threshold amount provided in Section 287.017, for CATEGORY TWO for a period of 36 months from the date of being placed on the convicted vendor list." Refer to Section 287.133, Florida Statutes.

Pursuant to Section 287.087, Florida Statutes, under certain circumstances preference may be given to businesses with a drug-free workplace program that meets the requirements of said Section.

INSTRUCTIONS TO BIDDERS  
SECTION 1 - SPECIAL INSTRUCTIONS

I-1.01 GENERAL:

The proposed work is the Palma Ceia Remote Storage Tank Refurbishment in the City of Tampa, as required for a complete project, as shown on the plans and detailed in the specifications. The work is located on land owned or controlled by the City of Tampa.

To be eligible to submit a proposal, a Bidder must hold the required and/or appropriate current license, certificate, or registration (e.g. DBPR license/certificate of authorization, etc.) in good standing at the time of receipt of Bids. Per Section 489.131, Florida Statutes, Proposals submitted for the construction, improvement, remodeling, or repair of public projects must be accompanied by evidence that the Bidder holds the required and/or appropriate current certificate or registration, unless the work to be performed is exempt under Section 489.103, Florida Statutes.

I-1.02 FORM PREPARATION AND PRESENTATION OF PROPOSALS: Replace the second sentence with the following: Submission of the entire specification book is not required.

I-1.03 ADDENDA – Section I-2.03 is replaced with the following: No interpretation of the meaning of the Plans, Specifications, or other Contract Documents will be made to any Bidder orally.

Every request for such interpretation must be in writing, addressed to the City of Tampa, Contract Administration Department, 306 E. Jackson St., 4th Floor, Tampa, Florida 33602 and then emailed to [ContractAdministration@tampagov.net](mailto:ContractAdministration@tampagov.net). To be given consideration, such request must be received at least seven (7) days prior to the date fixed for the opening of the Proposals. Any and all such interpretations and any supplemental instructions will be in the form of written addenda which, if issued, will be posted on DemandStar.Com and on the Department's web page. Failure of any Bidder to receive any such addenda shall not relieve said Bidder from any obligation under his Proposal as submitted. All addenda so issued shall become part of the Contract Documents.

I-1.04 INSTRUCTIONS TO BIDDERS

**SECTION 2 – GENERAL INSTRUCTIONS.** Section I-2.07 SIGNATURE AND QUALIFICATIONS OF BIDDERS is replaced with the following:

Proposals must be signed in ink by the Bidder with signature in full. When firm is a Bidder, the Proposal shall be signed in the name of the firm by one or more partners. When a corporation is a bidder the officer signing shall set out the corporate name in full beneath which he shall sign his name and give the title of his office.

If the bidder referred to in Section I-2.07 is a corporation, it must submit; upon request, a copy of its filed Articles of Incorporation. In addition, if the bidder was incorporated in another state, it must establish that it is authorized to do business in the State of Florida. If the bidder is using a fictitious name, it must submit upon request, proof of registration of such name with the Clerk of the Circuit Court of the County where its principal place of business is. Failure to submit what is required is grounds to reject the bid of that bidder.

**SECTION 2 – GENERAL INSTRUCTIONS.** Section I-2.14 NONDISCRIMINATION IN EMPLOYMENT is changed to add the following to the end of the existing text:

The following provisions are hereby incorporated into any contract executed by or on behalf of the City. Contractor shall comply with the following Statement of Assurance: During the performance of the Contract, the Contractor assures the City, that the Contractor is in compliance with Title VII of the 1964 Civil Rights Act, as amended, the Florida Civil Rights Act of 1992, and the City of Tampa Code of Ordinances, Chapter 12, in that Firm/Contractor does not on the grounds of race, color, national origin, religion, sex, sexual orientation, gender identity or expression, age, disability, familial status, or marital status, discriminate in any form or manner against said Firm's/Contractor's employees or applicants for employment. Contractor understands and agrees that the Contract is conditioned upon the veracity of this Statement of Assurance, and that violation of this condition shall be considered a material breach of the Award/Contract. Furthermore, Contractor herein assures the City that said Contractor will comply with Title VI of the Civil Rights Act of 1964 when federal grant(s) is/are

INSTRUCTIONS TO BIDDERS  
SECTION 1 - SPECIAL INSTRUCTIONS

involved. This Statement of Assurance shall be interpreted to include Vietnam-Era Veterans and Disabled Veterans within its protective range of applicability. Firm/Contractor further acknowledges and agrees to provide the City with all information and documentation that may be requested by the City from time to time regarding the solicitation, selection, treatment and payment of subcontractors, suppliers and vendors in connection with this Award/Contract. Firm/Contractor further acknowledges that it must comply with City of Tampa Code of Ordinances, Chapter 26.5, as enacted by Ordinance No. 2008-89.

I-1.05 TIME FOR COMPLETION:

The work shall be arranged to be completed in accordance with a progress schedule approved by the Construction Engineer.

The time for completion of this project, referred in Article 4.01 of the Agreement, shall be 180 consecutive calendar days. The period for performance shall start from the date indicated in the Notice To Proceed.

I-1.06 LIQUIDATED DAMAGES:

The amount of liquidated damages, referred to in Article 4.06 of the Agreement, for completion of this project shall be \$500 per calendar day.

I-1.07 BASIS OF AWARD OF CONTRACT:

The basis of award referred to in Item I-2.11 of Instructions to Bidders shall be the greatest amount of work, which can be accomplished within the funds available as budgeted. The award may be made on the basis of the total bid, base bid, alternates(s) if any, unit bids if any, or any combination thereof deemed to be in the best interest of the City.

Unless all bids are rejected, the award will be made within 90 days after opening proposals.

I-1.08 GROUND BREAKING CEREMONY:

Arrangement may be made by the City in coordination with the Contractor, for construction to commence with a Ground Breaking Ceremony. Details will be discussed at the pre-construction conference.

I-1.09 INSURANCE:

The insurance required for this project shall be as indicated on the attached and incorporated Special Instructions pages beginning with page INS-1 entitled CITY OF TAMPA INSURANCE REQUIREMENTS, which among other things requires the Contractor to provide a Certificate of Insurance to the City prior to commencing work. The City may from time to time use a third party vendor to manage its insurance certificates and related documentation which vendor may periodically initiate contact, requests for information, etc. on the City's behalf.

INSTRUCTIONS TO BIDDERS  
SECTION 1 – SPECIAL INSTRUCTIONS

I-1.10 EQUAL BUSINESS OPPORTUNITY PROGRAM (EBO) REQUIREMENTS / PROJECT SUBCONTRACTING GOAL(S)

BIDDERS MUST SUBMIT COMPLETED AND SIGNED CITY OF TAMPA FORMS MBD-10 AND MBD-20 WITH THEIR BIDS. BIDS SUBMITTED WITHOUT THESE COMPLETED FORMS (INCLUDING SIGNATURES) WILL BE DEEMED NON-RESPONSIVE. INSTRUCTIONS ON COMPLETING THE FORMS ARE INCLUDED AFTER EACH FORM IN THIS BID PACKAGE.

THE CHECKED BOX INDICATES SECTION THAT APPLIES TO THIS BID.



**SUBCONTRACTING GOAL – (WMBE and SLBE)**

In accordance with the City of Tampa's EBO Program, Chapter 26.5, City of Tampa Code, the subcontracting goal(s) has/have been established for subcontracting with City-certified underutilized WMBEs (Women and Minority Business Enterprises) and/or SLBEs (Small Local Business Enterprises) on this project (hereinafter "Goal"). *The Goal is based, in part, upon the availability of City-certified firms to perform the anticipated scope of work (Bid is subject to the subcontracting project goal(s) section for which a corresponding numerical percent is indicated).* Project Industry Category: Construction

Project Goal(s): \_\_\_\_\_% U-WMBE (Underutilized Woman and Minority Business Enterprise) (EBO Program)  
per MBD Form-70 the U-WMBE subcontract Classification for Construction is African American (BBE)  
\_\_\_\_\_% SLBE (Small Local Business Enterprise) (EBO Program) only City-certified SLBEs  
1.85% U-WMBE/SLBE Combined (EBO Program)  
per MBD Form-70 the U-WMBE subcontract Classification for Construction is African American (BBE)  
together with City-certified SLBEs  
\_\_\_\_\_% WMBE/SLBE ASPIRATIONAL (EBO Program) An all-inclusive SLBE/WMBE goal; any City certified firm counts towards goal attainment.

BIDDERS MUST SOLICIT ALL COMPANIES ON THE ATTACHED AVAILABILITY CONTACT LIST at least **five (5) City business days or more prior to bid opening as a first step** to demonstrate Good Faith Efforts to achieve the Goal. Substantive documentation that demonstrates Good Faith Efforts to achieve the Goal **must be submitted with the bid**, including emails, faxes, phone calls, letters, and other communication with City-certified firms. Bidders may explore other potential opportunities for subcontracting by consulting the current directory of all certified firms posted by the City of Tampa at <https://tampa.diversitysoftware.com> as the Availability Contact List may not be inclusive of all firms that could count toward Goal attainment. However, ONLY SUBCONTRACTING with those specific WMBEs designated as "underutilized" by Classification in the appropriate industry category (and, if made applicable by being specifically included in the above Goal, SLBEs) will count toward meeting the Goal. Making Good Faith Efforts through these and other means (not pro-forma) is the responsibility of the Bidder. See the attached Good Faith Effort Compliance Plan (GFCEP) (MBD Form-50) for specific requirements.

GOOD FAITH EFFORT COMPLIANCE PLAN (GFCEP) REQUIRED (MBD FORM-50). When a Goal has been established, the Bidder **must submit** with its bid a Good Faith Effort Compliance Plan (GFCEP) using the attached MBD Form-50 together with supporting documentation as specified therein. **Submittals that do not contain MBD Form-50 when a Goal has been established will be deemed non-responsive.** Additional explanation and documentation is required whenever a City-certified subcontractor's quote is not utilized. Any additional information regarding GFCEP (post-bid) shall be only upon the City's request for clarification of information submitted with bid and not to "cure" omissions or deficiencies of the bid.

**NOTE:** When U-WMBEs are included in a Goal, only those City-certified subcontractors whose WMBE Classification is designated "underutilized" will count toward Goal attainment. Refer to **MBD Form-70** to identify underutilized WMBEs by subcontract Classification for the applicable project industry category. A prime bidder who is a City-certified WMBE and/or SLBE is not exempt from the **GFCEP MBD Form-50** requirements.



**SUBCONTRACTING GOAL – (DBE) FDOT DISADVANTAGED BUSINESS ENTERPRISE PROGRAM**

The City of Tampa is required to use the Florida Department of Transportation (FDOT) Disadvantaged Business Enterprise (DBE) program on contracts with Federal Highway Administration (FHWA) funds. Effective October 1, 2017 through to September 30, 2020, the overall FDOT DBE aspirational goal is **10.65%** and is *race neutral*, meaning that FDOT believes the aspirational DBE goal may be achieved entirely through ordinary, competitive procurement methods. Despite the absence of a contract specific DBE goal on this project, the City encourages bidders to seek out and use DBEs and other minority, small businesses. For assistance in identifying certified DBEs, FDOT offers the use of its supportive services program accessed via FDOT's Equal Opportunity Office at <http://www.fdot.gov/equalopportunity/serviceproviders.shtm>. FDOT DBE rules and regulations apply to this solicitation, including the requirement to report bidder opportunity information in the FDOT Equal Opportunity Compliance (EOC) web-based application within three (3) business days of submission of the bid for ALL subcontractors who quoted bidder for this specific project. The five (5) char/digit LAP Agreement Contract Number for this project is G \_\_\_\_\_. The web address to the EOC system is: <https://fdotwp1.dot.state.fl.us/EqualOpportunityCompliance/Account.aspx/LogIn?ReturnUrl=%2fEqualOpportunityCompliance>

**NOTE:** Regardless of FDOT DBE program applicability, for data collection purposes bidder still **must submit** City Forms MBD-10 and MBD-20 completed and signed with its bid or the bid will be deemed non-responsive.

**DIVERSITY MANAGEMENT INITIATIVE (DMI) DATA REPORTING FORMS REQUIRED FOR ALL CONTRACTS**

Bidder **must submit**, with its bid, completed and signed Forms MBD-10 and MBD-20 to be considered a responsive bid. Specifically, the 'Schedule of All Solicited Sub-(Contractors/Consultants/Suppliers) (Form MBD-10)' listing all subcontractors (including non-certified) solicited and 'Schedule of All -To Be Utilized Sub-(Contractors/Consultants/Suppliers) (Form MBD-20)' listing all subcontractors (including non-certified) to be utilized. Supplemental forms, such as 'Form MBD-40 Official Letter Of Intent' (LOI), can be submitted with the bid or once declared lowest-responsive bidder. After an award, 'DMI Sub-(Contractors/Consultants/Suppliers) Payment Form (Form MBD-30)' is to be submitted with payment requests to report payments to subcontractors and using the on-line automated MBD compliance software system available at <https://tampa.diversitysoftware.com>

For additional information about the WMBE and SLBE programs contact the Minority and Small Business Development Office at 813-274-5522. (3-18)

INSTRUCTIONS TO BIDDERS  
SECTION 1 - SPECIAL INSTRUCTIONS

I-1.11 BID SECURITY:

Surety companies shall have a rating of not less than B+ Class VI as evaluated in the most recently circulated Best KeyRating Guide Property/Casualty.

I-1.12 PUBLIC CONSTRUCTION BOND:

The Bidder who is awarded the Contract will be required to furnish a Public Construction Bond upon the form provided herein, equal to 100 percent of the Contract price, such Bond to be issued and executed by (a) surety company(ies) acceptable to the City and licensed to underwrite contracts in the State of Florida. After execution of the Agreement and before commencing work, the Contractor must provide the City a certified copy of the officially recorded Bond.

I-1.13 AGREEMENT

**SECTION 2 – POWERS OF THE CITY'S REPRESENTATIVES**, new Article 2.05:

Add the following:

Article 2.05 CITY'S TERMINATION FOR CONVENIENCE:

The City may, at any time, terminate the Contract in whole or in part for the City's convenience and without cause. Termination by the City under this Article shall be by a notice of termination delivered to the Contractor, specify the extent of termination and the effective date.

Upon receipt of a notice of termination, the Contractor shall immediately, in accordance with instructions from the City, proceed with performance of the following duties regardless of delay in determining or adjusting amounts due under this Paragraph:

- (a) cease operations as specified in the notice;
- (b) place no further orders and enter into no further subcontracts for materials, labor, services or facilities except as necessary to complete continued portions of the Contract;
- (c) terminate all subcontracts and orders to the extent they relate to the Work terminated;
- (d) proceed to complete the performance of Work not terminated; and
- (e) take actions that may be necessary, or that the City may direct, for the protection and preservation of the terminated Work.

The amount to be paid to the Contractor by the City because of the termination shall consist of:

- (a) for costs related to work performed on the terminated portion of the Work prior to the effective date including termination costs relative to subcontracts that are properly chargeable to the terminated portion of the Work;
- (b) the reasonable costs of settlement of the Work terminated, including accounting, legal, clerical and other expenses reasonable necessary for the preparation of termination settlement proposals and supporting data; additional costs of termination and settlement of subcontracts excluding amounts of such settlements; and storage, transportation, and other costs incurred which are reasonably necessary for the preservation, protection or disposition of the terminated Work; and
- (c) a fair and reasonable profit on the completed Work unless the Contractor would have sustained a loss on the entire Contract had it been completed.

Allowance shall be made for payments previously made to the Contractor for the terminated portion of the Work, and claims which the City has against the Contractor under the Contract, and for the value of materials supplies, equipment or other items that are part of the costs of the Work to be disposed of by the Contractor.

**SECTION 5 – SUBCONTRACTS AND ASSIGNMENTS**, Article 5.01, Page A-7, last paragraph:

Change "...twenty-five (25) percent..." to "...fifty-one (51) percent..."

**SECTION 8 – CONTRACTOR'S EMPLOYEES**, Article 8.03, Page A-9, delete Article 8.03 in its entirety and

Replace with the following new article:

**ARTICLE 8.03 EMPLOYMENT OPPORTUNITIES**

The Contractor shall, in the performance of the work required to be done under this Contract, employ all workers without discrimination and must not maintain, provide or permit facilities that are segregated.

INSTRUCTIONS TO BIDDERS  
SECTION 1 - SPECIAL INSTRUCTIONS

**SECTION 10 – PAYMENTS**, Article 10.05, Page A-10, 1<sup>st</sup> Paragraph, 1<sup>st</sup> Sentence:

Change "...fair value of the work done, and may apply for..." to "...fair value of the work done, and shall apply for..."

**SECTION 11 – MISCELLANEOUS PROVISIONS**, Article 11.02, Page A-12, 1<sup>st</sup> Paragraph, 2<sup>nd</sup> Sentence:

Delete the 2<sup>nd</sup> Sentence in its entirety and replace it with the following new 2<sup>nd</sup> Sentence:

Without limiting application of Article 11.07, below, whenever the Contractor is required or desires to use any design, device, material, or process covered by letters of patent or copyright, the Contractor shall indemnify, defend, and hold harmless the City Indemnified Parties (as defined below) from any and all Claims (as defined below) for infringement by reason of the use of any such patented design, device, tool, material, equipment, or process, to be performed under the Contract and damages which may be incurred by reason of such infringement at any time during the prosecution or after completion of the work.

**SECTION 11 – MISCELLANEOUS PROVISIONS**, Article 11.03, Page A-12:

Delete Article 11.03 in its entirety and replace with the following new article:

ARTICLE 11.03 INTENTIONALLY OMITTED.

**SECTION 11 – MISCELLANEOUS PROVISIONS**, Article 11.07, Page A-12:

Delete Article 11.07 in its entirety and replace with the following new article:

ARTICLE 11.07 INDEMNIFICATION PROVISIONS

Whenever there appears in this Agreement, or in the other Contact Documents made a part hereof, an indemnification provision within the purview of Chapter 725.06, Laws of Florida, the monetary limitation on the extent of the indemnification under each such provision shall be One Million Dollars or a sum equal to the total Contract price, whichever shall be the greater.

Contractor releases and agrees to defend, indemnify and hold harmless the City, its officers, elected and appointed officials, employees, and/or agents (collectively, "City Indemnified Parties") from and against any and all losses, liabilities, damages, penalties, settlements, judgments, charges, or costs (including without limitation attorneys' fees, professional fees, or other expenses) of every kind and character arising out of any and all claims, liens, is entitled to indemnification hereunder. This obligation shall in no way be limited in any nature whatsoever by any limitation on the amount or type of Contractor's insurance coverage.

The parties agree that to the extent the written terms of this indemnification are deemed by a court of competent jurisdiction to be in conflict with any provisions of Florida law, in particular Sections 725.06 and 725.08, Florida Statutes, the written terms of this indemnification shall be deemed by any court of competent jurisdiction to be modified in such a manner as to be in fully and complete compliance with all such laws and to contain such limiting conditions or limitations of liability, or to not contain any unenforceable or prohibited term or terms, such that this indemnification shall be enforceable in accordance with and to the maximum extent permitted by Florida law.

The obligation of Contractor under this Article is absolute and unconditional; it is not conditioned in any way on any attempt by a City Indemnified Party to collect from an insurer any amount under a liability insurance policy, and is not subject to any set-off, defense, deduction, or counterclaim that the Contractor might have against the City Indemnified Party. The duty to defend hereunder is independent and separate from the duty to indemnify, and the duty to defend exists regardless of any ultimate liability of Contractor, the City, and any City Indemnified Party. The duty to defend arises immediately upon presentation of a Claim by any party and written notice of such Claim being provided to Contractor. Contractor's defense and indemnity obligations hereunder will survive the expiration or earlier termination of this Contract.

Contractor agrees and recognizes that the City Indemnified Parties shall not be held liable or responsible for any Claims which may result from any actions or omissions of Contractor in which the City Indemnified Parties participated either through providing data or advice and/or review or concurrence of Contractor's actions. In

INSTRUCTIONS TO BIDDERS  
SECTION 1 - SPECIAL INSTRUCTIONS

reviewing, approving or rejecting any submissions by Contractor or other acts of Contractor, the City in no way assumes or shares any responsibility or liability of Contractor or any tier of subcontractor/subconsultant/supplier, under this Contract.

In the event the law is construed to require a specific consideration for such indemnification, the parties agree that the sum of Ten Dollars and 00/100 (\$10.00), receipt of which is hereby acknowledged, is the specific consideration for such indemnification and the providing of such indemnification is deemed to be part of the specifications with respect to the services provided by Contractor.

**SECTION 11 – MISCELLANEOUS PROVISIONS**, Article 11.12, Page A-13:  
Change Article 11.12 to add the following new language after existing text:

The City of Tampa is a public agency subject to Chapter 119, Florida Statutes. In accordance with Florida Statutes, 119.0701, Contractor agrees to comply with Florida's Public Records Law, including the following:

1. Contractor shall keep and maintain public records required by the City to perform the services under this Agreement;
2. Upon request by the City, provide the City with copies of the requested records, having redacted records in total on in part that are exempt from disclosure by law or allow the records to be inspected or copied within a reasonable time (with provision of a copy of such records to the City) on the same terms and conditions that the City would provide the records and at a cost that does not exceed that provided in Chapter 119, Florida Statutes, or as otherwise provided by law;
3. Ensure that records, in part or in total, that are exempt or that are confidential and exempt from disclosure requirements are not disclosed except as authorized by law for the duration of the Agreement term and following completion (or earlier termination) of the Agreement if Contractor does not transfer the records to the City;
4. Upon completion (or earlier termination) of the Agreement, Contractor shall within 30 days after such event either transfer to the City, at no cost, all public records in possession of the Contractor or keep and maintain the public records in compliance with Chapter 119, Florida Statutes. If Contractor transfers all public records to the City upon completion (or earlier termination) of the Agreement, Contractor shall destroy any duplicate records that are exempt or confidential and exempt from public records disclosure requirements. If Contractor keeps and maintains public records upon completion (or earlier termination) of the Agreement, Contractor shall meet all applicable requirements for retaining public records. All records stored electronically must be provided to the City in a format that is compatible with the information technology systems of the agency.

The failure of Contractor to comply with Chapter 119, Florida Statutes, and/or the provisions set forth in this Article shall be grounds for immediate unilateral termination of the Agreement by the City; the City shall also have the option to withhold compensation due Contractor until records are received as provided herein.

**IF CONTRACTOR HAS QUESTIONS REGARDING THE APPLICATION OF CHAPTER 119, FLORIDA STATUTES, TO CONTRACTOR'S DUTY TO PROVIDE PUBLIC RECORDS RELATING TO THIS AGREEMENT, CONTACT THE CUSTODIAN OF PUBLIC RECORDS AT 813-274-8598, JIM.GREINER@TAMPAGOV.NET, AND CONTRACT ADMINISTRATION DEPARTMENT, TAMPA MUNICIPAL OFFICE BUILDING, 4TH FLOOR, 306 E. JACKSON ST. TAMPA, FLORIDA 33602.**

I-1.14 Contractors must utilize the U.S. Department of Homeland Security's E-Verify Systems to verify the employment eligibility of all persons employed during the term of the Contract to perform employment duties within the State of Florida and all persons, including subcontractors, assigned by Contractor to perform work pursuant to the contract.

INSTRUCTIONS TO BIDDERS  
SECTION 1 - SPECIAL INSTRUCTIONS

I-1.15 GENERAL PROVISIONS; G-2.02 Copies Furnished to Contractor: Replace the first paragraph with the following:

The Contractor shall acquire for its use copies of the plans and specifications as needed, which may be downloaded from the City's web site, at <http://www.tampagov.net/contract-administration/programs/construction-project-bidding>.

Bidder as part of the solicitation process (and as Contractor if Bidder is successful) may hold, come into possession of, and/or generate certain building plans, blueprints, schematic drawings, including draft, preliminary, and final formats, which depict the internal layout and structural elements of a building, facility, or other structure owned or operated by the City or an agency (singularly or collectively "Exempt Plans"), which pursuant to Section 119.071(3), Florida Statutes, are exempt from Section 119.07(1), Florida Statutes and Section 24(a), Art. I of the Florida State Constitution. Contractor certifies it has read and is familiar the exemptions and obligations of Section 119.071(3), Florida Statutes; further that Contractor is and shall remain in compliance with same, including without limitation maintaining the exempt status of such Exempt Plans, for so long as any Exempt Plans are held by or otherwise in its possession.

I-1.16 PAYMENT DISPUTE RESOLUTION

Any dispute pertaining to pay requests must be presented to the City pursuant to Executive Order 2003-1.

I-1.17 SCRUTINIZED COMPANIES CERTIFICATION

Section 287.135, Florida Statutes, prohibits agencies or local governmental entities from contracting for goods or services of any amount with companies that are on the Scrutinized Companies that Boycott Israel List or are engaged in a boycott of Israel, and of \$1 million or more with companies that are on either the Scrutinized Companies with Activities in Sudan List or the Scrutinized Companies with Activities in the Iran Petroleum Energy Sector List, or are engaged in business operations in Cuba or Syria. Specifically, Section 287.135(2), Florida Statutes, states: "A company is ineligible to, and may not, bid on, submit a proposal for, or enter into or renew a contract with an agency or local governmental entity for goods or services of: (a) Any amount if, at the time of bidding on, submitting a proposal for, or entering into or renewing such contract, the company is on the Scrutinized Companies that Boycott Israel List, created pursuant to s. 215.4725, or is engaged in a boycott of Israel; or (b) One million dollars or more if, at the time of bidding on, submitting a proposal for, or entering into or renewing such contract, the company: 1. Is on the Scrutinized Companies with Activities in Sudan List or the Scrutinized Companies with Activities in the Iran Petroleum Energy Sector List, created pursuant to s. 215.473; or 2. Is engaged in business operations in Cuba or Syria."

Upon submitting its bid or proposal, a bidder/proposer: (i) certifies the company is not in violation of Section 287.135, Florida Statutes, and shall not be in violation at the time the company enters into or renews any resulting contract; and (ii) agrees any such resulting contract shall be deemed to contain a provision that allows the City, at its option, to terminate such contract for cause if the company is found to have submitted a false certification, been placed on one or any of the foregoing Lists, been engaged in a boycott of Israel, or been engaged in business operations in Cuba or Syria.

I-1.18 FLORIDA'S PUBLIC RECORDS LAW; DATA COLLECTION

Pursuant to Section 119.071(5)(a)2a, Florida Statutes, social security numbers shall only be collected from Bidders and/or Contractor by the City should such number be needed for identification, verification, and/or tax reporting purposes. To the extent Bidder and/or Contractor collects an individual's social security number in the course of acting on behalf of the City pursuant to the terms and conditions of its Proposal or, if awarded, the Agreement, Bidder and/or Contractor shall follow the requirements of Florida's Public Records Law.

## INSTRUCTIONS TO BIDDERS

### SECTION 2 GENERAL INSTRUCTIONS

#### I-2.01 BIDDER'S RESPONSIBILITY

Before submitting Proposals, Bidders shall carefully examine the entire site of the proposed work and adjacent premises and the various means of approach and access to the site, and make all necessary investigations to inform themselves thoroughly as to the facilities necessary for delivering, placing and operating the necessary construction equipment, and for delivering and handling materials at the site, and inform themselves thoroughly as to all difficulties involved in the completion of all the work in accordance with the Contract Documents.

Bidders must examine the Plans, Specifications, and other Contract Documents and shall exercise their own judgment as to the nature and amount of the whole of the work to be done, and for the bid prices must assume all risk of variance, by whomsoever made, in any computation or statement of amounts or quantities necessary to complete the work in strict compliance with the Contract Documents.

Elevations of the ground are shown on the Plans and are believed to be reasonably correct, but are not guaranteed to be absolutely so and are presented only as an approximation. Bidders shall satisfy themselves as to the correctness of all elevations.

The City may have acquired, for its own use, certain information relating to the character of materials, earth formations, probable profiles of the ground, conditions below ground, and water surfaces to be encountered at the site of the proposed work. This information, if it exists, is on file at the offices of the Department of Public Works and Bidders will be permitted to see and examine this information for whatever value they consider it worth. However, this information is not guaranteed, and Bidders should satisfy themselves by making borings or test pits, or by such other methods as they may prefer, as to the character, location, and amounts of water, peat, clay, sand, quicksand, gravel, boulders, conglomerate, rock, gas or other material to be encountered or work to be performed.

Various underground and overhead structures and utilities are shown on the plans. The location and dimensions of such structures and utilities, where given, are believed to be reasonably correct, but do not purport to be absolutely so. These structures and utilities are plotted on the Plans for the information of the Bidders, but information so given is not to be construed as a representation or assurance that such structures will be found or encountered as plotted, or that such information is complete or accurate.

#### I-2.02 FORM, PREPARATION AND PRESENTATION OF PROPOSALS

Each Proposal shall be submitted upon the Proposal Form and in accordance with the instructions included herein. The Proposal Form must not be detached herefrom. All blank spaces for bid prices must be filled in, in both words and figures, with the unit or lump sum prices, or both, for which the Proposal is made. The computed total price for each unit price Contract Item shall be determined by multiplying the estimated quantity of the item, as set forth in the Proposal Form, by the corresponding unit price bid for such item. The resulting product shall be entered in the appropriate blank space under the column headed "Computed Total Price for Item". The lump sum price bid for each lump sum price Contract Item shall also be entered in the column headed "Computed Total Price for Item". If a Proposal contains any omissions, erasures, alterations, additions, or items not called for in the itemized Proposal, or contains irregularities of any kind, such may constitute sufficient cause for rejection of the Proposal. In case of any discrepancy in the unit price or amount bid for any item in the Proposal, the price as expressed in written words will govern. In no case is the Agreement Form to be filled out or signed by the Bidder.

In the case of certain jobs bid Lump Sum a "Schedule of Unit Prices" must be filled out as an attachment to the Lump Sum proposal. These prices may be used as a guide for the negotiation of change orders, at the City's option.

The proposal must be signed and certified and be presented on the prescribed form in a sealed envelope on/or before the time and at the place stated in the Notice of Bidders, endorsed with the name of the person, firm or corporation presenting it, the date of presentation, and the title of the work for which the Proposal is made.

Unless the apparent low bidder is now engaged in or has recently completed contract work for the City of Tampa, he, if requested, shall furnish to the City, after the opening of bids and prior to award, a summary statement of record of construction experience over the past three (3) years with proper supporting evidence, and, if required by the City, shall also furnish a list of equipment and other facilities pertinent to and available for the proper execution of the proposed work, and a statement of financial resources to the extent necessary to establish ability to carry on the proposed work. The City may make further investigations as considered necessary with respect to responsibility of the Bidder to whom it appears may be awarded the Contract.

If forwarded by mail, the sealed envelope containing the Proposal, endorsed as directed above, must be enclosed in another envelope addressed as specified in the Notice to Bidders and sent by registered mail.

#### I-2.03 ADDENDA AND INTERPRETATIONS

No interpretation of the meaning of the Plans, Specifications, or other Contract Documents will be made to any Bidder orally.

Every request for such interpretation must be in writing, addressed to the Contract Administration Department, Tampa Municipal Office Building, 4th Floor North, City Hall Plaza, Tampa, Florida 33602. To be given consideration, such request must be received at least seven (7) days prior to the date fixed for the opening of the Proposals. Any and all such interpretations and any supplemental instructions will be in the form of written addenda which, if issued, will be sent by certified mail, with return receipt requested, to all prospective bidders at the respective addresses furnished, for such purposes, not later than three (3) working days prior to the date fixed for the opening of the Proposals, and if requested, a copy will be delivered to the prospective bidder's representative. Failure of any Bidder to receive any such addenda shall not relieve said Bidder from any obligation under his Proposal as submitted. All addenda so issued shall become part of the Contract Documents.

#### I-2.04 BID SECURITY

Each Proposal must be accompanied by a certified or cashier's check issued by a solvent bank or trust company and payable at sight to the City of Tampa, in compliance with Section 255.051 Florida Statutes, or a Bid Bond upon the form provided herein, in an amount of not less than five percent of the sum of the computed total amount of the Bidder's Proposal as a guarantee that if the Proposal is accepted, the Bidder will execute and fill in the proposed Contract and Public Construction Bond within twenty (20) days after notice of award of the Contract. Certified checks shall have all necessary documentary revenue stamps attached if required by law. Surety on Bid Bonds shall be a duly authorized surety company authorized to do business in the State of Florida, and all such Bonds shall be issued or countersigned by a local resident producing agent, and satisfactory evidence of the authority of the person or persons executing such Bond to Execute the same shall be submitted with the Bond. Bid Bonds shall be issued by a surety company acceptable to the City.

Within ten (10) days after the opening of Proposals, the bid security of all but the three lowest Bidders will be returned. The bid security of the remaining two Bidders whose Proposals are not accepted will be

returned within ten (10) days after the execution of the Contract, or, if no such Contract has been executed, within ninety (90) days after the date of opening Proposals. The bid security of the Bidder whose Proposal is accepted will be returned only after he has duly executed the Contract and furnished the required Public Construction Bond and insurance.

Should it be necessary for the City to retain the bid security and said bid security is in the form of checks, the checks of these Bidders will be returned if replaced by Bid Bonds in an amount equal to the amount of the checks of such Bidders in such form and issued by a surety company acceptable to the City.

A Bidder may withdraw his Proposal before the time fixed for the opening of Proposals, without prejudice to himself, by communicating his purpose, in writing, to the Mayor and City Council, and when his communication is received, the Proposal will be handed to him or his authorized agent unopened. No Bidder may withdraw his Proposal within ninety (90) days after the day of opening Proposals.

The Bidder whose Proposal is accepted shall enter into a written contract, upon the Agreement form included herein, for the performance of the work and furnish the required Public Construction Bond within twenty (20) days after written notice by the City of Award of Contract has been served on such Bidder personally or after receipt of the written notice by registered mail to such Bidder at the address given in his Proposal.

If the Bidder to whom a Contract is awarded refuses or neglects to execute it or fails to furnish the required Public Construction Bond within twenty (20) days after receipt by him of the Notice of Award of Contract, the amount of his bid security shall be forfeited and shall be retained by the City as liquidated damages, and not as a penalty, it being now agreed that said sum is a fair estimate of the amount of damages that the City will sustain in case said Bidder fails to enter into a Contract and furnish the required Public Construction Bond. If a Bid Bond was furnished, the full amount of the Bond shall become due and payable as liquidated damages caused by such failure. The full amount of the bid security shall be forfeited as liquidated damages without consideration of the fact that an award may be less than the full amount of the Bidder's Proposal, excepting that the award shall be within the conditions of said Proposal relating to the basis of consideration for an award. No plea of mistake in the bid or misunderstanding of the conditions of forfeiture shall be available to the Bidder for the recovery of his deposit or as a defense to any action based upon the neglect or refusal to execute a contract.

#### I-2.05 LAWS AND REGULATIONS

The Bidder who is awarded the Contract must comply with all laws of the State of Florida, and all applicable Ordinances of the City of Tampa respecting labor and compensation and with all other statutes, ordinances, rules and regulations applicable and having the force of law.

#### I-2.06 PUBLIC CONSTRUCTION BOND

The Bidder who is awarded the Contract will be required to furnish a Public Construction Bond upon the form provided herein, equal to 100 percent of the Contract price, such Bond to be executed by a surety company acceptable to the City of Tampa and licensed to underwrite contracts in the State of Florida. Surety companies shall have a rating of not less than: B+ Class VI as evaluated in the most recently circulated BEST'S KEY RATING GUIDE PROPERTY-LIABILITY.

#### I-2.07 SIGNATURE AND QUALIFICATIONS OF BIDDERS

Proposals must be signed in ink by the Bidder with signature in full. When a firm is a Bidder, the Proposal shall be signed in the name of the firm by one or more of the partners. When a corporation is a Bidder the officer signing shall set out the corporate name in full beneath which he shall sign his name and give the title of his office. The Proposal shall also bear the seal of the corporation attested by its secretary. Anyone signing the Proposal as agent must file with it legal evidence of his authority to do so.

Bidders who are nonresident corporations shall furnish to the City a

duly certified copy of their permit to transact business in the State of Florida, signed by the Secretary of State, within ten days of the notice to do so. Such notice will be given to Bidders who are nonresident corporations, to whom it appears an award will be made, and the copy of the permit must be filed with the City before the award will be made. Failure to promptly submit this evidence of qualification to do business in the State of Florida may be basis for rejection of the Proposal.

#### I-2.08 REJECTION OF PROPOSALS

The City reserves the right to reject any Proposal if investigation of the Bidder fails to satisfy the City that such Bidder is properly qualified to carry out the obligations and to complete the work contemplated therein. Any or all Proposals will be rejected if there is reason to believe that collusion exists among Bidders. Proposals will be considered irregular and may be rejected if they show serious omissions, alterations in form, additions not called for, conditions or unauthorized alternates, or irregularities of any kind. The City reserves the right to reject any or all Proposals and to waive such technical errors as may be deemed best for the interests of the City.

#### I-2.09 QUANTITIES ESTIMATED ONLY

The estimate of quantities of the various items of work and materials, if set forth in the Proposal Form, is approximate only and is given solely to be used as a uniform basis for the comparison of Proposals.

The quantities actually required to complete the Contract work may be less or more than so estimated, and if awarded a Contract for the work specified, the Contractor agrees that he will not make any claim for damages or for loss of profits because of a difference between the quantities of the various classes of work assumed for comparison of Proposals and quantities of work actually performed. The City further reserves the right to vary the quantities in any amount.

#### I-2.10 COMPARISON OF PROPOSALS

Except jobs bid on a "One Lump Sum" basis, proposals will be compared on the basis of a total computed price arrived at by taking the sum of the estimated quantity of each item and the corresponding unit price of each item, and including any lump sum prices on individual items.

The computed total prices for individual Contract Items and the total computed price for the entire Contract, as entered by the Bidder in the Proposal Form, are for convenience only and are subject to correction in the tabulation and computation of the Proposals.

#### I-2.11 BASIS OF AWARD

The Contract will be awarded, if at all, to the lowest responsible Bidder or Bidders, as determined by the City and by the terms and conditions of the Contract Documents. Unless all bids are rejected, the award will be made within ninety (90) days after the opening of Proposals. The successful Bidder will be required to possess, or obtain, a valid City Occupational License.

#### I-2.12 INSURANCE REQUIRED

The successful Bidder and his subcontractors will be required to procure and pay for insurance covering the work in accordance with the provisions of Article 6.02 of the Agreement as indicated on special instructions pages beginning with INS-1.

#### I-2.13 NO ASSIGNMENT OF BID

No Bidder shall assign his bid or any rights thereunder.

#### I-2.14 NONDISCRIMINATION IN EMPLOYMENT

Contracts for work under this Proposal will obligate the contractors and subcontractors not to discriminate in employment practices.

Bidders must, if requested, submit with their initial bid a signed statement as to whether they have previously performed work subject to the President's Executive Order Nos. 11246 and 11375.

Bidders must, if requested, submit a compliance report concerning their employment practices and policies in order to maintain their eligibility to receive the award of the Contract.

Successful Bidders must, if requested, submit a list of all subcontractors who will perform work on the project and written,

signed statement from authorized agents of the labor pools with which they will or may deal for employees on the work together with supporting information to the effect that said labor pools practices and policies are in conformity with Executive Order No. 11246 and that said labor pools will affirmatively cooperate in or offer no hindrance to the recruitment, employment and equal treatment of employees seeking employment and performing work under the Contract, or a certification as to what efforts have been made to secure such statements when such agents or labor pools have failed or refused to furnish them prior to the award of the Contract.

#### I-2.15 LABOR STANDARDS

The Bidder's attention is directed to the Contract Provisions of the Labor Standards for federally assisted projects which may be attached to and made a part of the Agreement.

#### I-2.16 NOTICE TO LABOR UNIONS

If applicable, the successful Bidder will be required to provide Labor Unions and other organizations of workers a completed copy of the form entitled "Notice to Labor Unions or Other Organizations of Workers", and such form may be made a part of the Agreement.

#### I-2.17 NOTICE TO PROSPECTIVE FEDERALLY-ASSISTED CONSTRUCTION CONTRACTORS

A Certification of Nonsegregated Facilities, as required by the May 9, 1967, Order (32 F.R. 7439, May 19, 1967) on Elimination of Segregated Facilities, by the Secretary of Labor, must be submitted to said Secretary prior to the award of a federally-assisted construction and Contract exceeding \$10,000 which is not exempt from the provisions of the Equal Opportunity Clause. The form of certification may be bound herein following the form of Bid Bond.

Contractors receiving federally-assisted construction Contract awards exceeding \$10,000 which are not exempt from the provisions of the Equal Opportunity Clause will be required to provide for the forwarding of the following notice to prospective subcontractor for supplies and construction contracts where the subcontracts exceed \$10,000 and are not exempt from the provisions of the Equal Opportunity Clause:

#### NOTICE TO PROSPECTIVE SUBCONTRACTORS OF REQUIREMENT FOR CERTIFICATIONS OF NONSEGREGATED FACILITIES

"A Certification of Nonsegregated Facilities, as required by the May 9, 1967, Order (32 F.R. 7439, May 19, 1967) on Elimination of Segregated Facilities, by the Secretary of Labor, must be submitted prior to the award of a subcontract exceeding \$10,000 which is not exempt from the provisions of the Equal Opportunity Clause."

"Contractors receiving subcontract awards exceeding \$10,000 which are not exempt from the provisions of the Equal Opportunity Clause will be required to provide from the forwarding of this notice to prospective subcontractors for supplies and construction contracts where the subcontracts exceed \$10,000 and are not exempt from the provisions of the Equal Opportunity Clause."

The United States requires a pre-award conference if a proposed construction contract exceeds one million dollars to determine if the the prospective contractor is in compliance with the Equal Employment Opportunity requirements of Executive Order 11246 of September 24, 1965. In such instances, a meeting may be scheduled at which the prospective contractor must specify what affirmative action he has taken or proposed to take to assure equal employment opportunity which must be approved by the United States before award of the contract will be authorized.

Bidders must be prepared to submit an Equal Employment Opportunity (EEO) plan at a pre-award conference. The plan must include bidding opportunities offered by the Bidder to minority subcontractors.

On October 13, 1971, President Nixon issued Executive Order 11246 emphasizing the government's commitment to the promotion of minority business enterprise. Accordingly, the United States is firmly

committed to the utilization of available resources to support this important program. U.S. agencies are most interested in realizing minority participation on the subject. Achieving equal employment opportunity compliance is required through Executive Order 11246. WE cannot emphasize too strongly that minority subcontractors be extended subcontractors bidding opportunities as but one step in your affirmative action policy.

Due to the importance of this contract, U.S. Agencies may conduct an EEO Conference prior to the award of the Contract. It is suggested that the responsive Bidder confirm the minority subcontractors he contacted for bids or quotations in his EEO plan submitted at the conference.

#### I-2.18 EEO AFFIRMATIVE ACTION REQUIREMENTS

By the submission of a Proposal, each Bidder acknowledges that he understands and will agree to be bound by the equal opportunity requirements of Federal regulations which shall be applicable throughout the performance of work under any contract awarded pursuant to solicitation. Each Bidder agrees that if awarded a contract, he will similarly bind contractually each subcontractor. In policies, each Bidder further understands and agrees that if awarded a contract, he must engage in Affirmative Action directed to promoting and ensuring equal employment opportunity in the work force used under the contract (and he must require contractually the same effort of all subcontractors whose subcontracts exceed \$100,000). The Bidder understands and agrees that "Affirmative Action" as used herein shall constitute a good faith effort to achieve and maintain minority employment in each trade in the on-site work force used on the project. \*\*\*\*\* END of SECTION \*\*\*\*\*

## CITY OF TAMPA INSURANCE REQUIREMENTS

Prior to commencing any work or services or taking occupancy under that certain written agreement or award (for purposes of this document, Agreement) between the City of Tampa, Florida (City) and Firm/Awardee/Contractor/Consultant/Lessee/non-City party, etc. (for purposes of this document, Firm) to which this document is attached and incorporated as an Exhibit or otherwise, and continuing during the term of said Agreement (or longer if the Agreement and/or this document so requires), Firm shall provide, pay for, and maintain insurance against claims for injuries to persons (including death) or damages to property which may arise from or in connection with the performance of the Agreement (including without limitation occupancy and/or use of certain property/premises) by Firm, its agents, representatives, employees, suppliers, subtenants, or subcontractors (which term includes sub-consultants, as applicable) of any tier subject to the terms and conditions of this document. Firm's maintenance of insurance coverage as required herein is a material element of the Agreement and the failure to maintain or renew coverage or provide evidence of same (defined to include without limitation Firm's affirmative duty to provide from time to time upon City's request certificates of insurance, complete and certified copies of Firm's insurance policies, forms, and endorsements, information on the amount of claims payments or reserves chargeable to the aggregate amount of coverage(s) whether during the term of the Agreement or after as may be requested by the City in response to an issue or potential claim arising out of or related to the Agreement to which Firm's insurance obligations hereunder may apply or possibly help mitigate) may be treated as a material breach of the Agreement. Should at any time Firm not maintain the insurance coverages required, City at its sole option (but without any obligation or waiver of its rights) may (i) terminate the Agreement or (ii) purchase such coverages as City deems necessary to protect itself (charging Firm for same) and at City's option suspending Firm's performance until such coverage is in place. If Firm does not reimburse City for such costs within 10 days after demand, in addition to any other rights, City shall also have the right to offset such costs from amounts due Firm under any agreement with the City. All provisions intended to survive or to be performed subsequent to the expiration or termination of the Agreement shall survive, including without limitation Firm's obligation to maintain or renew coverage, provide evidence of coverage and certified copies of policies, etc. upon City's request and/or in response to a potential claim, litigation, etc.

The City reserves the right from time to time to modify or waive any or all of these insurance requirements (or to reject policies) based on the specific nature of goods/services to be provided, nature of the risk, prior experience, insurer, coverage, financial condition, failure to operate legally, or other special circumstances. If Firm maintains broader coverage and/or higher limits than the minimums shown herein, the City requires and shall be entitled to such broader coverage and/or higher limits maintained by Firm. Any available insurance proceeds in excess of the specified minimum limits of insurance and coverage shall be available to the City. No representation is made that the minimum insurance requirements are sufficient to cover Firm's interests, liabilities, or obligations. Required insurance shall not limit Firm's liability.

Firm acknowledges and agrees Firm and not the City is the party in the best position to determine applicability (e.g. "IF APPLICABLE"), confirm, and/or verify its insurance coverage. Acceptance by the City, or by any of its employees, representatives, agents, etc. of certificates or other documentation of insurance or policies pursuant to the terms of this document and the Agreement evidencing insurance coverages and limits does not constitute approval or agreement that the insurance requirements have been met or that coverages or policies are in compliance. Furthermore, receipt, acceptance, and/or approval of certificates or other documentation of insurance or policies or copies of policies by the City, or by any of its employees, representatives, agents, etc., which indicate less coverage than required does not constitute a waiver of Firm's obligation to fulfill these insurance requirements.

### MINIMUM SCOPE AND LIMIT OF INSURANCE <sup>1</sup>

A. Commercial General Liability (CGL) Insurance on the most current Insurance Services Office (ISO) Form CG 00 01 or its equivalent on an "occurrence" basis (Modified Occurrence or Claims Made forms are not acceptable without prior written consent of the City). Coverage must be provided to cover liability contemplated by the Agreement including without limitation premises and operations, independent contractors, contractual liability, products and completed operations, property damage, bodily, personal and advertising injury, contractual liability, explosion, collapse, underground coverages, personal injury liability, death, employees-as-insureds. Products and completed operations liability coverage maintained for at least 3 years after completion of work. Limits shall not be less than \$1M per occurrence and \$2M general aggregate for Agreements valued at \$2M or less; if valued over \$2M, a general aggregate limit that equals or exceeds the Agreement's value. If a general aggregate limit applies; it shall apply separately to the project/location (ISO CG 2S 03 or 2S 04 or equivalent). **(ALWAYS APPLICABLE)**

B. Automobile Liability (AL) Insurance in accordance with Florida law, as to the ownership, maintenance, and use of all owned, non-owned, leased, or hired vehicles. AL insurance shall not be less than: (a) \$500,000 combined single limit each occurrence bodily injury and property damage for Agreements valued at \$100,000 or less or (b) \$1M combined single limit each occurrence bodily injury and property damage for Agreements valued over \$100,000. If transportation of hazardous material involved, the MCS-90 endorsement (or equivalent). **(ALWAYS APPLICABLE)**

C. Worker's Compensation (WC) & Employer's Liability Insurance for all employees engaged under the Agreement, Worker's Compensation as required by Florida law. Employer's Liability with minimum limits of (a) \$500,000 bodily injury by accident and each accident, bodily injury by disease policy limit, and bodily injury by disease each employee for Agreements valued at \$100,000 and under or (b) \$1M bodily injury by accident and each accident, bodily injury by disease policy limit, and bodily injury by disease each for all other Agreements. **(ALWAYS APPLICABLE)**

D. Excess (Umbrella) Liability Insurance for Agreements valued at \$2M or more, at least \$4M per occurrence in excess of underlying limits and no more restrictive than underlying coverage for all work performed by Firm. May also compensate for a deficiency in CGL, AL, or WC. **(ALWAYS APPLICABLE)**

E. Builder's Risk Insurance for property loss exposure associated with construction/renovation/additions to buildings or structures, including materials or fixtures to be incorporated. Must be "All Risk" form with limits of no less than the project's completed value, have no coinsurance penalties, eliminate the "occupancy clause", cover Firm (together with its contractors, subcontractors of every tier, and suppliers), and name City as a Loss Payee. **(IF APPLICABLE)**

F. Installation Floater coverage for property (usually highly valued equipment or materials such as compressors, generators, etc.) during its installation. Coverage must be "All Risk" including installation and transit for no less than 100% of the installed replacement cost value. **(IF APPLICABLE)**

G. Architects & Engineers Liability/ Professional Liability (E&O)/ Contractors Professional Liability (CPL)/ Medical Malpractice Insurance where Agreement involves Florida-regulated professional services (e.g. architect, engineer, design-builder, CM, accountant, appraiser, investment banker medical professional) at any tier, whether employed or independent, vicarious design liability exposure (e.g. construction means & methods, design supervision), value engineering, constructability assessments/reviews, BIM process, and/or performance specifications. Limits of at least \$1M per occurrence and \$2M aggregate; deletion of design/ build liability exclusions, as applicable, and maintained for at least 3 years after completion of work/services and City's acceptance of same. **(IF APPLICABLE)**

H. Railroad Protective Liability CRPL Insurance for construction within 50ft of operated railroad track(s) or where affects any railroad bridge, trestle, tunnel, track(s) roadbed, or over/under pass. Subject to involved rail road's approval prior to commencement of work. **(IF APPLICABLE)**.

I. Pollution and/or Asbestos Legal Liability Insurance where Agreement involves asbestos and/or environmental hazards/contamination risks (defined broadly, e.g. lead, mold, bacteria, fuel storage, underground work, cleanup (owned or non-owned sites), pollutant generation/transportation, marine/natural resource damage, contamination claim, restitution, business interruption, mold, fungus, lead-based paint, 3rd party claims/removal, etc.), with limits of at least \$1M per occurrence and \$2M aggregate, maintained for at least 3 years after Agreement completion. **(IF APPLICABLE)**

J. Cyber Liability Insurance where Agreement involves portals allowing access to obtain, use, or store data; managed dedicated servers; cloud hosting services; software/hardware; programming; and/or other IT services

<sup>1</sup> "M" indicates million(s), for example \$1M is \$1,000,000

and products are involved. Limits of not less than \$2M per occurrence and \$2M aggregate. Coverage sufficiently broad to respond to duties and obligations undertaken by Firm, and shall include, but not be limited to, claims involving infringement of intellectual property/copyright, trademark, trade dress, invasion of privacy violations, damage to or destruction of electronic information, information theft, release of confidential and/or private information, alteration of electronic information, extortion, virus transmission, and network security. Coverage, as applicable and with sufficient limits to respond, for breach response costs, regulatory fines and penalties, credit monitoring expenses. **(IF APPLICABLE)**

K. Drone/UAV Liability Insurance where Agreements involves unmanned aerial vehicles/drones. Coverage to include products and completed operations, property damage, bodily injury with limits no less than \$1M per occurrence, and \$2M aggregate; may be provided by CGL endorsement subject to City's prior written approval. **(IF APPLICABLE)**

L. Longshore & Harbor Workers' Compensation Act/Jones Act for work being conducted near, above, or on "navigable waters" for not less than the above Employer's Liability Insurance limit. **(IF APPLICABLE)**

M. Garagekeeper/Hangerkeeper/Marina Operator Legal Liability Insurance and/or Hull/P&I Insurance where parking lot, valet, dealership, garage services, towing, etc. and/or operation of a hangar, marina, or air

plane/ship repairer, providing safe berth, air/watercraft storage/docking (on land/ in water), fueling, tours, charters, ferries, dredges, tugs, mooring, towing, boat/aircraft equipment/repair/alteration/maintenance, etc.; cover- age against liability for damage to vehicles air/watercraft, their machinery in Firm's care, custody, or control both private & commercial. Limits at least equal to greater of \$1M, value of max number of vehicles that may be in Firm's custody, or of most costly object in Firm's custody. **(IF APPLICABLE)**

N. Property Insurance and Interruption of Business CIOB) Insurance where premises, building, structure, or improved real property is leased, licensed, or otherwise occupied by Firm. Property Insurance against all risks of loss to any occupant/tenant improvements at full replacement cost with no coinsurance penalty, including fire, water, leak damage, and flood, as applicable, vandalism and malicious mischief endorsements. IOB by which minimum monthly rent will be paid to City for up to 1 year if premises are destroyed, rendered inaccessible or untenable, including disruption of utilities, water, or telecommunications. **(IF APPLICABLE)**

O. Liquor Liability/Host Liquor Liability where Firm directly or indirectly provides alcoholic beverages, limits of at least \$1M per occurrence and \$1M aggregate. **(IF APPLICABLE)**

P. Educators Legal Liability Insurance where day care, after school program, recreational activities, etc. limits per G above. **(IF APPLICABLE)**

### ADDITIONAL REQUIREMENTS

ACCEPTABILITY OF INSURERS- Insurance is to be placed with insurers admitted in the State of Florida and who have a current A.M. Best rating of no less than **A-:VII** or, if not rated by A.M. Best, as otherwise approved by the City in advance and in writing.

ADDITIONAL INSURED - **City, its elected officials, departments, officers, officials, employees, and volunteers together with, as applicable, any associated lender of the City shall be covered as additional insureds on all liability coverage** (e.g. CGL, AL, and Excess (Umbrella) Liability) as to liability arising out of work or operations performed by or on behalf of Firm including materials, parts, or equipment furnished in connection with such work or operations and automobiles owned, leased, hired, or borrowed by or on behalf of Firm. Coverage can be provided in the form of an endorsement to Firm's insurance (at least as broad as ISO Form CG 20 10 11 85 or **both** CG 10 20, CG 20 26, CG 20 33, or CG 20 38 **and** CG 20 37 if later revisions used).

CANCELLATION/NON-RENEWAL – Each insurance policy shall provide that at least 30 days written notice must be given to City of any cancellation, intent to non-renew, or material reduction in coverage (except aggregate liability limits) and at least 10 days' notice for non-payment of premium. Firm shall also have an independent duty to notify City in like manner, within 5 business days of Firm's receipt from its insurer of any notices of same. If any policy's aggregate limit is reduced, Firm shall directly take steps to have it reinstated. Notice and proof of renewal/continued coverage/certifications, etc. shall be sent to the City's notice (or Award contact) address as stated in the Agreement with a copy to the following:

- Contract Administration Department, 306 E Jackson St, Tampa, FL 33602     Purchasing Department, 306 E Jackson Street, Tampa, FL 33602  
 Other: \_\_\_\_\_

CERTIFICATE OF INSURANCE (COI) – to be provided to City by insurance carrier prior to Firm beginning any work/services or taking occupancy and, if the insurance expires prior to completion of the work or services or Agreement term (as may be extended), a renewal COI at least 30 days before expiration to the above address(es). COIs shall specifically identify the Agreement and its subject (project, lease, etc.), shall be sufficiently comprehensive to insure City (named as additional insured) and Firm and to certify that coverage extends to subcontractors' acts or omissions, and as to permit the City to determine the required coverages are in place without the responsibility of examining individual policies. **Certificate Holder must be The City of Tampa, Florida.**

CLAIMS MADE – If any liability insurance is issued on a claims made form, Firm agrees to maintain such coverage uninterrupted for at least 3 years following completion and acceptance of the work either through purchase of an extended reporting provision or purchase of successive renewals. The Retroactive Date must be shown and be a date not later than the earlier of the Agreement date or the date performance/occupancy began thereunder.

DEDUCTIBLES/ SELF-INSURED RETENTIONS (SIR) – must be disclosed to City and, if over \$500,000, approved by the City in advance and in writing, including at City's option being guaranteed, reduced, or eliminated (additionally if a SIR provides a financial guarantee guaranteeing payment of losses and related investigations, claim administration, and defense expenses). Firm shall be fully responsible for any deductible or SIR (without limiting the foregoing a policy with a SIR shall provide or be endorsed to provide that the SIR may be satisfied by either the City or named insured). In the event of loss which would have been covered but for a deductible or SIR, City may withhold from any payment due Firm, under any agreement with the City, an amount equal to same to cover such loss should full recovery not be obtained under the policy.

PERFORMANCE- All insurance policies shall be fully performable in Hillsborough County, Florida (the County), and construed in accordance with Florida law. Further, all insurance policies must expressly state that the insurance company will accept service of process in the County and that the exclusive venue for any action concerning any matter under those policies shall be in the appropriate state court of the County.

PRIMARY POLICIES - Firm's insurance coverage shall be primary insurance coverage at least as broad as ISO CG 20 01 04 13 as to the City, its elected officials, departments, officers, employees, and volunteers. Any insurance or self-insurance maintained by the City, its elected officials, departments, officers, employees, and volunteers shall be excess of the Firm's insurance and shall not contribute with it.

SUBCONTRACTORS/INDEPENDENT ASSOCIATES/CONSULTANTS/SUBTENANTS/SUBLICENSEE - **Firm shall require and verify that all such entities maintain insurance meeting all requirements stated herein with the City as an additional insured** by endorsement (ISO FORM CG 20 38, or broader) or otherwise include such entities within Firm's insurance policies. Upon City's request, Firm shall furnish complete and certified copies of copies of such entities' insurance policies, forms, and endorsements.

SUBCONTRACTOR DEFAULT INSURANCE CONTROLLED INSURANCE PROGRAM, WRAP-UP. Use requires express prior written consent of City Risk Manager.

UNAVAILABILITY- To the fullest extent permitted by law, if Firm is out of business or otherwise unavailable at the time a claim is presented to City, Firm hereby assigns to the City all of its right, title and interest (but not any liabilities or obligations) under any applicable policies of insurance.

WAIVER OF SUBROGATION – With regard to any policy of insurance that would pay third party losses, Firm hereby grants City a waiver of any right to subrogation which any insurer of Firm may acquire against the City by virtue of the payment of any loss under such insurance. Firm agrees to obtain any endorsement that may be necessary to affect such waiver, but this provision shall apply to such policies regardless.

WAIVER/RELEASE AGREEMENT – Where Firm has a defined group of persons who might be exposed to harm (e.g. participants in an athletic event/program, volunteers) any waiver or release agreement used by Firm whereby such persons (and their parent/guardian as applicable) discharge Firm from claims and liabilities, shall include the City, its elected officials, departments, officers, officials, employees, and volunteers to the same extent as Firm.

## Procurement Guidelines To Implement Minority & Small Business Participation

### Underutilized WMBE Primes by Industry Category

<b>FORMAL PROCUREMENT</b>	Construction	Construction-Related	Professional	Non-Professional	Goods
	Black	Asian	Black	Black	Black
	Hispanic	Native Am.	Hispanic	Asian	Hispanic
	Native Am.	Woman	Asian	Native Am.	Asian
	Woman		Native Am.		Native Am.
			Woman		Woman

### Underutilized WMBE Sub-Contractors / Sub-Consultants

<b>SUB WORK</b>	Construction	Construction-Related	Professional	Non-Professional	Goods
	Black	Black	Black	Black	Black
		Asian	Hispanic	Asian	Asian
		Native Am.	Asian	Native Am.	Native Am.
		Woman	Native Am.		Woman
			Woman		

#### Policy

The Guidelines apply to formal procurements and solicitations. WMBE participation will be narrowly-tailored.

#### Index

- Black = Black/African-American Business Enterprise
- Hispanic = Hispanic Business Enterprise
- Asian = Asian Business Enterprise
- Native Am. = Native American Business Enterprise
- Woman = Woman Business Enterprise (Caucasian)

#### Industry Categories

**Construction** is defined as: new construction, renovation, restoration, maintenance of public improvements and underground utilities.

**Construction-Related Services** are defined as: architecture, professional engineering, landscape architecture, design build, construction management services, or registered surveying and mapping.

**Professional Services** are defined as: attorney, accountant, medical doctor, veterinarian, miscellaneous consultant, etc.

**Non-Professional Services** are defined as: lawn maintenance, painting, janitorial, printing, hauling, security guard, etc.

**Goods** are defined as: all supplies, materials, pipes, equipment, machinery, appliances, and other commodities.

#### MBD Form-70

# Palma Ceia Remote Storage Tank Refurbishment

## Project #18-C-00027

### U-WMBE Availability Contact List

(The Underutilized WMBE Industry Category for Construction Subcontracts is BBE )

#'s	Business Name	Phone	Fax	Email	Address 1	City	State	Zip
1	Denson Construction Inc.	863-709-1001	863-709-1071	pete@denson-construction.com	4270 HOLDEN ROAD	LAKELAND	FL	33811
1	Excel 4 LLC	813-433-3486	813-433-3486	excel4llc@yahoo.com	318 N. John Young Parkway Suite #6	Kissimmee	FL	34741
1	Exclusive Contractors, Inc.	863-559-1039	000-000-0000	roadcontractor2@YAHOO.com	277 S. 10th Ave	Bartow	FL	33830
2	Fresh Start Development, Inc.	813-758-5345	813-333-5949	freshstartdevelop@yahoo.com	601 S Falkenburg Rd	Tampa	FL	33619

African American/Black Business Enterprises (BBE) shall count toward the subcontract goal. Refer to MBD Form 70 - Procurement Guidelines

**Palma Ceia Remote Storage Tank Refurbishment  
Project #18-C-00027  
SLBE Availability Contact List**

#'s	Business Name	Phone	Fax	Email	Address 1	City	State	Zip	Business Description	FEIN	Cert. Type	Ethnicity
1	Exclusive Contractors, Inc.	863-559-1039	000-000-0000	roadcontractor2@YAHOO.com	277 S. 10th Ave	Bartow	FL	33830	Concrete	592345574	SLBE	African American
1	Quick Construction Solutions, LLC	813-377-9997	813-374-5849	quickcs@outlook.com	4501 N. Saint Vincent St.	Tampa	FL	33614	Concrete	000972890	SLBE	Hispanic American
2	Best Made Enterprises, Inc.	813-248-5266	813-248-1299	BestMadeEntInc@gmail.com	4133 Causeway Blvd.	Tampa	FL	33619	N/A	593498525	SLBE	Hispanic American
2	Communication Support Network, Inc	727-433-2200	727-683-9220	csn2sara@gmail.com	2550 28th Ave N	St. Petersburg	FL	33713	Underground Utility Contractor;	030379746	SLBE	Caucasian
2	Fresh Start Development, Inc.	813-758-5345	813-333-5949	freshstartdevelop@yahoo.com	601 S Falkenburg Rd	Tampa	FL	33619	General Contractor;	203857845	SLBE	African American
2	Green Seeds Inc	813-858-7765		dbrion@ourgreenseed.com	3387 Antigua lane, UNIT 303	tampa	FL	33614	Landscape Maintenance, Sod Installation, Fencing, Planting, Tree Trimming	11867821	SLBE	Hispanic American
2	JEB Management Inc.	813-968-1921	813-241-6070	info@fence4u.biz	5804 N. Occident Street	Tampa	FL	33614	Fencing Installation;	030416868	SLBE	Caucasian
2	Rooms by Rooms Design	813-479-5353		roomsbyroomsdesign@hotmail.com	3101 21st ct east	palmetto	FL	34221	Janitorial Services, Landscaping;	31536268	SLBE	Hispanic American

Instructions Regarding Use of the WMBE/SLBE Availability Contact List

**Bidders must solicit a subcontracting bid from ALL of the firms listed on the WMBE/SLBEs list provided within the Specifications,** and provide documentation of emails, faxes, phone calls, letters, or other communication with the firms as a first step in demonstrating Good-Faith Efforts to achieve the goal set for WMBE/SLBE participation on this contract.

The list is formatted to facilitate e-mailing of a solicitation to the listed firms by copying and pasting the email addresses.

The WMBE/SLBE participation Goal is based upon the availability of the certified firms indicated on the contact list. The Goal and Requirements of the City's Equal Business Opportunity Program are stated in the Bid/Contract Document, Specifications.

PROPOSAL

To the Mayor and City Council of the City of Tampa, Florida:

Legal Name of Bidder: \_\_\_\_\_

Bidder's Fictitious Name, *if applicable*: \_\_\_\_\_

Bidder is a/an:  Individual  Partnership\*  Joint Venture\*  LLC  Corp.  Other:

Bidder is organized under the laws of:  State of Florida  Other:

Bidder Mailing Address: \_\_\_\_\_

Bidder's Federal Employee Identification No. (FEI/EIN): \_\_\_\_\_

Bidder's License No.: \_\_\_\_\_ Bidder's FDOS (SUNBIZ) Doc. No.: \_\_\_\_\_  
*(See Ch. 489. FS; use entity's, individual's only if applicable)*

Bidder Contact Name\*\*: \_\_\_\_\_ Email: \_\_\_\_\_ Phone: (\_\_\_\_) \_\_\_\_\_

Bidder's own initial application for employment has criminal history screening practices similar in nature to the practices contained in Chapter 12, Article VI, City of Tampa Code (*Responses, whether "Yes" or "No", are for informational purposes only and will not be used as a basis of award or denial, nor as a basis for any protest*):  Yes  No

The below named person, appearing before the undersigned authority and after being first duly sworn, for him/herself and on behalf of the entity submitting this Proposal does hereby affirm and declare as follows:

- (1) He/She is of lawful age and is authorized to act on behalf of Bidder (the individual, partnership, corporation, entity, etc. submitting this Proposal) and that all statements made in this document are true and correct to the best of my knowledge.
- (2) If Bidder is operating under a fictitious name, Bidder has currently complied with any and all laws and procedures governing the operation of businesses under fictitious names in the State of Florida
- (3) No person or entity other than Bidder has any interest in this Proposal or in the Contract proposed to be entered into.
- (4) This Proposal is made without any understanding, agreement, or connection with any person or entity making Proposal for the same purposes, and is in all respects fair and without collusion or fraud.
- (5) Bidder is not in arrears to the City of Tampa, upon debt or contract, and is not a defaulter, as surety or otherwise, upon any obligation to the City of Tampa.
- (6) That no officer or employee or person whose salary is payable in whole or in part from the City Treasury is, shall be or become interested, directly or indirectly, as a contracting party, partner, stockholder, surety or otherwise, in this Proposal, or in the performance of the Contract, or in the supplies, materials, or equipment and work or labor to which it relates, or in any portion of the profits thereof.
- (7) Bidder has carefully examined and fully understands the Solicitation and has full knowledge of the scope, nature, and quality of the work to be performed; furthermore, Bidder has carefully examined the site of the work and that, from his own investigations, he has satisfied himself as to the nature and location of the work, the character, quality, and quantity of materials and the kinds and extent of equipment and other facilities needed for the performance of the work, the general and local conditions and all difficulties to be encountered, and all other items which may, in any way, affect the work or its performance.
- (8) Bidder (including its principals)  has |  has NOT been debarred or suspended from contracting with a public entity.
- (9) Bidder  has |  has NOT implemented a drug-free workplace program that meets the requirements of Section 287.087, Florida Statutes.
- (10) Bidder has carefully examined and fully understands all the component parts of the Contract Documents and agrees Bidder will execute the Contract, provide the required Public Construction Bond, and will fully perform the work in strict accordance with the terms of the Contract and Contract Documents therein referred to for the following prices, to wit:

\* If a Partnership or Joint Venture, attach Partnership or Joint Venture Agreement.

\*\* Someone the City may contact with questions/correspondence regarding this Solicitation and/or permits.

Contract Item No.	Estimated Quantity	Description and Price in Words	Computed Total Price for Item in Figures
BASE BID	LS	The work includes the furnishing all labor, materials and equipment to replace altitude and isolation valves, install plug valves and plug linestops, replace safety, floor and access features, interior and exterior surface preparation and painting, replace exterior fence, any allowances that may be listed in Section 01020, and with all associated work required for a complete project in accordance with the Contract Documents.	
		_____ _____ dollars and _____ cents	
		(BASE BID) LS	\$ _____

Computed Total Price in Words: \_\_\_\_\_  
 \_\_\_\_\_ dollars and \_\_\_\_\_ cents.

Computed Total Price in Figures: \$ \_\_\_\_\_

Bidder acknowledges that the following addenda have been received and that the changes covered by the addendum(s) have been taken into account in this proposal: #1 \_\_\_\_ #2 \_\_\_\_ #3 \_\_\_\_ #4 \_\_\_\_ #5 \_\_\_\_ #6 \_\_\_\_ #7 \_\_\_\_ #8 \_\_\_\_.

Bidder acknowledges the requirements of the City of Tampa's Equal Business Opportunity Program.

Bidder acknowledges that it is aware of Florida's Trench Safety Act (Sections 553.60-553.64, Florida Statutes), and agrees that Bidder together with any involved subcontractors will comply with all applicable trench safety standards. Bidder further acknowledges that included in the various items of this Proposal and the total bid price (as applicable) are costs for complying with the Trench Safety Act. Bidder further identifies the costs and methods summarized below:

	Trench Safety Measure (Description)	Unit of Measure (LF, SY)	Unit Quantity	Unit Cost	Extended Cost
A.	_____	_____	_____	_____	_____
B.	_____	_____	_____	_____	_____
C.	_____	_____	_____	_____	_____
<b>Total Cost: \$</b>				_____	

Accompanying this Proposal is a certified check, cashier's check or Tampa Bid Bond (form included herein must be used) for at least five percent (5%) of the total amount of the Proposal which check shall become the property of the City, or which bond shall become forthwith due and payable to the City, if this Proposal shall be accepted by the City and the Bidder shall fail to enter into a legally binding contract with and to furnish the required Public Construction Bond to the City within twenty (20) days after the date of its receipt of written Notice of Award by the City so to do.

**FAILURE TO COMPLETE THE ABOVE MAY RESULT IN THE PROPOSAL BEING DECLARED NON-RESPONSIVE.**

[SEAL] Name of Bidder: \_\_\_\_\_  
 Authorized Signature: \_\_\_\_\_  
 Signer's Printed Name: \_\_\_\_\_  
 Signer's Title: \_\_\_\_\_

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

For an entity: The forgoing instrument was sworn (or affirmed) before me this \_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_ by \_\_\_\_\_ as \_\_\_\_\_ of \_\_\_\_\_, a/n  Partnership  Joint Venture  LLC  Corp  Other: \_\_\_\_\_, on behalf of such entity. Such individual is  personally known to me or  produced a/n \_\_\_\_\_ state driver's license as identification.

For an individual: The forgoing instrument was sworn (or affirmed) before me this \_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_ by \_\_\_\_\_, who is  personally known to me or  produced a/n \_\_\_\_\_ state driver's license as identification.

[NOTARY SEAL] \_\_\_\_\_  
 Notary Public, State of \_\_\_\_\_  
 Notary Printed Name: \_\_\_\_\_  
 Commission No.: \_\_\_\_\_  
 My Commission Expires: \_\_\_\_\_



# Good Faith Effort Compliance Plan Guidelines

for Women/Minority Business Enterprise/Small Local Business Enterprise Participation  
City of Tampa - Equal Business Opportunity Program  
(MBD Form 50 – detailed instructions on page 2 of 2)

Contract Name \_\_\_\_\_ Bid Date \_\_\_\_\_

Bidder/Proposer \_\_\_\_\_

Signature \_\_\_\_\_ Date \_\_\_\_\_

Name \_\_\_\_\_ Title \_\_\_\_\_

The Compliance Plan with attachments is a true account of Good Faith Efforts (GFE) made to achieve the participation goals as specified for Women/Minority Business Enterprises/Small Local Business Enterprises (WMBE/SLBE) on the referenced contract:

The WMBE/SLBE participation **Goal is Met or Exceeded**. See DMI Forms 10 and 20 which accurately report all subcontractors solicited and all subcontractors to-be-utilized.

The WMBE/SLBE participation Goal is **Not Achieved**. The following list is an overview of the baseline GFE action steps already performed. Furthermore, it is understood that these GFE requirements are weighted in the compliance evaluation based on the veracity and demonstrable degree of documentation provided with the bid/proposal:

(Check applicable boxes below. Must enclose supporting documents accordingly with remarks)

- (1) Solicited through reasonable and available means the interest of WMBE/SLBEs that have the capability to perform the work of the contract. The Bidder or Proposer must solicit this interest within sufficient time to allow the WMBE/SLBEs to respond. The Bidder or Proposer must take appropriate steps to follow up initial solicitations with interested WMBE/SLBEs.  See DMI report forms for subcontractors solicited.  See enclosed supplemental data on solicitation efforts.  Qualifying Remarks:
- (2) Provided interested WMBE/SLBEs with adequate, specific scope information about the plans, specifications, and requirements of the contract, including addenda, in a timely manner to assist them in responding to the requested-scope identified by bidder/proposer for the solicitation.  See enclosed actual solicitations used.  Qualifying Remarks:
- (3) Negotiated in good faith with interested WMBE/SLBEs that have submitted bids (e.g. adjusted quantities or scale). Documentation of negotiation must include the names, addresses, and telephone numbers of WMBE/SLBEs that were solicited; the date of each such solicitation; a description of the information provided regarding the plans and specifications for the work selected for subcontracting; and evidence as to why agreements could not be reached with WMBE/SLBEs to perform the work. Additional costs involved in soliciting and using subcontractors is not a sufficient reason for a bidder/proposer's failure to meet goals or achieve participation, as long as such costs are reasonable. Bidders are not required to accept excessive quotes in order to meet the goal.  DMI Utilized Forms for sub-(contractor/consultant) reflect genuine negotiations  This project is an RFO/RFP in nature and negotiations are limited to clarifications of scope/specifications and qualifications.  See enclosed documentation.  Qualifying Remarks:
- (4) Not rejecting WMBE/SLBEs as being unqualified without justification based on a thorough investigation of their capabilities. The WMBE/SLBEs standing within its industry, membership in specific groups, organizations / associations and political or social affiliations are not legitimate causes for rejecting or not soliciting bids to meet the goals.  Not applicable.  See attached justification for rejection of a subcontractor's bid or proposal.  Qualifying Remarks:
- (5) Made scope(s) of work available to WMBE/SLBE subcontractors and suppliers; and, segmented portions of the work or material consistent with the available WMBE/SLBE subcontractors and suppliers, so as to facilitate meeting the goal.  Sub-Contractors were allowed to bid on their own choice of work or trade without restriction to a pre-determined portion.  See enclosed comments.  Qualifying Remarks:
- (6) Made good faith efforts, despite the ability or desire of Bidder/Proposer to perform the work of a contract with its own forces/organization. A Bidder/Proposer who desires to self-perform the work of a contract must demonstrate good faith efforts if the goal has not been met.  Sub-Contractors were not prohibited from submitting bids/proposals and were solicited on work typically self-performed by the prime.  Qualifying Remarks:
- (7) Segmented portions of the work to be performed by WMBE/SLBEs in order to increase the likelihood that the goals will be met. This includes, where appropriate, breaking out contract work items into economically feasible units (quantities/scale) to facilitate WMBE/SLBE participation, even when the Bidder/Proposer might otherwise prefer to perform these work items with its own forces.  Sub-Contractors were allowed to bid on their own choice of work or trade without restriction to a pre-determined portion.  Sub-Contractors were not prohibited from submitting bids/proposals and were solicited on work typically self-performed by the prime.  See enclosed comments.  Qualifying Remarks:
- (8) Made efforts to assist interested WMBE/SLBEs in obtaining bonding, lines of credit, or insurance as required by the city or contractor.  See enclosed documentation on initiatives undertaken and methods to accomplish.  Qualifying Remarks:
- (9) Made efforts to assist interested WMBE/SLBEs in obtaining necessary equipment, supplies, materials, or related assistance or services, including participation in an acceptable mentor-protégé program.  See enclosed documentation of initiatives and/or agreements.  Qualifying Remarks:
- (10) Effectively used the services of the City and other organizations that provide assistance in the recruitment and placement of WMBE/SLBEs.  See enclosed documentation.  The following services were used:

Note: Provide any unsolicited information that will support the Bid/RFP Compliance Evaluation.  Named Documents Are:



**Participation Plan: Guidance for Complying with Good Faith Efforts Outreach**  
**(page 2 of 2)**

1. All firms on the WMBE/SLBE Goal Setting List must be solicited and documentation provided for email, fax, letters, phone calls, and other methods of outreach/communication with the listed firms. The DMI Solicited and DMI-Utilized forms must be completed for all firms solicited or utilized. Other opportunities for subcontracting may be explored by consulting the City of Tampa MBD Office and/or researching the on-line Diversity Management Business System Directory for Tampa certified WMBE/SLBE firms.
2. Solicitation of WMBE/SLBEs, via written or electronic notification, should provide specific information on the services needed, where plans can be reviewed and assistance offered in obtaining these, if required. Solicitations should be sent a minimum of a week (i.e. 5 business days or more) before the bid/proposal date. Actual copies of the bidder's solicitation containing their scope specific instructions should be provided.
3. With any quotes received, a follow-up should be made when needed to confirm detail scope of work. For any WMBE/SLBE low quotes rejected, an explanation shall be provided detailing negotiation efforts.
4. If a low bid WMBE/SLBE is rejected or deemed unqualified the contractor must provide an explanation and supporting documentation for this decision.
5. Prime shall break down portions of work into economical feasible opportunities for subcontracting. The WMBE/SLBE directory may be useful in identifying additional subcontracting opportunities and firms not listed in the "WMBE/SLBE Goal Setting Firms List."
6. Contractor shall not preclude WMBE/SLBEs from bidding on any part of work, even if the Contractor may desire to self-perform the work.
7. Contractor shall avoid relying solely on subcontracting out work-scope where WMBE/SLBE availability is not sufficient to attain the pre-determined subcontract goal set for the Bid or when targeted sub-consultant participation is stated within the RFP/RFQ.
8. In its solicitations, the Bidder should offer assistance to WMBE/SLBEs in obtaining bonding, insurance, et cetera, if required of subcontractors by the City or Prime Contractor.
9. In its solicitation, the Bidder should offer assistance in obtaining equipment for a specific job to WMBE/SLBEs, if needed.
10. Contractor should use the services offered by such agencies as the City of Tampa Minority and Small Business Development Office, Hillsborough County Entrepreneur Collaborative Center, Hillsborough County Economic Development Department's MBE/SBE Program and the NAACP Empowerment Center to name a few for the recruitment and placement of WMBEs/SLBEs.



**Failure to Complete, Sign and Submit Both Forms 10 & 20 SHALL render the Bid or Proposal Non-Responsive**

**Page 1 of 4 – DMI Solicited/Utilized Schedules  
City of Tampa – Schedule of **All Solicited** Sub-(Contractors/Consultants/Suppliers)  
(FORM MBD-10)**

Contract No.: \_\_\_\_\_ Contract Name: \_\_\_\_\_  
Company Name: \_\_\_\_\_ Address: \_\_\_\_\_  
Federal ID: \_\_\_\_\_ Phone: \_\_\_\_\_ Fax: \_\_\_\_\_ Email: \_\_\_\_\_

Check applicable box(es). Detailed Instructions for completing this form are on page 2 of 4.

- No Firms were contacted or solicited for this contract.
- No Firms were contacted because: \_\_\_\_\_
- See attached list of additional Firms solicited and all supplemental information (List must comply to this form)  
**Note: Form MBD-10 must list ALL subcontractors solicited including Non-minority/small businesses**

NIGP Code Categories: Buildings = 909, General = 912, Heavy = 913, Trades = 914, Architects = 906, Engineers & Surveyors = 925, Supplier = 912-77

S = SLBE W=WMBE O = Neither	Company Name Address Phone, Fax, Email	Type of Ownership (F=Female M=Male) BF BM = African Am. HF HM = Hispanic AF AM = Asian Am. NF NM = Native Am. CF CM = Caucasian	Trade or Services  NIGP Code (listed above)	Contact Method L=Letter F=Fax E=Email P=Phone	Quote or Response Received Y/N

Failure to Complete, Sign and Submit  
this form with your Bid or Proposal  
Shall render the Bid Non-Responsive  
(Do Not Modify This Form)

It is hereby certified that the information provided is an accurate and true account of contacts and solicitations for sub-contracting opportunities on this contract.

Signed: \_\_\_\_\_ Name/Title: \_\_\_\_\_ Date: \_\_\_\_\_

**Failure to Complete, Sign and Submit Both Forms 10 & 20 SHALL render the Bid or Proposal Non-Responsive**  
**Forms must be included with Bid / Proposal**



## Instructions for completing The Sub-(Contractors/Consultants/ Suppliers) Solicited Form (Form MBD-10)

**This form must be submitted with all bids or proposals.** All subcontractors (regardless of ownership or size) solicited and subcontractors from whom unsolicited quotations were received must be included on this form. The instructions that follow correspond to the headings on the form required to be completed. Note: Ability or desire to self-perform all work shall not exempt the prime from Good Faith Efforts to achieve participation.

- **Contract No.** This is the number assigned by the City of Tampa for the bid or proposal.
- **Contract Name.** This is the name of the contract assigned by the City of Tampa for the bid or proposal.
- **Contractor Name.** The name of your business and/or doing business as (dba) if applicable.
- **Address.** The physical address of your business.
- **Federal ID. FIN.** A number assigned to your business for tax reporting purposes.
- **Phone.** Telephone number to contact business.
- **Fax.** Fax number for business.
- **Email.** Provide email address for electronic correspondence.
- **No Firms were contacted or solicited for this contract.** Checking the box indicates that a pre-determined Subcontract Goal or Participation Plan Requirement was not set by the City resulting in your business not using subcontractors and will self-perform all work. If during the performance of the contract you employ subcontractors, the City must pre-approve subcontractors. Use of the “Sub-(Contractors/Consultants/Suppliers) Payments” form (MBD Form-30) must be submitted with every pay application and invoice. Note: Certified **SLBE or WMBE firms** bidding as Primes **are not exempt** from outreach and solicitation of subcontractors.
- **No Firms were contacted because.** Provide brief explanation why no firms were contacted or solicited.
- **See attached documents.** Check box, if after you have completed the DMI Form in its entirety, you need more space to list additional firms and/or if you have supplemental information/documentation relating to the form. All DMI data not submitted on the MBD Form-10 must be in the same format and have all requested data from MBD Form-10 included.

The following instructions are for information of any and all subcontractors solicited.

- **“S” = SLBE, “W” = WMBE.** Enter “S” for firms Certified by the City as Small Local Business Enterprises and/or “W” for firms Certified by the City as either Women/Minority Business Enterprise; **“O” = Non-certified others.**
- **Federal ID. FIN.** A number assigned to a business for tax reporting purposes. This information is critical in proper identification and payment of the contractor/subcontractor.
- **Company Name, Address, Phone & Fax.** Provide company information for verification of payments.
- **Type of Ownership.** Indicate the Ethnicity and Gender of the owner of the subcontracting business.
- **Trade, Services, or Materials** indicate the trade, service, or materials provided by the subcontractor. NIGP codes aka “National Institute of Governmental Purchasing” are listed at top section of document.
- **Contact Method L=letter, F=fax, E=Email, P=Phone.** Indicate with letter the method(s) of soliciting for bid.
- **Quote or Resp. (response) Rec’d (received) Y/N.** Indicate “Y” Yes if you received a quotation or if you received a response to your solicitation. Indicate “N” No if you received no response to your solicitation from the subcontractor. Must keep records: log, ledger, documentation, etc. that can validate/verify.

If additional information is required or you have questions, please contact the Equal Business Opportunity Program - Minority and Small Business Development Office at (813) 274-5522.





## Page 4 of 4 DMI – Solicited/**Utilized**

### Instructions for completing **The Sub-(Contractors/Consultants/ Suppliers) to be Utilized Form (Form MBD-20)**

**This form must be submitted with all bids or proposals. All subcontractors (regardless of ownership or size) projected to be utilized must be included on this form.** Note: Ability or desire to self-perform all work shall not exempt the prime from Good Faith Efforts to achieve participation.

**Contract No.** This is the number assigned by the City of Tampa for the bid or proposal.

- **Contract Name.** This is the name of the contract assigned by the City of Tampa for the bid or proposal.
- **Contractor Name.** The name of your business and/or doing business as (dba) if applicable.
- **Address.** The physical address of your business.
- **Federal ID. FIN.** A number assigned to your business for tax reporting purposes.
- **Phone.** Telephone number to contact business.
- **Fax.** Fax number for business.
- **Email.** Provide email address for electronic correspondence.
- **No Subcontracting/consulting (of any kind) will be performed on this contract.** Checking box indicates your business will not use subcontractors when no Subcontract Goal or Participation Plan Requirement was set by the City, but will self-perform all work. When subcontractors are utilized during the performance of the contract, the “Sub-(Contractors/Consultants/Suppliers) Payments” form (MBD Form-30) must be submitted with every pay application and invoice. Note: certified **SLBE or WMBE firms** bidding as Primes **are not exempt** from outreach and solicitation of subcontractors, including completion and submitting Form-10 and Form-20.
- **No Firms listed To-Be-Utilized.** Check box; provide brief explanation why no firms were retained when a goal or participation plan requirement was set on the contract. Note: mandatory compliance with Good Faith Effort outreach (GFCEP) requirements applies (MBD Form-50) and supporting documentation must accompany the bid.
- **See attached documents.** Check box, if after completing the DMI Form in its entirety, you need more space to list additional firms and/or if you have supplemental information/documentation relating to the scope/value/percent utilization of subcontractors. Reproduce copies of MBD-20 and attach. All data not submitted on duplicate forms must be in the same format and content as specified in these instructions.

The following instructions are for information of Any and All subcontractors To Be Utilized.

- **Federal ID. FIN.** A number assigned to a business for tax reporting purposes. This information is critical in proper identification of the subcontractor.
- **“S” = SLBE, “W” = WMBE.** Enter “S” for firms Certified by the City as Small Local Business Enterprises and/or “W” for firms Certified by the City as Women/Minority Business Enterprise; **“O” = Non-certified others.**
- **Company Name, Address, Phone & Fax.** Provide company information for verification of payments.
- **Type of Ownership.** Indicate the Ethnicity and Gender of the owner of the subcontracting business.
- **Trade, Services, or Materials (NIGP code if Known)** Indicate the trade, service, or material provided by the subcontractor. Abbreviated list of NIGP is available at <http://www.tampagov.net/mbd> “Information Resources”.
- **Amount of Quote, Letters of Intent** (required for both SLBEs and WMBEs).
- **Percent of Work/Contract.** Indicate the percent of the total contract price the subcontract(s) represent. For CCNA only (i.e. Consultant A/E Services) you must indicate subcontracts as percent of total scope/contract.
- **Total Subcontract/Supplier Utilization.** – Provide total dollar amount of all subcontractors/suppliers projected to be used for the contract. (Dollar amounts may be optional in CCNA depending on solicitation format).
- **Total SLBE Utilization.** Provide total dollar amount for all projected SLBE subcontractors/Suppliers used for this contract. (Dollar amounts may be optional in CCNA proposals depending on the solicitation format).
- **Total WMBE Utilization.** Provide total dollar amount for all projected WMBE subcontractors/Suppliers used for this contract. (Dollar amounts may be optional in CCNA proposals depending on the solicitation format).
- **Percent SLBE Utilization.** Total amount allocated to SLBEs divided by the total bid/proposal amount.
- **Percent WMBE Utilization.** Total amount allocated to WMBEs divided by the total bid/proposal amount.

If additional information is required or you have questions, please contact the Equal Business Opportunity Program - Minority and Small Business Development Office at (813) 274-5522.

TAMPA BID BOND  
Contract 18-C-00027; Palma Ceia Remote Storage Tank Refurbishment

KNOW ALL MEN BY THESE PRESENTS, that we, \_\_\_\_\_

\_\_\_\_\_  
(hereinafter called the Principal) and \_\_\_\_\_

(hereinafter called the Surety) a Corporation chartered and existing under the laws of the State of \_\_\_\_\_, with its principal offices in the City of \_\_\_\_\_, and authorized to do business in the State of Florida, are held and firmly bound unto the City of Tampa, a Municipal Corporation of Hillsborough County, Florida, in the full and just sum of 5% of the amount of the (Bid) (Proposal) good and lawful money of the United States of America, to be paid upon demand of the City of Tampa, Florida, to which payment will and truly to be made we bind ourselves, our heirs, executors, administrators, successors, and assigns, jointly and severally and firmly these presents.

WHEREAS, the Principal is about to submit, or has submitted to the City of Tampa, Florida, a Proposal for the construction of certain facilities for the City designated Contract 18-C-00027, Palma Ceia Remote Storage Tank Refurbishment.

WHEREAS, the Principal desires to file this Bond in accordance with law, in lieu of a certified Bidder's check otherwise required to accompany this Proposal.

NOW, THEREFORE: The conditions of this obligation are such that if the Proposal be accepted, the Principal shall, within twenty (20) days after the date of receipt of written Notice of Award, execute a contract in accordance with the Proposal and upon the terms, conditions and price set forth therein, in the form and manner required by the City of Tampa, Florida and execute a sufficient and satisfactory Public Construction Bond payable to the City of Tampa, Florida in an amount of one hundred percent (100%) of the total contract price, in form and with security satisfactory to said City, then this Bid Bond obligation is to be void; otherwise to be and remain in full force and virtue in law, and the Surety shall, upon failure of the Principal to comply with any or all of the foregoing requirements within the time specified above, immediately pay to the aforesaid City, upon demand, the amount thereof, in good and lawful money of the United States of America, not as a penalty, but as liquidated damages.

IN TESTIMONY THEREOF, the Principal and Surety have caused these presents to be duly signed and sealed this \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_.

Principal

\_\_\_\_\_

BY \_\_\_\_\_

TITLE \_\_\_\_\_

BY \_\_\_\_\_

TITLE \_\_\_\_\_

(SEAL)

\_\_\_\_\_  
Producing Agent

\_\_\_\_\_  
Producing Agent's Address

\_\_\_\_\_  
Name of Agency

\_\_\_\_\_  
The addition of such phrases as "not to exceed" or like import shall render the (Bid) (Proposal) non-responsive.

AGREEMENT

For furnishing all labor, materials and equipment, together with all work incidental thereto, necessary and required for the performance of the work for the construction of Contract 18-C-00027 in accordance with your Proposal dated \_\_\_\_\_, amounting to a total of \$ \_\_\_\_\_ as completed in accordance with subsections I-2.09 and I-2.10 of the Instruction to Bidders.

This AGREEMENT, made and entered into in triplicate, between the City of Tampa, Florida, hereinafter called the City, and \_\_\_\_\_ hereinafter called the Contractor, as of the \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_ when the City Council of the City of Tampa, Florida adopted a Resolution authorizing, among other things, the Mayor's execution of this Agreement.

WITNESSETH that, in consideration of the mutual stipulations, agreements, and covenants herein contained, the parties hereto have agreed and hereby agree with each other, the Party of the First Part for itself, its successors and assigns, and the Party of the Second Part for itself, or himself, or themselves, and its successors and assigns, or his or their executors, administrators and assigns, as follows:

Contract 18-C-00027; Palma Ceia Remote Storage Tank Refurbishment, shall include, but not be limited to, furnishing all labor, materials and equipment to install valves, install plug valves and plug stops, replace safety, floor and access features, surface preparation, painting and replacing exterior fence with all associated work required for a complete project in accordance with the Contract Documents.

Contract Documents referred to in Article 1.01 of this Agreement also includes this volume, applicable standard drawings, the plans and any provisions referred to whether actually attached or not.

# TAMPA AGREEMENT

## SECTION 1 GENERAL

### ARTICLE 1.01 THE CONTRACT

Except for titles, subtitles, headings, running headlines, and tables of contents (all of which are printed herein merely for convenience), the following, except for such portions thereof as may be specifically excluded, constitute the Contract:

The Notice to Bidders;  
The Instructions to Bidders, including Special Instructions and General Instructions;  
The Proposal;  
The Bid Bond;  
The Certification of Nonsegregated Facilities;  
The Notice of Award;  
The Agreement;  
The Performance Bond;  
The Notice To Proceed;  
The Specifications, including the General Provisions, the Workmanship and Materials, the Specific Provisions or the Contract Items  
The Plans;  
All Supplementary Drawings Issued after award of the Contract;  
All Addenda issued by the City prior to the receipt of proposals;  
All provisions required by law to be inserted in this Contract, whether actually inserted or not.

### ARTICLE 1.02 DEFINITIONS

The following words and terms, or pronouns used in their stead, shall, wherever they appear in this Contract, be construed as follows, unless different meaning is clear from the context:

(a)"City" shall mean the City of Tampa, Florida, represented by its Mayor and City Council, Party of the First Part, or such other City official as shall be duly empowered to act for the City on matters relating to this Contract.

(b)"Contractor" shall mean the Party of the Second Part hereto, whether corporation, firm or individual, or any combination thereof, and its, their, or his successors, personal representatives, executors, administrators, and assigns, and any person, firm or corporation who or which shall at any time be substituted in the place of the Party of the Second Part under this Contract.

(c)"Engineer" shall mean the Director of the Department or his duly authorized representative.

(d)"Consultant" shall mean the engineering or architectural firm or individual employed by the City to consult with and advise the City in the construction of the project.

(e)"Surety" shall mean any person, firm or corporation that has executed as Surety the Contractor's Performance Bond securing the performance of this Contract.

(f)"The Work" shall mean everything expressly or implied required to be furnished and done by the Contractor under the Contract, and shall include both Contract Work

and Extra Work.

(g)"Contract Work" shall mean everything expressly or implied required to be furnished and done by the Contractor by any one or more of the Contract parts referred to in Article 1.01 hereof, except Extra Work, as hereinafter defined; it being understood that, in case of any inconsistency in or between any part or parts of this Contract, the Engineer shall determine which shall prevail.

(h)"Contract" or "Contract Documents" shall mean each of the various part of the Contract referred to in Article 1.01 hereof, both as a whole and severally.

(i)"Extra Work" shall mean work other than that required either expressly or implied by the contract in its present form.

(j)"Plans" shall mean only those drawings specifically referred to as such in these documents, or in any Addendum. Drawings issued after the execution of the Contract to explain further, or to illustrate, or to show changes in the work, will be known as "Supplementary Drawings" and shall be binding upon the Contractor with the same force as the Plans.

(k)"Specifications" shall mean all of the directions, requirements, and standards of performance applying to the work, as hereinafter detailed and designated as such, or which may be issued in an addendum.

(l)"Addendum or Addenda" shall mean the additional contract provisions issued in writing prior to the receipt of bids.

(m)"Notice" shall mean written notice. Notice shall be served upon the Contractor, either personally or by leaving the said notice at his residence or with any employee found on the work, or addressed to the Contractor at the residence or place of business given in his proposal and deposited in a postpaid wrapper in any post office box regularly maintained by the United States Post Office.

(n)"Project" shall mean the entire improvement package or related work. The "project" may consist of several different, but related, contracts.

(o)"Site" shall mean, and be limited to, the area upon or in which the Contractor's operations are carried on and such other appropriate areas as may be designed as such by the Engineer.

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

(q)Whenever in the Contract the words "directed", "required", "permitted", "ordered", "designated", "prescribed", and words of like import are used, they shall imply the direction, requirement, permission, order, designation, or prescription of the Engineer; and "approved", "acceptable", "satisfactory", "in the judgement of", and words of like import shall mean approved by, or acceptable to, or satisfactory to, or in the judgment of the Engineer.

(r)Whenever in the Contract the word "day" is used, it shall mean calendar day.

(s)"Final Acceptance" shall mean acceptance of the

work as evidenced by an official resolution of the City. Such acceptance shall be deemed to have taken place only if and when an approving resolution has been adopted by the City Council. The final acceptance shall be signed only after the City has assured itself by tests, inspection, or otherwise, that all of the provisions of the Contract have been carried out to its satisfaction.

(t)"Eastern Standard Time" shall be construed as the time being observed in the City on the day proposals are received or other documents issued or signed.

## **SECTION 2 POWERS OF THE CITY'S REPRESENTATIVES**

### **ARTICLE 2.01 THE ENGINEER**

It is covenanted and agreed that the Engineer, in addition to those matters elsewhere herein expressly made subject to his determination, direction, or approval, shall have the power, subject to such express provisions and limitations herein contained as are not in conflict herewith, and subject to review by the Mayor and City Council:

(a)To monitor the performance of the work.

(b)To determine the amount, kind, quality, sequence, and location of the work to be paid for hereunder and, when completed, to measure such work for payment.

(c)To determine all questions of an engineering character in relation to the work, to interpret the Plans, Specifications and Addenda.

(d)To determine how the work of this Contract shall be coordinated with the work of other contractors engaged simultaneously on this project.

(e)To make minor changes in the work as he deems necessary, provided such changes do not result in a net increase in the cost to the City or to the Contractor of the work to be done under the Contract.

(f)To amplify the Plans, add explanatory information and furnish additional Specifications and Drawings consistent with the intent of the Contract Documents.

The power of the Engineer shall not be limited to the foregoing enumeration, for it is the intent of this Contract that all of the work shall be subject to his determinations and approval, except where the determination or approval of someone other than the Engineer is expressly called for herein and except as subject to review by the Mayor and City Council. All orders of the Engineer requiring the Contractor to perform work as Contract work shall be promptly obeyed by the Contractor.

The Engineer shall not, however, have the power to issue an extra work order, and the performance of such work on the order of the Engineer without previously obtaining written confirmation thereof from the Mayor in accordance with Article 7.02 hereof may constitute a waiver of any right to extra compensation therefor. The Contractor is warned that the Engineer has no power to change the terms and provisions of this Contract, except minor changes where such change results in no net increase in the Contract Price.

### **ARTICLE 2.02 DIRECTOR**

The Director of the Department in addition to those matters

expressly made subject to his determination, direction or approval in his capacity as "Engineer", shall also have the power:

(a)To review any and all questions in relation to this Contract and its performance, except as herein otherwise specifically provided, and his determination upon such review shall be final and conclusive upon the Contractor.

(b)With the approval of the Mayor and City Council to authorize modifications or changes in the Contract so as to require: (1) the performance of extra work, or (2) the omission of Contract work whenever he deems it in the interest of the City to do so, or both.

(c)To suspend the whole or any part of the work whenever, in his judgment, such suspension is required: (1) in the interest of the City generally, or (2) to coordinate the work of the various Contractors engaged on this project, or (3) to expedite the completion of the entire project, even though the completion of this particular Contract may be thereby delayed, without compensation to the Contractor for such suspension other than extending the time for the completion of the work, as much as it may have been, in the opinion of the City, delayed by such a suspension.

(d)If, before the final acceptance of all the work contemplated herein, it shall be deemed necessary to take over, use, occupy, or operate any part of the completed or partly completed work, the Engineer shall have the right to do so and the Contractor will not, in any way, interfere with or object to the use, occupation, or operation of such work by the City after receipt of notice in writing from the Engineer that such work or part thereof will be used by the City on and after the date specified in such notice. Such taking over, use, occupancy or operation of any part of the completed or partially completed work shall not constitute final acceptance or approval of any such part of the work.

### **ARTICLE 2.03 NO ESTOPPEL**

The City shall not, nor shall any department, officer, agent, or employee thereof, be bound, precluded, or estopped by any determination, decision, acceptance, return, certificate, or payment made or given under or in connection with this Contract by any officer, agent or employee of the City at any time either before or after final completion and acceptance of the work and payment therefor: (a) from showing the true and correct classification, amount, quality, or character of the work done, or that any determination, decision, acceptance, return certificate or payment is untrue, incorrect or improperly made in any particular, or that the work or any part thereof does not in fact conform to the requirements of the Contract Documents, and (b) from demanding and recovering from the Contractor any overpayments made to him or such damages as it may sustain by reason his failure to comply with the requirements of the Contract of Documents, or both.

### **ARTICLE 2.04 NO WAIVER OF RIGHTS**

Neither the inspection, nor any order, measurements or certificate of the City or its employees, officers, or agents, nor by any order of the City for payment of money, nor any money, nor payments for or acceptance of the whole or any part of the work by the City, nor any extension of time, nor any changes in the Contract, Specifications or Plans, nor any possession by the City or its employees shall operate as a

waiver of any provisions of this Contract, nor any power herein provided nor shall any waiver of any breach of this Contract be held as a waiver of any other subsequent breach.

Any remedy provided in this Contract shall be taken and construed as cumulative, namely, in addition to each and every other suit, action, or legal proceeding. The City shall be entitled as of right to an injunction against any breach of the provisions of this Contract.

### **SECTION 3 PERFORMANCE OF WORK**

#### **ARTICLE 3.01 CONTRACTOR'S RESPONSIBILITY**

The Contractor shall do all the work and furnish, at his own cost and expense, all labor, materials, equipment, and other facilities, except as herein otherwise provided, as may be necessary and proper for performing and completing the work under this Contract. The Contractor shall be responsible for the entire work until completed and finally accepted by the City.

The work shall be performed in accordance with the true intent and meaning of the Contract Documents. Unless otherwise expressly provided, the work must be performed in accordance with the best modern practice, with materials as specified and workmanship of the highest quality, all as determined by and entirely to the satisfaction of the Engineer.

Unless otherwise expressly provided, the means and methods of construction shall be such as the Contractor may choose, subject, however, to the approval of the Engineer. Only adequate and safe procedure, methods, structures and equipment shall be used. The Engineer's approval or the Engineer's failure to exercise his right thereon shall not relieve the Contractor of obligations to accomplish the result intended by the Contract, nor shall such create a cause of action for damages.

#### **ARTICLE 3.02 COMPLIANCE WITH LAWS**

The Contractor must comply with all local, State and Federal laws, rules, ordinances and regulations applicable to this Contract and to the work done hereunder, and must obtain, at his own expense, all permits, licenses or other authorization necessary for the prosecution of the work.

No work shall be performed under this Contract on Sundays, legal holidays or after regular working hours without the express permission of the Engineer. Where such permission is granted, the Engineer may require that such work be performed without additional expense to the City.

#### **ARTICLE 3.03 INSPECTION**

During the progress of the work and up to the date of final acceptance, the Contractor shall, at all times, afford the representatives of the City, the Florida Department of Environmental Regulation, and if applicable, the Federal Environmental Protection Agency and the Federal Department of Labor every reasonable, safe and proper facility for inspecting the work done or being done at the

site. The inspection of any work shall not relieve the Contractor of any of his obligations to perform proper and satisfactory work as herein specified. Finished or unfinished work found not to be in strict accordance with the Contract shall be replaced as directed by the Engineer, even though such work may have been previously approved and payment made therefor.

The City shall have the right to reject materials and workmanship which are defective or require their correction. Rejected work and materials must be promptly removed from the site, which must at all times be kept in a reasonably clean and neat condition.

Failure or neglect on the part of the City to condemn or reject bad or inferior work or materials shall not be construed to imply an acceptance of such work or materials, if it becomes evident at any time prior to the final acceptance of the work by the City. Neither shall it be construed as barring the City at any subsequent time from the recovery of damages of such a sum of money as may be needed to build anew all portions of the work in which inferior work or improper materials were used, wherever found.

Should it be considered necessary or advisable by the City at any time before final acceptance of the entire work to make examinations of work already completed, by removing or tearing out all or portions of such work, the Contractor shall, on request, promptly furnish all necessary facilities, labor, and material for that purpose. If such work is found to be defective in any material respect, due to the fault of the Contractor or his subcontractors, he shall defray all expenses of such examination and of satisfactory reconstruction. If, however, such work is found to meet the requirements of the Contract, the cost of examination and restoration of the work shall be considered an item of extra work to be paid for in accordance with the provisions of Article 7.02 hereof.

#### **ARTICLE 3.04 PROTECTION**

During performance and until final acceptance, the Contractor shall be under an absolute obligation to protect the finished and unfinished work against any damage, loss, or injury. The Contractor shall take proper precaution to protect the finished work from loss or damage, pending completion and the final acceptance of all the work included in the entire Contract, provided that such precaution shall not relieve the Contractor from any and all liability and responsibility for loss or damage to the work occurring before final acceptance by the City. Such loss or damage shall be at the risk of and borne by the Contractor, whether arising from acts or omissions of the Contractor or others. In the event of any such loss or damage, the Contractor shall forthwith repair, replace, and make good the work without extension of time therefor, except as may be otherwise provided herein.

The provisions of this Article shall not be deemed to create any new right of action in favor of third parties against the Contractor or the City.

#### **ARTICLE 3.05 PRESERVATION OF PROPERTY**

The Contractor shall preserve from damage all property along the line of the work, or which is in the vicinity of or is in anywise affected by the work, the removal or destruction of which is not called for by the Plans. This applies, but is not limited, to the public utilities, trees, lawn areas, building monuments, fences, pipe and underground structures, public streets (except natural wear and tear of streets resulting from legitimate use thereof by the Contractor), and wherever such property is damaged due to the activities of the Contractor, it shall be immediately restored to its original condition by the Contractor and at his own expense.

In case of failure on the part of the Contractor to restore such property, or make good such damage or injury, the City may, upon forty-eight (48) hour written notice, proceed to repair, rebuild, or otherwise restore such property as may be deemed necessary, and the cost thereof will be deducted from any monies due or which may become due the Contractor under this Contract. Nothing in this clause shall prevent the Contractor from receiving proper compensation for the removal, damage, or replacement of any public or private property not shown on the Plans, when this is made necessary by alteration of grade or alignment authorized by the Engineer, provided that such property has not been damaged through fault of the Contractor, his employees or agents.

**ARTICLE 3.06 BOUNDARIES**

The Contractor shall confine his equipment, apparatus, the storage of materials, supplies and apparatus of his workmen to the limits indicated on the plans, by law, ordinances, permits or direction of the Engineer.

**ARTICLE 3.07 SAFETY AND HEALTH REGULATIONS**

The Contractor shall comply with the Department of Labor Safety and Health Regulations for construction promulgated under the Occupational Safety and Health Act of 1970 (PL 91- 596) and under Section 107 of the Contract Work Hours and Safety Standards Act (PL91-54).

**ARTICLE 3.08 TAXES**

All taxes of any kind and character payable on account of the work done and materials furnished under this Contract shall be paid by the Contractor and shall be deemed to have been included in his bid. The laws of the State of Florida provide that sales and use taxes are payable by the Contractor upon the tangible personal property incorporated in the work and such taxes shall be paid by the Contractor and shall be deemed to have been included in his bid.

**ARTICLE 3.09 ENVIRONMENTAL CONSIDERATIONS**

The Contractor, in the performance of the work under this Contract, shall comply with all Local, State and Federal laws, statutes, ordinances, rules and regulations applicable to protection of the environment; and, in the event he violates any of the provisions of same, he shall be answerable to the Local, State and Federal agencies designated by law to protect the environment. In the event the City receives, from any of the environmental agencies, a citation which is occasioned by an act or omission of the Contractor or his

subcontractor or any officers, employees or agents of either, it is understood and agreed that the Contractor shall automatically become a party-respondent under said citation; and the City immediately shall notify the Contractor and provide him with a copy of said citation.

The Contractor shall comply with the requirements of the citation and correct the offending conditions(s) within the time stated in said citation and further shall be held fully responsible for all fines and/or penalties.

**SECTION 4  
TIME PROVISIONS**

**ARTICLE 4.01 TIME OF START AND COMPLETION**

The Contractor must commence work within thirty (30) days subsequent to the date of the receipt of the "Notice to Proceed" by the City unless otherwise provided in the Specific Provisions and Special Instructions. Time being of the essence of this Contract, the Contractor shall thereafter prosecute the work diligently, using such means and methods of construction as well as secure its full completion in accordance with the requirements of the Contract Documents no later than the date specified therefor, or on the date to which the time for completion may be extended.

The Contractor must complete the work covered by this Contract in the number of consecutive calendar days set forth in the Instructions to Bidders, unless the date of completion is extended pursuant to the provisions of Article 4.05 hereof.

The period for performance shall start from the date of signing of this Agreement by the City.

The actual date of completion will be established after a final inspection as provided in Article 4.07 hereof.

**ARTICLE 4.02 PROGRESS SCHEDULE**

To enable the work to be laid out and prosecuted in an orderly and expeditious manner, the Contractor shall submit to the Engineer a proposed progress schedule within fifteen (15) days after the award of this Contract.

The schedule shall state the Contract starting date, time for completion and date of completion and shall show the anticipated time of starting and completion of each of the various operations to be performed under this Contract, together with all necessary and appropriate information regarding sequence and correlation of work and an estimated time required for the delivery of all materials and equipment required for the work. The proposed schedule shall be revised as directed by the Engineer until finally approved by him, and, after such approval, shall be strictly adhered to by the Contractor. The approved progress schedule may be changed only with the written permission of the Engineer.

If the Contractor shall fail to adhere to the approved progress schedule or the schedule as revised, he shall promptly adopt such other or additional means and methods of construction as will make up for the time lost, and will assure completion in accordance with the contract time.

**ARTICLE 4.03 APPROVAL REQUESTS**

From time to time, as the work progresses and in the sequence indicated by the approved schedule, the Contractor must submit to the Engineer a specific request, in writing, for each item of information or approval required of him by the Contract. These requests must be submitted sufficiently in advance of the date upon which the information or approval is actually required by the Contractor to allow for the time the Engineer may take to act upon such submissions or resubmissions. The Contractor shall not have any right to an extension of time on account of delays due to his failure to submit his requests for the required information or the required approval in accordance with these requirements.

**ARTICLE 4.04 COORDINATION WITH OTHER CONTRACTORS**

During progress of the work, other Contractors may be engaged in performing other work on this project or on other projects on the site. In that event, the Contractor shall coordinate the work to be done hereunder with the work of such other Contractors in such manner as the Engineer may direct.

**ARTICLE 4.05 EXTENSION OF TIME**

If such an application is made, the Contractor shall be entitled to an extension of time for delay in completion of the work should the Contractor be obstructed or delayed in the commencement, prosecution or completion of any part of said work by any act or delay of the City, or by acts or omissions of other Contractors on this project, or by a riot, insurrection, war, pestilence, acts of public authorities, fire, lightning, hurricanes, earthquakes, tornadoes, floods, extremely abnormal and excessive inclement weather as indicated by the records of the local weather bureau for a five-year period preceding the date of the Contract, or by strikes, or other causes, which causes of delay mentioned in this Article, in the opinion of the City, are entirely beyond the expectation and control of the Contractor.

The Contractor shall, however, be entitled to an extension of time for such causes only for the number of days of delay which the City may determine to be due solely to such causes and only to the extent that such occurrences actually delay the completion of the project and then only if the Contractor shall have strictly complied with all of the requirements of Articles 4.01, 4.02, 4.03 and 4.04 hereof. It is hereby understood that the determination by the Engineer as to the order and sequence of the work shall not in itself constitute a basis for extension of time.

The determination made by the City on an application for an extension of time shall be binding and conclusive on the Contractor.

Delays caused by failure of the Contractor's materialmen, manufacturers, and dealers to furnish approved working drawings, materials, fixtures, equipment, appliances, or other fittings on time or failure of subcontractors to perform their work shall not constitute a basis of extension of time.

The Contractor agrees to make no claim for damages for delay in the performance of this Contract occasioned by any

act or omission to act of the City or any of its representatives or because of any injunction which may be brought against the City or its representatives and agrees that any such claim shall be fully compensated for by an extension of time to complete performance of the work as provided herein.

**ARTICLE 4.06 LIQUIDATED DAMAGES**

It is mutually agreed between the parties that time is the essence of this Contract and that there will be on the part of the City considerable monetary damage in the event the Contractor should fail to complete the work within the time fixed for completion in the Contract or within the time to which such completion may have been extended.

The amount per day set forth in the Instructions to Bidders is hereby agreed upon as the liquidated damages for each and every calendar day that the time consumed in completing the work under this Contract exceeds the time allowed.

This amount shall, in no event, be considered as a penalty or otherwise than as the liquidated and adjusted damages to the City because of the delay and the Contractor and his Surety agree that the stated sum per day for each such day of delay shall be deducted and retained out of the monies which may become due hereunder and if not so deductible, the Contractor and his Surety shall be liable therefor.

**ARTICLE 4.07 FINAL INSPECTION**

When the work has been completed in accordance with the requirements of the Contract and final cleaning up performed, a date for final inspection of the work by the Engineer shall be set by the Contractor in a written request therefor, which date shall be not less than ten (10) days after the date of such request. The work will be deemed complete as of the date so set by the Contractor if, upon such inspection, the Engineer determines that no further work remains to be done at the site.

If such inspection reveals interms of work still to be performed, however, the Contractor shall promptly perform them and then request a reinspection. If, upon such inspection, the Engineer determines that the work is complete, the date of final completion shall be deemed to be the last day of such reinspection.

**SECTION 5  
SUBCONTRACTS AND ASSIGNMENTS**

**ARTICLE 5.01 LIMITATIONS AND CONSENT**

The Contractor shall not assign, transfer, convey, sublet or otherwise dispose of this Contract or of his right, title, or interest therein, or his power to execute such Contract, or to assign any monies due or to become due thereunder to any other person, firm or corporation unless the previous written consent of the City shall first be obtained thereto and the giving of any such consent to a particular subcontract or assignment shall not dispense with the necessity of such consent to any further or other assignment.

Before making any subcontract, the Contractor must submit a

written statement to the Engineer, giving the name and address of the proposed contractor, the portion of the work and materials which he is to perform and furnish and any other information tending to prove that the proposed subcontractor has the necessary facilities, skill, integrity, past experience and financial resources to perform the work in accordance with the terms and conditions of this Contract.

If the City finds that the proposed subcontractor is qualified, the Contractor will be notified in writing. The City may revoke approval of any subcontractor when such subcontractor evidences an unwillingness or inability to perform his work in strict accordance with these Contract Documents. Notice of such revocation of approval will be given in writing to the Contractor.

The Contractor will promptly, upon request, file with the City a conformed copy of the subcontract. The Contractor shall cause appropriate provisions to be inserted in all subcontracts relative to the work to bind subcontractors to the Contractor by the terms of these Contract Documents, insofar as applicable to the work of subcontractors, and to give the Contractor the same power as regards terminating any subcontracts that the City may exercise over the Contractor under provisions of these Contract Documents.

The Contractor shall be required to perform with his own forces at least twenty-five (25) percent of the work, unless written consent to subcontract a greater percentage of the work is first obtained from the City.

**ARTICLE 5.02 RESPONSIBILITY**

The approval by the City of a subcontractor shall not relieve the Contractor of any of his responsibilities, duties, and liabilities hereunder. The Contractor shall be solely responsible to the City for the acts or defaults or omissions of his subcontractor and of such subcontractor's officers, agents, and employees, each of whom shall for all purposes be deemed to be the agent or employee of the Contractor. Nothing contained in the Contract Documents shall create any contractual relationship between any subcontractor and the City.

**SECTION 6  
SECURITY AND GUARANTY**

**ARTICLE 6.01 CONTRACT SECURITY**

The Contractor shall execute and deliver to the City a Performance Bond on the form as provided herein, in an amount at least equal to one hundred (100) percent of the full Contract price, such Bond to be executed by a surety company acceptable to the City. The surety on such Performance Bond shall be a surety company duly authorized to do business in the State of Florida, and the Bond shall be issued or countersigned by a local resident producing agent of such surety company who is a resident of the State of Florida, regularly commissioned and licensed in said State, and satisfactory evidence of the authority of the person or persons executing such Bond shall be submitted with the Bond. The Performance Bond shall serve as security for the faithful performance of this Contract, including

maintenance and guaranty provisions, and for the payment of all persons performing labor and furnishing materials in connection with the Contract. The premiums on the Performance Bond shall be paid by the Contractor.

If, at any time, the City shall become dissatisfied with any surety or sureties then upon the Performance Bond, or if for any other reason such bond shall cease to be adequate security for the City, the Contractor shall, within five days after notice so to do, substitute an acceptable Bond in such form and sum and signed by such other sureties as may be satisfactory to the City. The premiums on such Bond shall be paid by the Contractor. No further partial payments shall be deemed due or shall be made until the new sureties have qualified.

**ARTICLE 6.02 CONTRACTORS INSURANCE**

Insurance required shall be as indicated on Special Instructions pages beginning with "INS-1"

**ARTICLE 6.03 AGAINST CLAIMS AND LIENS**

The City may withhold from the Contractor as much as any approved payments to him as may, in the opinion of the City, be necessary to secure (a) just claims of any persons supplying labor or materials to the Contractor or any of his subcontractors for the work then due and unpaid; (b) loss due to defective work not remedied, or (c) liability, damage, or loss due to injury to persons or damages to the work or property of other contractors, subcontractors, or others, caused by the act or neglect of the Contractor or of any of his subcontractors. The City shall have the right, as agent for the Contractor, to apply any such amounts so withheld in such manner as the City may deem proper to satisfy such claims or to secure such protection. Such application of such money shall be deemed payments for the account of the Contractor.

**ARTICLE 6.04 MAINTENANCE AND GUARANTY**

The Contractor hereby guarantees all the work furnished under this Contract against any defects in workmanship and materials for a period of one year following the date of final acceptance of the work by the City. Under this guarantee, the Contractor hereby agrees to make good, without delay, at his own expense, any failure of any part of the work due to faulty materials or manufacture, construction, or installation, or the failure of any equipment to perform satisfactorily all the work put upon it within the limits of the Contract Documents, and further, shall make good any damage to any part of the work caused by such failure. It is hereby agreed that the Performance Bond shall fully cover all guarantees contained in this Article.

It is also agreed that all warranties, expressed or implied, inure to the benefit of the City and are enforceable by the City.

**SECTION 7  
CHANGES**

**ARTICLE 7.01 MINOR CHANGES**

The City reserves the right to make such additions, deductions, or changes to this Contract from time to time as

it deems necessary and in a manner not materially affecting the substance thereof or materially changing the price to be paid in order to carry out and complete more fully and perfectly the work herein agreed to be done and performed. This Contract shall in no way be invalidated by any such additions, deductions, or changes, and no claim by the Contractor shall be made for any loss of anticipated profits thereby.

Construction conditions may require that minor changes be made in the location and installation of the work and equipment to be furnished and other work to be performed hereunder, and the Contractor when ordered by the Engineer, shall make such adjustments and changes in said locations and work as may be necessary, without additional cost to the City, provided such adjustments and changes do not alter the character, quantity or cost of the work as a whole, and provided further that Plans and Specifications showing such adjustments and changes are furnished to the Contractor by the City within a reasonable time before any work involving such adjustment and changes is begun. The Engineer shall be the sole judge of what constitutes a minor change for which no additional compensation shall be allowed.

#### **ARTICLE 7.02 EXTRA WORK**

The City may at any time by a written order and without notice to the sureties require the performance of such extra work as it may find necessary or desirable. An order for extra work shall be valid only if issued in writing and signed by the Mayor and the work so ordered must be performed by the Contractor.

The amount of compensation to be paid to the Contractor for any extra work as so ordered shall be determined as follows:

(a) By such applicable unit prices, if any, as are set forth in the Proposal; or

(b) If no such unit prices are set forth then by a lump sum or other unit prices mutually agreed upon by the City and the Contractor; or

(c) If no such unit prices are set forth in the Proposal and if the parties cannot agree upon a lump sum or other unit prices then by the actual net cost in money to the Contractor of the extra work performed, which cost shall be determined as follows:

(1) For all labor and foreman in direct charge of the authorized operations, the Contractor shall receive the current local rate of wages to be agreed upon, in writing, before starting such work for each hour that said labor and foremen are actually engaged thereon, to which shall be added an amount equal to 25 percent of the sum thereof which shall be considered and accepted as full compensation for general supervision, FICA taxes, contributions under the Florida Unemployment Compensation Act, insurance, bond, subcontractor's profit and overhead, the furnishing of small tools and miscellaneous equipment used, such as picks, shovels, hand pumps, and similar items.

(2) For all materials used, the Contractor shall receive the actual cost of such materials delivered at the site or previously approved delivery point as established by original receipted bills. No percentage shall be added to this cost.

(3) For special equipment and machinery such as power-driven pumps, concrete mixers, trucks, and tractors, or other equipment, required for the economical performance of the authorized work, the Contractor shall receive payment based on the average local area rental price for each item of equipment and the actual time of its use on the work. No percentage shall be added to this sum.

(4) Records of extra work done under this procedure shall be reviewed at the end of each day by the Contractor or his representative and the Engineer. Duplicate copies of accepted records shall be made and signed by both Contractor or his representative and the Engineer, and one copy retained by each.

Request for payment for approved and duly authorized extra work shall be submitted in the same form as Contract work or in the case of work performed under paragraph (c) (1) above upon a certified statement supported by receipted bills. Such statement shall be submitted for the current Contract payment for the month in which the work was done.

#### **ARTICLE 7.03 DISPUTED WORK**

If the Contractor is of the opinion that any work required, necessitated, or ordered violates the terms and provisions of this Contract, he must promptly notify the Engineer, in writing, of his contentions with respect thereto and request a final determination thereof. If the Engineer determines that the work in question is Contract work and not extra work or that the order complained of is proper, he will direct the Contractor to proceed and the Contractor shall promptly comply. In order, however, to reserve his right to claim compensation for such work or damages resulting from such compliance, the Contractor must, within five (5) days after receiving notice of the Engineer's determination and direction, notify the City in writing that the work is being performed or that the determination and direction is being complied with under protest. Failure of the Contractor to notify shall be deemed as a waiver of claim for extra compensation or damages therefor.

Before final acceptance by the City, all matters of dispute must be adjusted to the mutual satisfaction of the parties thereto. Final determinations and decisions, in case any questions shall arise, shall constitute a condition precedent to the right of the Contractor to receive the money therefor until the matter in question has been adjusted.

#### **ARTICLE 7.04 OMITTED WORK**

The City may at any time by a written order and without notice to the sureties require the omission of such Contract work as it may find necessary or desirable.

An order for omission of work shall be valid only if signed by the Mayor and the work so ordered must be omitted by the Contractor. The amount by which the Contract price shall be reduced shall be determined as follows:

(a) By such applicable unit prices, if any, as are set forth in the Contract; or

(b) By the appropriate lump sum price set forth in the Contract; or

(c) By the fair and reasonable estimated cost to the City

of such omitted work as determined by the Engineer and approved by the City.

## **SECTION 8 CONTRACTOR'S EMPLOYEES**

### **ARTICLE 8.01 CHARACTER AND COMPETENCY**

The Contractor and his subcontractors shall employ upon all parts of the work herein contracted for only competent, skillful, and trustworthy workers. Should the Engineer at any time give notice, in writing, to the Contractor or his duly authorized representative on the work that any employee in his opinion is incompetent, unfaithful, disorderly, careless, unobservant of instructions, or in any way a detriment to the satisfactory progress of the work, such employee shall immediately be dismissed and not again allowed upon the site.

### **ARTICLE 8.02 SUPERINTENDENCE**

The Contractor shall give his personal supervision to the faithful prosecution of the work and in case of his absence shall have a competent, experienced, and reliable supervisor or superintendent, acceptable to the Engineer on the site who shall follow without delay all instructions of the Engineer in the prosecution and completion of the work and every part thereof, in full authority to supply workers, material, and equipment immediately. He shall keep on hand at all times copies of the Contract Documents.

### **ARTICLE 8.03 EMPLOYMENT OPPORTUNITIES**

The Contractor shall, in the performance of the work required to be done under this Contract, employ all workers without discrimination regarding race, creed, color, sex or national origin and must not maintain or provide facilities that are segregated on the basis of race, color, creed or national origin.

### **ARTICLE 8.04 RATES OF WAGES**

On federally assisted projects, the rates of wages to be paid under this Contract shall not be less than the rates of wages set forth in Section 12 of this Agreement.

On other projects, no wage rate determination is included. Florida's Prevailing Wage Law (Section 215.19, Florida Statutes) was repealed effective April 25, 1979.

### **ARTICLE 8.05 PAYROLL REPORTS**

The Contractor and each subcontractor shall, if requested to do so, furnish to the Engineer a duly certified copy of his payroll and also any other information required by the Engineer to satisfy him that the provisions of the law as to the hours of employment and rate of wages are being observed.

Payrolls shall be prepared in accordance with instructions furnished by the City and on approved forms. The Contractor shall not carry on his payroll any persons not employed by him. Subcontractor's employees shall be carried only on the payrolls of the employing subcontractor.

## **SECTION 9 CONTRACTOR'S DEFAULT**

### **ARTICLE 9.01 CITY'S RIGHT AND NOTICE**

It is mutually agreed that: (a) if the Contractor fails to begin work when required to do so, or (b) if at any time during the progress of the work it shall appear to the Engineer that the Contractor is not prosecuting the work with reasonable speed, or is delaying the work unreasonably and unnecessarily, or (c) if the force of workmen or quality or quantity of material furnished are not sufficient to insure completion of the work within the specified time and in accordance with the Specifications hereto attached, or (d) if the Contractor shall fail to make prompt payments for materials or labor or to subcontractors for work performed under the Contract, or (e) if legal proceedings have been instituted by others than the City in such manner as to interfere with the progress of the work and may subject the City to peril of litigation or outside claims of (f) if the Contractor shall be adjudged a bankrupt or make an assignment for the benefit of creditors, or (g) if in any proceeding instituted by or against the Contractor an order shall be made or entered granting an extension of time of payment, composition, adjustment, modification, settlement or satisfaction of his debts or liabilities, or (h) if a receiver or trustee shall be appointed for the Contractor or the Contractor's property, or (i) if the Contract or any part thereof shall be sublet without the consent of the City being first obtained in writing, or (j) if this Contract or any right, monies, or claim thereunder shall be assigned by the Contractor, otherwise than as herein specified, or (k) if the Contractor shall fail in any manner of substance to observe the provisions of this Contract, or (l) if any of the work, machinery, or equipment shall be defective, and shall not be replaced as herein provided, or (m) if the work to be done under this Contract shall be abandoned, then such fact or conditions shall be certified by the Engineer and thereupon the City without prejudice to any other rights or remedies of the City, shall have the right to declare the Contractor in default and so notify the Contractor by a written notice, setting forth the ground or grounds upon which such default is declared and the Contractor must discontinue the work, either as a portion of the work or the whole thereof, as directed.

### **ARTICLE 9.02 CONTRACTOR'S DUTY UPON DEFAULT**

Upon receipt of notice that his Contract is in default, the Contractor shall immediately discontinue all further operations on the work or such part thereof, and shall immediately quit the site or such part thereof, leaving untouched all plant, materials, equipment, tools, and supplies.

### **ARTICLE 9.03 COMPLETION OF DEFAULTED WORK**

The City, after declaring the Contractor in default, may then have the work completed or the defective equipment or machinery replaced or anything else done to complete the work in strict accordance with the Contract Documents by such means and in such manner, by Contract with or without public letting, or otherwise, as it may deem advisable,

utilizing for such purpose without additional cost to the City such of the Contractor's plant, materials, equipment, tools, and supplies remaining on the site, and also such subcontractors as it may deem advisable.

The City shall reimburse all parties, including itself, for the expense of such completion, including liquidated damages, if any, and the cost of reletting. The City shall deduct this expense from monies due or to become due to the Contractor under this Contract, or any part thereof, and in case such expense is more than the sum remaining unpaid of the original contract price, the Contractor and his sureties shall pay the amount of such deficiency to the City.

#### **ARTICLE 9.04 PARTIAL DEFAULT**

In case the City shall declare the Contractor in default as to a part of the work only, the Contractor shall discontinue such part, shall continue performing the remainder of the work in strict conformity with the terms of the Contract, and shall in no way hinder or interfere with any other contractor or person whom the City may engage to complete the work as to which the Contractor was declared in default.

### **SECTION 10 PAYMENTS**

#### **ARTICLE 10.01 PRICES**

For the Contractor's complete performance of the work, the City will pay and the Contractor agrees to accept, subject to the terms and conditions hereof, the lump sum prices or unit prices in the Contractor's Proposal and the award made therein, plus the amount required to be paid for any extra work ordered under Article 7.02 hereof, less credit for any work omitted pursuant to Article 7.04 hereof. Under unit price items, the number of units actually required to complete the work under the Contract may be more than stated in the Proposal. The Contractor agrees that no claim will be made for any damages or for loss of profits because of a difference between the quantities of the various classes of work assumed and stated in the Proposal Form as a basis for comparing Proposals and the quantities of work actually performed.

The sum as awarded for any lump sum Contract or lump sum Contract Item shall represent payment in full for all of the various classes of work, including materials, equipment, and labor necessary or required to complete, in conformity with the Contract Document, the entire work shown, indicated or specified under the lump sum Contract or lump sum Contract Item.

The amount as awarded as a unit price for any unit price Contract Item shall represent payment in full for all the materials, equipment, and labor necessary to complete, in conformity with the Contract Documents, each unit of work shown, specified, or required under the said unit price Contract Item.

No payment other than the amount as awarded will be made for any class of work included in a lump sum Contract Item or a unit price Contract Item, unless specific provision is

made therefor in the Contract Documents.

#### **ARTICLE 10.02 SUBMISSION OF BID BREAKDOWN**

Within fifteen (15) days after the execution of this Contract, the Contractor must submit to the Engineer in duplicate an acceptable breakdown of the lump sums and unit prices bid for items of the Contract, showing the various operations to be performed under the Contract, as described in the progress schedule required under Article 4.02 hereof, and the value of each of such operations, the total of such items to equal the total price bid. The Contractor shall also submit such other information relating to the bid prices as may be required and shall revise the bid breakdown as directed. Thereafter, the breakdown may be used for checking the Contractor's applications for partial payments hereunder but shall not be binding upon the City or the Engineer for any purpose whatsoever.

#### **ARTICLE 10.03 REPORTS, RECORDS AND DATA**

The Contractor shall furnish to the Engineer such schedules of quantities and costs, progress schedules, reports, invoices, delivery tickets, estimates, records, and other data as the Engineer may request concerning work performed or to be performed and the materials furnished under the Contract.

#### **ARTICLE 10.04 PAYMENTS BY CONTRACTOR**

The Contractor shall pay (a) for all transportation and utility services not later than the 20th day of the calendar month following that in which such services are rendered, (b) for all materials, tools, and equipment delivered at the site of the project, and the balance of the cost thereof not later than the 30th day following the completion of that part of the work in or on which such materials, tools, and equipment are incorporated or used, and (c) to each of his subcontractors, not later than the 5th day following each payment to the Contractor, the respective amounts allowed the Contractor on account of the work performed by his subcontractors, to the extent of each subcontractor's interest therein; and proof of such payments or releases therefor shall be submitted to the Engineer upon request.

#### **ARTICLE 10.05 PARTIAL PAYMENTS**

On or about the first of each month, the Contractor shall make and certify an estimate, on forms prescribed by the City, of the amount and fair value of the work done, and may apply for partial payment therefor. The Contractor shall revise the estimate as the Engineer may direct. When satisfactory progress has been made, and shows that the value of the work completed since the last payment exceeds one percent (1%) of the total Contract price in amount, the Engineer will issue a certificate that such work has been completed and the value thereof. The City will then issue a voucher to the Contractor in accordance with the following schedule:

#### **FOR CONTRACT AMOUNTS UNDER \$250,000**

(A) In the amount of ninety percent (90%) of the value of the work completed as certified until construction is one hundred percent (100%) complete (operational or beneficial occupancy), the withheld amount may be reduced below ten percent (10%), at the Engineer's option, to only that amount necessary to assure completion.

**FOR CONTRACT AMOUNTS OVER \$250,000**

(A) In the amount of ninety percent (90%) of the value of the work completed as certified until construction is fifty percent (50%) complete.

(B) When the dollar value, as determined by the Engineer, of satisfactorily completed work in place is greater than fifty percent (50%) of the original contract price, vouchers for partial payment will be issued by the City to the Contractor in the amount of one hundred percent (100%) of the value of the work, above 50%, completed as certified for that payment period.

(C) If the Contractor has performed satisfactorily and the work is substantially complete (operational or beneficial occupancy) the withheld amount may be reduced, at the Engineer's option, to only that amount necessary to assure completion.

In addition to the Conditions set forth in (A), (B), and (C) above, payments will always be less any sums that may be retained or deducted by the City under the terms of any of the contract documents and less any sums that may be retained to cover monetary guarantees for equipment, materials or progress performance.

Payment on estimates made on or about the first of the month may be expected on or about the 20th of the month.

Unless specified otherwise in the Contract Items, the delivered cost of equipment and nonperishable materials suitably stored at the site of the work and tested for adequacy may be included in the Contractor's application for partial payment provided, however, that the Contractor shall furnish evidence satisfactory to the City that the Contractor is the unconditional owner and in possession of such materials or equipment. The amount to be paid will be 90 percent of the invoice cost to the Contractor which cost shall be supported by receipted bills within 30 days of the date of payment by the City to the Contractor. Such payment shall not relieve the Contractor from full responsibility for completion of the work and for protection of such materials and equipment until incorporated in the work in a permanent manner as required by the Contract Documents.

Before any payment will be made under this Contract, the Contractor and every subcontractor, if required, shall deliver to the Engineer a written, verified statement, in satisfactory form, showing in detail all amounts then due and unpaid by such Contractor or subcontractor to all laborers, workmen, and mechanics, employed by him under the Contract for the performance of the work at the site thereof, for daily or weekly wages, or to other persons for materials, equipment, or supplies delivered at the site of the work during the period covered by the payment under consideration.

**ARTICLE 10.06 FINAL PAYMENT**

Under determination of satisfactory completion of the work under this Contract as provided in Article 4.07 hereof, the Engineer will prepare the final estimate showing the value of the completed work. This estimate will be prepared within 30 days after the date of completion or as soon thereafter as the necessary measurements and computations can be made.

All prior certificates and estimates, being approximate only, are subject to correction in the final estimate and payment.

When the final estimate has been prepared and certified by Engineer, he will submit to the Mayor and City Council the final certificate stating that the work has been completed and the amount based on the final estimate remaining due to the Contractor. The City will then accept the work as fully completed and will, not later than 30 days after the final acceptance, as defined in Article 1.02, of the work done under this Contract, pay the Contractor the entire amount so found due thereunder after deduction of all previous payments and all percentages and amounts to be kept and retained under provisions of this Contract; provided, however, and it is understood and agreed that, as a precedent to receiving final payment, the Contractor shall submit to the City a sworn affidavit that all bills for labor, service, materials, and subcontractors have been paid and that there are no suits pending in connection with this work. The City, at its option, may permit the Contractor to execute a separate surety bond in a form satisfactory to the City. The surety bond shall be in the full amount of the suit or suits.

Neither the final payment nor any part of the retained percentage shall be paid until the Contractor, if required, shall furnish the City with a complete release from any should remain unsatisfied after all payments are made, the Contractor shall refund to the City all monies which the City may be compelled to pay in discharging such claim, including incidental costs and attorney's fees.

**ARTICLE 10.07 ACCEPTANCE OF FINAL PAYMENT**

The acceptance by the Contractor, or by anyone claiming by or through him, of the final payment shall operate as and shall be a release to the City and every officer and agent thereof from any and all claims and liability to the Contractor for anything done or furnished in connection with the work or project and for any act or neglect of the Contractor or of any others relating to or affecting the work. No payment, however, final or otherwise, shall operate to release the Contractor or his sureties from any obligations under this Contract or the Performance Bond.

**SECTION 11 MISCELLANEOUS PROVISIONS**

**ARTICLE 11.01 CONTRACTOR'S WARRANTIES**

In consideration of, and to induce the award of this contract to him, the Contractor represents and warrants:

- (a) That he is not in arrears to the City upon debt or contract, and he is not a defaulter, as surety, contractor, or otherwise.
- (b) That he is financially solvent and sufficiently experienced and competent to perform the work.
- (c) That the work can be performed as called for by the Contract Documents.
- (d) That the facts stated in his proposal and the information given by him are true and correct in all respects.
- (e) That he is fully informed regarding all the conditions affecting the work to be done and labor and materials to be

furnished for the completion of this Contract, and that his information was secured by personal investigation and research.

**ARTICLE 11.02 PATENTED DEVICES, MATERIAL AND PROCESSES**

It is mutually understood and agreed that Contract prices include all royalties and costs arising from patents, trademarks, and copyrights in any way involved in the work. Whenever the Contractor is required or desires to use any design, device, material, or process covered by letters of patent or copyright, the Contractor shall indemnify and save harmless the City, its officers, agents and employees from any and all claims for infringement by reason of the use of any such patented design, device, tool, material, equipment, or process, to be performed under the Contract, and shall indemnify the said City, its officers, agents, and employees for any costs, expenses, and damages which may be incurred by reason of such infringement at any time during the prosecution or after completion of the work.

**ARTICLE 11.03 SUITS AT LAW**

In case any action at law or suit in equity may or shall be brought against the City or any of its officers, agents, or employees for or on account of the failure, omission, or neglect of the Contractor or his subcontractors, employees, or agents, to do or perform any of the covenants, acts, matters, or things by this Contract undertaken to be done or performed by the Contractor or his subcontractors, employees, or agents, or from any injuries done to property or persons and caused by the negligence or alleged negligence of the Contractor or his subcontractors, employees, or agents, or in any other manner arising out of the performance of this Contract, then the Contractor shall immediately assume and take charge of the defense of such actions or suits in like manner and to all intents and purposes as if said actions or suits have been brought directly against the Contractor, and the Contractor shall also indemnify and save harmless the City, its officers, agents, and employees from any and all loss, cost or damage whatever arising out of such actions or suits, in like manner and to all intents and purposes as if said actions or suits have been brought directly against the Contractor.

The Contractor shall and does hereby assume all liability for and agrees to indemnify the City or its Engineer against any or all loss, costs, damages, and liability for any or by reason of any lien, claims or demands, either for materials purchased or for work performed by laborers, mechanics, and others and from any damages, costs, actions, or causes of action and judgement arising from injuries sustained by mechanics, laborers, or other persons by reason of accidents or otherwise, whether caused by the carelessness or inefficiency or neglect of said Contractor, his subcontractors, agents, employees, workmen or otherwise.

**ARTICLE 11.04 CLAIMS FOR DAMAGES**

If the Contractor shall claim compensation for any damage sustained, other than for extra or disputed work covered by Article 7.02 and 7.03 hereof, by reason of any act or omission of the City, its agents, or any persons, he shall, within five days after sustaining such damage, make and

deliver to the Engineer a written statement of the nature of the damage sustained and of the basis of the claim against the City. On or before the 15th of the month succeeding that in which any damage shall have been sustained, the Contractor shall make and deliver to the Engineer an itemized statement of the details and amounts of such damage, duly verified by the Contractor. Unless such statements shall be made delivered within the times aforesaid, it is stipulated that and all claims for such compensation shall be forfeited and invalidated, and the Contractor shall not be entitled to payment on account of such claims.

**ARTICLE 11.05 NO CLAIMS AGAINST INDIVIDUALS**

No claim whatsoever shall be made by the Contractor against any officer, agent, employee of the City for, or on account of, anything done or omitted to be done in connection with this Contract.

**ARTICLE 11.06 LIABILITY UNAFFECTED**

Nothing herein contained shall in any manner create any liability against the City on behalf of any claim for labor, services, or materials, or of subcontractors, and nothing herein contained shall affect the liability of the Contractor or his sureties to the City or to any workmen or materialsmen upon bond given in connection with this Contract.

**ARTICLE 11.07 INDEMNIFICATION PROVISIONS**

Whenever there appears in this Agreement, or in the other Contract Documents made a part hereof, an indemnification provision within the purview of Chapter 725.06, Laws of Florida, the monetary limitation on the extent of the indemnification under each such provision shall be One Million Dollars or a sum equal to the total Contract price, whichever shall be the greater.

**ARTICLE 11.08 UNLAWFUL PROVISIONS DEEMED STRICKEN**

If this contract contains any unlawful provisions not an essential part of the Contract and which shall not appear to have a controlling or material inducement to the making thereof, such provisions shall be deemed of no effect and shall, upon notice by either party, be deemed stricken from the Contract without affecting the binding force of the remainder.

**ARTICLE 11.09 LEGAL PROVISIONS DEEMED INCLUDED**

Each and every provision of any law and clause required by law to be inserted in this Contract shall be deemed to be inserted herein, and the Contract shall be read and enforced as though it were included herein and if, through mistake or otherwise, any such provision is not inserted or is not correctly inserted, then upon application of either party the Contract shall forthwith be physically amended to make such insertion.

**ARTICLE 11.10 DEATH OR INCOMPETENCY OF CONTRACTOR**

In the event of death or legal incompetency of a Contractor who shall be an individual or surviving member of a contracting firm, such death or adjudication of incompetency

shall not terminate the Contract, but shall act as default hereunder to the effect provided in Article 9.01 hereof and the estate of the Contractor and his surety shall remain liable hereunder to the same extent as though the Contractor had lived. Notice of default, as provided in Article 9.01 hereof, shall not be required to be given in the event of such death or adjudication of incompetency.

**ARTICLE 11.11 NUMBER AND GENDER OF WORDS**

Whenever the context so admits or requires, all references herein in one number shall be deemed extended to and including the other number, whether singular or plural, and the use of any gender shall be applicable to all genders.

**ARTICLE 11.12 ACCESS TO RECORDS**

Representatives of Federal Agencies, if applicable, and the State of Florida shall have access to the work whenever it is in preparation of progress. On federally assisted projects the Federal Agency, the Comptroller General of the United States, or any authorized representative shall have access to any books, documents, papers, and records of the Contractor which are pertinent to the project for the purpose of making audit, examination, excerpts, and transcription thereof.

**SECTION 12  
LABOR STANDARDS**

**ARTICLE 12.01 LABOR STANDARDS**

The Contractor shall comply with all of the regulations set forth in "Labor Standards Provisions for Federally Assisted Construction Contracts", which may be attached, and any applicable Florida Statutes.

**ARTICLE 12.02 NOTICE TO LABOR UNIONS**

If required, the Contractor shall provide Labor Unions and other organizations of workers, and shall post, in a conspicuous place available to employees or applicants for employment, a completed copy of the form entitled "Notice to Labor Unions or Other Organizations of Workers" attached to and made a part of this Agreement.

**ARTICLE 12.03 SAFETY AND HEALTH REGULATIONS**

The Contractor shall comply with the Department of Labor Safety and Health Regulations for construction promulgated under the Occupational Safety and Health Act of 1970 (PL 91- 596) and under Section 107 of the Contract Work Hours and Safety Standards Act (PL 91-54). Nothing in these Acts shall be construed to supersede or in any manner affect any worker's compensation law or statutory rights, duties, or liabilities of employers and employees under any law with respect to injuries, diseases, or death of employees arising out of, or in the course of, employment.

**ARTICLE 12.04 EEO AFFIRMATIVE ACTION REQUIREMENTS**

The Contractor understands and agrees to be bound by the equal opportunity requirements of Federal regulations which shall be applicable throughout the performance of work under this Contract. The Contractor also agrees to similarly

bind contractually each subcontractor. In policies, the Contractor agrees to engage in Affirmative Action directed at promoting and ensuring equal employment opportunity in the work force used under the Contract (and the Contractor agrees to require contractually the same effort of all subcontractors whose subcontractors exceed \$100,000). The Contractor understands and agrees that "Affirmative Action" as used herein shall constitute a good faith effort to achieve and maintain minority employment in each trade in the on-site work force used on the Contract.

**ARTICLE 12.05 PREVAILING RATES OF WAGES**

Florida's prevailing wage law was repealed effective April 25, 1979.

For Federally assisted projects, appropriate prevailing wage rate determinations are indicated on pages beginning with WR-1.

\* \* \* \* \*

IN WITNESS THEREOF, the parties have hereunto set their hands and seals, and such of them as are corporation have caused these present to be signed by their duly authorized officers.

CITY OF TAMPA, FLORIDA

\_\_\_\_\_  
Bob Buckhorn, Mayor  
(SEAL)

ATTEST:

\_\_\_\_\_  
City Clerk

Approved as to Form:  
The execution of this document was authorized  
by Resolution No. \_\_\_\_\_

\_\_\_\_\_  
Rachel S. Peterkin, Assistant City Attorney

Contractor

By: \_\_\_\_\_  
(SEAL)

Title:

ATTEST:

\_\_\_\_\_  
Witness

TAMPA AGREEMENT (ACKNOWLEDGMENT OF PRINCIPAL)

STATE OF \_\_\_\_\_ )  
 ) SS:  
COUNTY OF \_\_\_\_\_ )

For a Corporation:

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

The foregoing instrument was acknowledged before me this \_\_\_\_ of \_\_\_\_\_, 20\_\_ by \_\_\_\_\_ of \_\_\_\_\_, a \_\_\_\_\_ corporation, on behalf of the corporation. He/she is \_\_\_\_ personally known or has \_\_\_\_ produced \_\_\_\_\_ as identification.

\_\_\_\_\_  
Notary

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

For an Individual:

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

The foregoing instrument was acknowledged before me this \_\_\_\_ of \_\_\_\_\_, 20\_\_ by \_\_\_\_\_ who is \_\_\_\_ personally known to me or has \_\_\_\_ produced \_\_\_\_\_ as identification.

\_\_\_\_\_  
Notary

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

For a Firm:

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

The foregoing instrument was acknowledged before me this \_\_\_\_ of \_\_\_\_\_, 20\_\_ by \_\_\_\_\_ who signed on behalf of the said firm. He/she is \_\_\_\_ personally known or has \_\_\_\_ produced \_\_\_\_\_ as identification.

\_\_\_\_\_  
Notary

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

PUBLIC CONSTRUCTION BOND

Bond No. (enter bond number) \_\_\_\_\_

Name of Contractor: \_\_\_\_\_

Principal Business Address of Contractor: \_\_\_\_\_

\_\_\_\_\_

Telephone Number of Contractor: \_\_\_\_\_

Name of Surety (if more than one list each): \_\_\_\_\_

\_\_\_\_\_

Principal Business Address of Surety: \_\_\_\_\_

\_\_\_\_\_

Telephone Number of Surety: \_\_\_\_\_

Owner is The City of Tampa, Florida

Principal Business Address of Owner: \_\_\_\_\_ 306 E Jackson St, Tampa, FL 33602

\_\_\_\_\_ Contract Administration Department (280A4N)

Telephone Number of Owner: \_\_\_\_\_ 813/274-8456

Contract Number Assigned by City to contract which is the subject of this bond: \_\_\_\_\_

Legal Description or Address of Property Improved or Contract Number is: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

General Description of Work and Services: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

KNOW ALL MEN BY THESE PRESENTS That we, \_\_\_\_\_

\_\_\_\_\_  
(Name of Contractor)

as Principal, hereinafter called CONTRACTOR, of the State of \_\_\_\_\_, and

\_\_\_\_\_  
(Name of Surety)

a corporation organized and existing under and by virtue of the laws of the State of \_\_\_\_\_, and regularly authorized to do business in the State of Florida, as SURETY, are held and firmly bound unto the City of Tampa, a municipal corporation organized and existing under the laws of the State of Florida, hereinafter called Owner, in the penal sum of \_\_\_\_\_ Dollars and \_\_\_\_\_ Cents (\$ \_\_\_\_\_), lawful money of the United States of America, for the payment whereof well and truly to be made, we bind ourselves, our heirs, executors, and administrators, successors and assigns, jointly and severally, firmly by these presents.

THE CONDITION OF THIS BOND is that if Principal:

1. Performs the contract dated \_\_\_\_\_, \_\_\_\_\_, 20\_\_\_\_, between Principal and Owner for construction of \_\_\_\_\_, the contract being made a part of this bond by reference, in the time and in the manner prescribed in the contract; and
2. Promptly makes payments to all claimants, as defined in Section 255.05(1) (Section 713.01), Florida Statutes, supplying Principal with labor, materials, or supplies, used directly or indirectly by Principal in the prosecution of the work provided for in the contract; and
3. Pays Owner all losses, damages, expenses, costs, and attorney's fees, including appellate proceedings, that Owner sustains because of a default by Principal under the contract; and
4. Performs the guarantee of all work and materials furnished under the contract for the time specified in the contract, then this bond is void; otherwise it remains in full force.
5. Contractor and Surety acknowledge that the Work for which this bond has been issued may be one of several such contract documents for a group of projects. This bond does not secure covenants to pay for or to perform design services survey or program management services. The Owner/Obligee is expected to reasonably account for damages that are caused to Owner with respect to Principal's (Contractor's) default in performance of the scope of the Work incorporated by reference into the bond, and notwithstanding any contractual or common law remedy permitted to Owner as against Contractor, the obligation of Surety for any damages under this bond shall be determined by the cost of completion of the Work less the contract balance unpaid upon default of Contractor for the Work plus liquidated damages at the rate of \$500.00 per day for delays by the Contractor and/or Surety in reaching substantial completion.
6. The notice requirements for claimants and conditions for entitlement to payment set forth in Section 255.05, Fla. Stat. and the limitations period to actions upon Section 255.05, Fla. Stat. bonds apply to claimants seeking payment from surety under this bond. Any action instituted by a claimant under this bond for payment must be in accordance with the notice and time limitation provisions in Section 255.05, Florida Statutes.
7. The Surety, for value received, hereby stipulates and agrees that no changes, extensions of time, alterations or additions to the terms of the contract documents or other Work to be performed hereunder, or the specifications referred to therein shall in any way affect its obligations under this bond, and it does hereby waive notice of any such changes, extensions of time, alterations or additions to the terms of the Contract or to Work or to the specifications.

8. The above SURETY states that it has read all of the Contract Documents made by the CONTRACTOR with the CITY, hereto attached, and the terms and conditions of the contract and work, and is familiar therewith and in particular those portions of the Agreement concerning the guaranty of such CONTRACTOR for a period of one year following the date of the final acceptance of the completed work under the Contract by the CITY, all of which this BOND includes.

DATED ON \_\_\_\_\_, 20\_\_

\_\_\_\_\_  
(Name of Principal)

\_\_\_\_\_  
(Name of Surety)

\_\_\_\_\_  
(Principal Business Address)

\_\_\_\_\_  
(Surety Address)

By \_\_\_\_\_

By \_\_\_\_\_  
(As Attorney in Fact)\*

Title \_\_\_\_\_

\_\_\_\_\_  
Telephone Number of Surety

\_\_\_\_\_  
Telephone Number of Principal

Approved as to legal sufficiency:

**Countersignature:**

By \_\_\_\_\_  
Assistant City Attorney

\_\_\_\_\_  
(Name of Local Agency)

\_\_\_\_\_  
(Address of Resident Agent)

By \_\_\_\_\_

Title \_\_\_\_\_

\_\_\_\_\_  
Telephone Number of Local Agency

\*(As Attorney in Fact) attach Power of Attorney and Current Certificate with Original Signature

# SPECIFICATIONS GENERAL PROVISIONS

## SECTION 1 SCOPE AND INTENT

### G-1.01 DESCRIPTION

The work to be done consists of the furnishing of all labor, materials and equipment, and the performance of all work included in this Contract.

### G-1.02 WORK INCLUDED

The Contractor shall furnish all labor, superintendence, materials, plant, power, light, heat, fuel, water, tools, appliances, equipment, supplies, and other means of construction necessary or proper for performing and completing the work. He shall obtain and pay for all required permits. He shall perform and complete the work in the manner best calculated to promote rapid construction consistent with safety of life and property and to the satisfaction of the Engineer, and in strict accordance with the Contract Documents. The Contractor shall clean up the work and maintain it during and after construction, until accepted, and shall do all work and pay all costs incidental thereto. He shall repair or restore all structures and property that may be damaged or disturbed during performance of the work.

The cost of incidental work described in these General Provisions, for which there are no specific Contract Items, shall be considered as part of the overhead cost of doing the work and shall be included in the prices for the various Contract Items. No additional payment will be made therefor.

The Contractor shall provide and maintain such modern plant, tools, and equipment as may be necessary, in the opinion of the Engineer, to perform in a satisfactory and acceptable manner all the work required by this Contract. Only equipment of established reputation and proven efficiency shall be used. The Contractor shall be solely responsible for the adequacy of his plant and equipment, prior approval of the Engineer notwithstanding.

### G-1.03 PUBLIC UTILITY INSTALLATIONS AND STRUCTURES

Public utility installations and structures shall be understood to include all poles, tracks, pipes, wires, conduits, house service connections, vaults, manholes, and all other appurtenances and facilities pertaining thereto whether owned or controlled by the City, other governmental bodies or privately owned by individuals, firms, or corporations, and used to serve the public with transportation, traffic control, gas, electricity, telephone, sewerage, drainage, water or other public or private property which may be affected by the work.

The Contract Documents contain data relative to existing public utility installations and structures above and below the ground surface. These data are not guaranteed as to their completeness or accuracy and it is the responsibility of the Contractor to make his own investigations to inform himself

fully of the character, condition and extent of all such installations and structures as may be encountered and as may affect the construction operations.

The Contractor shall protect all public utility installations and structures from damage during the work. Access across any buried public utility installation or structure shall be made only in such locations and by means approved by the Engineer. The Contractor shall so arrange his operations as to avoid any damage to these facilities. All required protective devices and construction shall be provided by the Contractor at his expense. All existing public utilities damaged by the Contractor which are shown on the Plans or have been located in the field by the utility shall be repaired by the Contractor, at his expense, as directed by the Engineer. No separate payment shall be made for such protection or repairs to public utility installations or structures.

Public utility installations or structures owned or controlled by the City or other governmental body which are shown on the Plans to be removed, relocated, replaced or rebuilt by the Contractor shall be considered as a part of the general cost of doing the work and shall be included in the prices bid for the various Contract Items. No separate payment shall be made therefor.

Where public utility installations or structures owned or controlled by the City or other governmental body are encountered during the course of the work, and are not indicated on the Plans or in the Specifications, and when, in the opinion of the Engineer, removal, relocation, replacement or rebuilding is necessary to complete the work under this Contract, such work shall be accomplished by the utility having jurisdiction or such work may be ordered, in writing by the Engineer, for the Contractor to accomplish. If such work is accomplished by the utility having jurisdiction it will be carried out expeditiously and the Contractor shall give full cooperation to permit the utility to complete the removal, relocation, replacement or rebuilding as required. If such work is accomplished by the Contractor, it will be paid for as extra work as provided for in Article 7.02 of the Agreement.

The Contractor shall, at all times in performance of the work, employ approved methods and exercise reasonable care and skill so as to avoid unnecessary delay, injury, damage or destruction of public utility installations and structures; and shall, at all times in the performance of the work, avoid unnecessary interference with, or interruption of, public utility services, and shall cooperate fully with the owners thereof to that end.

All City and other governmental utility departments and other owners of public utilities, which may be affected by the work, will be informed in writing by the Engineer within two weeks after the execution of the Contract or Contracts covering the work. Such notice will set out, in general, and direct attention to, the responsibilities of the City and other governmental

utility departments and other owners of public utilities for such installations and structures as may be affected by the work and will be accompanied by one set of Plans and Specifications covering the work under such Contract or Contracts.

In addition to the general notice given by the Engineer, the Contractor shall give written notice to all City and other governmental utility departments and other owners of public utilities of the location of his proposed construction operations, at least forty-eight (48) hours in advance of breaking ground in any area or on any unit of the work. This can be accomplished by making the appropriate contact with the "Underground Utility Notification Center for Excavators (Call Candy)".

The maintenance, repair, removal, relocation, or rebuilding of public utility installations and structures, when accomplished by the Contractor as herein provided, shall be done by methods approved by the Engineer.

## **SECTION 2 PLANS AND SPECIFICATIONS**

### **G-2.01 PLANS**

The Plans referred to in the Contract Documents bear the general project name and number as shown in the Notice To Bidders.

When obtaining data and information from the Plans, figures shall be used in preference to scaled dimensions, and large scale drawings in preference to small scale drawings.

### **G-2.02 COPIES FURNISHED TO CONTRACTOR**

After the Contract has been executed, the Contractor will be furnished with five sets of paper prints, the same size as the original drawings, of each sheet of the Plans and five copies of the Specifications. Additional copies of the Plans and Specifications, when requested, may be furnished to the Contractor at cost of reproduction.

The Contractor shall furnish each of the subcontractors, manufacturers, and material suppliers such copies of the Contract Documents as may be required for his work.

### **G-2.03 SUPPLEMENTARY DRAWINGS**

When, in the opinion of the Engineer, it becomes necessary to explain more fully the work to be done or to illustrate the work further or to show any changes which may be required, drawings known as Supplementary Drawings, with specifications pertaining thereto, will be prepared by the Engineer and five paper prints thereof will be given to the Contractor.

The Supplementary Drawings shall be binding upon the Contractor with the same force as the Plans. Where such Supplementary Drawings require either less or more than the estimated quantities of work, credit to the City or compensation therefor to the Contractor shall be subject to the terms of the Agreement.

### **G-2.04 CONTRACTOR TO CHECK PLANS AND DATA**

The Contractor shall verify all dimensions, quantities, and details shown on the Plans, Supplementary Drawings, Schedules, Specifications, or other data received from the Engineer, and shall notify him of all errors, omissions, conflicts, and discrepancies found therein. Failure to discover or correct errors, conflicts or discrepancies shall not relieve the Contractor of full responsibility for unsatisfactory work, faulty construction or improper operation resulting therefrom nor from rectifying such conditions at his own expense. He will not be allowed to take advantage of any errors or omissions as full instructions will be furnished by the Engineer, should such errors or omissions be discovered. All schedules are given for the convenience of the Engineer and the Contractor and are not guaranteed to be complete. The Contractor shall assume all responsibility for the making of estimates of the size, kind, and quality of materials and equipment included in work to be done under the Contract.

### **G-2.05 SPECIFICATIONS**

The specifications consist of four parts, the General Provisions, the Technical Specifications, the Special Provisions and the Contract Items. The General Provisions and Technical Specifications contain general requirements which govern the work. The Special Provisions and the Contract Items modify and supplement these by detailed requirements for the work and shall always govern, whenever there appears to be conflict.

### **G-2.06 INTENT**

All work called for in the Specifications applicable to this Contract, but not shown on the Plans in their present form, or vice versa, shall be of like effect as if shown or mentioned in both. Work not specified in either the Plans or in the Specifications, but involved in carrying out their intent 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.

The apparent silence of the Specifications as to any detail, or the apparent omission from them of a detailed description concerning any work to be done and materials to be furnished, shall be regarded as meaning that only the best general practice is to prevail and that only material and workmanship of the best quality is to be used, and interpretation of these Specifications shall be made upon that basis.

## **SECTION 3 WORKING DRAWINGS**

### **G-3.01 SCOPE**

The Contractor shall promptly prepare and submit layout, detail and shop drawings to insure proper construction, assembly, and installation of the work using those materials and methods as hereafter specified under the Technical Specifications, Special Provisions and Contract Items.

These drawings shall accurately and distinctly present the following:

- a. All working and erection dimensions.
- b. Arrangements and sectional views.
- c. Necessary details, including complete information for making connections between work under this Contract and work under other Contracts.
- d. Kinds of materials and finishes.
- e. Parts listed and description thereof.

Drawings for mechanical equipment shall present, where applicable, such data as dimensions, weight and performance characteristics. These data shall show conformance with the performance characteristics and other criteria incorporated in the Plans and Specifications.

Each drawing shall be dated and shall contain the name of the project, Division number and description, the technical specifications section number, names of equipment or materials and the location at which the equipment or materials are to be installed. Location shall mean both physical location and location relative to other connected or attached material. The Engineer will return unchecked any submittal which does not contain complete data on the work and full information on related matters.

Stock or standard drawings will not be accepted for review unless full identification and supplementary information is shown thereon in ink or typewritten form.

The Contractor shall review all working drawing submittals before transmitting them to the Engineer to determine that they comply with requirements of the Specifications. Drawings which are incomplete or are not in compliance with the Contract Documents shall not be submitted for processing by the Engineer. The Contractor shall place his stamp of approval on all working drawings submitted to the Engineer to indicate compliance with the above.

#### **G-3.02 APPROVAL**

If the working drawings show departures from the Contract requirements, the Contractor shall make specific mention thereof in his letter of submittal; otherwise approval of such submittals shall not constitute approval of the departure. Approval of the drawings shall constitute approval of the subject matter thereof only and not of any structure, material, equipment, or apparatus shown or indicated.

The approval of drawings will be general and shall not relieve the Contractor of responsibility for the accuracy of such drawings, nor for the proper fitting and construction of the work, nor for the furnishing of materials or work required by the Contract and not indicated on the drawings. No work called for by working drawings shall be done until such drawings have been approved by the Engineer.

The procedure in seeking approval of the working drawings shall be as follows:

1. The Contractor shall submit four complete sets of drawings

and other descriptive data together with one copy of a letter of transmittal to the Engineer for approval. The letter of transmittal shall contain the name of the project, contract number, technical specifications section number, the name of the Contractor, a list of drawings with numbers and titles, and any other pertinent information.

2. Drawings or descriptive data will be stamped "Approved", "Approved Subject to Corrections Marked", or "Examined and Returned for Correction" and one copy with a letter of transmittal will be returned to the Contractor.

3. If a drawing or other data is stamped "Approved", the Contractor shall insert the date of approval on five additional copies of the document and transmit the five copies to the Engineer together with one copy of a letter of transmittal containing substantially the same information as described in Instruction 1. above.

4. If a drawing or other data is stamped "Approved Subject to Corrections Marked", the Contractor shall make the corrections indicated and proceed as in Instruction 3., above.

5. If a drawing or data is stamped "Examined and Returned for Correction", the Contractor shall make the necessary corrections and resubmit the documents as set forth in Instruction 1., above. The letter of transmittal shall indicate that this is a resubmittal.

The Contractor shall revise and resubmit the working drawings as required by the Engineer, until approval thereof is obtained.

## **SECTION 4 MATERIALS AND EQUIPMENT**

### **G-4.01 GENERAL REQUIREMENTS**

All materials, appliances, and types or methods of construction shall be in accordance with the Specifications and shall, in no event, be less than that necessary to conform to the requirements of any applicable laws, ordinances, and codes.

All materials and equipment shall be new, unused, and correctly designed. They shall be of standard first grade quality, produced by expert personnel, and intended for the use for which they are offered. Materials or equipment which, in the opinion of the Engineer, are inferior or of a lower grade than indicated, specified, or required will not be accepted.

The quality of Workmanship and Materials entering into the work under this Contract shall conform to the requirements of the pertinent sections, clauses, paragraphs, and sentences, both directly and indirectly applicable thereto, of that part of the Technical Specifications, whether or not direct reference to such occurs in the Contract Items.

Equipment and appurtenances shall be designed in conformity with ANSI, ASME, IEEE, NEMA and other

generally accepted standards and shall be of rugged construction and of sufficient strength to withstand all stresses which may occur during fabrication, testing, transportation, installation, and all conditions of operation. All bearings and moving parts shall be adequately protected against wear by bushings or other approved means and shall be fully lubricated by readily accessible devices. Details shall be designed for appearance as well as utility. Protruding members, joints, corners, gear covers, and the like, shall be finished in appearance. All exposed welds shall be ground smooth and the corners of structural shapes shall be mitered.

Equipment shall be of the approximate dimensions as indicated on the Plans or as specified, shall fit the spaces shown on the Plans with adequate clearances, and shall be capable of being handled through openings provided in the structure for this purpose. The equipment shall be of such design that piping and electrical connections, ductwork, and auxiliary equipment can be assembled and installed without causing major revisions to the location or arrangement of any of the facilities.

Machinery parts shall conform exactly to the dimensions shown on the working drawings. There shall be no more fitting or adjusting in setting up a machine than is necessary in assembling high grade apparatus of standard design. The equivalent parts of identical machines shall be made interchangeable. All grease lubricating fittings on equipment shall be of a uniform type. All machinery and equipment shall be safeguarded in accordance with the safety codes of the ANSI and applicable state and local codes.

#### **G-4.02 MANUFACTURER**

The names of proposed manufacturers, suppliers, material, and dealers who are to furnish materials, fixtures, equipment, appliances or other fittings shall be submitted to the Engineer for approval, as early as possible, to afford proper investigation and checking. Such approval must be obtained before shop drawings will be checked. No manufacturer will be approved for any materials to be furnished under this Contract unless he shall be of good reputation and have a plant of ample capacity. He shall, upon the request of the Engineer, be required to submit evidence that he has manufactured a similar product to the one specified and that it has been previously used for a like purpose for a sufficient length of time to demonstrate its satisfactory performance.

All transactions with the manufacturers or subcontractors shall be through the Contractor, unless the Contractor shall request, in writing to the Engineer, that the manufacturer or subcontractor deal directly with the Engineer. Any such transactions shall not in any way release the Contractor from his full responsibility under this Contract.

Any two or more pieces of material or equipment of the same kind, type or classification, and being used for identical types of service, shall be made by the same manufacturer.

#### **G-4.03 REFERENCE TO STANDARDS**

Whenever reference is made to the furnishing of materials or

testing thereof to conform to the standards of any technical society, organization or body, it shall be construed to mean the latest standard, code, specification or tentative specification adopted and published at the date of advertisement for proposals, even though reference has been made to an earlier standard, and such standards are made a part hereof to the extent which is indicated or intended.

Reference to a technical society, organization or body may be made in the Specifications by abbreviations, in accordance with the following list:

AASHTO for American Association of State Highway and Transportation Officials (formerly AASHO)  
ACI for American Concrete Institute  
AGMA for American Gear Manufacturer's Association  
AFBMA for Anti-Friction Bearing Manufacturer's Association  
AISC for American Institute of Steel Construction  
AISI for American Iron and Steel Institute  
ANSI for American National Standards Institute  
ASCE for American Society of Civil Engineers  
ASTM for American Society for Testing and Materials  
ASME for American Society of Mechanical Engineers  
AWS for American Welding Society  
AWWA for American Water Works Association  
AWPA for American Wood Preservers Association  
CEMA for Conveyor Equipment Manufacturers Association  
CIPRA for Cast Iron Pipe Research Association  
IEEE for Institute of Electrical and Electronic Engineers  
IPCEA for Insulated Power Cable Engineers Association  
NEC for National Electrical Code  
NEMA for National Electrical Manufacturers Association  
SAE for Society of Automotive Engineers  
SHBI for Steel Heating Boiler Institute  
Fed.Spec. for Federal Specifications  
Navy Spec. for Navy Department Specifications  
U.L.,Inc. for Underwriters' Laboratories, Inc.

When no reference is made to a code, standard or specification, the Standard Specifications of the ANSI, the ASME, the ASTM, the IEEE, or the NEMA shall govern.

#### **G-4.04 SAMPLES**

The Contractor shall, when required, submit to the Engineer for approval typical samples of materials and equipment. The samples shall be properly identified by tags and shall be submitted sufficiently in advance of the time when they are to be incorporated into the work, so that rejections thereof will not cause delay. A letter of transmittal, in duplicate, from the Contractor requesting approval must accompany all such samples.

#### **G-4.05 EQUIVALENT QUALITY**

Whenever, in the Contract Documents, an article, material, apparatus, equipment, or process is called for by trade name or by the name of a patentee, manufacturer, or dealer or by reference to catalogs of a manufacturer or dealer, it shall be understood as intending to mean and specify the article, material, apparatus, equipment or process designated, or any

equal thereto in quality, finish, design, efficiency, and durability and equally serviceable for the purposes for which it is intended.

Whenever material or equipment is submitted for approval as being equal to that specified, the decision as to whether or not such material or equipment is equal to that specified shall be made by the Engineer.

Upon rejection of any material or equipment submitted as the equivalent of that specifically named in the Contract, the Contractor shall immediately proceed to furnish the designated material or equipment.

Neither the approval by the Engineer of alternate material or equipment as being equivalent to that specified nor the furnishing of the material or equipment specified, shall in any way relieve the Contractor of responsibility for failure of the material or equipment, due to faulty design, material, or workmanship, to perform the functions required of them by the Specifications.

#### **G-4.06 DELIVERY**

The Contractor shall deliver materials in ample quantities to insure the most speedy and uninterrupted progress of the work so as to complete the work within the allotted time. The Contractor shall also coordinate deliveries in order to avoid a delay in, or impediment of, the progress of the work of any related Contractor.

#### **G-4.07 CARE AND PROTECTION**

The Contractor shall be solely responsible for properly storing and protecting all materials, equipment, and work furnished under the Contract from the time such materials and equipment are delivered at the site of the work until final acceptance thereof. He shall, at all times, take necessary precautions to prevent injury or damage by water, freezing, or by inclemencies of the weather to such materials, equipment and work. All injury or damage to materials, equipment, or work resulting from any cause whatsoever shall be made good by the Contractor.

The Engineer shall, in all cases, determine the portion of the site to be used by the Contractor for storage, plant or for other purposes. If, however, it becomes necessary to remove and restack materials to avoid impeding the progress of any part of the work or interference with the work to be done by any other Contractor, the Contractor shall remove and restack such materials at his own expense.

#### **G-4.08 TOOLS AND ACCESSORIES**

The Contractor shall, unless otherwise stated in the Contract Documents, furnish with each type, kind or size of equipment, one complete set of suitably marked high grade special tools and appliances which may be needed to adjust, operate, maintain, or repair the equipment. Such tools and appliances shall be furnished in approved painted steel cases, properly labeled and equipped with good grade cylinder locks and duplicate keys.

Spare parts shall be furnished as specified.

Each piece of equipment shall be provided with a substantial nameplate, securely fastened in place and clearly inscribed with the manufacturer's name, year of manufacture, serial number, weight and principal rating data.

#### **G-4.09 INSTALLATION OF EQUIPMENT**

The Contractor shall have on hand sufficient proper equipment and machinery of ample capacity to facilitate the work and to handle all emergencies normally encountered in work of this character.

Equipment shall be erected in a neat and workmanlike manner on the foundations at the locations and elevations shown on the Plans, unless directed otherwise by the Engineer during installation. All equipment shall be correctly aligned, leveled and adjusted for satisfactory operation and shall be installed so that proper and necessary connections can be made readily between the various units.

The Contractor shall furnish, install and protect all necessary anchor and attachment bolts and all other appurtenances needed for the installation of the devices included in the equipment specified. Anchor bolts shall be as approved by the Engineer and made of ample size and strength for the purpose intended. Substantial templates and working drawings for installation shall be furnished.

The Contractor shall, at his own expense, furnish all materials and labor for, and shall properly bed in non-shrink grout, each piece of equipment on its supporting base that rests on masonry foundations. Grout shall completely fill the space between the equipment base and the foundation.

#### **G-4.10 OPERATING INSTRUCTIONS**

The Contractor, through qualified individuals, shall adequately instruct designated employees of the City in the operation and care of all equipment installed hereunder, except for equipment that may be furnished by the City.

The Contractor shall also furnish and deliver to the Engineer three complete sets for permanent files, identified in accordance with Subsection G-3.01 hereof, of instructions, technical bulletins and any other printed matter, such as diagrams, prints or drawings, containing full information required for the proper operation, maintenance, and repair, of the equipment installed and the ordering of spare parts, except for equipment that may be furnished by the City.

In addition to the above three copies, the Contractor shall furnish any additional copies that may be required for use during construction and start-up operations.

#### **G-4.11 SERVICE OF MANUFACTURER'S ENGINEER**

The Contract prices for equipment shall include the cost of furnishing a competent and experienced engineer or superintendent who shall represent the manufacturer and shall assist the Contractor, when required, to install, adjust, test and place in operation the equipment in conformity with the Contract Documents. After the equipment is placed in

permanent operation by the City, such engineer or superintendent shall make all adjustments and tests required by the Engineer to provide that such equipment is in proper and satisfactory operating condition, and shall instruct such personnel as may be designated by the City in the proper operation and maintenance of such equipment.

## **SECTION 5 INSPECTION AND TESTING**

### **G-5.01 GENERAL**

The Contractor's attention is hereby directed to Article 3.03 of the Agreement.

Inspection and testing of materials will be performed by the City unless otherwise specified.

For tests specified to be made by the Contractor, the testing personnel shall make the necessary inspections and tests and the reports thereof shall be in such form as will facilitate checking to determine compliance with the Contract Documents. Five copies of the reports shall be submitted and authoritative certification thereof must be furnished to the Engineer as a prerequisite for the acceptance of any material or equipment.

If, in the making of any test of any material or equipment, it is ascertained by the Engineer that the material or equipment does not comply with the Contract, the Contractor will be notified thereof and he will be directed to refrain from delivering said material and equipment, or to remove it promptly from the site or from the work and replace it with acceptable material, without cost to the City.

Tests of electrical and mechanical equipment and appliances shall be conducted in accordance with recognized test codes of the ANSI, ASME, or the IEEE, except as may otherwise be stated herein.

The Contractor shall be fully responsible for the proper operation of equipment during tests and instruction periods and shall neither have nor make any claim for damage which may occur to equipment prior to the time when the City formally takes over the operation thereof.

### **G-5.02 COSTS**

All inspection and testing of materials furnished under this Contract will be performed by the City or duly authorized inspection engineers or inspection bureaus without cost to the Contractor, unless otherwise expressly specified.

The cost of shop and field tests of equipment and of certain other tests specifically called for in the Contract Documents shall be borne by the Contractor and such costs shall be deemed to be included in the contract price.

Materials and equipment submitted by the Contractor as the equivalent to those specifically named in the Contract may be tested by the City for compliance. The Contractor shall reimburse the City for the expenditures incurred in making

such tests on materials and equipment which are rejected for noncompliance.

### **G-5.03 INSPECTIONS OF MATERIALS**

The Contractor shall give notice, in writing to the Engineer, sufficiently in advance of his intention to commence the manufacture or preparation of materials especially manufactured or prepared for use in or as part of the permanent construction. Such notice shall contain a request for inspection, the date of commencement and the expected date of completion of the manufacture or preparation of materials. Upon receipt of such notice the Engineer will arrange to have a representative present at such times during the manufacture as may be necessary to inspect the materials or he will notify the Contractor that inspection will be made at a point other than the point of manufacture, or he will notify the Contractor that inspection will be waived. The Contractor must comply with these provisions before shipping any material. Such inspection shall not release the Contractor from the responsibility for furnishing materials meeting the requirements of the Contract Documents.

### **G-5.04 CERTIFICATE OF MANUFACTURE**

When inspection is waived or when the Engineer so requires, the Contractor shall furnish to him authoritative evidence in the form of Certificates of Manufacture that the materials to be used in the work have been manufactured and tested in conformity with the Contract Documents. These certificates shall be notarized and shall include copies of the results of physical tests and chemical analyses, where necessary, that have been made directly on the product or on similar products of the manufacturer.

### **G-5.05 SHOP TESTS OF OPERATING EQUIPMENT**

Each piece of equipment for which pressure, duty, capacity, rating, efficiency, performance, function, or special requirements are specified shall be tested in the shop of the maker in a manner which shall conclusively prove that its characteristics comply fully with the requirements of the Contract Documents. No such equipment shall be shipped to the work until the Engineer notifies the Contractor, in writing, that the results of such tests are acceptable.

Five copies of the manufacturer's actual test data and interpreted results thereof, accompanied by a certificate of authenticity sworn to by a responsible official of the manufacturing company, shall be forwarded to the Engineer for approval.

The cost of the shop tests and of furnishing manufacturer's preliminary and shop test data of operating equipment shall be borne by the Contractor.

### **G-5.06 PRELIMINARY FIELD TESTS**

As soon as conditions permit, the Contractor shall furnish all labor, materials, and instruments and shall make preliminary field tests of equipment. If the preliminary field tests disclose any equipment furnished under this Contract which does not comply with the requirements of the Contract Documents, the Contractor shall, prior to the acceptance tests, make all changes, adjustments, and replacements required.

## TEMPORARY STRUCTURES

### G-5.07 FINAL FIELD TESTS

Upon completion of the work and prior to final payment, all equipment and appliances installed under this Contract shall be subjected to acceptance tests as specified or required to prove compliance with the Contract Documents.

The Contractor shall furnish labor, fuel, energy, water and all other materials, equipment, and instruments necessary for all acceptance tests, at no additional cost to the City.

### G-5.08 FAILURE OF TESTS

Any defects in the materials and equipment or their failure to meet the tests, guarantees or requirements of the Contract Documents shall be promptly corrected by the Contractor by replacements or otherwise. The decision of the Engineer as to whether or not the Contractor has fulfilled his obligations under the Contract shall be final and conclusive. If the Contractor fails to make those corrections or if the improved materials and equipment, when tested, shall again fail to meet the guarantees or specified requirements, the City, notwithstanding its partial payment for work, and materials and equipment, may reject the materials and equipment and may order the Contractor to remove them from the site at his own expense.

In case the City rejects any materials and equipment, then the Contractor shall replace the rejected materials and equipment within a reasonable time. If he fails to do so, the City may, after the expiration of a period of thirty calendar days after giving him notice in writing, proceed to replace such rejected materials and equipment, and the cost thereof shall be deducted from any compensation due or which may become due the Contractor under this Contract.

The City agrees to obtain other equipment within a reasonable time and the Contractor agrees that the City may use the equipment furnished by him without rental or other charges until the new equipment is obtained.

Materials or work in place that fails to pass acceptability tests shall be retested at the direction of the construction engineer all such retests shall be at the Contractor's expense. The rates charged shall be in accordance with the Department of Public Works current annual inspection contract which is available for inspection at the offices of the Department of Public Works.

### G-5.09 FINAL INSPECTION

The procedures for final inspection shall be in accordance with the provisions of Article 4.07 of the Agreement. During such final inspections, the work shall be clean and free from water. In no case will the final estimate be prepared until the Contractor has complied with all the requirements set forth and the Engineer has made his final inspection of the entire work and is satisfied that the entire work is properly and satisfactorily constructed in accordance with the requirements of the Contract Documents.

## SECTION 6

### G-6.01 GENERAL

All false work, scaffolding, ladders, hoistways, braces, pumping plants, shields, trestles, roadways, sheeting, centering forms, barricades, drains, flumes, and the like, any of which may be needed in the construction of any part of the work and which are not herein described or specified in detail, must be furnished, maintained and removed by the Contractor, and he shall be responsible for the safety and efficiency of such works and for any damages that may result from their failure or from their improper construction, maintenance, or operation.

### G-6.02 PUBLIC ACCESS

At all points in the work where public access to any building, house, place of business, public road, or sidewalk would be obstructed by any action of the Contractor in executing the work required by this Contract, the Contractor shall provide such temporary structure, bridges or roadway as may be necessary to maintain public access at all times. At least one lane for vehicular traffic shall be maintained in streets in which the Contractor is working. Street closure permits are required from the Department of Public Works.

The Contractor shall provide suitable temporary bridges, as directed by the Engineer, at street intersections when necessary for the maintenance of vehicular and pedestrian traffic.

Prior to temporarily cutting of access to driveways and garages, the Contractor shall give twelve (12) hours notice to affected property owners. Interruptions to use of private driveways shall be kept to a minimum.

### G-6.03 CONTRACTOR'S FIELD OFFICE

The Contractor shall erect, furnish and maintain a field office with a telephone at the site during the entire period of construction. He or an authorized agent shall be present at this office at all times while his work is in progress. Readily accessible copies of both the Contract Documents and the latest approved working drawings shall be kept at this field office.

### G-6.04 TEMPORARY FENCE

If, during the course of the work, it is necessary to remove or disturb any fence or part thereof, the Contractor shall, at his own expense, if so ordered by the Engineer, provide a suitable temporary fence which shall be maintained until the permanent fence is replaced. The Engineer shall be solely responsible for the determination of the necessity for providing a temporary fence and the type of temporary fence to be used.

### G-6.05 RESPONSIBILITY FOR TEMPORARY STRUCTURES

In accepting the Contract, the Contractor assumes full responsibility for the sufficiency and safety of all temporary structures or work and for any damage which may result from their failure or their improper construction, maintenance, or operation and will indemnify and save harmless the City from

all claims, suits or actions and damages or costs of every description arising by reason of failure to comply with the above provisions.

## **SECTION 7 TEMPORARY SERVICES**

### **G-7.01 WATER**

The Contractor shall provide the necessary water supply at his own expense. He shall, if necessary, provide and lay necessary waterlines from existing mains to the place of using, shall secure all necessary permits and pay for all taps to water mains or hydrants and for all water used at the established rates.

### **G-7.02 LIGHT AND POWER**

The Contractor shall provide, at his own expense, temporary lighting and power facilities required for the proper prosecution and inspection of the work. If, in the opinion of the Engineer, these facilities are inadequate, the Contractor will not be permitted to proceed with any portion of the work affected thereby.

### **G-7.03 SANITARY REGULATIONS**

The Contractor shall prohibit and prevent the committing of nuisances on the site of the work or on adjoining property and shall discharge any employee who violates this rule.

Ample washrooms and toilet facilities and a drinking water supply shall be furnished and maintained in strict conformity with the law by the Contractor for use by his employees.

### **G-7.04 ACCIDENT PREVENTION**

Precautions shall be exercised at all times for the protection of persons and property. The safety provisions of applicable laws, building and construction codes shall be observed. The Contractor shall comply with the U. S. Department of Labor Safety and Health Regulations for construction promulgated under the Occupational Safety and Health Act of 1970 (PL 91-596), and under Section 107 of the Contract Work. Hours and Safety Standards Act (PL 91-54), except where state and local safety standards exceed the federal requirements and except where state safety standards have been approved by the Secretary of Labor in accordance with provisions of the Occupational Safety and Health Act.

### **G-7.05 FIRST AID**

The Contractor shall keep upon the site, at each location where work is in progress, a completely equipped first aid kit and shall provide ready access thereto at all times when men are employed on the work.

### **G-7.06 HEATING**

The Contractor shall provide temporary heat, at his own expense, whenever required on account of work being carried on during cold weather and to prevent freezing of water pipes and other damage to the work.

## **SECTION 8**

## **LINES AND GRADES**

### **G-8.01 GENERAL**

All work done under this Contract shall be constructed in accordance with the lines and grades shown on the Plans, or as given by the Engineer. The full responsibility for keeping alignment and grade shall rest upon the Contractor.

The Engineer will establish bench marks and base line controlling points. Reference remarks for lines and grades as the work progresses will be located to cause as little inconvenience to the prosecution of the work as possible. The Contractor shall so place excavation and other materials as to cause no inconvenience in the use of the use of the reference marks provided. He shall remove any obstructions placed by him contrary to this provision.

### **G-8.02 SURVEYS**

The Contractor shall furnish and maintain, at his own expense, stakes and other such materials, and give such assistance, including qualified helpers, as may be required by the Engineer for setting reference marks. The Contractor shall check such reference marks by such means as he may deem necessary and, before using them, shall call the Engineer's attention to any inaccuracies. The Contractor shall, at his own expense, establish all working or construction lines and grades as required from the reference marks set by the Engineer, and shall be solely responsible for the accuracy thereof. He shall, however, be subject to the check and review of the Engineer.

The Contractor shall keep the Engineer informed a reasonable time in advance as to his need for line and grade reference marks, in order that they may be furnished and all necessary measurements made for record and payment with the minimum of inconvenience to the Engineer or of delay to the Contractor.

It is the intention not to delay the work for the establishment of reference marks but, when necessary, working operations shall be suspended for such reasonable time as the Engineer may require for this purpose.

### **G-8.03 SAFEGUARDING MARKS**

The Contractor shall safeguard all points, stakes, grade marks, monuments and bench marks made or established on the work, bear the cost of reestablishing them if disturbed, and bear the entire expense of rectifying work improperly installed due to not maintaining or protecting or to removing without authorization such established points, stakes and marks.

The Contractor shall safeguard all existing and known property corners, monuments and marks adjacent to but not related to the work and, if required, shall bear the cost of reestablishing them if disturbed or destroyed.

### **G-8.04 DATUM PLANE**

All elevations indicated or specified refer to the Mean Sea Level Datum of the U.S.C. & G.S. (N.O.S.) which is 0.80 feet above the Mean Low Water Datum of the U. S. Army

Corps of Engineers.

## **SECTION 9 ADJACENT STRUCTURES AND LANDSCAPING**

### **G-9.01 RESPONSIBILITY**

The responsibility for removal, replacement, relocation, repair, rebuilding or protection of all public utility installations, including poles, tracks, pipes, wires, conduits, house service connections, vaults, manholes, sewers, traffic control and fire alarm signal circuit installations and other appurtenances and facilities shall be in accordance with G-1.02 and G-1.03.

The Contractor shall also be entirely responsible and liable for all damage or injury as a result of his operations to all other adjacent public and private property, structures of any kind and appurtenances thereto met with during the progress of the work. The cost of protection, replacement in their original locations and conditions or payment of damages for injuries to such adjacent public and private property and structures affected by the work, whether or not shown on the Plans, and the removal, relocation, and reconstruction of such items called for on the Plans or specified shall be included in the various Contract Items and no separate payment will be made therefor. Where such public and private property, structures of any kind and appurtenances thereto are not shown on the Plans and when, in the opinion of the Engineer, removal or relocation and reconstruction is necessary to avoid interference with the work, payment therefor will be made as provided for extra work in Article 7.02 of the Agreement.

### **G-9.02 PROTECTION OF TREES**

All trees and shrubs shall be adequately protected by the Contractor with boxes or otherwise and, within the City of Tampa, in accordance with ordinances governing the protection of trees. No excavated materials shall be placed so as to injure such trees or shrubs. Trees or shrubs destroyed by negligence of the Contractor or his employees shall be replaced by him with new stock of similar size and age, at the proper season, and at the sole expense of the Contractor.

Beneath trees or other surface structures, where possible, pipelines may be built in short tunnels, backfilled with excavated materials, except as otherwise specified, or the trees or structures carefully supported and protected from damage.

The City may order the Contractor, for the convenience of the City, to remove trees along the line of trench excavation. If so ordered, the City will obtain any permits required for removal of trees. Such tree removal ordered shall be paid for under the appropriate Contract Items.

### **G-9.03 LAWN AREAS**

Lawn areas shall be left in as good condition as before the starting of the work. Where sod is to be removed, it shall be carefully removed and later replaced, or the area where sod has been removed shall be restored with new sod in the

manner described in the Technical Specifications section.

### **G-9.04 RESTORATION OF FENCES**

Any fence, or part thereof, that is damaged or removed during the course of the work shall be replaced or repaired by the Contractor and shall be left in as good a condition as before the starting of the work. The manner in which the fence is repaired or replaced and the materials used in such work shall be subject to the approval of the Engineer. The cost of all labor, materials, equipment, and work for the replacement or repair of any fence shall be deemed included in the appropriate Contract Item or Items, or if no specific Item is provided therefor, as part of the overhead cost of the work, and no additional payment will be made therefor.

## **SECTION 10 PROTECTION OF WORK AND PUBLIC**

### **G-10.01 TRAFFIC REGULATIONS**

The Contractor shall arrange his work to comply with Article G-6.02. The work shall be done with the least possible inconvenience to the public and to that end the work may be confined by the Engineer to one block at a time.

### **G-10.02 BARRIERS AND LIGHTS**

During the prosecution of the work, the Contractor shall put up and maintain at all times such barriers, and lights, as will effectually prevent accidents. The Contractor shall provide suitable barricades, red lights, "danger" or "caution" or "street closed" signs and watchmen at all places where the work causes obstructions to the normal traffic or constitutes in any way a hazard to the public. Such barriers and signs shall be constructed to State of Florida Department of Transportation standards and placed as recommended by the Traffic Division of the City's Department of Public Works.

No open fires will be permitted.

### **G-10.03 SMOKE PREVENTIONS**

The Contractor shall use hard coal, coke, oil or gas as fuel for equipment generating steam. A strict compliance with ordinances regulating the production and emission of smoke will be required.

### **G-10.04 NOISE**

The Contractor shall eliminate noise to as great an extent as practicable at all times. Air compressing plants shall be equipped with silencers and the exhaust of all gasoline motors or other power equipment shall be provided with mufflers. In the vicinity of hospitals and schools, special care shall be used to avoid noise or other nuisances. The Contractor shall strictly observe all local regulations and ordinances covering noise control.

Except in the event of an emergency, no work shall be done between the hours of 7:00 p.m. and 7:00 a.m., or on Sundays. If the proper and efficient prosecution of the work requires operations during the night, the written permission of the Engineer shall be obtained before starting such items of the work.

**SECTION 13  
CLEANING**

**G-10.05 ACCESS TO PUBLIC SERVICES**

Neither the materials excavated nor the materials or plant used in the construction of the work shall be so placed as to prevent free access to all fire hydrants, valves or manholes.

**G-10.06 DUST PREVENTION**

The Contractor shall prevent dust nuisance from his operations or from traffic by keeping the streets sprinkled with water at all times.

**G-10.07 PRIVATE PROPERTY**

The Contractor shall so conduct the work that no equipment, material, or debris will be placed or allowed to fall upon private property in the vicinity of the work unless he shall have obtained the owner's written consent thereto and shall have shown this consent to the Engineer.

**SECTION 11  
SLEEVES AND INSERTS**

**G-11.01 COORDINATION**

When the Contract requires the placing of conduits, saddles, boxes, cabinets, sleeves, inserts, foundation bolts, anchors, and other like work in floors, roofs, or walls of buildings and structures, they shall be promptly installed in conformity with the construction program. The Contractor who erects the floors, roofs, and walls shall facilitate such work by fully cooperating with the Contractors responsible for installing such appurtenances. The Contractor responsible for installing such appurtenances shall arrange the work in strict conformity with the construction schedule and avoid interference with the work of other contractors.

**G-11.02 OPENINGS TO BE PROVIDED**

In the event timely delivery of sleeves and other materials cannot be made and to avoid delay, the affected Contractor may arrange to have boxes or other forms set at the locations where the appurtenances are to pass through or into the floors, roofs, walls, or other work. Upon the subsequent installation of these appurtenances, the Contractor erecting the structure shall fill around them with materials as required by the Contract. The necessary expenditures incurred for the boxing out and filling in shall be borne by the Contractor or Contractors required to furnish the sleeves and inserts. Formed openings and later installation of sleeves will not be permitted at locations subject to hydrostatic pressure.

**SECTION 12  
CUTTING AND PATCHING**

**G-12.01 GENERAL**

The Contractor shall do all cutting, fitting, or patching of his portion of the work that may be required to make the several parts thereof join and coordinate in a manner satisfactory to the Engineer and in accordance with the Plans and Specifications. The work must be done by competent workmen skilled in the trade required by the restoration.

**G-13.01 DURING CONSTRUCTION**

During construction of the work, the Contractor shall, at all times, keep the site of the work and adjacent premises as free from material, debris, and rubbish as is practicable and shall remove the same from any portion of the site if, in the opinion of the Engineer, such material, debris, or rubbish constitutes a nuisance or is objectionable.

The Contractor shall remove from the site all of his surplus materials and temporary structures when no further need therefor develops.

**G-13.02 FINAL CLEANING**

At the conclusion of the work, all erection plant, tools, temporary structures and materials belonging to the Contractor shall be promptly taken away, and he shall remove and promptly dispose of all water, dirt, rubbish or any other foreign substances.

The Contractor shall thoroughly clean all equipment and materials installed by him and shall deliver such materials and equipment undamaged in a bright, clean, polished, and new appearing condition.

**SECTION 14  
MISCELLANEOUS**

**G-14.01 PROTECTION AGAINST SILTATION AND BANK EROSION**

The Contractor shall arrange his operations to minimize siltation and bank erosion on construction sites and on existing or proposed watercourses and drainage ditches.

**G-14.02 EXISTING FACILITIES**

The work shall be so conducted to maintain existing facilities in operation insofar as is possible. Work shall be scheduled to minimize bypassing during construction. Requirements and schedules of operations for maintaining existing facilities in service during construction shall be as described in the Special Provisions.

**G-14.03 USE OF CHEMICALS**

All chemicals used during project construction or furnished for project operation, whether herbicide, pesticide, disinfectant, polymer, reactant or of other classification, must show approval of either EPA or USDA. Use of all such chemicals and disposal of residues shall be in strict conformance with instructions.

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**Page 1 of 2 –DMI Payment**  
**City of Tampa – DMI Sub-(Contractors/Consultants/Suppliers) Payments**  
**(FORM MBD-30)**

[ ] Partial [ ] Final

Contract No.: \_\_\_\_\_ WO#,(if any): \_\_\_\_\_ Contract Name: \_\_\_\_\_

Contractor Name: \_\_\_\_\_ Address: \_\_\_\_\_

Federal ID: \_\_\_\_\_ Phone: \_\_\_\_\_ Fax: \_\_\_\_\_ Email: \_\_\_\_\_

GC Pay Period: \_\_\_\_\_ Payment Request/Invoice Number: \_\_\_\_\_ City Department: \_\_\_\_\_

Total Amount Requested for pay period: \$ \_\_\_\_\_ Total Contract Amount(including change orders):\$ \_\_\_\_\_

Type of Ownership - (F=Female M=Male), BF BM = African Am., HF HM = Hispanic Am., AF AM = Asian Am., NF NM = Native Am., CF CM = Caucasian S = SLBE

Type	Company Name Address Phone & Fax	Total Sub Contract Or PO Amount	Amount Paid To Date	Amount To Be Paid For This Period
Trade/Work Activity			Amount Pending Previously Reported	Sub Pay Period Ending Date
[ ]Sub [ ]Supplier				
Federal ID				
			\$	\$
			\$	\$
			\$	\$
			\$	\$
			\$	\$
			\$	\$

**(Modifying This Form or Failure to Complete and Sign May Result in Non-Compliance)**

Certification: I hereby certify that the above information is a true and accurate account of payments to sub – contractors/consultants on this contract.

Signed: \_\_\_\_\_ Name/Title: \_\_\_\_\_ Date: \_\_\_\_\_



**Page 2 of 2 – DMI Payment**  
**Instructions for completing The DMI Sub-(Contractors/Consultants/ Suppliers) Payment Form**  
**(Form MBD-30)**

This form must be submitted with all invoicing or payment requests where there has been subcontracting rendered for the pay period. If applicable, after payment has been made to the subcontractor, “Waiver and Release of Lien upon Progress Payment”, “Affidavit of Contractor in Connection with Final Payment”, or an affidavit of payment must be submitted with the amount paid for the pay period. The following will detail what data is required for this form. The instructions that follow correspond to the headings on the form required to be completed. **(Modifying or omitted information from this form may result in non-compliance).**

- **Contract No.** This is the number assigned by the City of Tampa for the bid or proposal.
- **W.O.#** If the report covers a work order number (W.O.#) for the contract, please indicate it in that space.
- **Contract Name.** This is the name of the contract assigned by the City of Tampa for the bid or proposal.
- **Contractor Name.** The name of your business.
- **Address.** The physical address of your business.
- **Federal ID.** A number assigned to a business for tax reporting purposes.
- **Phone.** Telephone number to contact business.
- **Fax.** Fax number for business.
- **Email.** Provide email address for electronic correspondence.
- **Pay Period.** Provide start and finish dates for pay period. (e.g. 05/01/13 – 05/31/13)
- **Payment Request/Invoice Number.** Provide sequence number for payment requests. (ex. Payment one, write 1 in space, payment three, write 3 in space provided.)
- **City Department.** The City of Tampa department to which the contract pertains.
- **Total Amount Requested for pay period.** Provide all dollars you are expecting to receive for the pay period.
- **Total Contract Amount (including change orders).** Provide expected total contract amount. This includes any change orders that may increase or decrease the original contract amount.
- **Signed/Name/Title/Date.** This is your certification that the information provided on the form is accurate.
- **See attached documents.** Check if you have provided any additional documentation relating to the payment data. Located at the bottom middle of the form.
- **Partial Payment.** Check if the payment period is a partial payment, not a final payment. Located at the top right of the form.
- **Final Payment.** Check if this period is the final payment period. Located at the top right of the form.

The following instructions are for information of any and all subcontractors used for the pay period.

- **(Type) of Ownership.** Indicate the Ethnicity and Gender of the owner of the subcontracting business or SLBE.
- **Trade/Work Activity.** Indicate the trade, service, or material provided by the subcontractor.
- **SubContractor/SubConsultant/Supplier.** Please indicate status of firm on this contract.
- **Federal ID.** A number assigned to a business for tax reporting purposes. This information is critical in proper identification of the subcontractor.
- **Company Name, Address, Phone & Fax.** Provide company information for verification of payments.
- **Total Subcontract Amount.** Provide total amount of subcontract for subcontractor including change orders.
- **Amount Paid To Date.** Indicate all dollars paid to date for the subcontractor.
- **Amount Pending, Previously Reported.** Indicate any amount previously reported that payments are pending.
- **Amount To Be Paid for this Period.** Provide dollar amount of dollars requested for the pay period.
- **Sub Pay Period Ending Date.** Provide date for which subcontractor invoiced performed work.

*Forms must be signed and dated or will be considered incomplete. The company authorized representative must sign and certify the information is true and accurate. Failure to sign this document or return the document unsigned can be cause for determining a company is in non-compliance of Ordinance 2008-89.*

If any additional information is required or you have any questions, you may call the Minority Business Development Office at (813) 274-5522.

0 1 2 3 4 5 6 7 8

**Sign Information**

**Building a Better Tampa**

**Downtown Riverwalk**  
*Creates a waterfront pedestrian walkway connecting the south edge of the CapTrust building with MacDill Park.*

**\$1.5 Million investment**  
 Scheduled for completion in October, 2012

**Orion Marine Construction, Inc.**

**Improvement Project**

**City of Tampa**  
 Florida

Mayor Bob Buckhorn

Project Contact:  
 Don Cermeno  
 Contract Administration  
 City of Tampa  
 Don.Cermeno@tampagov.net

For information call:  
 (813) 635-3400



**Building a Better Tampa**

**David L. Tippin Water Treatment Facility Caustic Soda Piping Improvements**

*Project provides for improvements at the David L. Tippin Water Treatment Facility to improve the reliability and safety of the Sodium Hydroxide System of the water distribution system within the facility.*

\$TBD investment  
 Scheduled for completion in TBD 2014

TBD

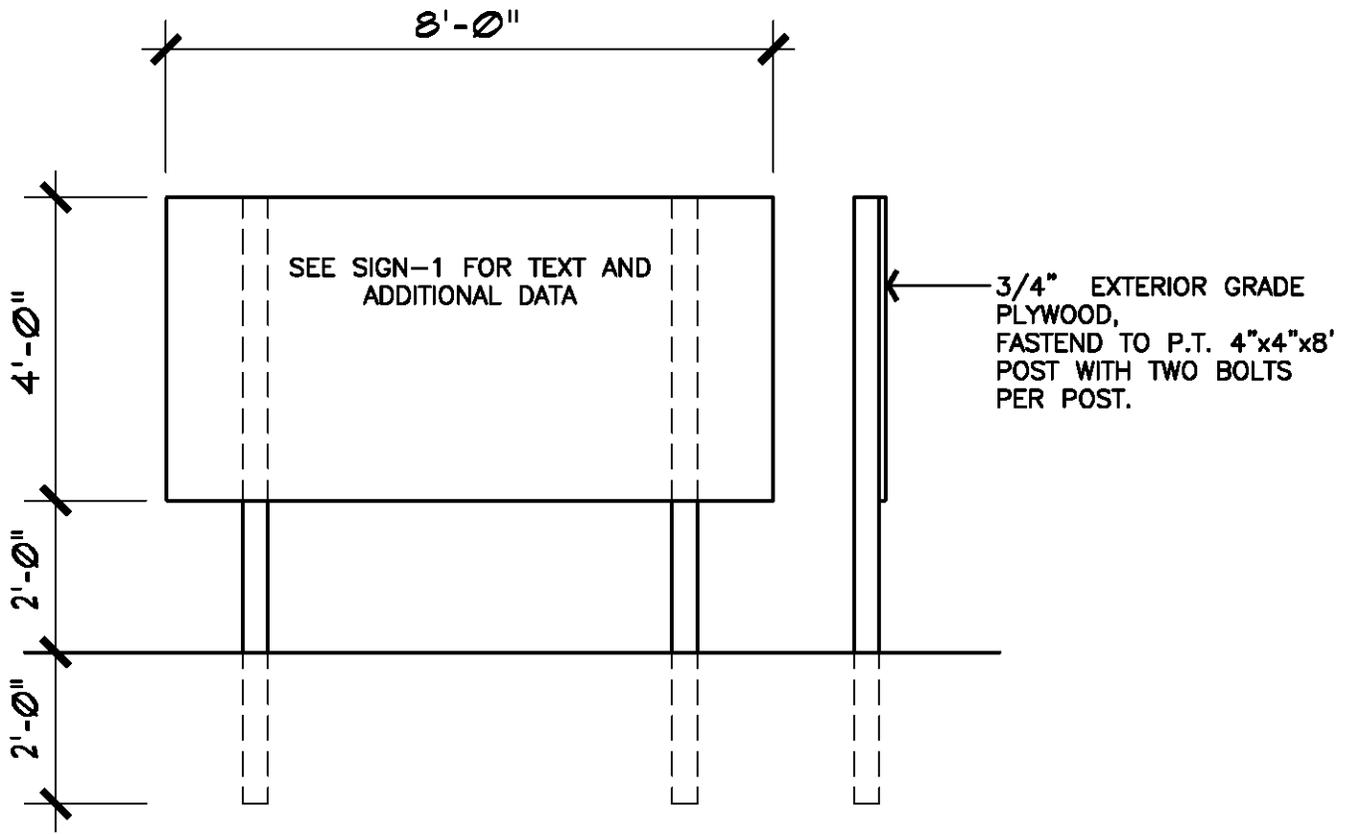
**Colors**

Blue: Sherwin Williams Naval SW6244  
 Green: Sherwin Williams Center Stage SW6920  
 White: Sherwin Williams Pure White SW7005

**SIGN EXAMPLE ONLY GRAPHIC TO BE DEVELOPED BY CONTRACTOR**

scale: 3"  3"

**Font**  
 Franklin Gothic



## SPECIFIC PROVISIONS

### SP-1 Scope and Contractor Qualifications

The Work included under these Contract Documents includes, but is not limited to the following:

Furnishing all labor, materials, equipment, services and incidentals for the improvements to the existing 1.5 million gallon (MG) elevated storage tank (EST) located south of W San Miguel Street and north of HB Plant High School in Tampa, Florida, as shown on the Drawings and specified herein. Work consists of, but not limited the following: interior and exterior tank coating and surface preparation, tank disinfection, removal and replacement of anchor bolt hardware, removal and replacement of interior and exterior ladders, removal and replacement of steel floor plate, removal and replacement of steel grating at the top of the riser, repair steel guardrail around riser openings, removal and replacement of exterior ladder platform access way, removal and replacement of roof vent, removal and replacement of concrete, inspection of cathodic protection system, replacement of exterior fence, removal and replacement of altitude valve including isolation valves, installation of dismantling joint, installation of plug valves, install temporary line stops, and miscellaneous installation and piping.. Work also includes general cleanup, start-up and testing.

The CONTRACTOR must conform to the experience and documentation requirements spelled out in the Instructions to Bidders, I-2.02,. Additionally, the CONTRACTOR must be able to demonstrate the ability and experience to construct, install, and operate the work specifically described in these Specifications and as shown on the Plans, all as required for a complete functional installation, and as described and directed by the ENGINEER.

### SP-2 Permits and Authorizations

The CONTRACTOR shall obtain any required City building permits and shall obtain other permits, licenses and authorizations required for a completed project. The CONTRACTOR is responsible for complying with all licenses, regulations, ordinances, conditions, and permits of the various authorities having jurisdiction over the work.

City building permit fees will be paid by the CITY.

The CONTRACTOR is responsible to schedule and coordinate with the CITY all required inspections and tests for all phases of work to obtain final approval.

The CITY shall be responsible for obtaining any required permits or exemptions from federal, state, regional, and local regulatory agencies.

### SP-3 Environmental Protection

The CONTRACTOR will be held liable for the violation of any and all environmental regulations. Violation citations carry civil penalties and in the event of willful violation, criminal penalties. Refer also to Tampa Agreement Article 3.09.

### SP-4 Construction Start

Construction shall not begin prior to receipt by the CITY of the required permits. If issuance of the Notice to Proceed is delayed due to permit acquisition, the contract time will be extended to suit, but no extra payment will be made to the CONTRACTOR. Refer also to Tampa Agreement Article 4.01

SP-5 Coordination and Cooperation

In performing work under this Contract, the CONTRACTOR shall coordinate work with that of any adjacent contractors for the CITY, and others, and cooperate with them in every reasonable way, to the end that there shall be the minimum practicable interference with their operations.

SP-7 Material and Equipment Approval

The CONTRACTOR shall not enter into any subcontracts, or place any order, for the furnishing of any material or equipment until he has received the ENGINEER's written approval of the material and equipment. After the CONTRACTOR has received approval of the ENGINEER, procurement shall commence.

SP-8 Working Hours

Normal working hours for this project will be from 7:30 am to 4:00 pm, Monday through Friday. If certain phases of the project require work outside of the normal hours, a minimum of 7-days notice must be provided to allow scheduling of CITY inspectors.

SP-9 Contractor's Field Office

Not required for this project

SP-10 Salvage

All existing pipe, appurtenances and equipment removed by the CONTRACTOR shall become the property of the CONTRACTOR and shall be removed from the site of the work to the CONTRACTOR's own place of disposal.

SP-11 Sequence of Operations

The CONTRACTOR shall be responsible for scheduling his work in an orderly fashion to meet the project goals described herein. The CONTRACTOR shall perform the work in a manner that will not disturb Water Department operations.

A detailed construction sequence and schedule shall be submitted to the ENGINEER for approval.

SP-12 Cleaning and Project Cleanup

The CONTRACTOR will be responsible for keeping the construction site neat and clean with debris to be removed regularly as the work progresses. Refer also to General Provisions Section 13.

SP-13 Surface Restoration

Where construction activities are conducted in existing grassed areas, the grassed areas shall be restored as specified or directed by sodding to match existing conditions, including species of grass. Surface restoration in paved areas, where applicable, shall be as shown on the Plans and in accordance with SP-30.

SP-14 Work Adjacent to Utilities

Existing utilities shall be protected as shown on the Plans, specified herein, and in accordance with the

requirements of the Agreement. All excavations for pipelines or conduits shall be hand dug with care to avoid damaging underground structures or utilities that may not be shown on the Plans. Refer also to General Provisions Section 1.03.

#### SP-15 Water and Electric Services

The CITY will provide potable water service from existing connection or fixtures. The quantity of water available is limited to that which might flow from a hose connection. Any other water required by the CONTRACTOR for the Work shall be the responsibility of the CONTRACTOR and shall be supplied from his own source of supply (tanker trucks or the like). Construction and removal of piping from existing connections and/or use of a separate construction water service shall be the responsibility of the CONTRACTOR, and such cost shall be included in the Lump Sum Price and no separate payment will be made therefore. This provision supersedes General Provisions Section G-7.01 and Supplementary General Provisions Section 2.6 pertaining to General Provisions Section G-7.01.

The CONTRACTOR may utilize power that is available at existing 120V electrical outlets located in the vicinity of the Work. Additional power, if necessary, will be the responsibility of the CONTRACTOR.

#### SP-16 Protection of Trees and Shrubs

CONTRACTOR shall take care not to disturb trees and ornamental vegetation. Should damage occur, the CITY shall be informed so that an assessment can be made. CONTRACTOR shall be responsible for remediation to the extent necessary as determined by the CITY.

#### SP-17 Facility Operations During Construction

CONTRACTOR shall perform all work in recognition of and coordination with on-going Tank Operation activities. The following shall apply:

CONTRACTOR shall perform work in a manner to minimize noise, vibration, dust and debris. CONTRACTOR shall coordinate with the CITY'S Water Production Division in advance of operations producing excessive noise and/or vibration and the use of non-designated areas in order to avoid disruption or interference with operations.

Staging areas shall be as designated, unless adjustments requested by the CONTRACTOR are pre-approved by the CITY.

Deliveries or other use of non-designated areas at the tank property shall be coordinated in advance with the CITY.

Company vehicles will be allowed on the premises provided they are properly marked.

Provide and install barricades, signage, etc. as needed to designate work areas, as well as protection for persons and existing materials to remain in, and adjacent to, work areas. Maintain protections as needed throughout the course of the Work.

Following each and every work session, leave site in clean and orderly fashion with site protections in place.

The CONTRACTOR shall have a supervisor on-site with Contract related personnel at all times. Failure to adhere to approved sequencing/layout plan and/or failure to have supervisory personnel present and/or failure to maintain appropriate site conditions will be

cause for work stoppage without additional Contract time.

#### SP-18 Testing

The cost of all testing required shall be borne by the CONTRACTOR.

#### SP-19 Monthly Schedules

In addition to the Progress Schedule required in Article 4.02 of the Agreement, the CONTRACTOR shall submit a monthly schedule with each pay estimate. Pay estimates will not be processed unless accompanied by an updated monthly schedule. The schedule shall be broken down into the following components at a minimum:

1. Procurement status
2. Demolition
3. Interior tank coating and surface preparation
4. Exterior tank coating and surface preparation
5. Removal and replacement of anchor bolt hardware
6. Removal and replacement of interior and exterior ladders
7. Removal and replacement of steel floor plate
8. Removal and replacement of steel grating at the top of the riser
9. Repair steel guardrail around riser openings
10. Removal and replacement of exterior ladder platform access way
11. Removal and replacement of roof vent
12. Removal and replacement of concrete
13. Inspection of cathodic protection system
14. Replacement of exterior fence
15. Removal and replacement of altitude valve including isolation valves
16. Installation of dismantling joint
17. Installation of plug valves
18. Install temporary line stops
19. Miscellaneous installation and piping
20. Equipment Testing and Acceptance
21. Final Restoration

In addition to the above, CONTRACTOR shall submit 3-Week Look Ahead schedules whenever Progress Meetings are held.

#### SP-20 Work Directive Change

A Work Directive Change is a written directive to the CONTRACTOR, issued on or after the date of the execution of the Agreement, and signed by the ENGINEER on behalf of the CITY, ordering an addition, deletion or revision in the work, or responding to an emergency. A Work Directive Change will not change the contract price or the time for completion, but is evidence that the parties expect that the change directed or documented by an Authorization to Proceed with Extra Work letter 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 the time for completion.

Without invalidating the Agreement, additions, deletions or revisions in the work may, at any time or from time to time, be authorized by a Change Order or a Work Directive Change. Upon receipt of any such document, the CONTRACTOR shall promptly proceed with the work involved. Refer also to Supplementary General Provisions Section G-14.08.

### SP-21 Services of Manufacturers' Representatives

The services of manufacturers' representatives shall be provided on the site as required for the supervision of installation, the adjustment and placing in satisfactory trouble-free operation of the equipment and for providing training to CITY personnel in the operation and maintenance of such equipment.

Such manufacturers' services shall be of sufficient time and shall meet the requirements of the Specifications. Additional time shall be provided if necessary.

The cost of all services of manufacturers' representatives shall be included in the total Lump Sum Price, and no separate payment will be made therefore. Refer also to General Provisions Section G-4.11.

### SP-22 Access to Work Area

The CITY's facility is a secure facility. As such, the CONTRACTOR will be obligated to comply with access rules and procedures described herein.

1. Prior to the start of on-site activities, CONTRACTOR must submit a list of employees to the CITY that the CONTRACTOR expects to assign to the project.
2. The above requirement extends to all employees of the Prime CONTRACTOR and all of the CONTRACTOR'S Sub-contractors.
3. The CONTRACTOR shall have a period of five (5) business days following the Notice to Proceed to provide the employee list(s) to the CITY. The list(s) shall include: Employee Name, photo identification, driver license number, race, sex, and date of birth.
4. The CITY reserves the right to reject any employee on the submitted list(s) (Prime and Subs) and may request that the CONTRACTOR submit additional names, if necessary.
5. During the course of the Work, the CITY will require the CONTRACTOR to submit additional names of employees, as needed, who were not on the original list and who are later proposed to work on the project.

### SP-23 Storage of Materials

The CONTRACTOR may use the tank property for storage of material and equipment at the specific location(s) identified by the CITY. Payment for use and restoration of storage areas will be included in the lump sum price and no separate payment will be made therefore.

### SP-24 Temporary Work Stoppages

The CONTRACTOR shall temporarily discontinue all construction activities from, and including, Thanksgiving Day through the following Sunday, and December 24 through January 2.

If applicable, prior to temporary work stoppages, all streets shall be restored to permit access and to allow ingress and egress by CITY vehicles. The CONTRACTOR shall maintain all streets at this condition level for the duration of the shutdown period.

All equipment, except that used for excavation and well pointing, and all materials including, but not limited to, structures, pipe, and stockpiled material shall be removed to either the CONTRACTOR's storage lot or to a location outside the project area as approved by the ENGINEER.

#### SP-25 Project Photographs and Video

Before the start of construction, the CONTRACTOR will be required to furnish color photographs and video of the Work site and surrounding area. The CONTRACTOR shall not perform any construction work until the pre-construction photographs and video are taken and submitted to the CITY.

The CONTRACTOR shall submit pre-construction photographs in digital form (JPEG) and video in digital form (MP4) to the CITY prior to the start of construction.

#### SP-26 Record Drawings

During the course of the Work, the CONTRACTOR shall maintain, at the site, a clean undamaged set of Contract Documents. The CONTRACTOR shall mark the Construction Documents on a daily basis showing the location, progress of the Work, and deviations, if any.

Drawings and specifications book shall be on-site at all times and available for review by the CITY. Failure of CONTRACTOR to have the Contract Documents and/or up to date may result in suspension of the Work until the situation is corrected. Extension of the Contract Time will not be granted for such condition.

At the conclusion of the Work, the CONTRACTOR shall provide the CITY with one complete set of Electronic Record Drawings (AutoCAD DWG) incorporating any changes (an un-marked set of construction drawings will be provided to the CONTRACTOR by the CITY for this purpose).

#### SP-27 Not Used

#### SP-28 Safety

The CONTRACTOR is solely responsible for the safety of its workers, and shall comply with all OSHA requirements pertaining to safety at the site of the Work. All costs associated with safety measures shall be included in the total lump sum contract price, and no separate payment shall be made therefore. Refer also to the Tampa Agreement Article 3.07.

The CONTRACTOR will be responsible for immediately notifying the CITY if a potential or actual event occurs that may be or is threatening the integrity of the tank and/or affecting its operations, and/or threatening the public in any way.

#### SP-29 Disposal of Debris

The CONTRACTOR shall be solely responsible for removal and proper disposal of debris to locations off of the project site.

#### SP-30 Pavement Restoration

If applicable, restoration shall conform to standard requirements of CITY and as shown on the Plans.

END OF SECTION

# Contract Pay Items

**SECTION 01010  
SUMMARY OF PROJECT**

**PART 1 - GENERAL**

**1.01 WORK COVERED BY CONTRACT DOCUMENTS**

- A. The contract is for the improvements to the existing 1.5 million gallon (MG) elevated storage tank (EST) located south of W San Miguel Street and north of HB Plant High School in Tampa, Florida, as shown on the Drawings and specified herein. Work consists of furnishing all labor, equipment, and materials for the construction of the facilities consisting of, but not limited to the equipment and structures associated with the following:
1. Exterior tank coating and surface preparation
  2. Interior tank coating and surface preparation
  3. Tank disinfection
  4. Removal and replacement of anchor bolt hardware
  5. Repair grout fill
  6. Removal and replacement of exterior column ladder
  7. Removal and replacement of exterior shell ladder
  8. Removal and replacement of interior riser column ladder
  9. Removal and replacement of interior shell ladder
  10. Removal and replacement of steel floor plate
  11. Removal and replacement of steel grating at the top of the riser
  12. Repair steel guardrail around riser openings
  13. Removal and replacement of exterior ladder platform access way
  14. Removal and replacement of roof vent
  15. Removal and replacement of approximately 777 sf of concrete
  16. Inspection of cathodic protection system
  17. Replacement of exterior fence
  18. Removal and replacement of altitude valve including isolation valves
  19. Installation of dismantling joint
  20. Installation of 24-inch plug valves
  21. Install temporary 24-inch line stops (unless the piping can be isolated)
  22. Miscellaneous installation and piping

1.02 CONTRACTOR'S USE OF PREMISES

- A. The Contractor shall assume full responsibility for the protection and safekeeping of products and materials at the job site. If additional storage or work areas are required, they shall be obtained by the Contractor at no additional cost to the Owner.

1.03 PROJECT SEQUENCE

- A. The Contractor shall establish his work sequence based on the use of crews to facilitate completion of construction and testing within the specified Contract Time, shall be 150 consecutive calendar days.

1.04 CARE AND PROTECTION OF PROPERTY

- A. The Contractor shall be responsible for the preservation of all public and private property, and shall use every precaution necessary to prevent damage thereto. If any direct or indirect damage is done to public or private property by or on account of any act, omission, neglect, or misconduct in the execution of the Work on the part of the Contractor, such property shall be restored by the Contractor, at his expense, to a condition similar or equal to that existing before the damage was done, or he shall make good the damage in other manner acceptable to the Engineer.

**PART 2 - PRODUCTS (NOT USED)**

**PART 3 - EXECUTION (NOT USED)**

**END OF SECTION**

## SECTION 01020 - ALLOWANCE

### PART 1 - GENERAL

#### RELATED DOCUMENTS

Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.

#### SUMMARY

This Section includes administrative and procedural requirements governing allowances.

Types of allowances include the following:

Contingency allowances.

#### SELECTION AND PURCHASE

#### SUBMITTALS

Submit proposals for purchase of products or systems included in allowances, in the form specified for Change Orders.

or delivery slips to show the actual quantities of materials delivered to the site for use in fulfillment of each allowance.

#### CONTINGENCY ALLOWANCES

Use the contingency allowance only as directed by the Owner.

The Contractor's related costs for services, products and equipment ordered by the Owner under the contingency allowance include delivery, installation, taxes, insurance, equipment rental, and similar costs.

Work Directive Change Orders authorizing use of funds from the contingency allowance will include Contractor's related costs and reasonable overhead and profit margins.

At Project closeout, credit unused amounts remaining in the contingency allowance to the Owner by Change Order.

### PART 2 - PRODUCTS (Not Applicable)

### PART 3 - EXECUTION

#### EXAMINATION

Examine products covered by an allowance promptly upon delivery for damage or defects.

PREPARATION

Coordinate materials and their installation for each allowance with related materials and installations to ensure that each allowance item is completely integrated and interfaced with related work.

SCHEDULE OF ALLOWANCES

Allowance No. 1: Include a contingency allowance of \$104,000 for use according to the Owner's instructions. The allowance shall be included in the Base Bid.

END OF SECTION 01020

**SECTION 02020  
DEMOLITION**

**PART 1 - GENERAL**

1.01 SCOPE OF WORK

- A. The Contractor shall furnish all labor, materials, equipment and services necessary to complete all demolition work as shown on the Drawings and as specified herein.

1.02 GENERAL DEMOLITION

- A. As related to the Work, unless otherwise directed in the Contract Documents, the Contractor shall:
1. Demolish, remove and properly dispose of all structures indicated, trash, rubbish, slabs, sidewalks and other improvements associated with the structures from the project site.
  2. Remove the materials from the demolition site in accordance with federal, state and local regulations.
  3. Disconnect and cap all utility services before demolition.
  4. Perform site clearance, grading and restoration.
  5. Complete the demolition work in accordance with the plans and these technical specifications and any special provisions included in the Contract Documents.

1.03 PROCESS STRUCTURE, PIPING, AND EQUIPMENT DEMOLITION

- A. As related to the Work, unless otherwise directed in the Contract Documents, the Contractor shall:
1. Demolish, remove, and properly dispose of the structures/piping/equipment.
  2. The Contractor shall also be responsible for providing the Owner with any and all paperwork associated with the cleaning, demolition, or disposal of the process structures/piping/equipment that is requested or required for Owner records.

1.04 PROTECTION OF PROPERTIES

- A. Debris and Mud
1. The Contractor shall be responsible for removing any demolition debris or mud from any street, alley or right-of-way resulting from the execution of the demolition work. Any cost incurred by Owner in cleaning up any litter or mud shall be charged to the Contractor and be deducted from the funds due for the work.
  2. Littering of the site shall not be permitted.
  3. All waste materials shall be promptly removed from the site.
- B. Noise

1. All construction equipment used in conjunction with this project shall be in good repair and adequately muffled. The Contractor shall comply with noise pollution ordinances of the City.

C. Dust Control

1. The Contractor shall take appropriate actions to minimize atmospheric pollution. To minimize atmospheric pollution, the Owner, or his designated representative shall have the authority to require that reasonable precautions be taken to prevent particulate matter from becoming airborne. Such reasonable precautions shall include, but not limited to:
  - a. The use of water or chemical for control of dusts in the demolition of existing buildings or structures, construction operations, the grading of roads, or the clearing of land.
  - b. Covering, at all times when in motion, open-bodied trucks transporting materials likely to give rise to airborne dusts.

D. Requirements for the Reduction of Fire Hazards

1. The Contractor shall be responsible for having and maintaining the correct type and class of fire extinguisher on site. When a cutting torch or other equipment that might cause a fire is being used, a fire extinguisher shall be placed close at hand for instant use.
2. No fires of any kind will be permitted in the demolition work area.
3. No material obstructions or debris shall be placed or allowed to accumulate within fifteen feet of any fire hydrants shall be accessible at all times.
4. Debris shall not be allowed to accumulate on roofs, floors, or in areas outside of and around any structure being demolished. Excess debris and materials shall be removed from the site as the work progresses.

E. Protection of Public Utilities

1. The Contractor shall not damage existing fire hydrants, street, lights, power poles, telephone poles, fire alarm boxes, wire cables, pole guys, underground utilities or other appurtenance in the vicinity of the demolition sites. The Contractor shall pay for temporary relocation of utilities, which are relocated at the Contractor's request for his convenience.

F. Protection of Adjacent Property

1. The Contractor shall not damage or cause to be damaged any public right-of-way, structures, parking lots, drives, streets, sidewalks, utilities, lawns or any other property adjacent to project sites for demolition whether or not the property is scheduled for future demolition. The Contractor shall provide such sheeting and shoring as required to protect adjacent during demolition. Care must also be taken to prevent the spread of dust and flying particles.

G. Site Security

1. Owner assumes no responsibility for loss, theft, or damage to the work, tools, equipment, and construction. In the instance of any such loss, theft, or damage, the Contractor shall be responsible to renew, restore, replace or remedy the work, tools, equipment, and construction without additional costs to Owner.

2. The Contractor, at his own cost, may provide watchmen services and other means of site security.
3. Site parked equipment, operable machinery, and hazardous parts of the work in progress subject to mischief and accidental operation, shall be inaccessible, locked, or otherwise made inoperable when left unattended.

H. Measurements

1. Any measurements, scales and indication of volumes of materials referenced within these Specifications, plans, or pictorials are provided only as a demonstration of work to be provided by the Contractor. It is the Contractor's responsibility to field verify any and all measurements necessary for the formulation of his bid.

1.05 RISK LOSS

- A. The Contractor shall accept the site in its present condition and shall inspect the site for its character and the type of facilities to be demolished. Owner assumes no responsibility for the condition of existing buildings, structures, and other property within the demolition area, or the condition of the property before or after the solicitation of proposals. No adjustment of proposal price or allowance for any change in conditions that may occur after the execution of contract will be allowed.

1.06 PERMITS AND FEES

- A. The Contractor shall obtain all the necessary permits and pay all permit fees that may be required by City, the State of Florida, or any utility having jurisdiction in conjunction with the demolition work.

**PART 2 - PRODUCTS (NOT USED)**

**PART 3 - EXECUTION**

3.01 DEMOLITION SCHEDULE

- A. The Contractor shall be responsible for providing the Owner, or his designated representative, with a minimum of 3 weeks advance notification prior to beginning the execution of demolition of any structure.

3.02 SALVAGE OF DEMOLITION MATERIALS

- A. The Contractor shall be allowed to salvage demolition materials only from property owned by City.
- B. The Contractor may recycle demolition debris at a licensed or permitted recycling center; however, all other debris must be disposed of at a licensed or permitted disposal facility.
- C. All building materials and equipment resulting from this work shall become the property of the Contractor, and shall be removed from the premises at once. Owner reserves the right to remove salvage items for use by Owner.

3.03 DEMOLITION AND REMOVALS

- A. Structures and Equipment/Material

1. Any part of a structure, whether structural, collateral, or accessory, which has become unstable through removal of other parts, shall be removed as soon as practicable. No unstable part shall be left free-standing or inadequately braced against all reasonably possible causes of collapse at the end of the any day's work.
2. All masonry or steel under floor structures, footings, and foundations shall be completely removed from the site. The under floor areas are to be inspected and approved by the Owner, or its designated representative, before backfilling, if required, is started. The Contractor shall ensure that no under floor excavation will remain open and exposed for more than 24 hours. Failure to do so may result in re-excavation of the under floor areas at the Contractor's expense.
3. All piping to be demolished shall be completely removed from the ground and properly disposed of.
4. All electrical equipment and associated wiring, conduits, boxes, etc. currently out of service and to be removed from service shall be demolished.

#### 3.04 DISPOSAL OF DEMOLITION DEBRIS AND SOLID WASTE

- A. All materials, rubbish, and trash shall be removed from the demolition area leaving the under floor and demolition area free of debris. Any cost incurred by Owner in cleaning up such materials and debris left behind shall be deducted from funds due the Contractor under this contract.
- B. All debris and solid waste shall be delivered by the Contractor to an approved disposal facility licensed in accordance with state and/or local regulations, laws, and zoning. The Contractor shall be responsible to pay all fees for waste disposal. The Contractor shall submit to the Owner, or his designated representative copies of all disposal tickets for each structure demolished, where available, which identify the specific address of the origin of the debris associated with each ticket. The cost of all fees shall be considered incidental to the demolition.

#### 3.05 BACKFILL, GRADING, AND CLEAN UP

- A. When site conditions permit, as determined by the Owner, or his designated representative, on-site soil shall be used as backfill material. The top 9-12 inches of topsoil within the limits of construction may be stripped and stockpiled on site for use as final topsoil and grading material. If adequate topsoil is not available on site, the Contractor shall bring in enough topsoil from off-site to place a minimum 8-inch cover within the limits of construction. Excess excavation materials shall be removed from the site. Topsoil material shall not be permitted as deep fill materials. Any borrow or fill material shall be approved by the Owner, or his designated representative before and during the placing of the material. All excavations shall be backfilled with acceptable material and compacted according to the requirements of Section 02220.
- B. All additional fill material shall be of equal quality to the soil adjacent to the excavation, and free of rubble or organic matter. The Contractor shall provide for a minimum depth of 8 inches of topsoil over the excavated area. There shall be no payment for additional fill material, which shall be considered incidental to the

demolition bid price. Additional fill material shall be acceptable fill material that meets the requirements of Section 02220.

- C. The Contractor shall employ hand labor where the use of power machinery is unsafe or unable to produce a finished job. Hand labor shall also be used to clean the site of any debris.
- D. The site shall be graded to conform to all surrounding areas and shall be finished to have a uniform surface that shall not permit pooling of water. The Contractor shall grade and shape the site to drain; complete fine grading and final clean up as part of the lump sum for demolition.
- E. Before acceptance of the demolition work, the Contractor shall remove all unused material and rubbish from the site of the work, remedy any objectionable conditions the Contractor may have created on private property, and leave the right-of-way in a neat and presentable condition. The Contractor shall not make agreements that allow salvaged or unused material to remain on private property. All ground occupied by the Contractor in connection with the work shall be restored. Restoration shall include appropriate smoothing to its original condition. Final cleaning up shall be subject to approval of the Owner, or his designated representative, and in accordance with applicable regulations.

### 3.06 ELECTRIC AND GAS UTILITY DISCONNECTIONS

- A. The Contractor will coordinate utility disconnections with the utility companies.

### 3.07 SAFETY AND FENCING

- A. The Contractor shall comply with all applicable current federal, state and local safety and health regulations.
- B. The Contractor shall furnish and place a safety fence around the site of the work adequate to secure the demolition site, including any resulting debris or excavation, and to prevent pedestrian access. The fencing, including all materials, shall be considered incidental to the demolition. The safety fence shall remain in place until the demolished materials are removed from the site and all holes or excavated areas are backfilled. The safety fencing material shall remain the property of the Contractor.

### 3.08 DAILY CLEAN UP OF RIGHT-OF-WAY AND PRIVATE PROPERTY

- A. At the end of each workday, the Contractor shall clean sidewalks, streets, and tank of any debris caused by the demolition operation.

**END OF SECTION**

**SECTION 02100  
SITE PREPARATION**

**PART 1 - GENERAL**

1.01 SCOPE OF WORK

- A. This Section covers clearing, grubbing, and stripping within the limits of the Utility Corridor as shown on the Drawings, complete as specified herein.
- B. The Contractor's attention is directed to any soil erosion and sediment control ordinances in force. The Contractor shall comply with all applicable sections of these ordinances and install protective measures such as silt fences, hay bales or other erosion and sediment control devices prior to beginning the clearing and grubbing.

**PART 2 - PRODUCTS (NOT USED)**

**PART 3 - EXECUTION**

3.01 CLEARING

- A. The surface of the ground, for the area to be cleared and grubbed shall be completely cleared of all timber, brush, stumps, roots, grass, weeds, rubbish, and all other objectionable obstructions resting on or protruding through the surface of the ground. Where construction necessitates the removal of trees, the Contractor shall obtain all required permits. Clearing operations shall be conducted so as to prevent damage to existing structures and installations, and to those under construction, and so as to provide for the safety of employees and others.
- B. As determined by the Owner or Engineer, where excavation, tree removal, stripping or trimming may result in damage to existing trees, shrubs or bushes, the Contractor shall employ a licensed tree surgeon/service to oversee the work and provide protection of the trees. The tree surgeon/service shall submit a detailed plan of action to the Owner prior to any work.

3.02 GRUBBING

- A. Grubbing shall consist of the complete removal of all stumps, roots larger than 1-1/2 inches in diameter, matted roots, brush, timber, logs, and any other organic or metallic debris not suitable for foundation purposes which are resting on, under or protruding through the surface of the ground; removal shall be to a depth of 18-inches below the subgrade. All depressions excavated below the original ground surface for or by the removal of such objects, shall be refilled with suitable materials and compacted to a density conforming to the surrounding ground surface.

3.03 STRIPPING

- A. Topsoil shall be stockpiled as directed by the Owner. Stockpiled topsoil shall be protected until it is placed as specified. The Contractor shall dispose of any topsoil remaining after all work is in place, unless directed otherwise by the Owner.

3.04 DISPOSAL OF CLEARED AND GRUBBED MATERIAL

- A. The Contractor shall dispose of all material and debris from the clearing and grubbing operation by hauling such material and debris away to an approved landfill.

Disposal by burning and burial will not be permitted. The cost of disposal (including hauling) of cleared and grubbed material and debris shall be considered a subsidiary obligation of the Contractor; the cost of which shall be included in the Contract Price.

3.05 PRESERVATION OF TREES

- A. Those trees which are designated for preservation shall be carefully protected from damage. The Contractor shall erect barricades, guards, and enclosures as required for the protection of the trees during all construction operations.

3.06 PRESERVATION OF DEVELOPED PRIVATE PROPERTY

- A. The Contractor shall exercise extreme care to avoid unnecessary disturbance of developed private property as applicable. Trees, shrubbery, gardens, lawns, and other landscaping, which in the opinion of the Owner or Engineer must be removed, shall be replaced and replanted to restore the area to the condition existing prior to construction; such work shall be at no additional cost to the Owner.
- B. All soil preservation procedures and replanting operations shall be under the supervision of a nursery representative experienced in such operations.
- C. Improvements to the land such as fences, walls, outbuildings, and other structures which of necessity must be removed, shall be replaced with equal quality materials and workmanship at no additional cost to the Owner.
- D. The Contractor shall clean up and restore the construction site/areas adjacent to developed private property immediately after construction is completed.

3.07 PRESERVATION OF PUBLIC PROPERTY

- A. The appropriate portions of Paragraphs 3.05, 3.06, and 3.07 of this Section shall apply to the preservation and restoration of public lands, parks, rights-of-way, easements, and all other damaged areas.

**END OF SECTION**

**SECTION 02140  
DEWATERING**

**PART 1 - GENERAL**

1.01 DESCRIPTION

- A. Scope of Work: The Work to be performed under this section shall include furnishing all equipment and labor necessary to remove storm or subsurface waters from excavation areas and disposal of same in accordance with the requirements set forth, as shown on the Drawings and as stated in the respective geotechnical report if furnished under separate cover.
- B. Dewatering Discharge Permit: The Contractor shall be responsible for permitting the discharge of dewatering effluent to surface water, or sanitary sewer, if needed for this project. The Contractor shall also be responsible for the sampling and testing of groundwater and dewatering effluent as necessary to meet the permit requirements and verify compliance. The Contractor shall provide the Owner with its plan for operating the dewatering system within 10 working days after notice to proceed, including information regarding the Contractor's plans to discharge dewatering effluent, if applicable. The Contractor shall be responsible for operation of the dewatering system in a manner that allows the Contractor to obtain valid water samples for analytical testing, including control of turbidity, at the required intervals.

1.02 QUALITY ASSURANCE

- A. Disposal of dewatering water is considered a means and method of the Contractor, and must be conducted in conformance with the FDEP and Owner environmental regulations/requirements. The Contractor will retain a private firm to provide water quality testing of dewatering effluent. The testing firm will advise the Contractor where dewatering effluent may be discharged based on the results of their quality testing. Should the Contractor select to discharge that water in non-conformance with the testing firm's recommendations, the Contractor shall be solely responsible for all associated fines/actions, including reimbursement of any fines levied against the City or others.
- B. Any non-contaminated dewatering effluent that is going to be discharged to a surface water body requires the "Generic Permit for the Discharge of Produced Groundwater from Any Non-Contaminated Site Activity", (Chapter 62-621.300(2), FAC). [Generic Permit]

**PART 2 - PRODUCTS (NOT APPLICABLE)**

**PART 3 - EXECUTION**

3.01 DEWATERING

- A. The Contractor shall provide adequate equipment for the removal of storm or subsurface waters which may accumulate in the excavation. Within and adjacent to residential areas, all pumping equipment shall be electrically powered without the use of internal combustion engines or generators associated unless approved in writing by the Owner.
- B. If subsurface water is encountered, the Contractor shall utilize suitable equipment to adequately dewater the excavation so that it will be dry for work and pipe laying. A wellpoint system or other Engineer accepted dewatering method shall be utilized if necessary to maintain the excavation in a dry condition for preparation of the trench bottom and for pipe laying.

- C. Dry condition shall be defined as groundwater table lowered to a minimum of one (1) foot below the proposed trench bottom or trench bottom soils within 2% optimum moisture content.
- D. Dewatering by trench pumping will not be permitted if migration of fine grained natural material from bottom, side walls, or bedding material will occur.
- E. In the event that satisfactory dewatering cannot be accomplished due to subsurface conditions or where dewatering could damage existing structures, the Contractor shall obtain Owner review and approval of wet trench construction or procedure before commencing construction.
- F. Dewatering shall be conducted in such a manner as to preserve the natural undisturbed bearing capacity of the subgrade soils at proposed bottom of excavation.
- G. The Contractor shall furnish all materials and equipment and perform all work required to install and maintain the drainage systems for handling groundwater and surface water encountered during construction of structures, pipelines and compacted fills.
- H. The Contractor is responsible for control of turbidity and pH of the dewatering effluent, and is responsible for the implementation of controls and/or structures, or technology strategies, to maintain acceptable turbidity and pH levels of the effluent prior to discharge.
- I. Continuous pumping will be required as long as water levels are required to be below natural levels.

### 3.02 DISPOSAL

- A. Disposal of dewatering water is considered a means and method of the Contractor, and must be conducted in conformance with the FDEP and City environmental regulations/requirements. Contractor is responsible for acquiring all permits required to discharge the water and shall protect waterways from turbidity during the operation.
- B. No flooding of streets, roadways, driveways or private property will be permitted. If engine-driven pumps are allowed by the Owner, engines driving dewatering pumps shall be equipped with residential type mufflers.
- C. Responsibility for turbidity control to prevent off-site sedimentation remains with the contractor until infiltration to water table occurs, or until received by a wetland or surface water body.
- D. Discharge water shall be clear, with no visible soil particles. Discharge from dewatering shall be disposed of in such a manner that it will not interfere with the normal drainage of the area in which the work is being performed, create a public nuisance or form ponding. The operation shall not cause damage to any portion of the work completed, in progress, to the surface of streets or to private property. The dewatering operation shall comply with the requirements of National Pollutant Discharge Elimination System (NPDES) and other state and City regulatory agencies. Additionally, the Contractor shall obtain proper right of entry where private property will be involved.

**END OF SECTION**

**SECTION 02200  
EARTHWORK**

**PART 1 - GENERAL**

1.01 SUMMARY OF WORK

- A. This Section includes the following:
  - 1. Preparing and grading subgrades for fill areas, ponds, swales, slabs-on-grade, walks, pavements, grassed areas and landscaping.
  - 2. Subbase course for pavement areas.
- B. Related Sections: The following Sections contain requirements that relate to this Section:
  - 1. Section 01000 - General Requirements
  - 2. Section 02100 - Site Preparation
  - 3. Section 03300 - Cast-in-Place Concrete

1.02 REFERENCES

- A. Florida Department of Transportation "Standard Specifications for Road and Bridge Construction, latest edition".

1.03 DEFINITIONS

- A. Excavation consists of the removal of material encountered to subgrade elevations and the reuse or disposal of materials removed.
- B. Subgrade: The uppermost surface of an excavation or the top surface of a fill or backfill immediately below subbase, or topsoil materials.
- C. Borrow: Soil material obtained off-site when sufficient approved soil material is not available from excavations.
- D. Subbase Course: The layer placed between the subgrade and base course in a paving system.
- E. Base Course: The layer placed between the subbase and surface pavement in a paving system.
- F. Unauthorized excavation consists of removing materials beyond indicated subgrade elevations or dimensions without direction by the Engineer. Unauthorized excavation, as well as remedial work directed by the Engineer, shall be at the Contractor's expense.
- G. Structures: Footings, foundations, flow control walls slabs, tanks, curbs, mechanical and electrical appurtenances, or other man made stationary features constructed above or below ground surface.
- H. Utilities include on-site underground or aboveground pipes, conduits, ducts, cables and power poles.

#### 1.04 SUBMITTALS

- A. General: Submit the following according to the Conditions of the Contract and Division 01 Specification Sections.
  - 1. Product data for the following:
    - a. Each type of plastic warning tape.
  - 2. Samples of the following:
    - a. 20-lb samples, sealed in air-tight containers, of each proposed fill and backfill material from on-site or borrow sources.
  - 3. Test Reports: In addition to test reports required under field quality control submit the following:
    - a. Laboratory analysis of each soil material proposed for fill and backfill from on-site and borrow sources.
    - b. One optimum moisture-maximum density curve for each soil material.
    - c. Report of actual unconfined compressive strength and/or results of bearing tests of each stratum tested.

#### 1.05 QUALITY ASSURANCE

- A. Codes and Standards: Perform earthwork complying with requirements of authorities having jurisdiction.
- B. Testing and Inspection Service: The Owner will provide a qualified independent geotechnical engineering testing agency to classify proposed on-site and borrow soils to verify that soils comply with specified requirements and to perform required field and laboratory testing.
- C. Preconstruction Conference: Before commencing earthwork, the Contractor shall meet with representatives of the governing authorities, Owner, RPR, Engineer, Geotechnical Engineer, independent testing agency, and other concerned entities. Review earthwork procedures and responsibilities including testing and inspection procedures and requirements. Notify participants at least 3 working days prior to convening conference. Record discussions and agreements and furnish a copy to each participant.

#### 1.06 PROJECT CONDITIONS

- A. Existing Utilities: Do not interrupt existing utilities serving facilities occupied by the Owner or others except when permitted in writing by the utility agency owner and then only after acceptable temporary utility services have been provided.
  - 1. Provide a minimum of 48-hours' notice to the Owner, including approvals as required by the utility agency owner for any service interruption, and receive written notice to proceed by the Owner before interrupting any utility.

### **PART 2 - PRODUCTS**

#### 2.01 SOIL MATERIALS

- A. General: Provide approved borrow soil materials from off-site when approved soil materials are not available from on-site excavations.

1. Satisfactory Soil Materials: ASTM D2487 soil classification groups GW, GP, GM, SW, SP and SM; free of rock or gravel larger than 2 inches in any dimension, debris, waste, organics (muck or peat), vegetation and other deleterious materials.
2. Unsatisfactory Soil Materials: ASTM D2487 soil classification groups GC, SC, ML, MH, CL, CH, OL, OH, and PT.
3. Backfill and Fill Materials: Satisfactory soil materials.
4. Aggregate for stabilizing Subbase: Conforming to FDOT Section 911.
5. Bedding Material: Natural or crushed gravel and sand, ASTM D2940, with 100 percent passing a 1-inch sieve and not more than 8 percent passing a No. 200 sieve.
6. Impervious Fill: clayey gravel and sand mixture capable of compacting to a dense state.

## 2.02 ACCESSORIES

- A. Detectable Warning Tape: Acid- and alkali-resistant polyethylene film warning tape manufactured for marking and identifying underground utilities, 6-inches wide and 4 mils thick, continuously inscribed with a description of the utility, with metallic core encased in a protective jacket for corrosion protection, detectable by metal detector when tape is buried up to 2-feet 6 inches deep.
  1. Tape Colors: Provide tape colors to utilities as follows:
    - a. Red: Electric
    - b. Yellow: Gas, oils, steam, and dangerous materials.
    - c. Orange: Telephone and other communications.
    - d. Blue: Water Systems.
    - e. Green: Sewer systems.
- B. Non-detectable Warning Tape with 12 gauge locating wire.

## PART 3 - EXECUTION

### 3.01 PREPARATION

- A. Protect structures, utilities, pavements, and other facilities from damage caused by settlement, lateral movement, undermining, washout, and other hazards created by earthwork operations.
- B. Power poles or other utilities required to be supported and/or protected as per the governing utility owner, shall require the Contractor to coordinate with and pay for any additional measures employed beyond the Contractor's means and methods to protect the utility and shall be at no additional expense to the Owner.
- C. Protect subgrades and foundation soils against freezing temperatures or frost. Provide protective insulating materials as necessary.
- D. Provide erosion control measures including silt fences to prevent erosion or displacement of soils and discharge of soil-bearing water runoff or airborne dust to adjacent wetlands.
- E. Tree protection is specified in Section 02100, Site Preparation.

3.02 DEWATERING

- A. Dewatering shall be in accordance with Section 02140, Dewatering.
- B. Prevent surface water and subsurface or ground water from entering excavations, from ponding on prepared subgrades, and from flooding the project site and surrounding areas.
- C. Protect subgrades and foundation soils from softening and damage by rain or water accumulation.

3.03 EXCAVATION GENERAL

- A. Explosives: Do not use explosives.
- B. Unclassified Excavation: Excavation is unclassified and includes excavation to required subgrade elevations regardless of the character of materials and obstructions encountered.

3.04 STABILITY OF EXCAVATIONS

- A. General: Comply with local codes, ordinances, and requirements of agencies having jurisdiction to maintain stable excavations.

3.05 EXCAVATION FOR STRUCTURES

- A. Excavate to indicated elevations and dimensions within a tolerance of plus or minus 0.10 foot. Extend excavations a sufficient distance from structures for placing and removing concrete formwork, installing services and other construction, and for inspection.
- B. Excavations for Footings and Foundations: Do not disturb bottom of excavation. Excavate by hand to final grade just before placing concrete reinforcement. Trim bottoms to required lines and grades to leave solid base to receive other work.
- C. Excavation for Underground Tanks, Basins, and Mechanical or Electrical Appurtenances: Excavate to elevations and dimensions indicated within a tolerance of plus or minus 0.10 foot. Do not disturb bottom of excavations intended for bearing surface.

3.06 EXCAVATION FOR WALKS AND PAVEMENTS

- A. Excavate surface under pavements to indicated cross-sections, elevations and grades.

3.07 APPROVAL OF SUBGRADE

- A. Notify the RPR when excavations have reached required subgrade.
- B. When the RPR determines that unforeseen unsatisfactory soil is present, continue excavation and replace with compacted backfill or fill material as directed.
  - 1. Unforeseen additional excavation and replacement material will be paid according to the Contract provisions for changes in Work.
- C. Reconstruct subgrades damaged by freezing temperatures, frost, rain, accumulated water, or construction activities, as directed by the RPR.

### 3.08 UNAUTHORIZED EXCAVATION

- A. When unsuitable soil is encountered at the bottom of excavation (bottom of trenches, foundations, structures and pavements areas), the Engineer must be notified to assess and approve overexcavation and replacement of the unsuitable soil.
- B. Overexcavate and remove all unsuitable material to a depth and lateral extent indicated by the Engineer and replace with suitable materials, placed in 12-inch lifts when loose, compacted to the corresponding density requirements for the bottom of excavation.
- C. Fill unauthorized excavation under foundations or wall footings by extending indicated bottom elevation of concrete foundation or footing to excavation bottom, without altering required top elevation. Lean concrete fill may be used to bring elevations to proper position, when acceptable to the Engineer.
  - 1. Fill unauthorized excavations under other construction as directed by the Engineer.
- D. Where indicated widths of utility trenches are exceeded, provide stronger pipe, or special installation procedures, as necessary.

### 3.09 STORAGE OF SOIL MATERIALS

- A. Stockpile excavated materials acceptable for backfill and fill soil materials, including acceptable borrow materials. Stockpile soil materials without intermixing; ensure that soil is separated during lake excavations. Place, grade, and shape stockpiles to drain surface water. Cover to prevent wind-blown dust.
  - 1. Stockpile soil materials away from edge of excavations. Do not store within drip line of trees indicated to remain.

### 3.10 BACKFILL

- A. Backfill excavations promptly, but not before completing the following:
  - 1. Acceptance of construction below finish grade.
  - 2. Surveying locations of underground utilities for record documents.
    - a. Testing, inspection, and approval of underground utilities.
    - b. Concrete formwork removal.
    - c. Removal of trash and debris from excavation.
    - d. Removal of temporary shoring and bracing, and sheeting.
    - e. Installing permanent or temporary horizontal bracing on horizontally supported walls.

### 3.11 PROOFROLLING

- A. Proofroll and compact exposed stripped subgrade using a vibratory roller with minimum static drum weight of 4 tons and minimum impact energy of 36,000 lb, i.e., DYNAPAC CA-25 or equivalent. Dewatering may be necessary before proofrolling.
- B. Make a minimum of 10 overlapping passes in a criss-cross pattern in all building and paved areas. Compact subgrade to 95 percent modified Proctor dry density (ASTMD-15857) to a minimum depth of 2.0 feet.

### 3.12 FILL

- A. Preparation: Remove vegetation, topsoil, debris organic material (muck or peat), wet and unsatisfactory soil materials, obstructions, and deleterious materials from ground surface prior to placing fills.
  - 1. Plow strip, or break up sloped surfaces steeper than 1 vertical to 4 horizontal so fill material will bond with existing surface.
- B. Place fill material in layers to required elevations for each location listed below.
  - 1. Under grass, use satisfactory excavated or borrow material.
  - 2. Under walks and fence line slabs use subbase or base material, or satisfactory excavated or borrow material.
  - 3. Under asphalt concrete base course, use stabilized fill.
  - 4. For building pads, use satisfactory excavated or borrow soil material.

### 3.13 MOISTURE CONTROL

- A. Uniformly moisten or aerate subgrade and each subsequent fill or backfill layer before compaction to within 2 percent of optimum moisture content.
- B. Do not place backfill or fill material on surfaces that are muddy, oily frozen, or contain frost or ice.
- C. Remove and replace, or scarify and air-dry, satisfactory soil material that is too wet to compact to specified density.
  - 1. Stockpile or spread and dry the excavated wet “satisfactory soil material”.

### 3.14 COMPACTION

- A. Place backfill and fill materials in layers not more than 12-inches thick, when loose for material compacted by heavy compaction equipment, and not more than 6-inches thick, when loose for material compacted by hand-operated tampers.
- B. Place backfill and fill materials evenly on all sides of structures to required elevations. Place backfill and fill uniformly along the full length of each structure.
- C. Percentage of Maximum Dry Density Requirements: Compact soil to not less than the following percentages of maximum dry density according to ASTM D 1557: Under structures, building slabs and steps, and pavements, compact the top 12-inches below subgrade and each layer of backfill or fill material at 98 percent maximum dry density.
  - 1. Under walkways, compact top 6-inches below subgrade and each layer of backfill or fill material at 95 percent maximum dry density.
  - 2. Under lawn or unpaved areas, compact top 6-inches below subgrade and each layer of backfill or fill material to 90 percent maximum dry density.

### 3.15 GRADING

- A. General: Uniformly grade areas to a smooth surface, free from irregular surface changes. Comply with compaction requirements and grade to cross sections, lines, and elevations indicated.
  - 1. Provide a smooth transition between existing adjacent grades and new grades.

2. Cut out soft spots, fill low spots, and trim high spots to conform to required surface tolerances.
- B. Site Grading: Slope grades to direct water away from buildings and to prevent ponding. Finish subgrades to required elevations with the following tolerances:
1. Lawn or Unpaved Areas: Plus or minus 0.10 foot.
  2. Walks: Plus or minus 0.10 foot.
  3. Pavements: Plus or minus ½ inch.
- C. Grading within Building Lines: Finish subgrade to a tolerance of ½ inch when tested with a 10-foot straightedge.

### 3.16 SUBBASE COURSES

- A. Under pavements, place subbase course material on prepared subgrades. Place base course material over subbase courses to pavements.
1. Stabilize and compact subbase courses at optimum moisture content to required grades, lines, cross sections, and thickness to not less than 95 percent of ASTM D 4254 relative density. Stabilize per FDOT Specifications to a minimum Florida Bearing Value of 75 psi or limerock bearing ratio of 40.
  2. Shape subbase and base to required crown elevations and cross-slope grades.

### 3.17 FIELD QUALITY CONTROL

- A. Testing Agency Services: The Owner will provide a testing agency who will inspect and test each subgrade and each fill or backfill layer. Do not proceed until test results for previously completed work verify compliance with requirements.
1. Perform field-in-place density tests according to ASTM D 1556 (sand cone method), ASTM D 2167 (rubber balloon method), or ASTM D 2937 (drive cylinder method), as applicable.
    - a. Field in-place density tests may also be performed by the nuclear method according to ASTM D 2922, providing that calibration curves are periodically checked and adjusted to correlate to tests performed using ASTM D 1556. With each density calibration check, check the calibration curves furnished with the moisture gages according to ASTM D 3017.
    - b. When field in-place density tests are performed using nuclear methods, make calibration checks of both density and moisture gages at beginning of work, on each different type of material encountered, and at intervals as directed by the Engineer.
  2. Paved and Building Slab Areas: At subgrade and at each compacted fill and backfill layer, perform at least one field in-place density test for every 10,000 sq. ft. or less of paved area or building slab, or no further than 200 feet apart.
  3. Trench Backfill: In each compacted initial and final backfill layer, perform at least one field in-place density test for each 150 feet or less of trench, but no fewer than two tests.
- B. When testing agency reports that subgrades, fills, or backfills are below specified density, scarify and moisten or aerate, or remove and replace soil to the depth required, recompact and retest until required density is obtained.

3.18 PROTECTION

- A. Protecting Graded Areas: Protect newly graded areas from traffic, freezing, and erosion. Keep free of trash and debris.
- B. Repair and re-establish grades to specified tolerances where completed or partially completed surfaces become eroded, rutted, settled, or lose compaction due to subsequent construction operations or weather conditions.
  - 1. Scarify or remove and replace material to depth directed by the Engineer; reshape, and recompact at optimum moisture content to the required density.
- C. Settling: Where settling occurs during the Project correction period, remove finished surfacing, backfill with additional approved material, compact, and reconstruct surfacing.
  - 1. Restore appearance, quality, and condition of finished surfacing to match adjacent work, and eliminate evidence of restoration to the greatest extent possible.

3.19 DISPOSAL OR STOCKPILE OF SURPLUS AND WASTE MATERIALS

- A. Disposal: Remove surplus unsatisfactory soil and waste material, including unsatisfactory soil, trash, and debris, and legally dispose of it off the Owner's property.
- B. Stockpile: Transport surplus satisfactory soil to designated storage areas on the Owner's property. Stockpile or spread soil as directed by Engineer.

**END OF SECTION**

**SECTION 02220  
EXCAVATING, BACKFILLING, AND COMPACTING**

**PART 1 - GENERAL**

1.01 DESCRIPTION

- A. Scope of Work: The work included under this Section consists of excavating, backfilling and compacting as required for the construction of the utility system consisting of piping and appurtenances as shown on the Drawings and specified herein.
- B. Definitions:
  - 1. Maximum Density: Maximum weight in pounds per cubic foot of a specific material.
  - 2. Optimum Moisture: Percentage of water in a specific material at maximum density.
  - 3. Rock Excavation: Excavation of any hard natural substance which requires the use of explosives and/or special impact tools such as jack hammers, sledges, chisels or similar devices specifically designed for use in cutting or breaking rock, but exclusive of trench excavating machinery.
  - 4. Suitable: Suitable materials for fills shall be noncohesive, nonplastic granular local sand and shall be free from vegetation, organic material, marl, silt or muck. The Contractor shall furnish all additional fill material required.
  - 5. Unsuitable: Unsuitable materials are highly organic soil (Peat or muck) classified as A-8 in accordance with AASHTO Designation M 145.
- C. Plan For Earthwork: The Contractor shall be responsible for having determined to his satisfaction, prior to the submission of his bid, the conformation of the ground, the character and quality of the substrata, the types and quantities of materials to be encountered, the nature of the groundwater conditions, the prosecution of the work, the general and local conditions and all other matters which can in any way affect the work under this Contract. Prior to commencing the excavation, the Contractor shall submit a plan of his proposed operations to the RPR for review. The Contractor shall consider, and his plan for excavation shall reflect, the equipment and methods to be employed in the excavation. The prices established in the Proposal for the work to be done will reflect all costs pertaining to the work.

1.02 QUALITY ASSURANCE

- A. A testing laboratory employed by the Owner will make such tests as are deemed advisable. The Contractor shall schedule his work so as to permit a reasonable time for testing before placing succeeding lifts and shall keep the laboratory informed of his progress. Costs for all testing shall be paid by the Owner. However, any and all tests which have to be repeated because of the failure of the tested material to meet specification shall be paid for by the Contractor and the cost of any tests shall be deducted from payments due the Contractor.
- B. Standards:

1. OSHA 29 CFR Subpart P - Excavations and Trenches a) 1926.650, 1926.651, 1926.652.
2. OSHA 29 CFR Subpart J - a) 1910.146 for Confined Space Entry.

#### 1.03 JOB CONDITIONS

- A. Test borings and the sub-surface exploration data if previously done on the site will be made available upon request and are for the Contractor's information only.
- B. If, in the opinion of the Owner, conditions encountered during construction warrant a change in the footing elevation, or in the depth of removal of unsuitable material from that indicated on the Drawings, an adjustment will be made in the contract price, as provided in the Schedule of cost for Changes in Quantities.

#### 1.04 PROTECTION

##### A. Sheeting and Bracing:

1. Furnish, put in place, and maintain such sheeting and bracing as may be required to support the sides of excavations, to prevent any movement which could in any way diminish the width of the excavation below that necessary for proper construction, and to protect adjacent structures, power poles, etc. from undermining, and to protect workers from hazardous conditions or other damage. Such support shall consist of braced steel sheet piling, braced wood lagging and soldier beams or other accepted methods. If the Owner is of the opinion that at any points sufficient or proper supports have not been provided, he may order additional supports put in at the expense of the Contractor, and compliance with such order shall not relieve or release the Contractor from his responsibility for the sufficiency of such supports. Care shall be taken to prevent voids outside of the sheeting, but if voids are formed, they shall be immediately filled and compacted. Where soil cannot be properly compacted to fill a void, lean concrete shall be used as backfill at no additional expense to the Owner.
2. The Contractor shall construct the sheeting outside the neat lines of the foundation unless indicated otherwise to the extent he deems it desirable for his method of operation. Sheeting shall be plumb and securely braced and tied in position. Sheeting and bracing shall be adequate to withstand all pressure to which the structure or trench will be subjected. Any movement or bulging which may occur shall be corrected by the Contractor at his own expense so as to provide the necessary clearances and dimensions.
3. Where sheeting and bracing is required to support the sides of excavations for structures, the Contractor shall engage a Professional Geotechnical Engineer, registered in the State of Florida, to design the sheeting and bracing. The sheeting and bracing installed shall be in conformity with the design, and the Professional Engineer shall provide certification of this.
4. The installation of sheeting, particularly by driving or vibrating, may cause distress to existing structures. The Contractor shall evaluate the potential for such distress and, if necessary, take all precautions to prevent distress of existing structures because of sheeting installation.

5. The Contractor shall leave in place to be embedded in the backfill all sheeting and bracing not shown on the Drawings but which the Owner may direct him in writing to leave in place at any time during the progress of the work for the purpose of preventing injury to structures, utilities, or property, whether public or private. The Owner may direct that timber used for sheeting and bracing be cut off at any specified elevation.
  6. All sheeting and bracing not left in place shall be carefully removed in such a manner as not to endanger the construction or other structures, utilities, or property. All voids left or caused by withdrawal of sheeting shall be immediately refilled with sand by ramming with tools especially adapted to that purpose, or otherwise as may be directed by the Owner.
  7. The right of the Owner to order sheeting and bracing left in place shall not be construed as creating any obligation on his part to issue such orders, and his failure to exercise his right to do so shall not relieve the Contractor from liability for damages to persons or property occurring from or upon the work occasioned by negligence or otherwise, growing out of a failure on the part of the Contractor to leave in place sufficient sheeting and bracing to prevent any caving or moving of the ground.
  8. No wood sheeting is to be withdrawn if driven below mid-diameter of any pipe, and under no circumstances shall any wood sheeting be cut off at a level lower than 1 foot above the top of any pipe.
- B. Pumping and Drainage:
1. The Contractor shall at all times during construction provide and maintain proper equipment and facilities to remove all water entering excavations, and shall keep such excavations dry so as to obtain a satisfactory undisturbed subgrade foundation condition until the fills, structures or pipes to be built thereon have been completed to such extent that they will not be floated or otherwise damaged by allowing water levels to return to natural levels as stipulated in Section 02140 - Dewatering. The Contractor shall engage a Professional Geotechnical Engineer registered in the State of Florida, to design the dewatering systems for all structures. The Contractor shall submit to the Engineer for review a plan for dewatering systems prior to commencing work. The dewatering system installed shall be in conformity with the overall construction plan, and the Professional Engineer shall provide certification of this. The Professional Engineer shall be required to monitor the performance of the dewatering systems during the progress of the work and require such modifications as may be required to assure that the systems are performing satisfactorily.
  2. Dewatering shall at all times be conducted in such a manner as to preserve the undisturbed bearing capacity of the subgrade soils at proposed bottom of excavation and to preserve the integrity of adjacent structures. Well or sump installations shall be constructed with proper sand filters to prevent drawing of finer grained soil from the surrounding ground.
  3. Water entering the excavation from surface runoff shall be collected in shallow ditches around the perimeter of the excavation, drained to sumps, and pumped from the excavation to maintain a bottom free from standing water.

4. The Contractor shall take all additional precautions to prevent uplift of any structure during construction.
5. The conveying of water in open ditches or trenches will not be allowed. Permission to use any storm sewers, or drains, for water disposal purposes shall be obtained from the authority having jurisdiction. Any requirements and costs for such use shall be the responsibility of the Contractor. However, the Contractor shall not cause flooding by overloading or blocking up the flow in the drainage facilities, and he shall leave the facilities unrestricted and as clean as originally found. Any damage to facilities shall be repaired or restored as directed by the Owner or the authority having jurisdiction, at no cost to the Owner.
6. The Contractor shall prevent flotation by maintaining a positive and continuous operation of the dewatering system. The Contractor shall be fully responsible and liable for all damages which may result from failure of this system.
7. Removal of dewatering equipment shall be accomplished after the system is no longer required; the Contractor shall remove the material and equipment constituting the system.
8. The Contractor shall take all necessary precautions to preclude the accidental discharge of fuel, oil, etc. in order to prevent adverse effects on groundwater quality.

**PART 2 - PRODUCTS**

2.01 MATERIALS

A. General:

1. All fill material shall be subject to the review and acceptance of the Engineer.
2. All fill material shall be free of organic material, trash, or other objectionable material. The Contractor shall remove excess or unsuitable material from the job site.

B. Common Fill Material: Common fill shall be sand and shall not contain stones, rock, concrete or other rubble larger than two (2) inches in diameter. It shall have physical properties that allow it to be easily spread and compacted.

C. Structural Fill: Structural fill shall be reasonably well graded sand to gravelly sand having the following gradation:

<u>US Sieve Size</u>	<u>Percent Passing By Weight</u>
1 - Inches	100
No. 4	75-100
No. 40	15- 80
No. 100	0- 30
No. 200	0- 12

D. Class 1 Soils\*: Manufactured angular, granular material, 1/4 to 1 1/2 inches (6 to 4 mm) size, including materials having significance such as crushed stone or rock, broken coral, crushed slag, cinders, or crushed shells. Sieve analysis for crushed stone is given below separately.

Crushed Stone: Crushed stone shall consist of clean mineral aggregate free from clay, loam or organic matter, conforming with ASTM C33 stone size No. 89 and with particle size limits as follows:

<u>U.S. Sieve Size</u>	<u>Percent Passing By Weight</u>
1/2	100
3/8	90-100
No. 4	20- 55
No. 8	5- 30
No. 16	0- 10
No. 50	0- 5

E. Class II Soils\*\*:

1. GW: Well-graded gravel's and gravel-sand mixtures, little or no fines. Fifty (50) percent or more retained on No. 4 sieve. More than 95 percent retained on No. 200 sieve. Clean.
2. GP: Poorly graded gravels and gravel-sand mixtures, little or no fines. Fifty (50) percent or more retained on No. 4 sieve. More than 95 percent retained on No. 200 sieve. Clean.
3. SW: Well-graded sands and gravelly sands, little or no fines. More than fifty (50) percent passes No. 4 sieve. More than 95 percent retained on No. 200 sieve. Clean.
4. SP: Poorly graded sands and gravelly sands, little or no fines. More than fifty (50) percent passes No. 4 sieve. More than 95 percent retained on No. 200 sieve. Clean.

\* Soils defined as Class I materials are not defined in ASTM D2487.

\*\* In accordance with ASTM D2487, less than 5 percent pass No. 200 sieve.

F. Coarse Sand: Sand shall consist of clean mineral aggregate with particle size limits as follows:

<u>U.S. Sieve Size</u>	<u>Percent Passing By Weight</u>
3/8 inch	100
No. 10	85-100
No. 40	20- 40
No. 200	0- 12

G. Other Material: All other material, not specifically described, but required for proper completion of the work shall be selected by the Contractor and accepted by the Engineer.

### PART 3 - EXECUTION

#### 3.01 PREPARATION

A. Clearing:

1. The construction areas shall be cleared of all obstructions and vegetation including large roots and undergrowth, as required for the excavation.
2. Strip and stockpile topsoil on the site at the location to be determined by the Owner.

## 3.02 EXCAVATION

- A. General: Excavations for roadways, structures and utilities must be carefully executed in order to avoid interruption of any utility service.
- B. Excavating for Roadways/Structures/Utilities:
  - 1. Excavation shall be made to such dimensions as will give suitable room for building the foundations and the structures, for bracing and supporting, for pumping and draining, and for all other work required.
    - a. Excavation for precast or prefabricated structures shall be carried to an elevation 2 feet lower than the proposed outside bottom of the structure to provide space for the select backfill material. Prior to placing the select backfill, the excavation shall be measured by the Owner to indicate to the satisfaction of the Owner that the excavation has been carried to the proper depth and is reasonably uniform over the area to be occupied by the structure.
    - b. Excavation for structures constructed or cast in place in dewatered excavations shall be carried down to the bottom of the structure where dewatering methods are such that a dry excavation bottom is exposed and the naturally occurring material at this elevation leveled and left ready to receive construction. Material disturbed below the founding elevation in dewatered excavations shall be replaced with Class B concrete.
    - c. Footings: Cast-in-place concrete footing sides shall be formed immediately after excavation. Forming for footing sides is specified elsewhere.
  - 2. Immediately document the location, elevation, size, material type and function of all new subsurface installations, and utilities encountered during the course of construction.
  - 3. Excavation equipment operators and other concerned parties shall be familiar with subsurface obstructions as shown on the Drawings and should anticipate the encounter of unknown obstructions during the course of the work.
  - 4. Encounters with subsurface obstructions shall be hand excavated.
  - 5. Excavation and dewatering shall be accomplished by methods that preserve the undisturbed state of subgrade soils. Subgrade soils, which become soft, loose, "quick" or otherwise unsatisfactory for support of structures as a result of inadequate dewatering or other construction methods, shall be removed and replaced by crushed stone as required by the Owner at the Contractor's expense.
  - 6. The bottom of excavations shall be rendered firm and dry before placing any structure. Excavated material not suitable for backfill shall be removed from the site and disposed of by the Contractor.
  - 7. All pavements shall be cut prior to removal, with saws or approved power tools.
  - 8. Excavated material shall be stockpiled in such a manner as to prevent nuisance conditions. Surface drainage shall not be hindered.

9. All locations and elevations as required herein must be permanently documented by the Contractor, on the Record Drawings prior to the Owner's review and acceptance of the Application for Payment for that work.
10. Excavation of sewer trenches shall not be opened in advance of the laying of sewer pipe for a greater distance than that required to install the sewer pipe. In no case shall the open trench ahead of the sewer pipe exceed 25 feet. Backfill should be accomplished immediately after jointing the pipe to prevent movements. Shoring, sheeting and bracing of trench is required by Owner when necessary to prevent caving during excavation in unstable material, or to protect adjacent structure, property, workers, and the public. Maintain sheeting in place until the pipe or structure has been placed and backfilled. Shoring and sheeting shall be removed, as the backfilling is done, in a manner that will not damage the pipe or structure or permit voids in the backfill.
11. All excavation, shoring, sheeting and bracing shall conform to the requirements of Federal Register CFR 29 Part 1926-650 and 651 Excavation Standards. Also, Federal Register CFR 29 Part 1926 Construction Standards and Part 1910 General Industry Standards. The most current of these requirements shall apply.

### 3.03 DRAINAGE

- A. The Contractor shall at all times during construction provide and maintain proper equipment and facilities to remove promptly and dispose of properly all water entering excavations, and keep such excavations dry so as to obtain a satisfactory undisturbed subgrade foundation condition. The dewatering method used shall prevent disturbance of earth below grade.
- B. All water pumped or drained from the work shall be disposed of in a suitable manner without undue interference with other work, without damage to surrounding property, and in accordance with pertinent rules and regulations.
- C. No construction, including pipe laying, shall be allowed in water. No water shall be allowed to contact masonry or concrete within 24 hours after being placed. The Contractor shall constantly guard against damage due to water and take full responsibility for all damage resulting from his failure to do so.
- D. The Contractor will be required at his expense to excavate below grade and refill with crushed stone (gradation 57 or 89) or other accepted fill material if the Engineer determines that adequate dewatering has not been provided.

### 3.04 UNDERCUT

- A. If the bottom of any excavation is below that shown on the Drawings or specified because of Contractor error, convenience, or unsuitable subgrade due the Contractor's excavation methods, he shall refill to normal grade with fill at his own cost. Fill material and compaction method shall be as directed by the Owner.

### 3.05 FILL AND COMPACTION

- A. Compact and backfill excavations and construct embankment according to the following schedule. (Proctor standard shall be ASTM D-698):

#### STRUCTURES AND ROADWORK

<b><u>Area</u></b>	<b><u>Material</u></b>	<b><u>Compaction</u></b>
Beneath Structures	Structural Fill	12" lifts, compacted to 98% maximum density as determined by AASHTO T-180. Fill should not be placed over any in-place soils until those deposits have been compacted to 95% Modified Proctor.
Around Structures	Structural Fill	8" lifts, 95% of maximum density as determined by AASHTO T-180. Use light rubber-tired or vibratory plate compactors.
Beneath Paved Surfaces	Common Fill	12" lifts, 98% by maximum density as determined by AASHTO T-180 or as required by the FDOT Standards.
Open Areas	Common Fill	12" lifts, 95% by maximum density as determined by AASHTO T-180.
Right-Of-Way	Common Fill	12" lifts, 98% by maximum density as determined by AASHTO T-180.

- B. Pipe shall be laid in open trenches unless otherwise indicated on the Drawings or elsewhere in the Contract Documents.
- C. Excavations shall be backfilled to the original grade or as indicated on the Drawings. Deviation from this grade because of settling shall be corrected. Backfill operation shall be performed to comply with all rules and regulation and in such a manner that it does not create a nuisance or safety hazard.
- D. Embankments shall be constructed true to lines, grades and cross sections shown on the plans or ordered by the Owner. Embankments shall be placed in successive layers of not more than 8-inches in thickness, loose measure, for the full width of the embankment. As far as practicable, traffic over the work during the construction phase shall be distributed so as to cover the maximum surface area of each layer.
- E. If the Contractor requests approval to backfill material utilizing lifts and/or methods other than those specified herein, such request shall be in writing to the Owner. Acceptance will be considered only after the Contractor has performed tests, at the Contractor's expense, to identify the material used and density achieved throughout the backfill area utilizing the method of backfill requested. The Owner's acceptance will be in writing.
- A. The backfill material shall be placed in 6 inch layers and compacted, using mechanical compacting equipment to a dry density equal to 98% of the maximum dry density as determined by the standard proctor compaction test ASTM D698, each layer being compacted to the required density prior to placing the next layer. The Utilities Department may require the density be checked by a licensed laboratory at each manhole and at two points between as selected by the inspector, at no cost to the Owner.

**END OF SECTION**

**SECTION 02260  
FINISH GRADING**

**PART 1 - GENERAL**

1.01 SCOPE OF WORK

- A. Finish grade sub-soil.
- B. Cut out areas to receive stabilizing base course materials for paving and sidewalks.
- C. Place, finish grade and compact top soil.
- D. For areas where subsequent work by others is anticipated, the Contractor shall provide rough grading and shall maintain the area until the subsequent work is performed.

1.02 PROTECTION

- A. Prevent damage to existing fencing, trees, landscaping, natural features, benchmarks, and pavement and utility lines. Correct damage at no cost to the Owner.

**PART 2 - PRODUCTS**

2.01 MATERIALS

- A. Topsoil: Friable loam free from subsoil, roots, grass, excessive amount of weeds, stones, and foreign matter; acidity range (pH) of 5.5 to 7.5; containing a minimum of 4 percent and a maximum of 25 percent organic matter. The topsoil shall be suitable for the proposed plant growth shown on the Drawings and specified. Use topsoil stockpiles on site if conforming to these requirements. If there is not sufficient topsoil available at the project site, the Contractor shall furnish additional topsoil as required to complete the work at no additional cost to the Owner.

**PART 3 - EXECUTION**

3.01 SUB-SOIL PREPARATION

- A. Rough grade sub-soil systematically to allow for a maximum amount of natural settlement and compaction. Eliminate uneven areas and low spots. Remove debris, roots, branches, stones, etc. Remove sub-soil that has been contaminated with petroleum products.
- B. Cut out areas to sub-grade elevation, which are to receive stabilizing base for paving and sidewalks.
- C. Bring sub-soil to required levels, profiles and contours. Make changes in grade gradual. Blend slopes into level areas.
- D. Slope grade away from building a minimum of 2-inches in 10-feet unless indicated otherwise on the Drawings.

- E. Cultivate sub-grade to a depth of 3-inches, where topsoil is to be placed. Repeat cultivation in areas where equipment, used for hauling and spreading topsoil, has compacted sub-soil.

3.02 PLACING TOPSOIL

- A. Place topsoil in areas where seeding, sodding, and planting is to be performed. Place to the following minimum depths, up to finished grade elevations.
  - 1. 6-inches for seeded areas.
  - 2. 4 1/2-inches for sodded areas.
  - 3. 24-inches for shrub beds.
  - 4. 18-inches for flower beds.
- B. Use topsoils in relatively dry state. Place during dry weather.
- C. Fine grade topsoil eliminating rough and low areas to ensure positive drainage. Maintain levels, profiles and contours of sub-grades.
- D. Remove stones, roots, grass, weeds, debris, and other foreign material while spreading.
- E. Manually spread topsoil around trees, plants, and building, to prevent damage, which may be caused by grading equipment.
- F. Lightly compact placed topsoil.

3.03 SURPLUS MATERIAL

- A. Remove surplus sub-soil and topsoil from site.
- B. Leave stockpile areas and entire job site clean and raked, ready to receive landscaping.

**END OF SECTION**

## SECTION 02506 LINE STOPS

### PART 1 - GENERAL

#### 1.01 OVERVIEW

- A. Tapping and Pipe Line Plugging are mechanical methods that have been developed to permit alterations to be made to an operating pipe system without having to interrupt service. The tap method gains access, under pressure, into the system and the plugging method permits the introduction of a special tool into the system to permit isolation of a specific section of system. Isolation can be accomplished with the plugging equipment alone or in conjunction with temporary or permanent by-pass assemblies. In the case of plugging, a temporary valve will be provided by the plugging contractor and will be recovered, “under pressure” upon job completion.
1. All fittings, equipment and work will be accomplished only by those contractors that can demonstrate at least a ten (10) year history of successful application of these methods and in the sizes as specified.
- B. It is the intention of this section of the specifications to clearly outline the use of materials, methods and procedures to be employed by a contractor for the safe and successful branch connection to the existing primary pipe system while it remains in service and under pressure. The accepted process will use hot tapping as the exclusive means to perform a branch connection from the existing primary system to the new system.
- C. The plans and documents indicate the location of the existing primary pipe system and where the work is to be performed.
- D. The Contractor will be directly responsible for all aspects of the pipe alteration process “under pressure” and shall hire only pipe manufacturers or “specialty pressure contractor firms” that have a minimum of 10 years demonstrated history of performing these types of operations without service interruption. The Contractor will “clearly specify”, in the submitted bid, the name of the pressure contractor they intend to use. Pressure contractors approved for this project will be: Rangeline Tapping Services 1-800-346-5971, EA Tapping Services, or approved equal.

#### 1.02 PRELIMINARY INVESTIGATIONS

- A. Prior to the placement of material orders for this portion of the project, the Contractor will be required to obtain certain jobsite data to facilitate the proper manufacture of components needed to complete the alterations “Under Pressure”.
1. All relevant data will be submitted to the Engineer a minimum of 60 days prior to the required mobilization of the specialty fittings, equipment, and technicians to the work site.
  2. The Engineer will review the required data and return said approved documents to the Contractor within ten working days.

3. Prior to fabrication of materials required for the hot tapping process, the Contractor will determine, in the field, the actual site conditions of the pipe at the location where the work is to take place.
  - a. The Contractor, or those at the owner's direction, will safely excavate, expose, and clean the outside of the pipe (including power brushing and/or power washing) to permit the contractor to accurately circumferentially tape measure and caliper the pipe for the purpose of determining the outside diameter and ovality of the pipe to which the specialty fitting must be installed.
  - b. Should the existing pipe be encased in concrete or other protective material, the encasement will be removed down to the factory supplied pipe outside diameter or the location for the work changed to an area where the factory supplied pipe is accessible. Work with piping shall be only after approved by the Engineer and Owner.
  - c. If existing site conditions preclude the complete operation from taking place at the designated location, the Engineer is to be so advised.
  - d. Cast / Ductile Iron pipes will be circumferentially tape measured and callipered at a minimum of four points.
4. The Contractor shall be responsible for all placement of support required for this portion of the project. This will include all lateral pipe thrust restraint that will be encountered as a result of the hot tapping process. It will also include all pipe support based upon the size and weight of the equipment to be utilized.
  - a. Calculations for concrete support will be based upon site soil conditions and actual operating pressures.

## **PART 2 - PRODUCTS**

### **2.01 MATERIALS (PERMANENT FITTINGS THAT ARE TO BE ATTACHED TO THE EXISTING PIPE SYSTEM):**

- A. All fittings used under this section of the bid require shop drawings be submitted and approved by the Engineer prior to the start of fabrication.
- B. If requested, tapping contractor will provide pressure retention design calculations for the type of fitting specified and based upon the operating conditions as provided by the Owner.

### **2.02 GENERAL**

The hot tap fitting to be used for this type work shall be manufactured in two sections. The back (bottom) section will be of the full encirclement type and conform to the measured pipe outside diameter. The front (top) section will also be full encirclement type with a factory installed nozzle and flange outlet. Hot tapping saddles will be fabricated from approved carbon steel materials. The body run sections (top and bottom) shall be made of ASTM A-283 grade steel as a minimum.

Steel run sections will conform to and re-enforce the existing pipe. Fittings will have a minimum 7/8" wide recess for installation of a Buna-N rubber gasket around the hot tapping outlet. Bolts and nuts shall be 3/4" corrosion resistant alloy material (per AWWA C-111, ANSI 21.11) optional bolts and nuts shall be stainless steel 18-8 type 404. A 3/4" test outlet will be placed into the nozzle branch outlet, at the factory, for the purposes of site pressure testing after the fitting has been installed around the pipe.

2.03 SERVICE RATING: 4" TO 60" OUTLETS TO 150 PSI. HIGHER RATINGS ARE AVAILABLE BY SPECIFIC APPLICATION.

A. Body:

1. ASTM A283 grade C or ASTM A-36. Saddle plate thickness shall be in accordance with the design criteria for the entire fitting. The minimum wall thickness for saddle plates shall be 0.375". All welding of materials shall be in accordance with applicable code standards and all welds shall be stress relieved when code standards so specify. Saddle plates shall be designed to permit longitudinal bolting of the top and bottom halves around the pipe.

B. Hot Tap Nozzle:

1. Nozzles attached to the saddle plates and used for hot tapping shall be constructed of A-106 grade B steel or ASTM A-234 or A-283 steel. All welds shall be suitably stress relieved when required by code or by common practice. Nozzle thickness will be as a minimum standard steel pipe wall thickness (0.250" minimum in sizes 6" and above) and in compliance with the maximum working pressure of the system as provided by the Owner.

C. Nozzle to Pipe Sealing Gasket:

1. Shall be molded from elastomer compounds that resist compression set and are compatible with potable water in the temperature range of 32 to 140 degrees f. Buna-N rubber is recommended for use with water, salt solutions, mild acids and bases.

D. Flanges Used For Line Plugging:

1. All flanges used for line plugging will be manufactured from ASTM A-105 grade steel only. Flanges will comply with ASME B16.5 in sizes up to 12". Completion Plug locking mechanisms shall consist of ring segments or steel leaves that lock from or into the flange bore with at least 80% of bore engagement. The use of point loaded set screw type locks are strictly prohibited.

E. Completion Plugs Used For Line Plugging:

1. Shall be manufactured from steel plate ASTM A-36 grade material as a minimum. Completion plugs shall be constructed in such a manner that an "O" ring pressure activated device will permit sealing the completion plug to the flange bore thus permitting the safe recovery of the temporary valve

utilized for the line plugging operation. Locking grooves or locking leaves will be designed to meet the maximum working pressure of the system.

F. Blind Flanges:

1. Will be provided in ASTM A-181 or ASTM A-105 grade steel and will mate with the line plugging flanges listed above. Minimum blind flange thickness shall comply with AWWA C-07.

G. Flange Gaskets:

1. All gaskets will be of non-asbestos composition and will be designed to mate to the inner bore and inner bolt circle of the line plugging flange. All gaskets will be at least .125" minimum thickness.

H. Fasteners:

1. All external bolting, studs and nuts that shall become a permanent part of the fitting installation shall be Corrosion resistant, high strength, low alloy (AWWA C-111 ANSI 21.111). Optional Stainless Steel 18-8 type 304.

I. Plug:

1. Each fitting will be furnished with a factory supplied 3/4" threaded test outlet and plug attached to the hot tap nozzle.

J. Finish:

1. After completion of fabrication, all fittings shall be coated both internally and externally with a heavy coat of corrosion resistant metal primer. Optional fusion bonded epoxy coating is available and per AWWA Specification C-213 -or- AWWA approved coal tar. Coatings will be applied to 10-20 mil. thickness minimum.

K. Marking:

1. All pipe plugging fittings will be clearly marked to permit proper alignment in the field and to insure ends are properly matched when installed around the pipe. The use of paint strips and/or matched serial numbers at one end of the fitting will be required.

### **PART 3 - EXECUTION**

#### **3.01 INSTALLATION**

- A. Fitting Field Installation (General): Fitting will be installed in accordance with the manufacturer's recommendation. In no case will the fitting be retro-fitted while it is on the pipe. Any mis-match in fitting installation will require the Contractor to remove the fitting from the pipe and make Engineer and/or Owner recommended alterations.
- B. Suggested Installation Instructions: Cast Iron -or- Ductile Iron Pipe

1. Pipe Installation: The pipe will be excavated at the location indicated on the plans and specifications. Excavation will be in accordance with current O.S.H.A safety standards. Excavation will include necessary sheeting and shoring, gravel base and site de-watering. Proper pipe support and thrust restraint will be in place prior to the start of hot tapping saddle installation. The pipe will be thoroughly cleaned down to the factory supplied outside diameter. The pipe will be carefully inspected, especially at the point where the fitting “O” ring must seal to the pipe surface. Any surface pitting will be filled in with an Engineer approved epoxy or the site moved to an acceptable location.
2. Installation: The bottom half of the fitting will be placed around the pipe first and properly supported from the bottom of the pipe with wood cribbing. The top half of the fitting will have the “O” ring seal lightly lubricated with vegetable base grease and then place upon top of the pipe. Side seam draw bolts will be installed and the fitting halves will be UNIFORMLY drawn together, in a loose fashion, starting from the center and working out to each end. Once the fitting is snug to the pipe, it will be rotated with the flange in the top horizontal position to the flange in a vertical position. The flange will be plumbed using a spirit level. Once the outlet flange is plumb, the sides of the fitting should be drawn together until the “O” ring is compressed against the pipe surface. The use of a feeler gauge may be used to determine “O” ring compression.
3. Pressure Testing: A blind flange should now be attached to the fitting flange outlet and a suitable pressure test applied to check the contoured elastometric “O” ring seal. After successful pressure test, the blind flange is to be removed. It is recommended that the field pressure test not exceed 15% above actual pipe system operating conditions.
4. Concrete Encasement/Thrust Restraint: After acceptance of the pressure test, concrete support and thrust restraint should be placed around the fitting and pipe joints to properly support the pipe, including equipment weights, and to prevent lateral movement of the pipe joints when the system is altered downstream of the line stopping process. It shall be the Contractor’s responsibility to ensure that required restrained joints and adequate concrete supports are provided for the line stop installation.

### 3.02 EQUIPMENT:

#### A. General

1. All equipment utilized for the hot tapping and pipe plugging operations will be designed and manufactured to meet the maximum working pressures of the system onto which they are to be used. All equipment that will come into contact with potable water will be suitably chlorinated at the jobsite, under the supervision of the Owner and/or Engineer, prior to mounting to the valve used for hot tapping or pipe plugging.

- B. Hot tapping machinery: Will be designed and constructed in such a manner that they will withstand the pressure and mechanical forces to be encountered during the hot

tapping process. Equipment will be power operated. The machinery utilized to perform each hot tap shall have a pressure tight chamber attached to the power rotation portion of the mechanism. Shell cutter utilized for the trepanning process shall have carbide or high strength carbons steel tips to insure a smooth cut. Shell cutter will be inspected by the Contractor for sharpness prior to mounting the hot tap machine to the valve. At least one spare hot tap cutter will be on site prior to the start of the hot tap.

1. The pilot drill will also have carbide or high strength carbon steel tip and will be inspected by the Contractor. Drill will be furnished with “coupon catching” device to insure that every precaution has been taken to recover the cut out pipe section. Contractor will inspect the coupon catching devise. The use of threaded tip pilot drills that act as coupon catching devices is strictly prohibited. The Contractor shall demonstrate either by experience or by calculation that the catching mechanism is of sufficient strength to retain the weight of the cut out pipe section (coupon).
- C. Pipe Plugging Equipment (General): All equipment utilized for the pipe plugging operation will be designed and manufactured to meet the maximum working pressures of the system onto which it will to be placed. All plugging equipment will utilize a branch outlet that is smaller than the existing pipe run section. Branch outlets for pipe plugging will be in accordance with the below table:
- |                |                     |
|----------------|---------------------|
| 4” Run with    | 3” Plugging Outlet  |
| 6” Run with    | 4” Plugging Outlet  |
| 8” Run with    | 6” Plugging Outlet  |
| 10” Run with   | 8” Plugging Outlet  |
| 12” Run with   | 8” Plugging Outlet  |
| 16” - 20” Run  | 12” Plugging Outlet |
| 22” to 24” Run | 16” Plugging Outlet |
| 30” to 36” Run | 24” Plugging Outlet |
| 40” to 66” Run | 36” Plugging Outlet |
| 72” to 84” Run | 48” Plugging Outlet |
| 90” to 96” Run | 60” Plugging Outlet |
- D. All equipment will be pressure rated for a minimum 150 PSI working pressure through 60-inch size and 50 PSIG in sizes above 66 inches. The pressure ratings will include a suitable safety factor above the operating pressures in the equipment design calculations.
  - E. Temporary Pipe Plugging Control Valve (sandwich valve): This valve will be provided by the hot tapping contractor along with a certificate of pressure test, at the

factory, for the maximum pressures to be encountered while working on the pipe. All valves will have a minimum bore that permits placement and removal of the factory supplied completion plug. All temporary valves are the property of the tapping contractor and will be returned upon project completion.

- F. Pipe Plugging Machinery: The pipe plugging machinery will consist of an actuator attached to a pressure tight housing. Contained within the pressure tight housing shall be a plugging head with an elastomer seal captured between steel plates. The design and operation of the plugging head and sealing element shall meet the maximum pressures to be encountered in the water system. The sealing element shall be manufactured of elastometric material and will be non-toxic. The use of a vegetable base lubricant will be mandatory for placement of the sealing element into the pipe system.
- G. Purge/Equalization: Pipe plugging normally requires the use of an ancillary fitting for de-pressurization of the pipe system after the pipe plugging head has been placed into the system. The purge/equalization fitting is used to insure the integrity of the pipe plugging mechanism, to insure no other valves in the system might be open or not holding and to safely and in a controlled manner to de-pressurize and pump the water out of the main prior to modification. This fitting shall also require to re-introduce pressure into the pipe system after alterations are completed the pipe system pressure must be "equalized" on both sides of the plugging head to permit its removal from the system. Where ever possible, existing connections will be used for this purpose. When existing fittings are not available, then the tapping contractor will provide a completion type fitting for this purpose.

### 3.03 FIELD PROCEDURES FOR HOT TAPPING AND PLUGGING CAST IRON / DUCTILE IRON PIPE

- A. Contractor shall provide a safe work environment in accordance with current OSHA standards. Any site specific safety requirements will be outlined by the Contractor prior to equipment and technician's arrival at the jobsite.
- B. Contractor will excavate, expose and clean the outer surface of the main so that the pipe to be tapped / plugged can tape measured and callipered prior to manufacture of the required special fitting.
  - 1. Excavation company will be responsible for proper pipe support and the excavation will be in compliance with current OSHA safety standards.
  - 2. Pipe plugging fitting drawings will be prepared and submitted for approval to Engineer and Owner prior to manufacture.
- C. The Contractor will properly install the fitting in accordance with the manufacturer's recommendations and with the assistance of the contractor's personnel. After installation, the fitting will be suitably pressure tested.
  - 1. After fitting installation the Contractor will provide sufficient concrete support under and around each fitting based upon existing soil conditions, the size and weight of the equipment to be mounted to the fitting, and anticipated lateral thrust that will be placed on the fittings and pipe sections at the time of the pipe plugging operations and main line alterations. Lateral thrust restraint

is required. The Contractor will also take into consideration the lateral thrust that will be placed on the pipe and plugging fitting at the time work is to be performed downstream of the line stops. Tapping contractor will provide thrust forces on the fitting and equipment based upon operating pressures of the system.

- a. Concrete shall reach minimum cure strength as specified by the Engineer prior to the mounting of any tapping-plugging machinery. The use of concrete additives to speed the cure time will be used with the approval of the Owner.
- D. Upon acceptance of concrete support and thrust cure process, the tapping contractor will provide and install the temporary control valve on to the plugging fitting.
- E. The hot tapping machine will be mounted to the temporary control valve. The hot tap will be performed and the cut out pipe section (coupon) will be retracted into the tapping machine's pressure housing. The temporary control valve will be closed, the tapping machine de-pressurized and removed from the temporary control valve.
1. Hot tap technician will be required to furnish, to the Engineer, a written calculation for the hot tap and pipe plugging operation. That written calculation must include pilot drill travel, location of the pilot drill keeper wires in relation to the severed coupon and hot tap shell cutter travel. Hot tap machine will be provided with a positive travel measurement device and all calculations will be verified by the site engineer prior to the start of the tap. Plugging head sealing element sizing data and plugging head travel calculations will be provided in a written format. Completion plug setting calculations will also be required.
  2. Once the hot tap machine has been attached to the valve, the hot tap pilot drill will be advanced to the pipe face by hand (not by power operation). Travel calculations will be checked in relation to the previous recorded data. The drill will be retracted at least (2) two full turns off the pipe face prior to engaging the power drive. Once the pilot drill has penetrated the pipe wall, the hot tap machine will be shut down and all joints inspected for leaks. The hot tap process will be continued to the pre-determined cut completion calculation. The machine will be shut down and the cutting head retracted by hand back to the start measurement.
- F. The coupon will be removed from the hot tapping machine and the coupon will be measured for the purpose of verification of the pipe plugging sealing element.
- G. The plugging machine will be mounted to the temporary control valve.
1. The plugging sealing element will be lubricated with vegetable base grease only and prior to retraction into the pressure housing. No petroleum base grease will be permitted.
- H. The temporary control valve will be opened and the plugging head will be placed the measured and calculated distance into the main line.

The “Down Stream” plugging head will be placed into the system first. Once the line plugging head (s) is (are) seated in the main, the system will be de-pressurized downstream of the plugging head using the special purge fitting provided for that purpose, or through existing system connections.

1. De-pressurization will be in accordance with the below listed fitting sizes based upon the main size being plugged:
  - a. Main size 4” to 12” 2”
  - b. Main size 14” to 20” 3”
  - c. Main size above 24” 4” minimum
  - d. Main size above 48” 6” minimum
  
- I. Once de-pressurization is confirmed then the owner/general contractor may perform alterations to the pipe system as specified.
  
- J. Upon termination of pipe alterations, the pipe system will be re-sealed and pressure will be introduced into the section of the pipe that has been modified.
  
- K. With system pressure “equalized” on both sides of the plugging head, the plugging head will be removed from the pipe system and retracted back into the pressure housing on the plugging machine. The temporary control valve will be closed and the line plugging machine de-pressurized and removed from the temporary control valve.
  
- L. A completion machine will have the completion plug mounted to the tool holder and the completion plug “O” ring will be lubricated with a vegetable based grease. The completion machine will be installed on the temporary control valve and the valve opened.
  
- M. The completion plug will be lowered the pre-measured distance into the special flange on the line plugging fitting. The completion plug will be securely locked into position and verified locked by the hot tap field technician.
  
- N. The completion machine will be disconnected from the completion plug tool holder, the machine de-pressurized to confirm the plug is secure and holding. The completion machine will then be removed from the temporary control valve.
  
- O. The temporary control valve will be removed from the plugging fitting and a gasket and blind flange will be installed on the plugging fitting.
  
- P. The same procedures will be followed for each line plugging operation and at each site location.

### 3.04 FIELD TECHNICIAN QUALIFICATIONS

- A. Hot Tap Technician Qualifications: Hot tap technician actually operating the machinery will have, as a minimum, a (5) year continuous employment history with the hot tap contracting company. Hot Tap Company will be required to furnish employment history for this technician along with a safety and other operational training summary. In no case will a technician without proper supporting documentation and qualifications be permitted to work on the jobsite.

- B. The pre-approved Contractor for this specialized work will be Rangeline Tapping Services, 1-800-346-5971 or pre-qualified and pre-approved equal.

### 3.05 FULL ENCIRCLEMENT MECHANICAL JOINT FITTING

- A. General Description: The Hot Tap and pipe plugging fitting to be used for this type work shall be a full mechanical joint fitting with longitudinal side seam bolting and circumferential seals with backup rings. The use of fittings that rely on a seal at the nozzle-pipe junction will not be acceptable, nor will fittings that require field welding and the use of lead in the circumference ends. The hot tapping and/or pipe plugging fitting shall be of split mechanical joint design with separate end and side seam gaskets. The fitting shall be constructed of high strength steel, ASTM A-285 grade C, ASTM A-234 or ASTM A-36. Glands will be ASTM A-36. The Mechanical Joint end dimensions shall conform to AWWA Standard C-110. Split coupling designs are not acceptable. The Owner reserves the right to request fitting calculations based upon information provided at the time of bid and based upon system design and operating pressures.
1. PIPE PLUGGING SADDLE PLATES: Saddle plates shall be made of ASTM A-285 grade C or ASTM A-234 grade material. Saddle plate thickness shall be in accordance with the design criteria for the entire fitting. The minimum wall thickness for saddle plates shall be 0.375". All welding of materials shall be in accordance with applicable code standards and all welds shall be stress relieved when code standards so specify. Saddle plates shall be designed to permit longitudinal bolting of the top and bottom halves around the pipe. A gasket will be installed between both bolted halves.
  2. PIPE PLUGGING NOZZLE: Nozzles attached to the saddle plates and used for pipe plugging shall be constructed of A-106 grade B steel or ASTM A-234 steel. All weld aments will be suitably stressed relieved when required by code or by common practice. Nozzle thickness will be a minimum of standard steel pipe size or schedule 40 pipe wall thickness compliance with the maximum working pressure of the system as provided by the Owner of the system.
- B. Recommended Field Installation Procedure: After installation and pressure testing, the fitting will be grouted in the internal annular space between the pipe O.D. and the fitting I.D. Gout mixture will be non-toxic and will be installed up to the junction of the saddle plate and the outlet nozzle.

**END OF SECTION**

**SECTION 02820**  
**CHAIN LINK FENCES AND GATES**

**PART 1 - GENERAL**

**1.01 WORK INCLUDED**

- A. The work included in this Section consists of furnishing and installing an aluminum-coated steel chain link fence, nominally 6 feet high, complete with gates, and 3 strands of barbed wire to be constructed around the area indicated on the Drawings.

**1.02 QUALITY ASSURANCE**

- A. Standards of Manufacture: Standards of manufacturer shall comply with the standards of the Chain Link Fence Manufacturer's Institute for "Galvanized Steel Chain Link Fence Fabric," and as herein specified.
- B. Provide each type of steel chain link fence and gates as a complete unit produced by a single manufacturer, including necessary erection accessories, fittings and fastenings.
- C. Erector Qualifications: Minimum of 2 years experience installing similar fencing.

**1.03 SUBMITTALS**

- A. Product Data: Steel Chain Link Fences and Gates: Submit copies of manufacturer's technical data, details of fabrication, and installation instructions and procedures for steel chain link fences and gates.
- B. Certificates: Manufacturer's certification that materials meet specification requirements.
- C. Shop Drawings: Submit shop drawings for steel chain link fences and gates, including plan layout and details illustrating fence height, location and sizes of posts, rails, braces, gates and footings, hardware list and erection procedures.

**1.04 WARRANTY**

- A. Provide a five-year limited warranty against all defects in materials and/or workmanship. Defective material shall be replaced with comparable materials furnished by the manufacturer, at no cost to the owner.
- B. To ensure validation of warranty, return completed warranty registration form (included in Installation and Reference manual) to manufacturer.

**PART 2 - PRODUCTS**

**2.01 MATERIALS**

- A. Fabric: The fabric shall be aluminum coated steel chain link 72 inches high, No. 9 gauge

wire woven in a 2 inch diamond mesh. Fence top selvages shall be barbed and bottom selvages shall be knuckled. Gate top and bottom selvages shall be knuckled. The fabric shall conform to the requirements of ASTM Designation A 491. The aluminum coating shall be a minimum of 0.40 ounces per square foot of wire surface for No. 9 gauge fabric or 0.35 ounces per square foot of wire surface for No. 11 gauge. The weight of coating shall be determined by the strip test as defined in ASTM Designation A 428.

- B. Posts and Other Appurtenances: All posts and other appurtenances used in the construction of this fence shall be hot dipped galvanized, Schedule 40, ASTM A 120, with a minimum of 1.8 ounces per square foot of surface. Pipe sections shall conform to the requirements of ASTM Designation A 120.
- C. Sizes of Posts, Gate Frames and Rails:

DIMENSIONS IN THICKNESS

<u>Designation</u>	<u>Nominal Diameter</u>	<u>Outside Diameter</u>	<u>Thickness</u>	<u>Pounds Per Foot Plain Ends</u>
End, corner & pull Post	2 1/2	2.875	0.203	5.79
Gate posts (one leaf width over 13'):	6	6.625	0.280	18.97
Gate posts (one leaf width 6' to 13'):	3 1/2	4.000	0.226	9.11
Gate posts (one leaf width 6' or less):	2 1/2	2.875	0.203	5.79
Intermediate posts:	2	2.375	0.154	3.65
Gate frames:	1 1/2	1.900	0.145	2.72
Braces:	1 1/4	1.660	0.140	2.27
Top rails:	1 1/4	1.660	0.140	2.27

D. Gates:

1. Swing Gates: Gates shall be complete with latches, stops, keepers and hinges. Gate frames shall be constructed of round tubular members continuously welded at all corners or assembled with fittings. Welds shall be painted with aluminum or zinc based paint. Gate filler shall be of same fabric as specified for the fence and shall be attached securely to the gate frame at intervals not exceeding 14 inches. Hinges shall be of adequate strength for the gate and with large bearing surfaces for clamping in position. The hinges shall not twist or turn under the action of the

- gate. The gates shall be easily operable by one person. Latches, stops and keepers for all gates, with provision for padlocking, shall be provided.
- E. Top Rail: The top rail shall be provided with couplings approximately every 20 feet. Couplings are to be the outside sleeve type, at least 6-inches long.
  - F. Barbed Wire Supporting Arms: Barbed wire supporting arms shall form an angle of approximately 45° with the vertical fence and be fitted for attaching three strands of barbed wire. The top wire shall project approximately 12-inches horizontally from the fence line and the other wires shall be spaced uniformly between the top of the fence fabric and the outside strand. The barbed wire supporting arm shall be of sufficient strength to withstand a weight of 200 pounds applied at the outer strand of barbed wire. The supporting are shall provide post top protection as a combination post top cap.
  - G. Barbed Wire: Barbed wire shall consist of two aluminum coated steel strands of 12 ½ gauge wire with 14 gauge aluminum wire, 4 point bars spaced approximately 5 inches apart, complying with ASTM A 121, Class B.
  - H. Concrete: Concrete shall have a minimum compressive strength of 3,000 psi at 28 days.
  - I. Hardware: Miscellaneous hardware shall be of steel, malleable iron or ductile iron of standard design and conform to the requirements of the Chain Link Fence Manufacturer's Institute. All parts shall be galvanized except ties and clips may be of aluminum.

## PART 3 - EXECUTION

### 3.01 ARRANGEMENT

- A. Posts: Posts shall be uniformly spaced, not to exceed 10 feet on centers. Intermediate posts shall have waterproof tops which have integrally cast openings through which the top rails shall pass. Terminal posts shall consist of end, corner and pull posts.
- B. Braces: Braces shall be provided at each gate, corner, pull and end post.
- C. Top Rails: The top rails shall pass through the line post tops and form a continuous brace from end to end of each stretch of fence. The top rail shall be securely fastened to the terminal posts by heavy pressed steel brace bands and malleable end connections.
- D. Bottom Tension Wire: The tension wire shall be No. 7 gauge aluminum coated spring coil or crimped wire. Minimum weight of aluminum coating shall be 0.40 ounces per square foot of wire surface. The tension wire shall be stretched taut between terminal posts and securely fastened to each intermediate post. Tension wire shall be attached to the fence fabric with aluminum hog rings every 24 inches. Locate at bottom of fabric only where top rail is located, and at bottom and top of fabric where no top rail is furnished.
- E. Stretcher Bars: Stretcher bars shall be no less than 3/16-inch x 3/4-inch in cross section and shall have a minimum length 2 inches shorter than the fabric height. Stretcher bars shall be used for attaching the fabric to all terminal posts by threading through the fabric and being attached to the posts with 11 gauge tension bands, or other positive mechanical means, spaced at 12 inch centers. One stretcher bar shall be provided for each gate and end post and two for each corner and pull post.

- F. Ties and Clips: Fabric shall be fastened to all intermediate posts with 9 gauge tie wires, spacing not to exceed 14 inches apart. Fabric shall be tied to top rail with 9 gauge tie wires, spacing not to exceed 24 inches on centers.

### 3.02 INSTALLATION

- A. Post Setting: Line posts shall be set in holes 12 inches in diameter, 38 inches deep with 36 inch post embedment. Terminal posts shall be set in holes 15 inches diameter, 38 inches deep with 36 inch post embedment. After the post has been set and plumbed, the hole shall be filled with concrete. The exposed surface of the concrete shall be crowned to shed water.
- B. Terminal and Gate Posts: Terminals and gate posts shall be set as specified above and shall be braced to the nearest post with a galvanized horizontal brace used as a compression member and a galvanized 3/8-inch steel truss rod and truss tightener used as a tension member.
- C. Fabric: Fabric shall not be stretched until concrete footings have cured a minimum of three days. Chain link fabric shall be placed on the side designated by the Engineer and shall be stretched taut approximately 2 inches above finish grade and securely fastened to all posts. Rolls of wire fabric shall be joined by weaving a single strand into the ends of the rolls to form a continuous mesh.

**END OF SECTION**

**SECTION 02934  
SOLID SODDING**

**PART 1 - GENERAL**

1.01 DESCRIPTION

- A. Scope of Work: The work specified in this section consists of establishing a stand of grass by furnishing and placing grass sod. Included are fertilizing, watering and maintenance as required to assure a healthy stand of grass. Solid sodding shall be placed on all slopes greater than 4:1, within 10 feet of all proposed structures and in all areas where existing grass or sod (regardless of its condition) is removed or disturbed by Contractor's operation unless otherwise specified or shown on the Drawings.

1.02 SUBMITTALS

- A. A certification of sod quality by the producer shall be delivered to the Engineer ten days prior to use.

**PART 2 - PRODUCTS**

2.01 GRASS SOD

- A. Grass sod for restoration of new construction sites and/or areas disturbed by construction on existing sites shall be St. Augustine or Bahia to match the existing adjacent area and shall be well matted with grass roots. The sod shall be taken up in rectangles, preferably 12-inch by 24-inch, shall be a minimum of 2-inches in thickness and shall be live, fresh and uninjured at the time of planting.
- B. It shall be reasonably free of weeds and other grasses and shall have a soil mat of sufficient thickness adhering firmly to the roots to withstand all necessary handling. The sod shall be planted as soon as possible after being dug and shall be shaded and kept moist until it is planted.

2.02 FERTILIZER

- A. Commercial fertilizers shall comply with the state fertilizer laws.
- B. The numerical designations for fertilizer indicate the minimum percentages (respectively) of (1) total nitrogen, (2) available phosphoric acid and (3) water- soluble potash contained in the fertilizer.
- C. The chemical designation of the fertilizer shall be 6-6-6. At least 50 percent of the nitrogen shall be derived from organic sources. At least 50 percent of the phosphoric acid shall be from normal super phosphate or an equivalent source which will provide a minimum of two units of sulfur. The amount of sulfur shall be indicated on the quantitative analysis card attached to each bag or other container.

**PART 3 - EXECUTION**

3.01 PREPARATION OF GROUND

- A. The area over which the sod is to be placed shall be scarified or loosened to a depth and then raked smooth and free from debris. Where the soil is sufficiently loose and clean, the Owner, at his discretion, may authorize the elimination of ground preparation.

### 3.02 APPLICATION OF FERTILIZER

- A. Before applying fertilizer, the soil pH shall be brought to a range of 6.0 - 7.0.
- B. The fertilizer shall be spread uniformly over the area to be sodded at the rate of 700 pounds per acre, or 16 pounds per 1,000 square feet, by a spreading device capable of uniformly distributing the material at the specified rate. Immediately after spreading, the fertilizer shall be mixed with the soil to a depth of approximately 4-inches.
- C. On steep slopes, where the use of a machine for spreading or mixing is not practicable, the fertilizer shall be spread by hand and raked in and thoroughly mixed with the soil to a depth of approximately 2-inches.

### 3.03 PLACING SOD

- A. The sod shall be placed on the prepared surface, with edges in close contact and shall be firmly and smoothly embedded by light tamping with appropriate tools.
- B. Where sodding is used in drainage ditches, or on slopes of 4:1 or greater, the setting of the pieces shall be staggered so as to avoid a continuous seam along the line of flow. Along the edges of such staggered areas, the offsets of individual strips shall not exceed 6 inches. In order to prevent erosion caused by vertical edges at the outer limits, the outer pieces of sod shall be tamped so as to produce a featheredge effect.
- C. On slopes greater than 2:1, the Contractor shall, if necessary, prevent the sod from sliding by means of wooden pegs driven through the sod blocks into firm earth, at suitable intervals.
- D. Sod which has been cut for more than 72 hours shall not be used unless specifically authorized by the Owner after his inspection thereof. Sod which is not planted within 24 hours after cutting shall be stacked in an approved manner and maintained and properly moistened. Any pieces of sod which, after placing, show an appearance of extreme dryness shall be removed and replaced by fresh, uninjured pieces.
- E. Sodding shall not be performed when weather and soil conditions are, in the Owner's opinion, unsuitable for proper results.

### 3.04 WATERING

- A. The areas on which the sod is to be placed shall contain sufficient moisture, as determined by the Owner, for optimum results. After being placed, the sod shall be kept in a moist condition to the full depth of the rooting zone for at least 2 weeks. Thereafter, the Contractor shall apply water as needed until the sod roots and starts to grow for a minimum of 60 days (or until final acceptance, whichever is latest).

### 3.05 MAINTENANCE

- A. The Contractor shall, at his expense, maintain the sodded areas in a satisfactory condition until final acceptance of the project. Such maintenance shall include watering, mowing and repairing of any damaged areas and replacing areas in which the establishment of the grass stand does not appear to be developing satisfactorily.
- B. Replanting or repair necessary due to the Contractor's negligence, carelessness or failure to provide routine maintenance shall be at the Contractor's expense.

**END OF SECTION**

**SECTION 03300  
CAST-IN-PLACE CONCRETE**

**PART 1 - GENERAL**

1.01 SCOPE OF WORK

- A. Furnish all labor and materials required and install cast-in-place concrete complete as shown on the Drawings and as specified herein.

1.02 RELATED WORK

- A. General Requirements

1.03 SUBMITTALS

- A. Submit to the Engineer, in accordance with Section 01340, shop drawings.
- B. Test Reports
  1. Fine aggregates - sieve analysis, physical properties, and deleterious substance.
  2. Coarse aggregates - sieve analysis, physical properties, and deleterious substances.
  3. Cements - chemical analysis and physical properties for each type.
  4. Pozzolans - chemical analysis and physical properties.
  5. Proposed concrete mixes - compressive strength, slump and air content.
- C. Certifications
  1. Certify admixtures used in the same concrete mix are compatible with each other and the aggregates.
  2. Certify admixtures are suitable for use in contact with potable water after 30 days of concrete curing.
  3. Certify curing compound is suitable for use in contact with potable water after 30 days (non-toxic and free of taste or odor).

1.04 REFERENCE STANDARDS

- A. American Society for Testing and Materials (ASTM)
  1. ASTM C31 - Standard Practice for Making and Curing Concrete Test Specimens in the Field.
  2. ASTM C33 - Standard Specification for Concrete Aggregates.
  3. ASTM C39 - Standard Test Method for Compressive Strength of Cylindrical Concrete Specimens.
  4. ASTM C42 - Standard Test Method for Obtaining and Testing Drilled Cores and Sawed Beams of Concrete.
  5. ASTM C94 - Standard Specification for Ready-Mixed Concrete.
  6. ASTM C143 - Standard Test Method for Slump of Hydraulic Cement Concrete

7. ASTM C150 - Standard Specification for Portland Cement
  8. ASTM C171 - Standard Specification for Sheet Materials for Curing Concrete
  9. ASTM C173 - Standard Test Method for Air Content of Freshly Mixed Concrete by the Volumetric Method.
  10. ASTM C231 - Standard Test Method for Air Content of Freshly Mixed Concrete by the Pressure Method.
  11. ASTM C260 - Standard Specification for Air-Entraining Admixtures for Concrete.
  12. ASTM C309 - Standard Specification for Liquid Membrane-Forming Compounds for Curing Concrete.
  13. ASTM C494 - Standard Specification for Chemical Admixtures for Concrete.
  14. ASTM C618 - Standard Specification for Coal Fly Ash and Raw or Calcined Natural Pozzolan for Use as a Mineral Admixture in Concrete.
  15. ASTM C1017 - Standard Specification for Chemical Admixtures for use in Producing Flowing Concrete.
- B. American Concrete Institute (ACI).
1. ACI 304 - Guide for Measuring, Mixing, Transporting and Placing Concrete.
  2. ACI 305 - Hot Weather Concreting.
  3. ACI 306.1 - Standard Specification for Cold Weather Concreting.
  4. ACI 318 - Building Code Requirements for Structural Concrete.
  5. ACI 350 - Environmental Engineering Concrete Structures.
  6. Where reference is made to one of the above standards, the revision in effect at the time of bid opening shall apply.

#### 1.05 QUALITY ASSURANCE

- A. Reinforced concrete shall comply with ACI 318, the recommendations of ACI 350R and other stated requirements, codes and standards. The most stringent requirement of the codes, standards and this Section shall apply when conflicts exist.
- B. Only one source of cement and aggregates shall be used on any one structure. Concrete shall be uniform in color and appearance.
- C. Well in advance of placing concrete, discuss with the Engineer the sources of individual materials and batched concrete proposed for use. Discuss placement methods, waterstops and curing. Propose methods of hot and cold weather concreting as required. Prior to the placement of any concrete containing a high-range water-reducing admixture (plasticizer), the Contractor, accompanied by the plasticizer manufacturer, shall discuss the properties and techniques of batching and placing plasticized concrete.
- D. If, during the progress of the work, it is impossible to secure concrete of the required workability and strength with the materials being furnished, the Engineer may order such changes in proportions or materials, or both, as may be necessary to secure the desired properties. All changes so ordered shall be made at the Contractor's expense.

- E. If, during the progress of the work, the materials from the sources originally accepted change in characteristics, the Contractor shall, at his/her expense, make new acceptance tests of aggregates and establish new design mixes.
- F. Testing of the following materials shall be furnished by Contractor to verify conformity with this Specification Section and the stated ASTM Standards.
  - 1. Fine aggregates for conformity with ASTM C33 - sieve analysis, physical properties, and deleterious substances.
  - 2. Coarse aggregates for conformity with ASTM C33 - sieve analysis, physical properties, and deleterious substances.
  - 3. Cements for conformity with ASTM C150 - chemical analysis and physical properties.
  - 4. Pozzolans for conformity with ASTM C618 - chemical analysis and physical properties.
  - 5. Proposed concrete mix designs - compressive strength, slump and air content.
- G. Field testing and inspection services will be provided by the Owner. The cost of such work, except as specifically stated otherwise, shall be paid by the Owner. Testing of the following items shall be by the Owner to verify conformity with this Specification Section.
  - 1. Concrete placements - compressive strength (cylinders), compressive strength (cores), slump, and air content.
  - 2. Other materials or products that may come under question.
- H. All materials incorporated in the work shall conform to accepted samples.

## **PART 2 - PRODUCTS**

### 2.01 GENERAL

- A. The use of manufacturer's name and model or catalog number is for the purpose of establishing the standard of quality and general configuration desired.

### 2.02 CEMENT:

- A. U.S. made portland cement complying with ASTM C150. Air entraining cements shall not be used. Cement brand shall be subject to approval by the Engineer and one brand shall be used throughout the Work.

### 2.03 MATERIALS

- A. Materials shall comply with this Section and any applicable State or local requirements.
- B. Cement: The following cement type(s) shall be used:
- C. All Classes - Type I/II or Type II
- D. Fine Aggregate: Washed inert natural sand conforming to the requirements of ASTM C33.
- E. Coarse Aggregate: Well-graded crushed stone or washed gravel conforming to the requirements of ASTM C33. Grading requirements shall be as listed in ASTM C33 Table 2 for the specified coarse aggregate size number. Limits of Deleterious

- Substances and Physical Property Requirements shall be as listed in ASTM C33 Table 3 for severe weathering regions. Size numbers for the concrete mixes shall be as shown in Table 1 herein.
- F. Water: Potable water free from injurious amounts of oils, acids, alkalis, salts, organic matter, or other deleterious substances.
  - G. Admixtures: Admixtures shall be free of chlorides and alkalis (except for those attributable to water). When it is required to use more than one admixture in a concrete mix, the admixtures shall be from the same manufacturer. Admixtures shall be compatible with the concrete mix including other admixtures and shall be suitable for use in contact with potable water after 30 days of concrete curing.
    - 1. Air-Entraining Admixture: The admixture shall comply with ASTM C260. Proportioning and mixing shall be in accordance with manufacturer's recommendations.
    - 2. Water-Reducing Agent: The admixture shall comply with ASTM C494, Type A. Proportioning and mixing shall be in accordance with manufacturer's recommendations.
    - 3. High-Range Water-Reducer (Plasticizer): The admixture shall comply with ASTM C494, Type F and shall result in non-segregating plasticized concrete with little bleeding and with the physical properties of low water/cement ratio concrete. The treated concrete shall be capable of maintaining its plastic state in excess of 2 hours. Proportioning and mixing shall be in accordance with manufacturer's recommendations. Where walls are 14" thick or less and the wall height exceeds 12 ft a mix including a plasticizer must be used.
    - 4. Admixtures causing retarded or accelerated setting of concrete shall not be used without written approval from the Engineer. When allowed, the admixtures shall be retarding or accelerating water reducing or high range water reducing admixtures.
  - H. Pozzolan (Fly Ash): Pozzolan shall be Class C or Class F fly ash complying with ASTM C618 except the Loss on Ignition (LOI) shall be limited to 3 percent maximum.
  - I. Sheet Curing Materials. Waterproof paper, polyethylene film or white burlap-polyethylene sheeting all complying with ASTM C171.
  - J. Liquid Curing Compound. Liquid membrane-forming curing compound shall comply with the requirements of ASTM C309, Type 1-D (clear or translucent with fugitive dye) and shall contain no wax, paraffin, or oil. Curing compound shall be approved for use in contact with potable water after 30 days (non-toxic and free of taste or odor). Curing compound shall comply with Federal, State and local VOC limits.

#### 2.04 MIXES

- A. Select proportions of ingredients to meet the design strength and materials limits specified in Table 1 and to produce concrete having proper placability, durability, strength, appearance and other required properties. Proportion ingredients to produce a homogenous mixture which will readily work into corners and angles of forms and around reinforcement without permitting materials to segregate or allowing excessive free water to collect on the surface.
- B. The design mix shall be based on standard deviation data of prior mixes with essentially the same proportions of the same constituents. Acceptance of mixes based

- on standard deviation shall be based on the modification factors for standard deviation tests contained in ACI 318. The water content of the concrete mix, determined by laboratory testing, shall be based on a curve showing the relation between water cementitious ratio and 7 and 28 day compressive strengths of concrete made using the proposed materials. The curves shall be determined by four or more points, each representing an average value of at least three test specimens at each age. The curves shall have a range of values sufficient to yield the desired data, including the specified design strengths as modified below, without extrapolation. The water content of the concrete mixes to be used, as determined from the curve, shall correspond to strengths 16 percent greater than the specified design strengths. The resulting mix shall not conflict with the limiting values for maximum water cementitious ratio and net minimum cementitious content as specified in Table 1.
- C. Compression Tests: Provide test results of the proposed concrete mix or mixes to demonstrate compliance with the specified design strength requirements in conformity with the above paragraph.
  - D. Entrained air, as measured by ASTM C231, shall be as shown in Table 1.
    - 1. If the air-entraining agent proposed for use in the mix requires testing methods other than ASTM C231 to accurately determine air content, make special note of this requirement in the admixture submittal.
  - E. Slump of the concrete as measured by ASTM C143, shall be as shown in Table 1. If a high-range water-reducer (plasticizer) is used, the slump indicated shall be that measured before plasticizer is added. Plasticized concrete shall have a slump ranging from 7 to 10-in.
  - F. Proportion admixtures according to the manufacturer's recommendations. Two or more admixtures specified may be used in the same mix provided that the admixtures in combination retain full efficiency and have no deleterious effect on the concrete or on the properties of each other.

**TABLE 1**  
**CONCRETE MIX REQUIREMENTS**

Class	Design Strength (1)	Cement (2)	Fine Aggregate (2)	Coarse Aggregate (3)	Cementitious Content (4)
A	2500	C150 Type II	C33	57	440 min.
B	3000	C150 Type II	C33	57	480 min.
C	4000	C150 Type II	C33	57	560 min.
D	5000	C150 Type II	C33	57	600 min.

Class	W/Cm Ratio (5)	Fly Ash	AE Range (6)	WR (7)	HRWR (8)	Slump Range Inches
A	0.62 max.	--	3.5 to 5	Yes	*	1-4
B	0.54 max.	--	3.5 to 5	Yes	*	1-3
C	0.44 max.	25% max	3.5 to 5	Yes	*	3-5
D	0.40 max.	--	3.5 to 5	Yes	*	3-5

**NOTES:**

- (1) Minimum compressive strength in psi at 28 days
  - (2) ASTM designation
  - (3) Size Number in ASTM C33
  - (4) Cementitious content in lbs/cu yd
  - (5) W/Cm is Water-Cementitious ratio by weight
  - (6) AE is percent air-entrainment
  - (7) WR is water-reducer admixture
  - (8) HRWR is high-range water-reducer admixture
- \* HRWR used at contractor's option except where walls are 14" thick or less and the wall height exceeds 12 ft a mix including a plasticizer must be used.

**PART 3 - EXECUTION****3.01 MEASURING MATERIALS**

- A. Concrete shall be composed of portland cement, fine aggregate, coarse aggregate, water and admixtures as specified and shall be produced by a plant acceptable to the

- Engineer. All constituents, including admixtures, shall be batched at the plant except a high-range water-reducer may also be added in the field.
- B. Measure materials for batching concrete by weighing in conformity with and within the tolerances given in ASTM C94 except as otherwise specified. Scales shall have been certified by the local Sealer of Weights and Measures within 1 year of use.
  - C. Measure the amount of free water in fine aggregates within 0.3 percent with a moisture meter. Compensate for varying moisture contents of fine aggregates. Record the number of gallons of water as-batched on printed batching tickets.
  - D. Admixtures shall be dispensed either manually using calibrated containers or measuring tanks, or by means of an automatic dispenser approved by the manufacturer of the specific admixture.
    - 1. Charge air-entraining and chemical admixtures into the mixer as a solution using an automatic dispenser or similar metering device.
    - 2. Inject multiple admixtures separately during the batching sequence.

### 3.02 MIXING AND TRANSPORTING

- A. Batch plants shall have a current NRMCA Certification or equal.
- B. Concrete shall be ready-mixed concrete produced by equipment acceptable to the Engineer. No hand-mixing will be permitted. Clean each transit mix truck drum and reverse drum rotation before the truck proceeds under the batching plant. Equip each transit-mix truck with a continuous, nonreversible, revolution counter showing the number of revolutions at mixing speeds.
- C. Ready-mix concrete shall be transported to the site in watertight agitator or mixer trucks loaded not in excess of their rated capacities as stated on the name plate.
- D. Keep the water tank valve on each transit truck locked at all times. Any addition of water above the appropriate W/Cm ratio must be directed by the Engineer. Added water shall be incorporated by additional mixing of at least 35 revolutions. All added water shall be metered and the amount of water added shall be shown on each delivery ticket.
- E. All central plant and rolling stock equipment and methods shall comply with ACI 318 and ASTM C94.
- F. Select equipment of size and design to ensure continuous flow of concrete at the delivery end. Metal or metal-lined non-aluminum discharge chutes shall be used and shall have slopes not exceeding 1 vertical to 2 horizontal and not less than 1 vertical to 3 horizontal. Chutes more than 20-ft long and chutes not meeting slope requirements may be used if concrete is discharged into a hopper before distribution.
- G. Retempering (mixing with or without additional cement, aggregate, or water) of concrete or mortar which has reached initial set will not be permitted.
- H. Handle concrete from mixer to placement as quickly as practicable while providing concrete of required quality in the placement area. Dispatch trucks from the batching plant so they arrive at the work site just before the concrete is required, thus avoiding excessive mixing of concrete while waiting or delays in placing successive layers of concrete in the forms.
- I. Furnish a delivery ticket for ready mixed concrete to the Engineer as each truck arrives. Each ticket shall provide a printed record of the weight of cement and each

aggregate as batched individually. Use the type of indicator that returns for zero punch or returns to zero after a batch is discharged. Clearly indicate the weight of fine and coarse aggregate, cement and water in each batch, the quantity delivered, the time any water is added, and the numerical sequence of the delivery. Show the time of day batched and time of discharge from the truck. Indicate the number of revolutions of the truck mixer.

J. Temperature and Mixing Time Control

1. In cold weather, do not allow the as-mixed temperature of the concrete and concrete temperatures at the time of placement in the forms to drop below 40 degrees F.
2. If water or aggregate has been heated, combine water with aggregate in the mixer before cement is added. Do not add cement to mixtures of water and aggregate when the temperature of the mixture is greater than 90 degrees F.
3. In hot weather, cool ingredients before mixing to maintain temperature of the concrete below the maximum placing temperature of 90 degrees F. If necessary, substitute well-crushed ice for all or part of the mixing water.
4. The maximum time interval between the addition of mixing water and/or cement to the batch and the placing of concrete in the forms shall not exceed the values shown in Table 2.

TABLE 2

MAXIMUM TIME TO DISCHARGE OF CONCRETE

<u>Air or Concrete Temperature (whichever is higher)</u>	<u>Maximum Time</u>
80 to 90 Degree F (27 to 32 Degree C).....	45 minutes
70 to 79 Degree F (21 to 26 Degree C).....	60 minutes
40 to 69 Degree F (5 to 20 Degree C).....	90 minutes

3.03 CONCRETE APPEARANCE

- A. Concrete mix showing either poor cohesion or poor coating of the coarse aggregate with paste shall be remixed. If this does not correct the condition, the concrete shall be rejected. If the slump is within the allowable limit, but excessive bleeding, poor workability, or poor finishability are observed, changes in the concrete mix shall be obtained only by adjusting one or more of the following:
  1. The gradation of aggregate.
  2. The proportion of fine and coarse aggregate.
  3. The percentage of entrained air, within the allowable limits.
- B. Concrete for the work shall provide a homogeneous structure which, when hardened, will have the required strength, durability and appearance. Mixtures and workmanship shall be such that concrete surfaces, when exposed, will require no finishing. When concrete surfaces are stripped, the concrete, when viewed in good

lighting from 10-ft away, shall be pleasing in appearance, and at 20-ft shall show no visible defects.

### 3.04 PLACING AND COMPACTING

#### A. Placing

1. Verify that all formwork completely encloses concrete to be placed and is securely braced prior to concrete placement. Remove excess water, dirt and other foreign materials from forms. Confirm that reinforcement and other embedded items are securely in place. Have a competent workman at the location of the placement who can assure that reinforcing steel and embedded items remain in designated locations while concrete is being placed. Sprinkle semi-porous subgrades or forms to eliminate suction of water from the mix. Seal extremely porous subgrades in an approved manner.
2. Deposit concrete as near its final position as possible to avoid segregation due to rehandling or flowing. Place concrete continuously at a rate which ensures the concrete is being integrated with fresh plastic concrete. Do not deposit concrete which has partially hardened or has been contaminated by foreign materials or on concrete which has hardened sufficiently to cause formation of seams or planes of weakness within the section. If the section cannot be placed continuously, place construction joints as specified or as approved.
3. Pumping of concrete will be permitted. Use a mix design and aggregate sizes suitable for pumping and submit for approval.
4. Remove temporary spreaders from forms when the spreader is no longer useful. Temporary spreaders may remain embedded in concrete only when made of galvanized metal or concrete and if prior approval has been obtained.
5. Do not place concrete for supported elements until concrete previously placed in the supporting element (columns, slabs and/or walls) has reached adequate strength.
6. Where surface mortar is to form the base of a finish, especially surfaces designated to be painted, work coarse aggregate back from forms with a suitable tool to bring the full surface of the mortar against the form. Prevent the formation of excessive surface voids.
7. Formed Concrete
  - a. Place concrete in forms using tremie tubes and taking care to prevent segregation. Bottom of tremie tubes shall preferably be in contact with the concrete already placed. Do not permit concrete to drop freely more than 4-ft. Place concrete for walls in 12 to 24-in lifts, keeping the surface horizontal. If plasticized concrete is used, the maximum lift thickness may be increased to 7-ft.

#### B. Compacting

1. Consolidate concrete by vibration, puddling, spading, rodding or forking so that concrete is thoroughly worked around reinforcement, embedded items and openings and into corners of forms. Puddling, spading, etc, shall be continuously performed along with vibration of the placement to eliminate air or stone pockets which may cause honeycombing, pitting or planes of weakness.

2. All concrete shall be placed and compacted with mechanical vibrators. The number, type and size of the units shall be approved by the Engineer in advance of placing operations. No concrete shall be ordered until sufficient approved vibrators (including standby units in working order) are on the job.
3. A minimum frequency of 7000 rpm is required for mechanical vibrators. Insert vibrators and withdraw at points from 18 to 30-in apart. At each insertion, vibrate sufficiently to consolidate concrete, generally from 5 to 15 seconds. Do not over vibrate so as to segregate. Keep a spare vibrator on the site during concrete placing operations.
4. Concrete Slabs: Concrete for slabs less than 8-in thick shall be consolidated with vibrating screeds; slabs 8 to 12-in thick shall be compacted with internal vibrators and (optionally) with vibrating screeds. Vibrators shall always be placed into concrete vertically and shall not be laid horizontally or laid over.
5. Amount of Vibration: Vibrators are to be used to consolidate properly placed concrete but shall not be used to move or transport concrete in the forms. Vibration shall continue until:
  - a. Frequency returns to normal.
  - b. Surface appears liquefied, flattened and glistening.
  - c. Trapped air ceases to rise.
  - d. Coarse aggregate has blended into surface, but has not disappeared.

### 3.05 CURING AND PROTECTION

- A. Protect all concrete work against injury from the elements and defacements of any nature during construction operations.
- B. Curing Methods
  1. Curing Methods for Concrete Surfaces: Cure concrete to retain moisture and maintain specified temperature at the surface for a minimum of 7 days after placement. Curing methods to be used are as follows:
    - a. Water Curing: Keep entire concrete surface wet by ponding, continuous sprinkling or covered with saturated burlap. Begin wet cure as soon as concrete attains an initial set and maintain wet cure 24 hours a day.
    - b. Sheet Material Curing: Cover entire surface with sheet material. Securely anchor sheeting to prevent wind and air from lifting the sheeting or entrapping air under the sheet. Place and secure sheet as soon as initial concrete set occurs.
  2. Specified applications of curing methods.
    - a. Formed Surfaces: None if nonabsorbent forms are left in place 7 days. Water cure if absorbent forms are used. Sheet cured or liquid membrane cured if forms are removed prior to 7 days. Exposed horizontal surfaces of formed walls or columns shall be water cured for 7 days or until next placement of concrete is made.
    - b. Surfaces of Concrete Joints: Water cured or sheet material cured.
- C. Finished surfaces and slabs shall be protected from the direct rays of the sun to prevent checking and crazing.
- D. Cold Weather Concreting:

1. "Cold weather" is defined as a period when for more than 3 successive days, the average daily outdoor temperature drops below 40 degrees F. The average daily temperature shall be calculated as the average of the highest and the lowest temperature during the period from midnight to midnight.
2. Cold weather concreting shall conform to ACI 306.1 and the additional requirements specified herein. Temperatures at the concrete placement shall be recorded at 12 hour intervals (minimum).

E. Hot Weather Concreting

1. "Hot weather" is defined as any combination of high air temperatures, low relative humidity and wind velocity which produces a rate of evaporation estimated in accordance with ACI 305R, approaching or exceeding 0.2 lbs/sqft/hr).
2. Concrete placed during hot weather, shall be batched, delivered, placed, cured and protected in compliance with the recommendations of ACI 305R and the additional requirements specified herein.
  - a. Temperature of concrete being placed shall not exceed 90 degrees F and every effort shall be made to maintain a uniform concrete mix temperature below this level. The temperature of the concrete shall be such that it will cause no difficulties from loss of slump, flash set or cold joints.
  - b. All necessary precautions shall be taken to promptly deliver, to promptly place the concrete upon its arrival at the job and to provide vibration immediately after placement.
  - c. The RPR may direct the Contractor to immediately cover plastic concrete with sheet material.
3. Discuss with the Engineer a work plan describing the methods and procedures proposed to use for concrete placement and curing during hot weather periods. Hot weather concreting shall not begin until the work plan is acceptable to the Engineer.

3.06 INSPECTION AND FIELD TESTING

- A. The batching, mixing, transporting, placing and curing of concrete shall be subject to the inspection of the RPR at all times. The Contractor shall advise the RPR of his/her readiness to proceed at least 24 hours prior to each concrete placement. The RPR will inspect the preparations for concreting including the preparation of previously placed concrete, the reinforcing steel and the alignment, cleanliness and tightness of formwork. No placement shall be made without the inspection and acceptance of the RPR.
- B. Sets of field control cylinder specimens will be taken by the testing laboratory or RPR during the progress of the work, in compliance with ASTM C31. The number of sets of concrete test cylinders taken of each class of concrete placed each day shall not be less than one set per day, nor less than one set for each 150 cu yds of concrete nor less than one set for each 5,000 sq ft of surface area for slabs or walls.
  1. A "set" of test cylinders consists of four cylinders: one to be tested at 7 days and two to be tested and their strengths averaged at 28 days. The fourth may be used for a special test at 3 days or to verify strength after 28 days if 28 day test results are low.

2. When the average 28 day compressive strength of the cylinders in any set falls below the specified design strength or below proportional minimum 7 day strengths (where proper relation between seven and 28 day strengths have been established by tests), proportions, water content, or temperature conditions shall be changed to achieve the required strengths.
- C. Cooperate in the making of tests by allowing free access to the work for the selection of samples, providing an insulated closed curing box for specimens, affording protection to the specimens against injury or loss through the operations and furnish material and labor required for the purpose of taking concrete cylinder samples. All shipping of specimens will be paid for by the Owner. Curing boxes shall be acceptable to the RPR.
  - D. Slump tests will be made in the field immediately prior to placing the concrete. Such tests shall be made in accordance with ASTM C143. If the slump is greater the specified range, the concrete shall be rejected.
  - E. Air Content: Test for air content shall be made on fresh concrete samples. Air content for concrete made of ordinary aggregates having low absorption shall be made in compliance with either the pressure method complying with ASTM C231 or by the volumetric method complying with ASTM C173.
  - F. The RPR may have cores taken from any questionable area in the concrete work such as construction joints and other locations as required for determination of concrete quality. The results of tests on such cores shall be the basis for acceptance, rejection or determining the continuation of concrete work.
  - G. Cooperate in obtaining cores by allowing free access to the work and permitting the use of ladders, scaffolding and such incidental equipment as may be required. Repair all core holes. The work of cutting and testing the cores will be at the expense of the Owner for concrete that meets the specified compressive strength. For concrete that falls below the specified compressive strength, the Contractor shall pay the costs for cutting and testing the core.

### 3.07 FAILURE TO MEET REQUIREMENTS

- A. Should the strengths shown by the test specimens made and tested in compliance with the previous provisions fall below the values given in Table 1, the Engineer shall have the right to require changes in proportions outlined to apply to the remainder of the work. Furthermore, the Engineer shall have the right to require additional curing on those portions of the structure represented by the test specimens which failed. The cost of such additional curing shall be at the Contractor's expense. In the event that such additional curing does not give the strength required, as evidenced by core and/or load tests, the Engineer shall have the right to require strengthening or replacement of those portions of the structure which fail to develop the required strength. The cost of all such core borings and/or load tests and any strengthening or concrete replacement required because strengths of test specimens are below that specified, shall be entirely at the expense of the Contractor. In such cases of failure to meet strength requirements the Contractor and Engineer shall confer to determine what adjustment, if any, can be made in compliance with Sections titled "Strength" and "Failure to Meet Strength Requirements" of ASTM C94. The "purchaser" referred to in ASTM C94 is the Contractor in this Section.

- B. When the tests on control specimens of concrete fall below the specified strength, the Engineer will permit check tests for strengths to be made by means of typical cores drilled from the structure in compliance with ASTM C42 and C39. In the case of cores not indicating adequate strength, the Engineer, in addition to other recourses, may require, at the Contractor's expense, load tests on any one of the slabs, beams, piles, caps, and columns in which such concrete was used. Tests need not be made until concrete has aged 60 days.
- C. Should the strength of test cylinders fall below 60 percent of the required minimum 28 day strength, the concrete shall be rejected and shall be removed and replaced.

### 3.08 PATCHING AND REPAIRS

- A. It is the intent of this Section to require quality work including adequate forming, proper mixture and placement of concrete and curing so completed concrete surfaces will require no patching.
- B. Defective concrete and honeycombed areas as determined by the Engineer shall be repaired as specified by the Engineer.
- C. As soon as the forms have been stripped and the concrete surfaces exposed, fins and other projections shall be removed; recesses left by the removal of form ties shall be filled; and surface defects which do not impair structural strength shall be repaired. Clean all exposed concrete surfaces and adjoining work stained by leakage of concrete, to approval of the Engineer.
- D. Immediately after removal of forms remove plugs and break off metal ties. Promptly fill holes upon stripping as follows: Moisten the hole with water, followed by a 1/16-in brush coat of neat cement slurry mixed to the consistency of a heavy paste. Immediately plug the hole with a 1 to 1.5 mixture of cement and concrete sand mixed slightly damp to the touch (just short of "balling"). Hammer the grout into the hole until dense, and an excess of paste appears on the surface in the form of a spiderweb. Trowel smooth with heavy pressure. Avoid burnishing.
- E. When patching exposed surfaces the same source of cement and sand as used in the parent concrete shall be employed. Adjust color if necessary by addition of proper amounts of white cement. Rub lightly with a fine Carborundum stone at an age of 1 to 5 days if necessary to bring the surface down with the parent concrete. Exercise care to avoid damaging or staining the virgin skin of the surrounding parent concrete. Wash thoroughly to remove all rubbed matter.

### 3.09 SCHEDULE

- A. Concrete overlay slabs and pavements shall be a minimum of 3,000 psi. Walls, slabs on grade, suspended slab and beam systems, columns, grade beams and all other structural concrete, shall be a minimum of 4,000 psi.

**END OF SECTION**

**SECTION 05500**  
**MISCELLANEOUS METAL**

**PART 1 GENERAL**

1.01 SCOPE OF WORK

- A. Furnish all labor, materials, equipment and incidentals required and cut, remove, repair or otherwise modify parts of existing concrete structures or appurtenances as shown on the Drawings and as specified herein.

1.02 SUBMITTALS

- A. Submit to the Engineer, in accordance with Section 01340, shop drawings and product data showing materials of construction and details of installation for:

- 1. Shop drawings, showing sizes of members, method of assembly, anchorage and connection to other members.

- B. Samples

- 1. Submit samples as requested by the Engineer during the course of construction.

- C. Design Data

- 1. Submit manufacturer's load and deflection tables for grating.

- D. Test Reports

- 1. Certified copy of mill test reports on each aluminum proposed for use showing the physical properties and chemical analysis.

- E. Certificates

- 1. Certify that welders have been qualified under AWS, within the previous 12 months, to perform the welds required under this Section.
  - 2. The Contractor shall submit a Welding Procedure Specification (WPS) in conformance with AWS D1.1 along with welder performance qualification test records for those welds that are to be used on this project.

1.03 REFERENCE STANDARDS

- A. Aluminum Association (AA)

- 1. ABH-21 Aluminum Brazing Handbook
  - 2. ASD-1 Aluminum Standards and Data
  - 3. DAF-45 Designation System for Aluminum Finishes

4. SAA-46 Standards for Anodized Architectural Aluminum
- B. American Society for Testing and Materials (ASTM)
1. ASTM A36 – Standard Specification for Carbon Structural Steel.
  2. ASTM A48 – Standard Specification for Gray Iron Castings.
  3. ASTM A53 – Standard Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated, Welded and Seamless.
  4. ASTM A108 – Standard Specification for Steel Bars, Carbon, Cold Finished, Standard Quality.
  5. ASTM A123 – Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products.
  6. ASTM A153 – Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware.
  7. ASTM A240 – Standard Specification for Chromium and Chromium-Nickel Stainless Steel Plate, Sheet and Strip for Pressure Vessels.
  8. ASTM A276 – Standard Specification for Stainless Steel Bars and Shapes.
  9. ASTM A307 - Standard Specification for Carbon Steel Bolts and Studs, 60,000 Psi Tensile Strength.
  10. ASTM A325 - Standard Specification for Structural Bolts, Steel, Heat Treated, 120/105 ksi Minimum Tensile Strength.
  11. ASTM A366 - Standard Specification for Steel, Sheet, Carbon, Cold-Rolled, Commercial Quality.
  12. ASTM A500 - Standard Specification for Cold-Formed Welded and Seamless Carbon Steel Structural Tubing in Rounds and Shapes.
  13. ASTM A501 - Standard Specification for Hot-Formed Welded and Seamless Carbon Steel Structural Tubing.
  14. ASTM A536 - Standard Specification for Ductile Iron Castings.
  15. ASTM A570 - Standard Specification for Steel, Sheet and Strip, Carbon, Hot-Rolled, Structural Quality.
  16. ASTM B209 - Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate.
  17. ASTM B221 - Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles and Tubes.
  18. ASTM B429 - Standard Specification for Aluminum-Alloy Extruded Structural Pipe and Tube.

19. ASTM F593 – Standard Specification for Stainless Steel Bolts, Hex Caps Screws, and Studs.
  20. ASTM F1554 – Standard Specification for Anchor Bolts, Steel, 36, 55, and 105-ksi Yield Strength.
- C. American Iron and Steel Institute (AISI).
1. Specification for Structural Steel Buildings.
- D. American Welding Society (AWS)
1. AWS D1.1 - Structural Welding Code Steel.
  2. AWS D1.2 - Structural Welding Code Aluminum.
  3. AWS D1.6 - Structural Welding Code Stainless Steel.
- E. Occupational Safety and Health Administration (OSHA)
- F. 2014 Florida Building Code. (FBC)
- G. Where reference is made to one of the above standards, the revision in effect at the time of bid opening shall apply.

#### 1.04 QUALITY ASSURANCE

- A. The work of this Section shall be completely coordinated with the work of other Sections. Verify, at the site, both the dimensions and work of other trades adjoining items of work in this Section before fabrication and installation of items herein specified.
- B. Furnish to the pertinent trades all items included under this Section that are to be built into the work of other Sections.
- C. All welding shall be performed by qualified welders and shall conform to the applicable AWS welding code. Welding of steel shall conform to AWS D1.1 and welding of aluminum shall conform to AWS D1.2.

#### 1.05 DELIVERY, STORAGE AND HANDLING

- A. Deliver items to be incorporated into the work of other trades in sufficient time to be checked prior to installation.
- B. Repair items which have become damage or corroded to the satisfaction of the Engineer prior to incorporating them into the work.

### **PART 2 PRODUCTS**

#### 2.01 GENERAL

- A. The use of manufacturer's name and model or catalog number is for the purpose of establishing the standard of quality and general configuration desired.

- B. Like items of materials shall be the end products of one manufacturer in order to provide standardization for appearance, maintenance and manufacturer's service.

## 2.02 MATERIALS

- A. Unless otherwise noted, materials for miscellaneous metals shall conform to the following standards:

1. Structural Steel
  - a. W Shapes: ASTM A992, Gr.50
  - b. M Shapes: ASTM A36
  - c. S, C and MC Shapes: ASTM A36
  - d. L Shapes: ASTM A36
  - e. Plates, rods and Bars: ASTM A36
2. HSS Rectangular Shapes: ASTM A500, Grade B, 42 ksi
3. HSS Round Shapes: ASTM A500, Grade B, 35 ksi
4. Welded and Seamless Steel Pipe: ASTM A501 or ASTM A53, Type E or S, Grade B Schedule 40. Use standard malleable iron fittings, galvanized for exterior work
5. Steel Sheets: ASTM A366
6. Gray Iron Castings: ASTM A48, Class 35
7. Ductile Iron Castings: ASTM A536, Grade 65-45-12
8. Aluminum Extruded Pipe: ASTM B429, Alloy 6063 T6
9. Aluminum Extruded Shapes: ASTM B221, Alloy 6061 T6
10. Aluminum Sheet and Plate: ASTM B209, Alloy 6061 T6
11. Stainless Steel Plates, Sheets, and Structural Shapes
  - a. Exterior, Submerged  
or Industrial Use: ASTM A240, Type 316 (Type 316L for welded)
  - b. Interior and Architectural Use: ASTM A240, Type 304
12. Stainless Steel Bolts, Nuts, and Washers: ASTM A276, Type 316
13. Carbon Steel Bolts and Studs: ASTM A307, Grade A or ASTM F1154, Gr. 36 (galvanized unless noted otherwise)
14. High Strength Steel Bolts, Nuts and washers: ASTM A325 (mechanically

		Galvanized per ASTM B695, Class 50, where noted)
a.	Elevated Temperature Exposure	Type I
b.	General Application	Type I or Type II
15.	Galvanizing	ASTM A123 Zn w/0.5 Percent minimum Ni
16.	Galvanizing, hardware	ASTM A153, Zn w/0.5 percent minimum

### 2.03 ANCHORS, BOLTS AND FASTENING

- A. Furnish anchors, bolts, fasteners, etc., as necessary for installation of the work of this section or as specified for securing the work of other sections.
- B. Anchor bolt material shall be ASTM F1154, Grade 36, or ASTM A307, Grade A standard headed bolts with heavy hex nuts, Grade A washers, hot-dipped galvanized, unless noted otherwise on drawings.
- C. Unless otherwise noted, bolts for the connection of carbon steel or iron shall be steel bolts; bolts for the connection of galvanized steel or iron shall be galvanized steel or stainless steel bolts; and bolts for the connection of aluminum or stainless steel shall be stainless steel bolts.
- D. Unless otherwise noted, expansion anchors shall be zinc plated carbon steel wedge type anchors complete with nuts and washers. Type 316 stainless steel, wedge type anchors shall be used where they will be submerged or exposed to the weather or where stainless steel wedge type anchors are required. When the length or embedment of the bolt is not noted on the Drawings, provide length sufficient to place the wedge and expansion sleeve portion of the bolt at least 1-in behind the concrete reinforcing steel. Expansion anchors shall be Hilti, Kwick-bolt III; ITW Ramset; Redhead trubolt, or equal.
- E. Unless otherwise noted, adhesive anchors shall be a two-component chemical resin anchoring system. Capsules shall be self-contained, exactly premeasured amounts of polyester or vinyl ester resin, aggregate and hardener. Stud assemblies shall consist of a stainless steel type 316 all-thread anchor rod with nut and washer. Provide manufacturer's recommended installation tools for installing anchor components. Install anchors in full compliance with the manufacturer's recommendations. Adhesive anchor system shall be Hilti, HIT-RE 500-SD; Simpson Strong Tie, SET-XP Epoxy-Tie or Acrylic Tie; or approved equal.
- F. Anchors used in masonry construction shall be as indicated in Section 2.03.C above where anchors are installed into solid grouted cells. Additional, Hilti, HIY-HY150 MAX adhesive anchoring system, or approved equal, may also be used in grouted masonry construction. When fastening to hollow concrete block or brick, adhesive anchors shall be a three-part stud, screen and chemical dispenser anchoring system. Adhesive cartridges shall contain premeasured amounts of resin and hardener which are mixed and deposited in a screen tube by a dispenser. Stud assemblies shall

consist of a stainless steel type 316 all-thread anchor rod with nut and washer. Anchors shall be Hilti, HIT HY-20 System or approved equal.

- G. Automatic end welded headed anchor studs shall be flux ended studs made from cold drawn steel, ASTM A108 Grades C-1010 through C-1020. Headed anchor studs shall be Nelson, H4L Headed Concrete Anchors or equal.
- H. Machine bolts and nuts shall conform to Federal Specification FF-B-575C. Bolts and nuts shall be hexagon type. Bolts, nuts, screws, washers and related appurtenances shall be Type 316 stainless steel.
- I. Connection bolts for wood members shall be ASTM A307, galvanized where specified.
- J. Toggle bolts shall be Hilti, Toggler Bolt or equal.

#### 2.04 METAL GRATING

- A. Grating shall have rectangular, 3/16-in thick, bearing bars spaced 1-3/16-in on center with cross bars spaced at 4-in on center. All grating panels shall be banded with a bar the same size as the bearing bars.
  - 1. Grating shall not exceed the fabricator's maximum recommended span, and meet or exceed the following load and deflection criteria for the maximum span length at the opening being covered by the grating.
    - a. The grating shall produce a deflection of 1/360 of the span or less under a uniform live load of 100 lbs/sq ft on the maximum span.
    - b. The grating shall produce a deflection of 1/360 of the span or less under a concentrated live load of 300 lbs applied at the mid point of the maximum span.
  - 2. Openings 2-in or greater in diameter/dimension and grating edges shall be banded with a bar of the same depth and thickness as the bearing bars. Cut bearing bars or cross bars shall be welded to the banding bar.
  - 3. Provide trench grating with symmetrical cross bar arrangement.
  - 4. Grating clamps, nuts, bolts, washers and other fastening devices for grating and grating supports shall be Type 316 stainless steel. All grating shall be anchored to the supporting system using saddle clips.
- B. Aluminum grating material shall be aluminum alloy 6063-T6 with a mill finish. Cross bars shall be attached to the bearing bars with interlocked swaged joints. The grating shall be Type BS by IKG Borden, Houston, TX; Type 19 SG-4 by Ohio Gratings, Inc., Canton, OH; Type 19S4 by Seidelhuber Metal Products, San Carlos, CA or equal.
- C. Metal frames and supports for grating shall be of the same material as the grating unless otherwise shown on the Drawings. Where aluminum supports are used, they shall be fabricated from aluminum alloy 6061-T6.

## 2.05 RAILINGS

- A. Railings shall be 2 rail welded railing systems, as shown on the Drawings, fabricated with 1-1/2-in nominal diameter pipe. Posts shall be Schedule 80 pipe, and railing shall be Schedule 40 pipe, minimum. Posts and top rails shall be continuous. The top surface of the top railing at all points, including corners and terminations, shall be smooth and shall not be interrupted by projected fittings or posts. Spacing of posts shall not exceed 5-ft on center and shall be uniformly spaced except as otherwise shown on the Drawings. Posts will be required on each side of structure expansion joints. All railing posts shall be vertical.
- B. Welds shall be circumferential welds ground smooth and even to produce a railing that is neat in appearance and structurally sound. Welding methods shall be in conformity with AWS standards for the materials being joined. All rail to post connections shall be coped and fastened by continuous welds. There shall be no burrs, sharp edges or protrusions on any weld on any part of the handrail system. After fabrication, the welds and surrounding area shall be cleaned and hand buffed to blend with the adjacent finish. All mechanical fasteners shall be unobtrusively located in countersunk holes with the top flush with the surface of the rail. Bends in the railing shall be as indicated by the Drawings. No distortion of the circular railing shape will be allowed. Bends and terminal sections shall be made without the use of fittings. Corner bends shall be mitered and welded bends.
- C. Railing shall be assembled in sections as long as practical but shall not be greater than 24-ft in length. A field splice shall be used when an assembled section is to be attached to another section. Field splices shall be used in all railing panels that cross over structure expansion joints.
1. Field splices shall use internal splice sleeves located within 8-in of railing posts. The sleeve shall be welded to the rail on one side and fastened with a set screw to the rail on other side. The field splice shall be detailed to take the differential expansion between the railing system and the supporting structure.
  2. When the field splice occurs in a railing panel crossing a structure expansion joint, the sleeve shall be welded to the rail on one side and be free to slide in the rail on other side. The field splice shall be detailed to take the same movement as the structure expansion joint.
- D. The bases or supports for railing posts and handrail shall be the types indicated on the Drawings.
1. Where non-removable railing is set in concrete, the posts shall be placed in 2-1/2-in diameter formed concrete openings and firmly caulked with a nonsulphur compound, hydraulic cement equal to Por-Rok by Minwax Construction Products Division Sterling Drug, Montvale, NJ. Collars shall be placed around the post bases and fastened in place with set screws on the side of the post away from the walkway. Posts shall be placed with the centerline

4-in from the edge of the concrete except that posts shall be set at the centerline of concrete curbs.

2. Aluminum railing posts, which may collect condensation, shall have a 3/16-in drain hole drilled immediately above the concrete encased area, the base flange, or supporting socket on the side away from the walking area. The bottom of the rail post between the drain hole and the bottom of the post shall be filled with an inert material such as a compressed closed cell neoprene rod.
- E. Toeboards shall be provided on all railing adjacent to a drop in elevation of 4-ft or more. Toeboards are not required on the inclined portion of stairway railings or where concrete or steel curbs, 4-in or more in height, are present. Toeboards shall be 4-in high channels of the same material as the railing. The channels shall have a minimum thickness of 1/8-in and have flanges of not less than 3/4-in nor more than 1-1/2-in in width. Toeboards shall be positioned with a maximum clearance of 1/4-in from the floor and fastened to railing posts with 1/4-in stainless steel U-bolts, with J-bolts at corner posts and with clip angles and two 1/4-in stainless steel expansion bolts at walls. Toeboards shall not be welded to the posts. Connection to post shall allow expansion and contracting movements.
- F. All railings shall be properly protected by paper, or by an approved coating or by both against scratching, splashes or mortar, paint, or other defacements during transportation and erection and until adjacent work by other trades has been completed. After protective materials are removed, the surfaces shall be made clean and free from stains, marks, or defects of any kind.
- G. Aluminum shapes, including mounting brackets, in contact with concrete or a different type of metal shall be separated by a 1/32" neoprene gasket or provided with a heavy coating of protective zinc chromate for separation of dissimilar materials.
- H. Safety gates, for railing openings, shall be fabricated of matching pipe and rail material and configuration. The gates shall be self-closing gates with approved stop, latch and stainless steel closure spring and hinges.
- I. Barrier chains, for railing openings, shall be fabricated of stainless steel chains. Chain shall be 1/4-in stainless steel links, with eleven links per foot as manufactured by Eastern Chain Works, Inc., NY; Lawrence Metal Products, Inc. or equal. Chains shall be fastened to the handrail posts at the elevation of each rail. One end of each chain shall be connected to one post with a 1/4-in diameter stainless steel eye bolt and the other end shall be connected to the other post by means of a heavy chromium plated bronze swivel eye slide harness snap and a similar eye bolt.

## 2.06 MISCELLANEOUS ALUMINUM

- A. All miscellaneous metal work shall be formed true to detail, with clean, straight, sharply defined profiles and smooth surfaces of uniform color and texture and free from defects impairing strength or durability. Holes shall be drilled or punched. Edges shall be smooth and without burrs. Fabricate supplementary pieces necessary to complete each item though such pieces are not definitely shown or specified.
- B. Connections and accessories shall be of sufficient strength to safely withstand the stresses and strains to which they will be subjected. Exposed joints shall be close fitting and jointed where least conspicuous. Threaded connections shall have the threads concealed where practical. Welded connections shall have continuous welds or intermittent welds as specified or shown. The face of welds shall be dressed flush and smooth. Welding shall be on the unexposed side as much as possible in order to prevent pitting or discoloration of the aluminum exposed surface. Grind smooth continuous welds that will be exposed. Provide holes for temporary field connections and for attachment of the work of other trades.
- C. Miscellaneous aluminum items shall include: beams, angles, closure angles, grates, hatches, floor plates, stop plates, stair nosings, and any other miscellaneous aluminum called for on the Drawings and not otherwise specified.
- D. Angle frames for hatches, beams, grates, etc, shall be complete with welded strap anchors attached.
- E. Aluminum diamond plate and floor plate shall have a minimum thickness of 3/8-in. Frames and supports shall be of aluminum construction. Fastening devices and hardware shall be Type 304 stainless steel. Plates shall have a mill finish.
- F. Stair treads for aluminum stairs shall have abrasive non-slip nosing as approved.
- G. Aluminum nosing at concrete stairs shall be Wooster Products, Inc.; Alumogrit Treads, Type 116; similar by Barry Pattern and Foundry Co.; Andco or equal. Furnish with wing type anchors and flat head stainless steel machine screws, 12-in on center. Nosing shall also be used at concrete ladder openings. Nosing shall a single piece for each step extending to within 3-in at each side of stair or full ladder width. Set nosing flush with stair tread finish at concrete stairs. Furnish treads with heavy duty protective tape cover.
- H. Miscellaneous aluminum items shall have a cleaned and degreased mill finish.

## 2.07 MISCELLANEOUS STEEL

- A. All miscellaneous metal work shall be formed true to detail, with clean, straight, sharply defined profiles and smooth surfaces of uniform color and texture and free from defects impairing strength or durability. Holes shall be drilled or punched. Edges shall be smooth and without burrs. Fabricate supplementary pieces necessary to complete each item though such pieces are not definitely shown or specified.
- B. Connections and accessories shall be of sufficient strength to safely withstand the stresses and strains to which they will be subjected. Exposed joints shall be close fitting and jointed where least conspicuous. Threaded connections shall have the threads concealed where practical. Welded connections shall have continuous welds or intermittent welds as specified or shown. The face of welds shall be dressed flush and smooth. Grind smooth continuous welds that will be exposed. Provide holes for temporary field connections and for attachment of the work of other trades.
- C. Miscellaneous steel items shall include: beams, angles, lintels, metal stairs, support brackets, base plates for other than structural steel or equipment, closure angles, bridge crane rails, monorail hoist beams, holddown straps and lugs, door frames, splice plates, subframing at roof openings and any other miscellaneous steel called for on the Drawings and not otherwise specified.
- D. Structural steel angle and channel door frames shall be shop coated with primer. Frames shall be fabricated with not less than three anchors on each jamb.
- E. Steel pipe pieces for sleeves, lifting attachments and other functions shall be Schedule 40 pipe unless otherwise shown on the Drawings. Wall and floor sleeves, of steel pipe, shall have welded circumferential steel waterstops at mid-length.
- F. Lintels, relief angles or other steel supporting masonry or embedded in masonry shall be shop coated with primer.
- G. All steel finish work shall be thoroughly cleaned, by effective means, of all loose mill scale, rust and foreign matter and shall be given one shop coat of primer compatible with the finish coat after fabrication but before shipment. Paint shall be omitted within 3-in of proposed field welds. Paint shall be applied to dry surfaces and shall be thoroughly and evenly spread and well worked into joints and other open spaces.
- H. Galvanizing, where required, shall be the hot-dip zinc process after fabrication. Coating shall be not less than 2 oz/sq ft of surface.

**2.08 MISCELLANEOUS STAINLESS STEEL**

- A. All miscellaneous metal work shall be formed true to detail, with clean, straight, sharply defined profiles and smooth surfaces of uniform color and texture and free from defects impairing strength or durability. Holes shall be drilled or punched. Edges shall be smooth and without burrs. Fabricate supplementary pieces necessary to complete each item though such pieces are not definitely shown or specified.
- B. Connections and accessories shall be of sufficient strength to safely withstand the stresses and strains to which they will be subjected. Exposed joints shall be close fitting and jointed where least conspicuous. Threaded connections shall have the threads concealed where practical. Welded connections shall have continuous welds or intermittent welds as specified or shown. The face of welds shall be dressed flush and smooth. Grind smooth continuous welds that will be exposed. Provide holes for temporary field connections and for attachment of the work of other trades.
- C. Miscellaneous stainless steel items shall include: beams, angles, bar racks and any other miscellaneous stainless steel called for on the Drawings and not otherwise specified.

**PART 3 EXECUTION****3.01 INSTALLATION**

- A. Items to be attached to concrete or masonry after such work is completed shall be installed in accordance with the details shown. Fastening to wood plugs in masonry will not be permitted.
- B. Abrasions in the shop primer shall be touched up immediately after erection. Areas left unprimed for welding shall be painted with primer after welding.
- C. Zinc coating which has been burned by welding, abraded, or otherwise damaged shall be cleaned and repaired after installation. The damage area shall be thoroughly cleaned by wire brushing and all traces of welding flux and loose or cracked zinc coating removed prior to painting. The cleaned area shall be painted with two coats of zinc oxide-zinc dust paint conforming to the requirements of Military Specifications MIL-P-15145. The paint shall be properly compounded with a suitable vehicle in the ratio of one part zinc oxide to four parts zinc dust by weight.
- D. Specialty products shall be installed in accordance with the manufacturer's recommendations.
- E. Expansion bolts shall be checked for tightness a minimum of 24 hours after initial installation.
- F. Install adhesive capsule anchors using manufacture's recommended drive units and adapters and in compliance with the manufacturer's recommendations.

- G. Headed anchor studs shall be welded in accordance with manufacturer's recommendations.
- H. All railings shall be erected to line and plumb with tightly fitted joints proving smooth transitions. For mechanically fastened systems provide gaps between connecting members no greater than 1/8" unless at designated expansion joints.
- I. All steel surfaces that come into contact with exposed concrete or masonry shall receive a protective coating of an approved heavy bitumastic troweling mastic applied in accordance with the manufacturer's instructions prior to installation.
- J. Where aluminum contacts a dissimilar metal, apply a heavy brush coat of zinc-chromate primer followed by two coats of aluminum metal and masonry paint to the dissimilar metal.
- K. Where aluminum contacts masonry or concrete, apply a heavy coat of approved alkali resistant paint to the masonry or concrete.
- L. Where aluminum contacts wood, apply two coats of aluminum metal and masonry paint to the wood.
- M. Between aluminum grating, aluminum stair treads, or aluminum handrail brackets and steel supports, insert 1/4-in thick neoprene isolator pads, 85 plus or minus 5 Shore A durometer, sized for full width and length of bracket or support.

**END OF SECTION**

**SECTION 09900  
PAINTING**

**PART 1 - GENERAL**

1.01 DESCRIPTION

- A. This section pertains to the painting of the Elevated Water Tank.
- B. All surfaces encompassed by this specification shall be cleaned, prepared and coated with the designated paint system as specified herein. All coating shall be applied in strict accordance with the manufacturer's instructions and Standards herein.

1.02 RELATED SECTIONS

- A. 01010 - Summary of Work

1.03 REFERENCED STANDARDS

- A. SSPC: The Society for Protective Coatings
- B. NACE: NACE International (formerly National Association of Corrosion Engineers)
- C. AWWA: American Water Works Association
- D. ANSI: American National Standards Institute
- E. ASTM: ASTM International (formerly American Society for Testing and Materials)
- F. OSHA: Occupational Safety and Health Administration SSPC - Society of Protective Coatings

1.04 QUALITY ASSURANCE

- A. Inspection Program
  - 1. A formalized inspection program will be developed by the Contractor and submitted to the City/Engineer for approval. The inspection program and the Project line of authority will be reviewed at the Pre-Construction Conference.
  - 2. It will be the Contractor's responsibility to provide the City, through the Engineer, or his designee, with clear, accurate information necessary in daily inspection reports.
  - 3. The Contractor will be responsible for performing the quality control inspections and filling out a daily inspection report form. No request for payment will be processed unless accompanied by completed inspection report forms. Quality assurance inspections will be performed by the City Engineer or his designee. It is expected that information furnished on the Contractor's inspection reports will coincide with the information recorded during the Engineer's inspections.

4. It is the Contractor's responsibility to notify the Engineer or his designee (Owner Inspector) when an area is ready for inspection (Hold Point). No work will be approved until the Owner Inspector has performed all reviews and verification of required tests and inspections.
5. The Contractor shall provide for the Owner Inspector all necessary rigging required to complete the inspection and testing operations. The Contractor shall assist the Owner Inspector in making all required tests and inspections. Deficient areas such as pinholes, holidays, embedded contamination, sags, dry spray, mechanical damage, high / low mils, shall be repaired to meet the requirements of this specification.
6. The City will provide hold point coating inspection for the duration of the project.

B. Inspection Authority

1. The Engineer has ultimate responsibility for Contract administration and inspection for this project. Field quality control inspection responsibilities are the responsibility of the Contractor.
2. The Engineer can stop the job if the Contractor is deviating from the specifications. The Contractor's field supervisor shall be advised verbally to stop work and the Contractor's office shall be notified in writing that work has been stopped.
3. Each step of the construction is subject to approval by the Engineer prior to proceeding with a subsequent step.
4. During the progress of the work and up to the date of final acceptance, the Contractor shall at all times afford representatives of the City, County, State, and Federal agencies having jurisdiction, every reasonable, safe, and proper access for observation of the work done or being done at the site and also at the place of manufacture or preparation.

C. Test Equipment Furnished by Contractor

1. The Contractor will have the following test equipment available for use by the Inspector at the job site always during the progress of the work:
  - a. Sling Psychrometer or Electronic Dew Point Gage
  - b. Surface Temperature Gauge
  - c. Psychrometric Tables
  - d. Wet Film Thickness Gauge
  - e. Dry Film Thickness Gauge (Properly Calibrated)
  - f. National Bureau of Standards thickness plates.
  - g. SSPC VIS-I- Abrasive Blast Pictorial Surface Preparation Standard
  - h. SSPC VIS – 3 – Power Tool Cleaning Pictorial Surface Preparation Standard
  - i. SSPC VIS – 4 – Water Jetting Cleaning Pictorial Surface Preparation Standard
  - j. Holiday Detector - Low voltage type such as Tinker & Razor Model M- 1 Series 9533
  - k. ASTM D 4417 Method B or Method C Equipment to perform Anchor Profile Testing.

## D. Contractor Furnished Information

1. The following information will be part of the information required for the inspection reports:
  - a. Compressor: Size, Manufacturer, Moisture and Water separators, Air Drier, Clean li ness of Air, Number of Blast Nozzles.
  - b. Safety Equipment: Protective Cloths, Respirators, and Breathing Equipment.
  - c. Paint Equipment: Paint Pump, Spray Gun, and other essential items deemed necessary.
  - d. Materials: Abrasive: (Size, Type, Source, Cleanliness)
  - e. Paints: Type, Manufacturer, Batch No., and current PDS and Application Data.
  - f. Thinners: Type, Manufacturer, Batch No., and other information deemed necessary.
  - g. Inhibitors: Type, Manufacturer, Batch No., and other information deemed necessary by the City Engineer.
  - h. Grouts: Type, Manufacturer, and other information deemed necessary.
  - i. Contractor Personnel: Name, Address, and Phone Number of Supervisor. Name, Address, and Phone Number of Foreman. Name of each Crew member or Laborer.
  - j. Caulking product data sheets and manufacturer recommendations for compatibility and application.

## E. Contractor Request for Inspection

1. The Contractor will notify the Inspector (5) five days in advance that portions of the work (Hold Point) are ready for inspection and will assist the Inspector in making all necessary tests and inspections.
2. No rigging and/or staging shall be removed before Hold Point inspections and approval is made. The Contractor shall assist the Inspector in the use and operation of all equipment for access to the surfaces to be tested.
3. The Contractor will make all necessary rigging available to the Inspector, and assist in the operation of rigging during any and all testing operations.
4. Approval of an area by the Engineer or his designee does not release the Contractor from providing the quality and workmanship required by this Specification.

## F. Coating Thickness and Continuity

1. The specified coverage rates of the coatings are minimums. The first coat on metal surfaces refers to the first paint coat and not to conditioning or other pretreatment applications. Coating shall be applied to the thickness specified, and in accordance with these specifications. The minimum dry film thickness at any spot measurement shall not be less than 80% of the specified thickness. Unless otherwise specified, not less than two (2) coats shall be applied. The Contractor shall furnish a wet film thickness gauge, a dry film thickness gauge, and certified thickness calibration standards for the Owner's use. Dry film thickness gauges shall be calibrated Type 2 electronic gages

2. After each coat has been allowed to dry, the dry film thickness will be measured and recorded in the daily inspection reports. The Contractor shall not apply a successive coat until the dry film thickness of the preceding coat or coats has been approved by the Engineer or his designee.
3. Coating system thickness is the total thickness of all the required coats of paint, and does not include passivators or sealers.
4. Measurement of dry paint thickness over steel surfaces will be done in accordance with SSPC-PA 2 Level 3.

G. Holiday Testing

1. All interior tank surfaces shall be holiday tested for discontinuities such as pinholes, missed and skipped areas, using a low voltage holiday tester. The Contractor shall furnish to the Inspector a Tinker and Razor Model M-1 Holiday Detector or equivalent for the testing. Testing shall be done in accordance with NACE RPO 188, Discontinuity (Holiday) Testing of Protective Coatings.
2. Holiday tests shall not be performed until the finish coat has cured sufficiently that it can be walked on without damage, and water will not have a detrimental effect on the coating (after approximately 2-3 days). Holidays shall be repaired by an additional brush application of finish coat, and then retested.
3. The Contractor shall perform the holiday test and provide the rigging, and support personnel for observations by the Engineer or his designee.

1.05 PRODUCT HANDLING

A. Storage

1. All coating materials shall be protected from direct sunlight and stored in a covered area provided by the Contractor. The covers shall be constructed of non-combustible materials. The area shall have sufficient ventilation to prevent the concentration of fumes and vapors.
2. Coating storage environmental conditions shall conform to the coating manufacturer's recommendations. The Contractor shall be solely responsible for the protection of all the material stored by him at the job site.
3. Coating materials shall be delivered to the job site in the original and unopened containers, with legible labels, marked with the proper designation of the product, as well as the manufacturer.
4. All coating materials at the job site shall be subject to inspection.
5. An approved environmental paint spill kit and container shall be located near the paint storage area.
6. All coating components will be delivered in unopened containers. They will be protected from freezing and overheating during shipment.
7. All coating components must be stored at temperatures above freezing and out of the weather per the manufacturer's instructions. The containers must remain unopened until they are ready to be used.

## B. Mixing

1. Mechanical mixers or shakers shall be used to mix the coating after properly measuring the required components. Catalysts, thinners, and other components shall only be added in exact quantities and at the times specified by the coating manufacturer. Containers used for mixing shall be clean and dry. Mixed materials that are not used prior to expiration of the pot life shall be discarded.
2. All coatings materials shall be mixed and thinned in the presence of the Inspector. Plural component materials will not be approved for application unless the Inspector can verify the proper proportions were mixed and they had proper induction time after mixing.
3. An approved environmental paint spill kit and container shall be located near the paint mixing area.
4. An appropriate type of fire extinguisher shall be kept nearby.

## 1.06 SUBMITTALS

- A. The following information shall be provided. Information on each coating system shall be delivered to the Engineer two (2) weeks before applying that coating system.
- B. For each primer, intermediate, and finish coating the Contractor shall provide the Manufacturer's Application Instructions and the data listed below:
  1. Surface preparation recommendations.
  2. Primer, intermediate, and finish coating, pot life and specific mixing instructions.
  3. Induction time after mixing.
  4. Minimum and maximum dry and wet film thickness per coat.
  5. Minimum and maximum curing time between coats including atmospheric conditions for each.
  6. Curing time before submergence in liquid.
  7. Thinner and thinning ratios to be used with each paint.
  8. Ventilation requirements.
  9. Allowable atmospheric conditions during which the paint may be applied, including ambient temperature, relative humidity and surface temperature.
  10. Allowable applications methods.
  11. Maximum allowable moisture content of surface to be painted.
  12. Maximum storage life.
  13. Manufacturer's certification's that painting materials are in accordance with the appropriate reference standards.
  14. Certificates of approval from the Florida Department of Environmental Protection (FDEP), that the proposed interior coatings are approved for use with potable water.

15. Material Safety Data Sheets and cautions concerning health hazards.

1.07 COLOR SELECTION

- A. All colors are as specified by the Owner's color schedule after submittal of the Manufacture's color charts.
- B. The Contractor shall submit a color chart, from the specified coating manufacture, to the City to select a color for the exterior tank. The City shall submit its choice to the Contractor in writing before application of coatings.

1.08 DAMAGE CLAIMS

- A. The Contractor shall be responsible for all damages that may be caused by this painting operation to surrounding property.

**PART 2 - PRODUCTS**

2.01 MATERIALS

- A. The products referenced in this section are presented as a standard of comparison. Products manufactured by other manufacturers may be substituted upon request. Requests for substitution must be in accordance with PART 1.06 above. Only products of one manufacturer shall be used in a particular coating system.
- B. Materials, supplies and articles provided shall be the standard products of manufacturers. Paints in a particular coating system shall be the products of a single manufacturer unless otherwise specified.
- C. No lead containing coatings shall be used.

2.02 COATING MATERIALS

- A. The following manufacturer shall supply the industrial coating materials specified in this specification:
  - 1. Tnemec Company, Inc.

2.03 INTERIOR COATINGS

- A. Interior (Wet) Service:
  - 1. Coating: Three (3) coats of high build, high solids epoxy lining system, NSF 61 approved.
  - 2. Caulking: Sika-flex Ia, a one component polyurethane sealant. (NSF 61 Approved.)

2.04 EXTERIOR COATINGS:

- A. Exterior Service:

1. One (1) spot coat of modified polyamidoamine epoxy primer, one (1) full coat of aliphatic acrylic polyurethane intermediate coat, and (1) one full coat of advanced thermoset fluoropolymer polyurethane to prepared surfaces.

## 2.05 ABRASIVE BLAST MATERIALS

- A. All abrasive blast material shall be "Black Beauty", as sold by Reed Minerals, or approved equal.

## PART 3 - EXECUTION

### 3.01 GENERAL

- A. All work shall be accomplished by skilled workmen in a professional manner.
- B. All abrasive blasting, coating or lining application shall be done by experienced personnel. The awarded contractor shall be able to provide proof of five successful projects as prime contractor on projects of similar size, completed in the last five years. Similar projects shall be a minimum of 750,000-gallon tank size and shall include full containment.
- C. All work shall comply with Local, County, State, and Federal regulations concerning open-air blasting and pollution control.
- D. The Contractor shall test all coating to be removed to assure that the coating will meet environmental requirements for removal and disposal.
- E. The proximity of private and public property will require containment of pressure wash debris, paint over-spray, and spatter.
- F. Surfaces to be coated shall be cleaned in accordance with SSPC-SP I (Solvent Cleaning). Before applying coating or surface treatments, oil, grease, rust, loose mill scale, old weathering coatings, and other foreign substances shall be removed, except as specified. Oil and grease shall be removed before mechanical cleaning is started. Where mechanical cleaning is accomplished by blast cleaning, the abrasive used shall be washed, graded and free of contaminants, which might interfere with the adhesion and performance of the coatings. Blast abrasive shall be "Black Beauty" or approved equal, capable of achieving a surface profile of 1 to 3 mils (unless otherwise recommended by the paint manufacturer). The Contractor shall furnish for the Inspector's use, ASTM D4417 Method B Depth Micrometer or Method C Replica Tape and Spring Micrometer.
- G. Clean cloths and clean fluids shall be used in solvent cleaning. Cleaning and painting shall be scheduled so that dust and spray from the cleaning process will not fall on wet, newly painted surfaces.
- H. Preparation of metallic surfaces shall be based upon comparison with SSPC-VIS 1 and SSPC VIS 3 (ASTM D2200) and as described herein. The Contractor shall furnish the photographic standards.

- I. Compressed air for blast cleaning shall be clean, dry, and oil free as confirmed ASTM D 4285 by a blotter test each day prior to beginning blasting. Test air quality by directing the air stream from the blast nozzle without abrasive onto a clean piece of blotter paper for 1 minute. Inspect the blotter for contamination.
- J. All abrasive and dust from the blasting operation shall be removed from the surfaces before the painting application has begun.
- K. Abrasive blasted surfaces shall be coated the same day that blasting was done, and before any rust bloom occurs.
- L. All painting equipment shall be maintained in good working order and shall be comparable to that described in the coating manufacturer's most recent application instructions. It shall be thoroughly cleaned and inspected daily.
- M. Worn nozzles, tips, etc., shall be replaced regularly. Effective oil and water separators shall be used and serviced on all air lines.
- N. All empty paint cans shall remain on site for inspection until the painting operation is complete and has been approved by the Owner and Engineer.

### 3.02 SAFETY

- A. All rigging shall meet OSHA requirements, and shall be operated in a safe manner, and will conform to industry standards.
- B. The Contractor is responsible for the integrity of any rigging connections. All rods and rigging points shall be carefully checked for structural integrity before use in climbing or rigging of the tank. Items found to need repair shall be disassembled, cleaned and repaired. All modifications shall be reviewed by the Engineer before execution.

### 3.03 PROTECTION OF AREAS NOT TO BE COATED

- A. All areas that are not specified to be coated or repaired shall be adequately protected to avoid any damage or overspray during all repairs, washing, blasting, and painting operations. The Contractor shall confer with the City before conducting any work, to clarify these areas.
- B. The areas NOT to be cleaned or coated include:
  - 1. All lighting and all cabling.
  - 2. All antennae and connected wiring.
  - 3. Cathodic protection system wiring.
- C. Protect all telecommunication equipment (antenna, cables, trays, etc.) attached to the tank. Telecommunication equipment shall be protected during this project to avoid damage from pressure washing, surface preparation and painting operations. Any damage to this equipment shall be the responsibility of the Contractor.

- D. Tank surfaces under items that are not to be coated shall be coated. Items not to be coated shall be temporarily relocated while the area is coated. After coating has cured, the relocated equipment shall be returned to its original location.
- E. Any damage shall be repaired at the Contractor's expense.

### 3.04 APPLICATION

- A. Unless otherwise specified, the application of paint shall be in accordance with SSPC-PA- 1 latest edition and the paint manufacturer's printed instructions for surface preparation, mixing, thinning, and paint application unless otherwise specified herein. The Contractor shall fully comply with all recommendations and instructions set forth by the paint manufacturer. All coatings shall be applied before the shelf life of the coating expires.
- B. Paint shall only be applied over thoroughly dry surfaces, with a surface temperature that conforms to the manufacturer's minimum - maximum limits, and the relative humidity shall not exceed 85%. The surface temperature must be at least 5 degrees above the dew point. Paint shall not be applied to a condensing surface. Paint shall not be applied when freshly painted surfaces may be damaged by rain, fog, dust or condensation and/or when it can be anticipated that these conditions will prevail during the drying period.
- C. Except where otherwise specified, thinning shall only be done when necessary for the workability of the coating material and then only in accordance with the coating manufacturer's most recent printed application instructions. Use only approved manufacturer's thinner. Thinner shall only be added in the exact quantities as recommended by the manufacturer.
- D. Paint shall be applied in a uniform layer, with a 50% over-lap pattern. All runs, and sags shall be brushed out immediately or the paint will be removed and surface recoated.
- E. All fasteners, welded seams, edges, holes, etc. shall have special care taken in applying the prime and topcoats. These areas shall be brush coated before applying the coating to remaining surfaces. This is to insure proper dry film thickness on these areas.
- F. Areas inaccessible to spray shall be brushed. If inaccessible by brush, daubs or sheepskins may be used if approved by the manufacturer. Top quality, properly styled brushes and rollers shall be used. The brushing or rolling shall be done so that a smooth coat as nearly uniform in thickness as possible is obtained. Brush or roller strokes shall be made to smooth the film without leaving deep or detrimental marks.
- G. Drying time between coats will adhere to the coating manufacturer's recommendation with conditions of temperature and humidity taken into account. All paint and coating materials shall be stored prior to application under cover and at temperature within 10 degrees F. of the anticipated application temperature.

- H. The dry film thickness of each coat and the entire system shall follow the coating manufacturer's recommendations and this specification. The number of coats specified shall be a minimum to achieve the specified film thickness.
- I. All paint damaged areas, which shall be touch-up painted, shall be feathered after surface preparation to provide a smooth, even surface before priming. Touch-up systems will be the same as the original specification. Manufacturer's complete touch-up recommendations shall be followed.

### 3.05 VENTILATION

- A. The Contractor shall provide forced air ventilation while work is being done inside the tank, after each coat is applied and continue after completion of painting for a minimum period of seven days to insure proper cure of the coating. Air shall be exhausted from the lowest portions of the tank with the top openings kept open and clear. Ventilation requirements will be in strict accordance with the manufacturer's recommendations, this Specification and all OSHA requirements as applicable.

### 3.06 SURFACE PREPARATION

#### A. INTERIOR

1. Remove mold, mildew, chalk, loose paint, organic deposits, or other surface contamination from the entire interior wet area prior by Low Pressure Water Cleaning (min. 4000 psi) prior to abrasive blast cleaning.
2. All interior surfaces shall be abrasive blast cleaned to SSPC-SP10 (Near White Blast Cleaning) to remove all existing coatings, rust, mil scale and other contaminants.
3. Solvent wipe all areas to be coated in accordance with SSPC-SPI prior to application of the specified primer.
4. All piping and drain connections to the tanks shall be sufficiently covered to keep all blast media from entering the piping.

#### B. EXTERIOR

1. Remove oil, grease, mold, mildew, chalk, loose paint, or other surface contamination in accordance with SSPC/NACE WJ 4 Low Pressure Water Cleaning (min. 4000 psi). Verify remaining materials are tightly adhered by use of a dull putty knife.
2. The 12 exterior columns shall be abrasive blast cleaned from the bottom base plate and up two feet to meet the requirements of SSPC-SP10 (Near White Blast Cleaning)
3. Except for B.2 above, all other exterior rusted and abraded surfaces shall be power tool cleaned in accordance with SSPC-SP11 "Power Tool Clean to Bare Metal".
4. The Contractor shall take every precaution necessary to contain spray or dust from the cleaning operation blowing towards the surrounding buildings and passing traffic.

### 3.07 COATING SYSTEMS

#### A. INTERIOR

1. All interior coatings, caulking materials, and linings of potable water tank shall be approved for application in accordance with NSF-61 for use in potable water systems.
2. All interior surfaces shall be cleaned as applicable in Section 3.06.A 'SURFACE PREPARATION, INTERIOR'.
3. Each coat shall be of a contrasting color to facilitate application and inspection.
4. Interior Coating System:
  - a. PRIME COAT: Apply by brush, roller, or spray to all interior surfaces, Tnemec Company Series N 140 PotaPox Plus at a dry film thickness of 3 mils to 5 mils.
  - b. STRIPE COAT: Apply by brush, one (1) coat of the specified first coat to all weld seams, roof lap joints, structural members, manholes, edges, lugs, and brackets.
  - c. INTERMEDIATE COAT: Apply by brush, roller, or spray to all interior surfaces, Tnemec Company Series N 140 PotaPox Plus at a dry film thickness of 3 mils to 5 mils.
  - d. TOP COAT: Apply by brush to all interior surfaces, Tnemec Company Series N 140 Pota Pox Plus at a dry film thickness of 3 mils to 5 mils.
  - e. COVERAGE RATES: Maximum coverage rates shall not exceed manufacturer's recommendations per coat. The total dry film thickness of the interior system shall be no less than 9.0 mils.
  - f. CAULKING: After the finish coat has cured per the manufacturer's recommendations, all of the roof lap joints, angles, and brackets that cannot be removed, and other areas as indicated by the inspector shall be caulked using a one component polyurethane sealant as manufactured by Sika Corporation, Sika-flex 1a. The sealant shall be applied per the manufacturer's data sheets.

#### B. EXTERIOR

1. The Contractor shall submit coating manufacturer's color charts to the Engineer. Finish colors will be selected by the City.
2. Each coat shall be of a contrasting color to facilitate application and inspection.
3. A five-gallon kit of the finish coat of paint shall be supplied to the City as touch-up paint. This kit shall be "fresh" at the time of final acceptance of the tank. The touch-up kit shall have a minimum shelf life of one (1) year.
4. The Contractor shall be responsible for all damages that may be caused by his painting operation to surrounding property and to vehicles traveling on and parked on adjacent properties and roadways.

5. All exterior surfaces shall be cleaned as applicable in Section 3.06.B 'SURFACE PREPARATION, EXTERIOR'.
6. Exterior Coating System:
  - a. PRIME COAT: Apply by brush, roller, or spray, to all bare metal exterior surfaces Tnemec Company's Series 135 Chembuild at a dry film thickness of 3.0 mils to 5.0 mils.
  - b. STRIPE COAT: Apply by brush, one (1) coat of the specified first coat to all weld seams, edges, fasteners lugs and brackets of blast cleaned and power tool cleaned surfaces.
  - c. INTERMEDIATE COAT: Apply by brush, roller, or spray, to all exterior surfaces Tnemec Company's Series 73 Endura-Shield at a dry film thickness of 2.0 mils to 3.0 mils.
  - d. TOP COAT: Apply by brush, roller, or spray, to all exterior surfaces, one coat of Tnemec Company's Series 700 Hydroflon, at a dry film thickness of 2.0 mils to 3.0 mils.
7. Coverage Rates: Maximum coverage rates shall not exceed manufacturer's recommendations per coat. The total dry film thickness of the exterior system shall be no less than 7.0 mils.
8. The Contractor shall take every precaution necessary to avoid paint splatter blowing toward the street or any surrounding structures. This also includes vehicles driving near the tank.

**END OF SECTION**

**SECTION 09905  
PIPING, VALVE, AND EQUIPMENT IDENTIFICATION SYSTEM**

**PART 1 - GENERAL**

1.01 DESCRIPTION

1.02 SCOPE OF WORK:

- A. The work included under this Section consists of providing an identification system for piping systems and related equipment.

1.03 RELATED WORK

- A. Division 1 – General Requirements
- B. Section 09910 – Utility System Painting
- C. Section 15062 – Ductile Iron Pipe and Fittings
- D. Section 15100 – Valves and Piping Appurtenances

1.04 REFERENCES

- A. American Water Works Association (AWWA)
- B. American National Standards Institute (ANSI) Standards

1.05 GENERAL DESIGN

- A. Piping color codes, and code labels for pipe identification shall conform to Table 09905.
- B. Pipelines, equipment, or other items which are not listed here shall be assigned a color by the Owner and shall be treated as an integral part of the Contract.
- C. Color coding shall consist of color code painting and identification of all exposed conduits, through lines and pipelines for the transport of gases, liquids, or semi-liquids including all accessories such as valves, insulated pipe coverings, fittings, junction boxes, bus bars, connectors and any operating accessories which are integral to a whole functional mechanical pipe and electrical conduit systems.
- D. All moving parts, drive assemblies, and covers for moving parts which are potential hazards shall be Safety Orange.
- E. All safety equipment shall be painted in accordance with OSHA standards.
- F. All inline equipment and appurtenances not assigned another color shall be painted the same base color as the piping. The pipe system shall be painted with the pipe

color up to, but not including, the flanges attached to pumps and mechanical equipment assigned another color.

- G. All hangers and pipe support floor and accessories stands shall be painted to match their piping. The system shall be painted up to, but not including, the face of flanges or the flexible conduit connected to electrical equipment. Structural members used solely for pipe hangers or supports shall be painted to match their piping. Where the contact of dissimilar metals may cause electrolysis and where aluminum will contact concrete, mortar or plaster, the contact surface of the metals shall be coated in accordance with Section 09910 – Utility System Painting .
- H. All systems which are an integral part of the equipment, that is originating from the equipment and returning to the same piece of equipment, shall be painted between and up to, but not including, the face of flanges or connections on the equipment.

#### 1.06 QUALITY ASSURANCE

- A. All work shall be in accordance with ANSI A13.1, Scheme for the Identification of Piping Systems.

#### 1.07 SUBMITTALS

- A. Submit manufacturer's descriptive literature, illustrations, specifications, and other pertinent data.
- B. Schedules:
  1. Provide a typewritten list of all tagged valves giving tag color, shape, letter code and number, the valve size, type, use, and general location.
  2. Provide a complete list of materials to be furnished and surfaces on which they will be used.
- C. Samples:
  1. Provide a sample of each type valve tag supplied.
  2. Provide a sample of each type of identification tape supplied.
  3. Provide manufacturer's color charts for color selection by Engineer.

#### 1.08 DELIVERY, STORAGE, AND HANDING

- A. Except for locally mixed custom colors, deliver sealed containers with labels legible and intact.
- B. Materials shall be stored as follows:
  1. Store in accordance with the manufacturer's recommendations.
  2. Store only acceptable project materials on project site.
  3. Store in suitable location.
  4. Restrict storage to paint materials and related equipment.

5. Comply with health and fire regulations.

## **PART 2 - PRODUCTS**

### **2.01 MATERIALS AND EQUIPMENT**

- A. Materials for painting shall conform to requirements of Section 09910 – Utility System Painting . Materials selected for coating systems for each type of surface shall be the product of a single manufacturer.
- B. Above Ground Piping: Above ground piping shall be identified by self-adhesive pipe markers equal to those manufactured by W. H. Brady Company or equal.
  1. Markers shall be of wording and color as shown in Table 09905.
  2. Lettering and flow direction arrows shall be in conformance with ANSI A13.1:
    - a. 1/2-inch high for pipes 1 1/4 inches or smaller in diameter.
    - b. 3/4-inch high for pipes 1 1/2 inches to 2 inches in diameter.
    - c. 1 1/4-inches high for pipes 2 1/2 inches to 6 inches in diameter.
    - d. 2 1/2-inches high for pipes 8 inches to 10 inches in diameter.
    - e. 3 1/2-inches high for pipes 10 inches diameter or larger.
- C. Buried Piping: Buried piping shall be identified by a continuous length of identification tape around the pipelines.
  1. Ductile Iron Pipe: Pipelines shall be spiral wrapped with a continuous length of minimum 2-inch wide vinyl identification tape. The tape shall be wrapped a minimum of three times per pipe section with a maximum spacing of 6-inches.
- D. Above Ground and Exposed Valves: A coded and numbered tag attached with brass chain and/or brass "S" hooks shall be provided on all exposed valves.
  1. Tags for valves on pipe shall be brass or anodized aluminum. Colors for aluminum tags shall, where possible, match the color code of the pipe line on which installed. Square tags shall be used to indicate normally closed valves and round tags shall indicate normally open valves.
  2. Coding: In addition to the color coding, each tag shall be stamped or engraved with wording or abbreviations to indicate the valve service and number. All color and letter coding shall be approved by the Engineer. Valve service shall either be as listed in Table 09905, or by equipment abbreviation if associated with a particular piece of equipment. Valve numbering, if required, shall be as approved by the Engineer and/or Owner.
- E. Buried Valves: Buried valves shall have valve boxes protected by a concrete pad. The concrete pad for the valve box cover shall have a 3-inch diameter, bronze disc embedded in the surface as shown on the Drawings. The bronze disc shall have the following information neatly stamped on it:
  1. Size of valve, inches

2. Type of valve:
  - a. BFV - Butterfly Valve
  - b. PV - Plug Valve
3. Number of turns to fully open
4. Direction to open

### **PART 3 - EXECUTION**

#### **3.01 PREPARATION**

- A. Unless otherwise indicated or specifically approved, all fabricated equipment shall be shop primed and finished. See Section 09910 – Utility System Painting for additional details.
- B. The Contractor shall be responsible for and take whatever steps are necessary to properly protect the shop prime and finish coats against damage from weather or any other cause.
- C. Where specified in other sections of these specifications for mechanical equipment, the Contractor shall apply field coat or coats of paint in accordance with Section 09910 – Painting. If shop finish coat is unsatisfactory due to poor adhesion or other problems with primer or finish coats, coatings shall be removed and replaced by sandblasting, priming and finishing in accordance with Section 09910 – Utility System Painting and this Section.
- D. Wherever fabricated equipment is required to be sandblasted, the Contractor shall protect all motors, drives, bearings, gears, etc., from the entry of grit. Any equipment found to contain grit shall be promptly and thoroughly cleaned. Equipment contaminated by grit in critical areas, such as bearings, gears, seals, etc., shall be replaced at no cost to the Owner.

#### **3.02 INSTALLATION**

- A. Identification tape shall be installed for all buried pipelines in accordance with the manufacturer's installation instructions, as shown on the Drawings, and as specified herein.
- B. Markers shall be placed no more than 20 feet apart with at least one marker on every straight run and additional markers at turns and where pipe passes through walls.
- C. An arrow indicating direction of flow shall be placed adjacent to each marker.
- D. The bronze valve identification disc for buried valves shall be embedded in the concrete pad surrounding the valve box.

**TABLE 09905  
COLOR CODES AND ABBREVIATIONS**

Service	Mark	Conduit, Pipe, and Valve Color Code	Letter and Flow Arrow Color
Drain	DR	Brown	White
Potable Water	PW	Blue	Black
Electrical Conduit	--	Interior: Match adjacent wall or equipment color Exterior: Grey	--

NOTE: Other piping shall be painted as directed by the Engineer.

**END OF SECTION**

**SECTION 09910**  
**UTILITY SYSTEM PAINTING**

**PART 1 - GENERAL**

1.01 SCOPE OF WORK

- A. These specifications pertain to the painting of all above ground and exposed assets included but not limited to steel, ductile iron pipe, ductile iron fittings, valves, hardware and all appurtenances. Brass, bronze and 316 stainless steel shall not be painted.
- B. The terms "paint" or "painting" as used in this section, includes the use of emulsions, enamels, paints, scalers and other coatings, organic or inorganic whether used as prime, intermediate, or finish coats.
- C. Unless otherwise specified in the detailed equipment specifications, shop painting shall conform to the requirements of this Section and to the Owner's Standards.
- D. It is the intent of these Specifications to field paint the following:
  - 1. All exposed piping and appurtenances.
  - 2. All exposed equipment.
  - 3. Work under this Section shall also include touch-up or repair of any damaged or defective painted surface.
  - 4. Pipe identification markings.
- E. The omission of minor items in the schedule of work shall not relieve the Contractor of his obligation to include such items where they come within the general intent of the Specifications.

1.02 RELATED WORK

- A. Division 1 – General Requirements
- B. Section 09905 – Piping, Valve, and Equipment Identification System
- C. Section 15062 – Ductile Iron Pipe and Fittings
- D. Section 15100 – Valves and Piping Appurtenances

1.03 REFERENCES

- A. American Water Works Association (AWWA)/American National Standards Institute (ANSI) Standards
- B. American Society for Testing and Materials (ASTM) Standards
- C. National Association of Corrosion Engineers (NACE) Standards
- D. Society for Protective Coatings (SSPC) Standards
- E. NSF/ANSI 61: Drinking Water System Components – Health Effects

1.04 QUALITY ASSURANCE

- A. All work shall be proved to be in first class condition and constructed in accordance with the drawings and specifications. All defects disclosed by tests and inspections shall be remedied immediately by the Contractor at no expense to the Owner.

- B. Holiday Testing: Each coat shall be holiday tested at the recommended 100-125 volts DC per mil in accordance with the latest edition of the following standards: NACE SP0188-2006, NACE RP0490-2007, and ASTM G62. Areas found to have holidays shall be marked and repaired in accordance with the paint manufacturer's instructions. The City shall be notified of time of testing so they or an authorized representative may be present to witness testing. All low voltage holiday testing shall be performed using a Tinker & Razor model M-1 Holiday Detector or approved equal.
- C. All materials shall be delivered to the job in original sealed and labeled containers of the coating manufacturer, and shall be subject to inspection by the Engineer. Labels shall show name of manufacturer, type of coating, formulation, date, color and manufacturers recommendations. Coatings manufacturer date shall not exceed the manufacturer's recommendations for storage and useful life and coating manufactured in excess of one (1) year prior to application shall be rejected.
- D. Oil and grease shall be completely removed in accordance with SSPC-SP1 before beginning any other surface preparation method. Surfaces of welds shall be scraped and ground as necessary to remove all slag and weld spatter.
- E. All components of equipment that can be properly prepared and coated after installation shall be installed prior to surface preparation. Components that will be inaccessible after installation shall have the surfaces prepared and coated before installation.
- F. All ferrous metal surfaces shall be free of all defects and have all sharp edges, welds, slag, and weld spatter ground smooth.
- G. Edges, corners, crevices, welds, and bolts shall be given a brush coat (stripe coat) for each coating. The stripe coat shall be applied by a brush and worked in both directions. Special attention shall be given to filling all crevices with coating.
- H. Coating shall be applied in a neat manner that will produce an even film of uniform and proper thickness, with finished surfaces free of runs, sags, ridges, laps, and brush marks. Each coat shall be carefully examined and faulty material, poor workmanship, holidays, damaged areas and other imperfections shall be touched up prior to applying succeeding coats. Each coat shall be thoroughly dry and hard before the next coat is applied in accordance with the coating manufacturer's recommendations for drying time between coats. In no case shall coating be applied at a rate of coverage greater than the maximum rate recommended by the coating manufacturer. Each coat shall be uniform in coverage and color. Successive coats shall perceptibly vary in color.
- I. Coating failures will not be accepted and shall be entirely removed down to the substrate and the surface recoated. Failures include but are not limited to holidays, sags, checking, cracking, teardrops, fat edges, fisheyes, or delamination.
- J. Surfaces not required to be coated: Brass, Bronze, Stainless Steel (not including stainless steel bolts and nuts).

#### 1.05 SUBMITTALS

- A. Product data and samples shall be submitted in accordance with the General Requirements. The submissions shall include, but not be limited to the followings:
  - 1. A painting schedule listing the manufacturer, type of paint, and the manufacturer's recommendations for surface preparations, application and dry mil thickness.
  - 2. A complete specification for each component used.
- B. Submit the following operation and maintenance data:
  - 1. Product name and number

2. Name, address and telephone of the manufacturer and the local distributor.
3. Detailed procedures for routine maintenance and cleaning
4. Detailed procedures for light repairs, such as dents, scratches, and straining.

#### 1.06 JOB CONDITIONS

- A. The Manufacturer's recommendations concerning environmental conditions under which a material can be applied shall be strictly followed. No finishes shall be applied in areas where dust is being generated.

#### 1.07 TESTING EQUIPMENT

- A. The Contractor shall furnish and make available to the Owner the following items of testing equipment for use in determining if the requirement of this section is being satisfied. The specified items of equipment shall be available for use at all times when field painting or surface preparation is in progress.
  1. Surface thermometer.
  2. Set of NACE visual standards.
  3. Dry film gauge.
  4. Holiday (pin hole) detector.
  5. Sling-psychrometer.

### PART 2 - PRODUCTS

#### 2.01 ACCEPTABLE MANUFACTURERS

- A. The paints and paint products shall be as manufactured by Carboline, Tnemec or PPG Protective & Marine Coatings as shown in the following table:

**Table 09910-1 Color Codes**

<b>Generic Name</b>	<b>Application</b>	<b>Tnemec</b>	<b>Carboline</b>	<b>PPG</b>
Safety Blue	Exposed Water Components	True Blue/Safety 11SF	9122	BL Safety Blue
Safety Yellow	Bollards	Lemon Yellow/Safety 02SF	6666	YE-3 Safety Yellow

- B. The painting schedule lists competitive brands of paint and other finishes acceptable for use in the work. The schedule is for identification as to type and quality of materials, and shall be strictly followed unless the Contractor submits an alternate schedule to the Engineer for review. A painting schedule shall be submitted for review. Paint applied contrary to the specified schedule shall be corrected as directed by the Engineer. All rejected paint shall be removed from the job, and surfaces shall be repainted in strict accordance with the schedule and such other directions, as deemed necessary by the Engineer. Unless noted otherwise, each coat of paint shall be applied by appropriate methods to obtain the minimum dry film thickness recommended by the manufacturer for the intended use. The submitted schedule shall contain the manufacturer's recommendations for film thickness.

## 2.02 LEAD BASED PAINTS

- A. Applicants must comply with Lead Based Paints Poisoning and Prevention Act and National Consumer Health Information and Health Promotion Act of 1976.

## 2.03 PAINTING SCHEDULE

- A. The following paint systems are intended to include all surfaces to be painted. Any surface or item not specifically named herein but obviously required to be painted, shall be included under the system selected by the Owner. The minimum dry film thicknesses shall be within the limits indicated in parenthesis adjacent to the manufacturer's products. Surface preparation shall be as specified herein and in accordance with the manufacturer's recommendations.
- B. Prime and Finish Coatings
1. Primer: Prime coat all surfaces in the factory with a product compatible with the below specified finish coats. Prime coating shall be as specified by the manufacturer of the finish coating.
  2. Finish: Finish coat all surfaces as specified by the Owner.
  3. Piping and Appurtenances Color Code/Identification Markings shall be in accordance with Section 09905 – Piping, Valve, and Equipment Identification System.
- C. Piping installed below ground or in a casing pipe:
1. All ductile iron pipe shall be marked in accordance with Section 15062. Backfill shall not be placed for a minimum of 30 minutes following paint application.
  2. All polyvinyl chloride (PVC) pipe shall be solid color. Backfill shall not be placed for a minimum of 30 minutes following paint application.
  3. Piping color for potable water shall be Safety Blue.
- D. Piping and appurtenances installed above ground or exposed in below ground vaults:
1. Color:
    - a. Potable Water: Safety Blue
  2. Appurtenances:
    - a. Bollards: Safety Yellow
    - b. Potable Water Valves: Safety Blue

## 2.04 MAINTENANCE MATERIAL

- A. The Contractor shall provide the Owner at final inspection one gallon of each type and final color of paint used on the project.

## PART 3 - EXECUTION

### 3.01 FERROUS METAL SURFACES (INCLUSIVE OF STEEL, DIP, FITTINGS AND APPURTENANCES)

- A. Cleaning, surface preparation, coating application, and thickness shall be as specified herein and shall meet or exceed the coating manufacturer's recommendations. When the manufacturer's minimum recommendations exceed the specified requirement, the Contractor shall comply with the manufacturers minimum recommendations. All cleaning, surface preparation, coating application, thickness, testing and coating materials (where applicable) shall be in accordance with the referenced standards of the following: AWWA, ANSI, NACE, SSPC, NSF, and ASTM. Surfaces

shall be holiday detected in accordance with ASTM G62. Areas found to have holidays shall be marked and repaired in accordance with the paint manufacturer's instructions. The Owner or owner's authorized representative shall be notified of time of testing so that they might be present to witness testing.

**B. Procedures for Coating Exterior of DIP, Fittings and Appurtenances**

1. **Surface Preparation.** Do not abrasive blast or prepare more surface area than can be coated in the same day; prepare surfaces and apply prime coatings within an 8-hour period.
  - a. **Steel:** Shall require NACE-1/SSPC-SP5 White Metal Blast Cleaning minimum angular anchor profile of 1.5 mils. White metal blast cleaning removes all of the coating, mill scale, rust, oxides, staining, corrosion products, and other foreign matter from the surface.
  - b. **DIP, DIP with asphaltic seal coat, FBE (valves and appurtenances):** Shall require NACE-3/SSPC-SP6 Commercial Blast Cleaning minimum angular anchor profile 1.5 mils. Commercial blast cleaning removes all visible oil, grease, dust, dirt, mill scale, rust, coating, oxides, corrosion products, and other foreign matter from all surfaces and allows stains to remain on 33 percent of each unit area of surface.  
 Note: Primer Option – FBE (valves and appurtenances) with existing factory coatings: Where specifically called out in the Coating System Table below, NACE-4/SSPC-SP7 may be substituted for the commercial blast for factory applied FBE (valves and appurtenances) where the coating manufacturer has specifically provided compatible coatings with existing coatings including urethane, epoxy, alkyd and water-based coatings. Under no circumstances shall DIP with asphaltic seal coat be over-coated. NACE-4/SSPC-SP7 Brush-Off Blast Cleaning shall be free of all visible oil, grease, dirt, dust, loose mill scale, loose rust, and loose coating. Tightly adherent mill scale rust and coating may remain on the surface. Mill scale, rust and coating are considered tightly adherent if the cannot be removed by lifting with a dull putty knife after abrasive blast cleaning has been performed.
2. **Contaminants:** Remove dirt, dust, oil and all other contaminants that could interfere with adhesion of the coating in accordance with SSPC-SP1 for the substrate and between each coating layer.
3. **Temperature:** Surface Temperature of substrate shall be a minimum of 5 degrees above the dew point and rising and generally between 40°F to 100°F. Temperatures shall not exceed manufacturer's recommendations.
4. **Stripping:** Edges, corners, crevices, welds, and bolts shall be given a brush coat/stripe coat for each material/layer. The stripe coat shall be applied by a brush and worked in both directions.
5. **Coating Systems:** Two options for coating systems are provided. Each Coat shall be a distinctive color or shade to verify each coating in the system.
6. **Prime Coat:** DIP, DIP with asphaltic seal coat, FBE (valves and appurtenances) prime coat shall be zinc-rich. Zinc-rich shall only be used on bare metal. Factory applied FBE/Asphaltic/Mastic Coatings on valves and appurtenances shall be completely removed per NACE-3/SSPC-SP6.

Note: Where specifically called out in the Coating System Table for factory applied FBE (valves and appurtenances) surface preparation may be NACE-4/SSPC-SP7 and the prime coat shall be an Inorganic Water Based Epoxy.

7. Intermediate Coat: Varies per coating system.
8. Final Coat: Varies per coating system.
9. Holiday Testing: Each coating layer shall be holiday tested at the recommended 100-125 volts DC per mil in accordance with the latest edition of the following standards: NACE SP0188-2006, NACE Standard RP0490-2007, ASTM G62, and per the manufactures recommendations. All low voltage holiday testing shall be performed using a Tinker & Rasor model M-1 Holiday Detector or approved equal.
10. Coating Systems: Either System 1 or System 2 shall be used for above ground or exposed non-immersion ferrous metal surfaces (Inclusive of Steel, DIP, Fittings and Appurtenances).

**Table 09910-2 System 1 – Zinc/Urethane/Fluoropolymer**

<b>Description</b>	<b>Generic Coating Name</b>	<b>Tnemec DFT (mils)</b>	<b>Carboline DFT (mils)</b>
Prime Coat all materials. Surface Prep NACE-1 or NACE-3	Zinc-Rich	Zinc Series 90-97 2.5-3.5	Carbozinc 621 3.0-8.0
Prime Coat – option for FBE only. Surface prep NACE-4	Inorganic water based epoxy-overcoat existing coatings	Typoxy Series 27WB 4.0-14.0	N/A N/A
Intermediate Coat	Aliphatic Acrylic Polyurethane	Endura-Shield Series 73 2.0-3.0	Carbothane 133 HB 3.0-5.0
Final Coat	Advanced Thermoset Fluoropolymer Polyurethane	Hydroflon Series 700 2.0-3.0	Carboxane 950 2.0-3.0

**Table 09910-3 System 2 – Zinc/Epoxy/Urethane**

<b>Description</b>	<b>Generic Coating Name</b>	<b>Tnemec DFT (mils)</b>	<b>Carboline DFT (mils)</b>	<b>PPG/Amero DFT (mils)</b>
Prime Coat all materials. Surface prep NACE-1 or NACE-3	Aromatic Urethane, Zinc-rich	Zinc Series 90-97 2.5-3.5	Carbozinc 621 3.0-8.0	Amercoat 68HS 3.0
Prime Coat option for FBE. Surface Prep NACE-4	Inorganic water based epoxy-overcoat existing coatings	Typoxy Series 27WB 4.0-14.0	N/A	N/A
Intermediate Coat	Polyamidoamine Epoxy	Color Hi-Build Epoxoline II Series N69 4.0-10.0	Carboguard 60 4.0-6.0	Amerlock 2/400 2.0-3.0
Final Coat	Aliphatic Acrylic Polyurethane	Endura-Shield Series 73 2.0-3.0	Carboxane 950 2.0-3.0	Americoat 450H 2.0-3.0

C. Procedures for Coating Interior of DIP and Fittings

1. Water, Storm Water, and Reclaimed Fittings. Interior coating shall be FBE or Cement mortar lined.
  - a. FBE for Fittings – Fittings shall be supplied with a fusion applied epoxy coating (FBE), both inside and outside for total protection including flanged and buried fittings. The exterior of flange fittings for above ground assemblies shall adhere to final exterior coating requirements as specified herein. The FBE coating system shall meet or exceed ANSI/AWWA C550 and C116/A21.116 requirements and shall have NSF 61 certification. FBE coatings thickness shall be 6 to 8 mils dry film thickness and shall be applied for secure adhesion and shall have a smooth surface and shall be holiday free.
  - b. Cement-mortar lining for ductile iron pipe and ductile and grey iron fittings for water service shall be in accordance with ANSI/AWWA C104/A21.4 and the exterior surface of buried DIP shall be asphaltic coating.
  - c. Exterior flanged fittings shall be as specified herein.

3.02 CLEAN-UP

- A. All materials and debris shall be removed and the site of the work left in a clean condition so far as this work is concerned.

3.03 FINAL INSPECTION

- A. The Contractor shall protect all painted surfaces against damage until the date of final acceptance of the work. The Engineer will conduct a final inspection of all work and the Contractor will be required to repaint or retouch any areas found which do not comply with the requirements of this section.

**END OF SECTION**

**SECTION 15044**  
**TESTING OF PIPING AND TANK**

**PART 1 - GENERAL**

1.01 SCOPE OF WORK

- A. Furnish all labor, materials, and equipment required for the pressure testing of tapping valve for line stop and visual leakage test for the tank valves and appurtenances.

1.02 RELATED WORK

- A. Section 15062 – Ductile Iron Pipe and Fittings
- B. Section 15100 – Valves and Piping Appurtenances

1.03 TEST PRESSURES

- A. Tapping valve for line stop shall be hydrostatically tested for 2 hours, at the minimum pressures defined for the pipe or tank materials listed below, unless specified elsewhere:

- 1. Tapping Valve for Line Stop – 150 psi

1.04 SUBMITTALS

A. Test Plan

- 1. Contractor shall submit a pressure testing plan, including piping to be tested, method of testing, test pressures, as required, and durations to the Engineer and Owner for approval prior to initiating testing.
- 2. Contractor shall submit a visual testing plan, including tank piping to be tested, method of testing, as required, and durations to the Engineer and Owner for approval prior to initiating testing.

B. Test Report

- 1. The Contractor shall submit a test report which includes the following information:
  - a. Date and time of tests.
  - b. Name and person/persons conducting tests and company name.
  - c. Test locations.
  - d. All pressure gauge locations and pressures at time of tests, as required.
- 2. Submit five (5) copies of the test reports to the Engineer, Department of Health (DOH) and Owner upon completion of the testing.

**PART 2 - PRODUCTS (NOT USED)****PART 3 - EXECUTION**

## 3.01 GENERAL

- A. Hydrostatic testing of tapping valve for line stop shall be performed at a minimum of 150 psi for a period of not less than 0.5 hours.
- B. Verification that the pipes, valves, and tanks have been cleaned and properly isolated shall be made.
- C. The Contractor is responsible for providing all equipment required to perform the cleaning and testing of the piping, valves, and the tank and for performing the work.

## 3.02 TESTING PREPARATION

- A. Tapping valve shall be in place and anchored before performing the pressure testing.
- B. Conduct hydrostatic tests on tapping valve after it has been installed and attached to the pipe supports, hangers, anchors, expansion joints, valves, and meters.
- C. Before conducting hydrostatic tests, the pipes and tanks must be cleaned.
  - 1. Pipes may be cleaned by the flushing required prior to disinfection of the piping, using potable water at a minimum velocity of 2.5 feet per second to remove the dirt and debris. Prior to any flushing operations, the Contractor shall notify the Owner and the Engineer for coordination.
- D. Testing of new pipes which are to be connected to existing pipes shall be isolated from the existing line by means of pipe caps, special flanges, or blind flanges. After the new line has been successfully tested, remove caps or flanges and connect to the existing piping.

## 3.03 TESTING

- A. Hydrostatic Testing:
  - 1. All air shall be purged while the piping is being filled with water. Once all of the air is removed, the piping system shall be subjected to the required test pressure for a preliminary test. All joints, fittings, valves, and connections shall be examined for leaks. Correct leaks prior to starting the actual test.
  - 2. Once all visible leaks have been repaired, the test pressure shall be applied and maintained for a period of 2 hours. No allowable leakage is acceptable.
- B. Visual Testing:
  - 1. All air shall be purged while the piping and tank is being filled with water. All joints, fittings, valves, and connections shall be examined for leaks. Correct all leaks and reset until no leaks are present.

**END OF SECTION**

**SECTION 15045  
DISINFECTION OF PROCESS PIPING**

**PART 1 - GENERAL**

1.01 SCOPE OF WORK

- A. Furnish all labor, material, and equipment required for the disinfection of all new or modified potable water piping and equipment.

1.02 RELATED WORK

- A. Section 15100 – Valves and Appurtenances
- B. Section 15062 – Ductile Iron Pipe and Fittings

1.03 REFERENCES

- A. American Water Works Association (AWWA)
- B. National Sanitation Foundation (NSF)

1.04 SUBMITTALS

- A. Test Reports

1. The Contractor shall submit disinfection reports which include the following information:
  - a. Type and form of disinfectant used.
  - b. Date and time of disinfectant spraying or swabbing start and time of completion.
  - c. Test locations.
  - d. Initial and 24 hour disinfectant residuals for each outlet tested.
  - e. Date and time of flushing start and completion.
  - f. Disinfectant residual after flushing for each outlet tested.
2. The Contractor shall submit bacteriological reports which include the following information:
  - a. Date issued, project name, and testing laboratory name, address, telephone number, and state certification number.
  - b. Date and time of water sample collection.
  - c. Name of person collecting samples and company name.
  - d. Test locations.
  - e. Initial and 24 hour disinfectant residuals for each outlet tested.
  - f. Coliform bacteria test results for each outlet tested.
  - g. Certification that water conforms to bacteriological standards of AWWA.

- h. Bacteriologists' signature and authority.
- 3. Submit three (3) copies of the test reports to the Department of Health (DOH), and to the City's designated Inspector upon completion of the testing.

## **PART 2 - PRODUCTS**

### 2.01 DISINFECTION CHEMICALS

- A. All chemicals used for disinfection shall meet AWWA B300 and/or AWWA B301 and shall be NSF 60 approved.

## **PART 3 - EXECUTION**

### 3.01 GENERAL

- A. Before being placed in service, all new process pipes shall be chlorinated in accordance with the specifications below and the procedures outline in AWWA C653, Disinfection of Water Treatment Plants, and AWWA C651, Disinfecting Water Mains. Disinfection of process piping shall be witnessed by the Engineer.
- B. Piping to be used for conveyance of sulfuric acid chemical prior to point of chemical injection shall be exempt from disinfection.

### 3.02 FLUSHING

- A. Sections of pipe to be disinfected shall first be flushed (full diameter) to remove any solids or contaminated material that may have become lodged in the pipe. A blow-off valve shall be provided large enough to develop a velocity of at least 2.5 feet per second in the process pipe.
- B. All taps required for chlorination or flushing purposes, or for temporary or permanent release of air, shall be provided for by the Contractor as a part of the construction of the process piping. After the disinfection, all such taps shall be sealed to the satisfaction of the Engineer.

### 3.03 DISINFECTION CRITERIA

- A. Before the system is put into operation, all process pipes and appurtenances and any item of new construction with which the water comes in contact, shall be thoroughly sterilized in accordance with AWWA C651 or C653. All piping, valves, fittings and all other appurtenances connections shall be sprayed disinfected or swabbed with a minimum 1 percent solution chlorine just before being installed, if the total length of the connection from the end of a new main to the existing main is equal to or less than 20 feet.

3.04 FORM OF APPLIED CHLORINE

- A. Chlorine may be applied as a liquid chlorine (gas-water mixture), or a mixture of water and sodium hypochlorite, as required. The Contractor shall assume responsibility for safe handling of chlorine and shall meet requirements of OSHA and other regulatory agencies for safe handling of chlorine.

3.05 FINAL FLUSHING AND TESTING

- A. Following chlorination, all treated water shall be thoroughly flushed from the newly constructed pipe and appurtenances at its extremity until the replacement water throughout its lengths shows upon test, a free chlorine residual not in excess of that normally carried in the system.
- B. After flushing, water samples collected on two (2) successive days from the treated piping system, as directed by the Florida Department of Environmental Protection (FDEP), shall show acceptable bacteriological results. Contractor to use a certified laboratory and reporting format per 62-550.730 Florida Administrative Code. Copies of testing results and all related correspondence with the Florida Department of Environmental Protection (FDEP) shall be submitted to the Engineer.
- C. Bacteriological sampling and testing procedures shall be paid for by the Contractor.

3.06 REPITITION OF FLUSHING AND TESTING

- A. Should the initial treatment result in an unsatisfactory bacterial test, the original chlorination procedure shall be repeated by the Contractor until satisfactory results are obtained.

**END OF SECTION**

**SECTION 15050**  
**CLEANING AND DISINFECTION OF STRUCTURES**

**PART 1 - GENERAL**

1.01 SCOPE

- A. This section covers the cleaning and disinfection of the Palma Ceia Elevated Storage Tank structure.
- B. Unless otherwise specified, disinfection work shall not be started until cleaning of the structures have been completed.
- C. Cleaning and disinfection of pipelines shall be consistent with the requirements in the Specification 15045 - Disinfection of Process Piping.

1.02 GENERAL

- A. Governing Standard
  - 1. Cleaning and disinfection work shall conform to the requirements of ANSI/AWWA C652, and as specified herein.
- B. Disinfection Plan
  - 1. Prior to starting any disinfection work, the Contractor shall prepare a detailed disinfection plan. The plan shall cover the method and procedure proposed, necessary coordination, sequence of operations, equipment to be used, the manner of filling and flushing of each structure specified herein to be disinfected, and the neutralization and disposal of wasted water. The plan shall be in compliance with this Specification and all procedures shall be subjected to acceptance by the Owner.
- C. Coordination
  - 1. The Contractor shall coordinate disinfection work with adjacent work, and with the Owner's operation of the existing facilities, as necessary to preclude work interference or duplication of effort and to expedite the overall progress of the work.
- D. Equipment and Facilities
  - 1. The Contractor shall provide all necessary piping connections, temporary valves, sampling taps, pumps, disinfectant, neutralization agents, chlorine residual test apparatus, and all other items of equipment or facilities required to complete the disinfection work.
- E. Water
  - 1. Water required for cleaning and disinfection of these structures will be furnished by the Owner for the first fill of the tank. Contractor will be responsible to provide water for any additional tank fills required for cleaning and disinfection of the tank.

**F. Chlorine Residual Tests**

1. The Contractor shall provide the necessary apparatus for making chlorine residual tests by the drop dilution method in accordance with Appendix A of ANSI/AWWA C652. Tests will be made by the Contractor's approved laboratory.

**PART 2 - PRODUCTS (NOT USED)****PART 3 - EXECUTION****3.01 CLEANING OF STRUCTURES**

- A. The tank shall be kept clean until they have been placed in services or until final acceptance by the Owner. All dirt, debris, rubbish, and construction materials shall be removed from the interior of structures.
- B. The tank shall be thoroughly cleaned after the work has been completed. All water remaining in the structures after the cleaning has been completed shall be removed by means of dewatering pumping equipment or other methods acceptable to the Engineer. All cleaning of the structures shall have been completed and the resulting water removed before disinfection work is started.

**3.02 STRUCTURES TO BE DISINFECTED**

- A. The following structures shall be disinfected as specified herein:
  1. Palma Ceia Elevated Storage Tank

**3.03 DISINFECTION PROCEDURES FOR TANK**

- A. After all work, including testing and cleaning, has been completed, the interior of the structure shall be disinfected.
- B. Disinfection procedures for the tank shall be as noted herein. Water and chlorine shall be added to the storage facility in amounts such that the solution will satisfy the chlorine demand and have a measurable residual of at least 1.0 mg/L after being held at a full level for 24 hours. Chlorine shall be added to the tank as needed to maintain the chlorine residual. The chlorine used shall be NSF approved for drinking water. The water shall be provided by the Contractor, upon Owner approval.
- C. After the disinfection is satisfactory, the Contractor will perform required bacteriological tests. Two consecutive sets of acceptable samples, taken at least 24 hours apart, shall be collected and the presence or absence of coliform organisms measured for each sample. Only when the tank satisfactorily passes the bacteriological tests, may it be placed into service.

**3.04 DISPOSAL OF CHLORINATED WASTEWATER**

- A. Disposal of the water used for disinfecting the tank shall be disposed through the existing tank drain line and into the sewer system, as available. Note that the chlorine in the water shall be neutralized prior to discharge. The neutralization shall be verified by checking the chlorine residual at, or upstream of, the discharge point. The Contractor may use the new pumps or provide alternate means by which to pump the chlorinated water from the tank. Provisions for impoundment (for additional contact time for the neutralizing agent and / or for energy dissipation) shall be the responsibility of the Contractor.

**END OF SECTION**

**SECTION 15062  
DUCTILE IRON PIPE AND FITTINGS**

**PART 1 - GENERAL**

1.01 SCOPE OF WORK

- A. Furnish all labor, materials, equipment and incidentals required and install, as shown on the Drawings, all ductile iron piping, ductile iron fittings, and appurtenances as specified herein.

1.02 RELATED WORK

- A. Division 1 – General Requirements
- B. Section 02140 – Dewatering and Drainage
- C. Section 02220 – Excavating, Backfilling, and Compacting
- D. Section 09905 – Piping, Valve, and Equipment Identification System
- E. Section 09910 – Utility System Painting
- F. Section 15044 – Pressure Testing of Process Piping
- G. Section 15045 – Disinfection of Process Piping
- H. Section 15126 – Pipe Hangers and Supports

1.03 REFERENCES

- A. American Water Works Association (AWWA)/American National Standards Institute (ANSI) Standards
- B. American Society for Testing and Materials (ASTM) Standards
- C. NSF/ANSI 61: Drinking Water System Components – Health Effects

1.04 GENERAL DESIGN

- A. The equipment and materials specified herein is intended to be standard types of ductile iron pipe or ductile iron fittings for use in transporting potable water.

1.05 QUALITY ASSURANCE

- A. Qualifications: All of the ductile iron pipe and ductile iron fittings shall be furnished by manufacturers who are fully experienced, reputable, and qualified in the manufacture of the materials to be furnished. The pipe and fittings shall be designed,

constructed, installed in accordance with the best practices and methods and shall comply with these specifications as applicable.

B. Standards:

1. Ductile iron pipe shall conform to ANSI/AWWA C151/A21.51.
2. All wetted surfaces and linings shall be NSF 61 approved.

C. Factory Tests: The manufacturer shall perform the factory tests described in ANSI/AWWA A21.51/C151.

D. Quality Control:

1. The manufacturer shall establish the necessary quality control and inspection practice to ensure compliance with the referenced standards. All pipe on this project shall be supplied by a single manufacturer unless otherwise accepted in writing by the Engineer.
2. In addition to the manufacturer's quality control procedures, the Owner may select an independent testing laboratory to inspect the material at the foundry for compliance with these specifications. The cost of foundry inspection requested by the Owner will be paid for by the Owner.

## 1.06 SUBMITTALS

A. Shop Drawings: Refer to Section 01340, Submittals. Provide the following:

1. Manufacturer's literature, catalog cuts, and specifications showing dimensions and materials of construction.
2. Shop drawings shall include dimensioning, methods and locations of supports and all other pertinent technical specifications.
3. Submit shop drawings, including layouts, within and under buildings and structures.
4. Shop drawings shall be prepared by the pipe manufacturer.
5. Shop drawings for piping within and under buildings and structures shall be submitted within 30 days of Execution of Contract.

B. Operating Instructions: Submit Operation and Maintenance Manuals in accordance with Section 01730, Operating and Maintenance Data.

C. Manufacturer's Certification: Submit sworn certification of factory tests and their results.

## 1.07 DELIVERY, STORAGE AND HANDLING

A. Delivery and Storage: Delivery and storage of the materials shall be in accordance with the manufacturer's recommendations.

B. Handling: Care shall be taken in loading, transporting and unloading to prevent damage to the pipe or fittings and their respective coatings. Pipe or fittings shall not be rolled off the carrier or dropped. Unloading shall be done by lifting with a forklift

or crane. All pipe or fittings shall be examined before laying, and no piece shall be installed which is found to be defective.

## **PART 2 - PRODUCTS**

### 2.01 MATERIALS

#### A. Ductile Iron Pipe

1. Ductile iron pipe shall meet ANSI A21.51 and AWWA C151, latest edition.
2. Thickness:
  - a. Below ground piping: Class 250 (20"-54") unless otherwise noted or specified.
  - b. Above ground piping: Flanged, Special Thickness Class 53 rated for a maximum working pressure of 250 psi, per ANSI/AWWA C115/A21.15, unless otherwise noted or specified
3. Joints:
  - a. Push-on or Mechanical Joints (below ground piping):
    - i. Pipe shall be supplied with all joint accessories:
      - I.* Push-on pipe accessories shall include gaskets and lubricant in sufficient quantity for the proper assembly of each joint. Gaskets for push-on joints shall be ethylene propylene diene (EPDM) rubber. All plain ends shall be painted with a circular stripe on the pipe barrel to allow a visual means of checking proper assembly.
      - II.* Mechanical joint pipe accessories shall include lubricant, gaskets, ductile iron glands, bolts, and nuts, all in sufficient quantity for the assembly of each joint. The bolts and nuts shall be manufactured of high-strength, low-allow steel having the characteristics listed in Table 6 of AWWA C111. The follower gland shall be ductile iron. Gaskets for mechanical joints shall be made of ethylene propylene diene (EPDM) rubber.
    - ii. Standards: ANSI/AWWA C111/A21.11
    - iii. Class: 250 psi water working pressure rating.
    - iv. Manufacturers: U.S. Pipe and Foundry Co., McWane, Inc., American Cast Iron Pipe Co, or approved equal.
  - b. Restrained Joints:
    - i. Joints shall be push-on in accordance with ANSI/AWWA C111/A21.11. Joints shall be secured by wedged locking shims or a follower gland which shoulder against a retaining ring permanently fastened to the spigot end of the pipe within the

joint. Gaskets for manufactured restrained pipe joints shall be made of ethylene propylene diene (EPDM) rubber.

- ii. Class: 250 psi water working pressure rating.
  - iii. Standard mechanical joint retainer glands will not be acceptable.
  - iv. Manufacturers: American Cast Iron Pipe Co. “Flex-Ring” or “Lok-Ring”, US Pipe and Foundry Co. “TR Flex” or “HP Lok”, EBAA Iron “Megalug”, or approved equal.
- c. Flanged (above ground, inside below ground vaults):
- i. All flanges shall be ductile iron and shall be manufactured and installed on ductile iron pipe in accordance with ANSI/AWWA C115/A21.15. Bolt circle and bolt holes shall be drilled and faced to match ANSI B16.1, Class 125 Flanges. All accessory hex-head bolts and nuts, and full-faced gaskets for each joint size shall be furnished as a Flange Accessory Package. Bolts, nuts, and washers shall be Type 316 stainless steel.
  - ii. Standards: ANSI/AWWA C115/A21.15 and ANSI B16.1
  - iii. Class: 125 lb factory applied screwed long hub flanges, plain faced without projection.
  - iv. Gaskets:
    - I.* Spans less than 10 feet: full face 1/8-inch thick neoprene rubber
    - II.* Spans greater than 10 feet: Toruseal gaskets as manufactured by American Cast Iron Pipe Co. or approved equal.
  - v. Manufacturers: U.S. Pipe and Foundry Co., American Cast Iron Pipe Co., or approved equal.
- d. Pipe Length (below ground installation): 18 or 20 feet maximum nominal length.

## B. Ductile Iron Fittings

### 1. Mechanical Joint:

- a. Mechanical joint fittings shall be manufactured in accordance with ANSI/AWWA C111/A21.11 and C153/A21.53. Mechanical joint bolts and nuts shall be manufactured of high-strength, low-allow steel having the characteristics listed in Table 6 of AWWA C111. Gaskets for mechanical joints shall be made of ethylene propylene diene (EPDM) rubber.

### 2. Flanged:

- a. Flanged fittings shall be manufactured in accordance with ANSI/AWWA C110/A21.10. All necessary hex-head bolts and nuts, and full faced gaskets for each joint shall be furnished as a Flange Accessory Package and shall conform to ANSI B18.2.2; threads shall be manufactured in accordance with ANSI B1.1. Bolts, nuts, and

washers shall be Type 316 stainless steel. Bolt circle and bolt holes shall be drilled and faced to match ANSI B16.1, Class 125 Flanges.

- b. Class: 125 lb, plain.
- 3. Manufacturers: U.S. Pipe and Foundry Co., American Cast Iron Pipe Co., Tyler/Union, or approved equal.

## 2.02 COATINGS AND LININGS

- A. Ductile iron pipe shall have a cement mortar lining and asphaltic seal coat complying with ANSI/AWWA C104/A21.4 and NSF 61. Exterior coatings shall be in accordance with ANSI/AWWA C151/A21.51 and shall have a prime coat compatible with the field finish coatings.
- B. Fittings shall have a cement mortar lining and asphaltic seal coating, or shall be supplied with a fusion applied epoxy coating, both inside and outside for total protection. All fittings for installation above ground shall be epoxy coated.
  - 1. Cement mortar lined fittings shall have a standard thickness cement mortar lining and asphaltic seal coat complying with ANSI/AWWA C104/A21.4 and NSF 61. Exterior coatings shall be in accordance with ANSI/AWWA C151/A21.51 and shall have a prime coat compatible with field finish coatings.
  - 2. Fusion epoxy coated fittings shall have an epoxy coating shall be certified by the manufacturer as approved for use in potable water applications. The epoxy coating shall meet AWWA C550, ANSI/AWWA C116/A21.16, and NSF 61 requirements. Nominal coating and lining thickness shall be 6 to 8 mils dry film thickness.
- C. Pipe and fittings shall be painted according to Section 09910 – Utility System Painting.

## 2.03 POLYETHYLENE ENCASEMENT

- A. Polyethylene encasement shall conform to the requirements of ANSIAWWA C105/A21.5 Method A and shall be 8 mil thick.
- B. The raw material used to manufacture polyethylene encasement shall be Type 1, Class A Grade E-1 in accordance with ASTM D-1248. The polyethylene shall meet the following test requirements:

Tensile Strength	1200 PSI minimum
Elongation	300% minimum
Dielectric Strength	800 V/Mil Thickness minimum
Thickness 0.008”	(8 mils) minimum nominal with minus tolerance not exceeding 10% of nominal
Melt Index	0.4 maximum

## **PART 3 - EXECUTION**

### **3.01 INSTALLATION**

- A. Standards: Installation of ductile iron pipe shall be in accordance with manufacturer's recommendations, AWWA C600, and as described in these technical specifications.
- B. Underground Ductile Iron Pipe and Fittings
  - 1. Pipe Cradle: Upon satisfactory installation of the pipe bedding material as specified in Section 02220 – Excavating, Backfilling, and Compacting, a continuous trough for the pipe barrel and recess for the pipe bells or couplings shall be excavated by hand digging. When the pipe is laid in the prepared trench, true to line and grade, the pipe barrel shall receive continuous, uniform support and pressure will be exerted on the pipe joints from the trench bottom. Blocking under the pipe will not be permitted.
  - 2. Dewatering: Water shall not be allowed in the trenches while the pipes are being laid and/or tested. Contractor shall not open more trenches than the available pumping facilities are able to dewater to the satisfaction of the Engineer. The Contractor shall assume responsibility for disposing of all water so as not to injure or interfere with the normal drainage of the area being worked in. In no case shall the pipelines being installed be used as drains for such water. See Section 02140 – Dewatering for more information.
  - 3. Cleanliness: The interior of the pipes shall be thoroughly cleaned of all foreign matter before being gently lowered into the trench and shall be kept clean during laying operations by means of plugs or other methods directed by the Engineer. During suspension of work for any reason at any time, a suitable stopper shall be placed in the end of the pipe last laid to prevent mud or other foreign material from entering the pipe.
  - 4. Survey Line and Grade: Lines shall be laid straight and depth of cover shall vary to provide uniform gradient or slope to pipe, whether grading is completed or proposed at time of pipe installation. When a grade or slope is shown on the Drawing, batter boards with string line paralleling design grade, or other previously directed means, shall be used by the Contractor to assure conformance to required grade and minimum required cover over the piping. The Contractor shall provide line and grade stakes at 100-foot maximum spacing and at all line and/or grade change locations. The minimum pipe cover shall be 36-inches below the finished grade surface or as shown on the Drawings.
  - 5. Pipe Joint Deflection: Deflection of joints shall not exceed that recommended by the manufacturer or exceed 50% of that allowed under AWWA C600 for the type of joint being installed, whichever is less.
  - 6. Pipe and Fittings Inspection: All pipe and fittings shall be inspected prior to lowering into trench to ensure no cracked, broken, or otherwise defective materials are being used. All homing marks shall be checked for proper length so as to not allow a separation or over homing of connected pipes. Homing marks incorrectly marked on pipe shall result in rejection of the pipe and removal from the site at the Contractor's expense.

7. Joint Compounds: No sulfur based joint compound shall be used.
  8. Polyethylene Encasement: All buried ductile iron pipe shall be polyethylene encased. Prior to polyethylene encasement, all nuts, bolts, and other parts of the valve joints shall be coated with two coats, 10 mils DFT per coat, of bituminous paint, Tnemec Series 46-465, Carbolite Bitumastic 50, or equal.
  9. Identification: Each run of ductile-iron potable water pipe shall be wrapped with a continuous length of tape, in accordance with the standard details and Section 09905 – Piping, Valve, and Equipment Identification System. Tape for spiral wrapping shall be minimum 2” wide blue vinyl tape, with a minimum of three spiral wraps per pipe section.
  10. Joint Placement:
    - a. Push on joints: Pipe shall be laid with the bell ends facing upstream. The gasket shall be inserted and the joint surfaces cleaned and lubricated prior to placement of the pipe. After joining the pipe, a metal feeler shall be used to verify that the gasket is correctly located.
    - b. Mechanical Joints: Pipe and fittings shall be installed in accordance with the "Notes on Method of Installation" under ANSI/AWWA C111/A21.11. The gasket shall be inserted and the joint surfaces cleaned and lubricated with soapy water before tightening the bolts to the specified torque.
  11. Anchorage of Fittings: Adequate precautions shall be taken to prevent the separation of joints at bends, tees, and plugged ends. Details of design, construction, applications, installations, and number of joints necessary for the restraint of a given thrust shall be as specified in these specifications or as indicated on the plans.
  12. Backfilling: Backfilling shall be in accordance with Section 02220 – Excavating, Backfilling, and Compaction.
- C. Above Ground and Exposed Ductile Iron Pipe and Fittings
1. Alignment: Piping shall be installed along straight line and grade between fittings unless other lines of alignment or grade changes have been indicated. Modifying alignments or grades during construction must be approved by the Engineer prior to installation.
  2. Above ground and exposed piping shall be cut accurately to measurements established at the job site and shall be worked into place without springing or forcing, properly clearing all equipment access areas and openings. Changes in sizes shall be made with appropriate reducing fittings. Pipe connections shall be made in accordance with the details shown and manufacturer’s recommendations. Open ends of pipes shall be properly capped or plugged during installation to keep dirt and other foreign material out of the system. Pipe supports and hangers shall be provided where indicated, as required to insure adequate support of the piping, or as specified in Section 15126 – Pipe Hangers and Supports.
  3. All pipe and appurtenances connected to equipment shall be supported in such a manner as to prevent any strain being imposed on the equipment. When manufacturers have indicated requirements that piping loads shall not be

transmitted to their equipment, a certification shall be submitted stating that such requirements have been complied with.

4. Assembling Flanged Joints
  - a. Bolt holes of flanges shall straddle the horizontal and vertical centerlines of the pipe. Clean flanges by wire brushing before installing flanged fittings. Clean flange bolts and nuts by wire brushing, lubricate bolts with oil and graphite.
  - b. Insert the nuts and bolts (or studs) finger tighten, and progressively tighten diametrically opposite bolts uniformly around the flange to the proper tension.
  - c. Care shall be used when tightening joints to prevent undue strain upon valves, pumps, and other equipment.
  - d. If flanges leak under pressure testing, loosen or remove the nuts and bolts, reset or replace the gasket, reinstall or retighten the bolts and nuts, and retest the joints. Joints shall be watertight with no visible leakage under normal operational or testing conditions.
  
5. Tapped Connections
  - i. Make all tapped connections as shown on the Drawings or as directed by the Engineer.
  - ii. Make all connections watertight and of adequate strength to prevent pullout.
  - iii. Drill and tap normal to the longitudinal axis of the pipe.
  
- D. Cutting: When required, cutting shall be done by machine, leaving a smooth cut at right angles to the axis of the pipe. Cut ends of the pipe to be used with a push-on bell shall be beveled.
  
- E. Thrust Restraint
  1. General: Thrust restraint shall be accomplished by the use of mechanical restraining devices unless specifically identified otherwise on the Drawings or herein.
  2. Length of Restrained Joints: In accordance with the lengths listed in the table as shown on the Drawings.

### 3.02 CLEANING AND FIELD TESTING

- A. General: At the conclusion of the work, the Contractor shall thoroughly clean the new pipe lines by flushing with water and swabbing to remove all dirt, stones, and other material which may have entered the line during construction.
  
- B. Flushing and Swabbing
  1. Flushing: Preliminary flushing may be accomplished through a full diameter flush or swabbing. Preliminary flushing may be used prior to swabbing. Preliminary flush shall have a minimum of 2.5 feet per second full diameter in accordance with AWWA C651. The Contractor shall dispose of the flushing water without causing a nuisance or property damage. The Contractor shall arrange with the Owner the source of the flushing water. Prior to any testing

being performed, the Contractor shall submit and have approved the required record drawings.

2. Swabbing: New water mains shall be hydraulically cleaned with a polypropylene or polyurethane swabbing device to remove dirt, sand, and debris.
  - a. If swabbing access and egress points are not provided in the design Drawings, it shall be the Contractor's responsibility to provide temporary access and egress points for the cleaning as required. Passage of a cleaning poly swabs through the system shall be constantly monitored, controlled, and all poly swabs entered into the system shall be individually marked and identified so that the exiting of the poly swabs from the system can be confirmed.
  - b. Cleaning of the system shall be done in conjunction with the initial filling of the system for its hydrostatic test. After initial slow-fill, pipe shall sit full for 24 hours to facilitate cleaning and collection of debris from interior of pipe. The Contractor shall insert polypropylene or polyurethane foam swabs (two pounds per cubic foot density) complete with rear polyurethane drive seal, into the first section of pipe. The swabs shall remain there until the pipeline construction is completed. The line to be cleaned shall only be connected to the existing system at a single connection point. Locate and open all new in-line valves beyond the point of connection on the pipeline to be cleaned during the swabbing operation.
  - c. At the receiver or exit point for the poly swab, the Contractor is responsible for creating a safe environment for collection of debris, water, and the swab. Considerations shall be made for protecting surrounding personnel and property for safe retrieval of the swab.
  - d. Only the City shall operate the supply valve from the existing system. Cleaning and flushing shall be accomplished by propelling the swab down the pipeline to the exit point with potable water. Flushing shall continue until the water is completely clear and swab is retrieved.
  - e. Re-apply a series of individual swabs in varying diameters and/or densities as required to attain proper cleanliness of the pipe.
  - f. Swabbing speed shall range between two and five feet per second.
  - g. After the swabbing process, pressure testing and disinfection of the pipe shall be completed in accordance with the Contract Documents.
  
- C. Hydrostatic Testing: The Contractor shall hydrostatic all new or modified pipe as per Section 15044 – Pressure Testing of Process Piping.

### 3.03 PAINTING

- A. Above ground and exposed ductile iron pipe shall be painted following successfully completing hydrostatic pressure and leakage testing, with the pipes empty.
- B. Pipe shall be degreased with solvent and wiped dry immediately prior to the application of the specified coating.
- C. Pipe shall be painted and identified per Section 09905 – Piping, Valve, and Equipment Identification System and Section 09910 – Utility System Painting.

3.04 DISINFECTION AND FINAL CLEARANCE

- A. General: Before being placed into service, all potable water pipelines shall be disinfected by chlorination. Taps for chlorination and sampling shall be uncovered and backfilled by the Contractor as required. During the chlorination period, valves and appurtenances in the treated section shall be operated to ensure that they are disinfected with the new pipe.
- B. Disinfection: The Contractor shall disinfect all new or modified pipe as per Section 15045 – Disinfection of Process Piping.
- C. Approval: The water line, including process piping, shall not be placed in service until the requirements of the State and/or City Public Health Department are met, and the letter of clearance is obtained from the Florida Department of Environmental Protection.

**END OF SECTION**

**SECTION 15100**  
**VALVES AND PIPING APPURTENANCES**

**PART 1 - GENERAL**

1.01 SCOPE OF WORK

- A. Furnish all labor, materials, equipment and incidentals required and install, as shown on the Drawings, all valves and appurtenances as specified herein.

1.02 RELATED WORK

- A. Division 1 – General Requirements
- B. Section 09905 – Piping, Valve, and Equipment Identification System
- C. Section 09910 – Utility System Painting
- D. Section 15044 – Pressure Testing of Process Piping
- E. Section 15045 – Disinfection of Process Piping
- F. Section 15062 – Ductile Iron Pipe and Fittings
- G. Section 15126 – Pipe Hangers and Supports

1.03 REFERENCES

- A. American Water Works Association (AWWA)/American National Standards Institute (ANSI) Standards
- B. American Society for Testing and Materials (ASTM) Standards
- C. NSF/ANSI 61: Drinking Water System Components – Health Effects
- D. NSF/ANSI 372: Drinking Water System Components – Lead Content

1.04 GENERAL DESIGN

- A. The equipment and materials specified herein are intended to be standard types of valves and appurtenances for use in controlling the flow of potable water.
- B. The equipment includes, but is not limited to the following:
  - 1. Altitude Valve
  - 2. Plug Valves
  - 3. Gate Valves/Tapping Valves
  - 4. Tapping Sleeves
  - 5. Rigid Pipe Couplings

6. Dismantling Joints
7. Joint Restraints
8. Flange Adapters
9. Valve Boxes
10. Pipe and Valve Identification

#### 1.05 QUALITY ASSURANCE

- A. Qualifications: All of the valves and appurtenances shall be furnished by manufacturers who are fully experienced, reputable, and qualified in the manufacture of the materials to be furnished.
- B. Standards:
  1. All wetted surfaces and linings shall be NSF/ANSI 61 approved.
- C. Quality Control:
  1. The manufacturer shall establish the necessary quality control and inspection practice to ensure compliance with the referenced standards.
  2. In addition to the manufacturer's quality control procedures, the Owner may select an independent testing laboratory to inspect the material at the manufacturer for compliance with these specifications. The cost of manufacturer inspection requested by the Owner will be paid for by the Owner.

#### 1.06 SUBMITTALS

- A. Shop Drawings: Refer to Section 01340 – Submittals. Provide the following:
  1. Manufacturer's literature, catalog cuts, and specifications showing dimensions and materials of construction.
  2. Shop drawings shall include dimensioning, methods and locations of supports and all other pertinent technical specifications.
- B. Operating Instructions: Submit Operation and Maintenance Manuals in accordance with Section 01730 – Operating and Maintenance Data.
- C. Manufacturer's Certification: Submit sworn certification of factory tests and their results.

#### 1.07 DELIVERY, STORAGE AND HANDLING

- A. Delivery and Storage: Delivery and storage of the materials shall be in accordance with the manufacturer's recommendations.
- B. Handling: Care shall be taken in loading, transporting and unloading to prevent damage to the valves and their respective coatings.

## 1.08 WARRANTY AND GUARANTEES

- A. Provide equipment warranties in accordance with Section 01740 – Warranties and Bonds.

**PART 2 - PRODUCTS**

## 2.01 GENERAL

- A. Valves shall include the required accessories such as operators, operating nuts, valve boxes, hand wheels, chain wheels, extension stems, etc. necessary for proper operation.
- B. All valves and appurtenances shall be of the size shown on the Drawings. All similar type valves shall be from the same manufacturer.
- C. Direction of opening and the word “OPEN” to be cast in hand wheel or valve bonnet.
- D. All valves and appurtenances shall have the name of the manufacturer and the working pressure for which they are rated cast in raised letters upon the body.
- E. All bolts, washers and nuts shall be Type 316 stainless steel, unless specified otherwise.
- F. Factory Finishing:
  - 1. Epoxy Lining and Coating:
    - a. Linings and coatings shall be in accordance with AWWA C550, as applicable, unless otherwise specified.
    - b. Linings and coatings shall be either two-part liquid material or heat-activated (fusion) material. Only heat-activated material is acceptable if specified as “fusion” or “fusion bonded” epoxy.
    - c. Linings and coatings shall be a minimum of 7-mil dry film thickness except where limited by valve operating tolerances.
    - d. Lining and coatings shall be as specified in Section 09910 – Utility System Painting, unless specified otherwise herein.
- G. Materials:
  - 1. All wetted materials shall be NSF/ANSI 61 approved. Manufacturer’s shall submit an affidavit with the product literature indicating NSF/ANSI 61 approval, in accordance with Rule 62-555.320(3) Florida Administrative Code.

## 2.02 MATERIAL AND EQUIPMENT

- A. Altitude Valves:
  - 1. The altitude control valve shall be installed on the tank common inlet/outlet line to feed the tank as shown on the Drawings. The two-way flow valve shall be designed to shut off at the high water level and reopen when the system pressure drops below the tank head. It shall also open to let flow back through the valve when inlet system pressure drops below tank elevation. The valve

shall sense the tank head from a customer installed sensing line run back to the CDS6A pilot mounted on the valve.

2. The altitude valve shall have a solenoid shutoff feature that shall open and close the valve remotely by energizing or de-energizing a solenoid on the pilot system.
  3. The main valve will be a diaphragm actuated globe style main valve. It shall be a single flat diaphragm that flexes as the valve opens and closes. No double rolling diaphragm valves shall be permitted.
  4. The altitude valve shall consist of three parts: body, with seat installed, the diaphragm assembly, and the cover with cover bearing. The main valve shall be ductile iron and have stainless steel trim. The diaphragm assembly shall be fully guided throughout its entire stroke. There shall be a bearing in the main valve cover and an integral bearing in the valve seat. The main valve will have a NSF/ANSI 61 approved fusion bonded epoxy coating on all ferrous metal surfaces. It will be a packless valve with no O-rings or packing glands anywhere within the main valve. The main valve shall have a one piece stainless steel seat. No snap seat rings will be accepted. The main valve cover hardware shall be stainless steel.
  5. The main valve cover shall have a locating lip to ensure for proper alignment and also ease of maintenance. There shall be no alignment pins on the cover.
  6. The pilot control system shall have three separate pilot controls:
    - a. Opening and shutting off at tank high water level. This CDS6A pilot will have a 150-200 feet adjustment range.
    - b. Opening the valve for return flow. The pilot system shall also have a normally closed solenoid in the control loop. It shall be designed to open the main valve when the solenoid is energized using a level transducer or it can be energized to close the valve at any time to stop filling.
    - c. Closing speed control. The pilot control system will also contain an X105LCW limit switch for electronic monitoring of open or closed position.
  7. The valve shall be Model 610-27, as manufactured by Cla-Val Co. Newport Beach, Ca.
- B. Plug Valves:
1. Eccentric plug valves shall be in conformance with AWWA C517, latest revision, and designed for a minimum of 150 psi.
  2. Plug valves shall be a non-lubricated, eccentric type, resilient-faced plug valve and shall be furnished with end connections. Flanges shall be per the ANSI B16.1 125 lb. standard. End-to-end length of flanged valves shall be per AWWA C517, Table 1.
  3. Plug valves shall be of the tight closing rubber-seat type. The seat shall be made of ethylene propylene diene (EPDM) rubber, suitable for use in potable water application.
  4. The plug shall be of one-piece construction and shall be capable of withstanding the full pressure rating of the valve in either direction without

the use of structural ribs that extend beyond the profile of the plug. Valves shall be drip-tight with 150 psi versus 0 psi in either direction.

5. Valves shall be satisfactory for applications involving valve operation after long periods of inactivity.
6. Valve bodies shall be constructed of high-strength cast iron conforming to ASTM A126, Class B. Port area shall be 100% of standard pipe area. The body shall have minimal pooling designed with a flushing side port to provide complete flushing of the valve every time it cycles. Port of valve shall be rectangular and of one design through the entire size range. Valve body thickness shall be in accordance with AWWA C517, latest revision.
7. Valve seats shall be rectangular ported, 1/8" thick welded overlay of not less than 95% pure nickel. Seat area shall at least 1/2" wide and raised, with the raised surface completely covered with weld to ensure that the plug face contacts only nickel.
8. Plugs shall be solid one-piece castings of ASTM A536 ductile iron. The plug shall have a cylindrical seating surface eccentrically offset from the center of the plug shaft. The plug shall not contact the seat prior to 90% closed. The interference between the plug face and body seat, with the plug in the closed position, shall be externally adjustable in the field with the valve in the line under pressure.
9. Buried valves shall have integrally cast mechanical joint ends in accordance with ANSI/AWWA C111/A21.11, latest revision. Gaskets for mechanical joints shall be made of ethylene propylene diene (EPDM) rubber.
10. Above ground valves shall have cast iron flanges in accordance with ANSI/AWWA C110/A21.10 with bolt circle and bolt holes drilled to match ANSI B16.1, Class 125. All flange related bolts, nuts, and washers shall be Type 316 stainless steel. Flange gasket shall be as specified in Section 15062 – Ductile Iron Pipe and Fittings.
11. Valve plug shall rotate 90 degrees from the fully open position to the fully closed position.
12. Shaft seals shall be of the multiple V-ring type with a packing gland follower. Shaft seals shall be externally adjustable and repackable under pressure without removing the actuator or bonnet from the valve. All Flanged and mechanical joint plug valves shall have an air gap between shaft packing and bottom of actuator for visual inspection, adjustment or complete replacement of packing without disturbing any portion of the valve or actuator except the packing gland follower. This valve shaft packing design must have been used successfully within the county for the past 10 years. Valves utilizing O-ring seals or non-adjustable packing shall not be acceptable.
13. All buried plug valves shall open left or counterclockwise when viewed from the stem and shall have a 2" operating nut which conforms to AWWA C517. All exposed plug valves shall open left or counter-clockwise when viewed from the stem and shall have a hand wheel operator. Manual valve operators shall be of the worm gear or traveling nut type and shall be fully enclosed.
14. Manual valves located above ground shall be equipped with hand wheel operators and shall have a suitable indicator arrow to give valve position from fully open to fully close. Buried plug valves shall be furnished with 2-inch

square AWWA nut operator with valve box and cover. Operator components shall, at the extreme operator positions, withstand without damage a pull of 200 lbs. for hand wheel operators or an input torque of 300 ft.-lbs. for operating nuts.

15. Interior of valve body and valve plug except for valve seat and stainless steel valve seat ring shall be coated with a fusion bonded or thermosetting epoxy coating in accordance with AWWA C550, latest revision. Coating shall be holiday-free with a minimum thickness of 10 mils. Surfaces shall be clean, dry, and free from rust and grease before coating.
16. All exterior surfaces of plug valves shall be clean, dry, and free from rust and grease before coating.
17. For buried service, the exterior ferrous parts of all valves shall be coated at the factory with coal tar epoxy with a minimum total finish dry film thickness of 20 mils. Prior to backfilling, all uncoated nuts, bolts, glands, rods, and other parts of joints shall be coated with two coats, 10 mils DFT per coat, of bituminous paint, Tnemec Series 46-465, Carbolite Bitumastic 50, or equal.
18. For valves installed above ground, the exterior ferrous parts of all valves shall be shop primed at the factory with one coat, minimum dry film thickness of 4 mils, of a rust inhibitive, universal epoxy primer. Primer shall be suitable for finish paint specified. Following installation above ground valves shall be finish painted in accordance with Section 09910 – Utility System Painting and Section 09905 – Piping, Valve, and Equipment Identification System.
19. Prior to shipment from the factory, hydrostatic and leakage tests shall be conducted for each plug valve. Hydrostatic and leakage tests shall be conducted in strict accordance with ANSI/AWWA C517, latest revision, and results shall be submitted to the Engineer.
20. Plug valve shall be manufactured by DeZurik, or approved equal.

#### C. Gate Valves and Tapping Valves

1. Gate valves shall be non-rising stem resilient wedge type rated for 250 psi working pressure and shall conform to AWWA C509 or C515. Valve bodies, bonnets, wedges and hand wheels shall be constructed of ductile iron.
2. Standard gate valves for buried installation shall have mechanical joints at both ends and tapping valves shall be a gate valve with one end mechanical joint and on end flanged, as specified herein.
3. All mechanical and flanged joints for standard and tapping valves shall conform to ANSI/AWWA C111/A21.11 and C110/A21.10. Mechanical and flanged joints shall be supplied with accessories package including bolts, nuts, and gasket. Bolts and nuts shall be Type 316 stainless steel and gaskets shall be ethylene propylene diene (EPDM) rubber.
4. The exterior of the ductile iron wedges shall be fully encapsulated with ethylene propylene diene (EPDM) rubber. The wedges shall be symmetrical and seal equally well with flow in either direction.
5. Non-metallic seats for standard and tapping valves shall be bonded to the gate; mechanically attached seats will not be accepted. The method of bonding shall be approved by ASTM D429A or B and as specified in AWWA C509/C515.

6. Standard and tapping valves shall open by turning a 2-inch square AWWA operating nut clockwise, open right.
  7. Standard and tapping valve stems shall be high-strength bronze manufactured in accordance with the appropriate AWWA C509/C515, latest revisions. Stems, stem nuts, and wedges shall act independently. Stems shall be sealed by at least three "O" rings; two located above and one below the thrust collar. The top two "O" rings shall be replaceable with valve fully open and while subject to full rated working pressure. Stems shall be provided with low friction torque reducing thrust bearings. Thrust washers may be used to separate the thrust collar from iron surfaces.
  8. The resilient seat shall be bubble-tight against a 200 psi water working pressure. Shell test pressure for testing a valve shall be twice the rated working pressure and maintain zero leakage at all times.
  9. Tapping valve interior waterway shall be full opening (full port) and capable of passing a full sized shell cutter through the valve.
  10. All tapping valve shall be interchangeable with other makes of tapping sleeves.
  11. All valves shall meet or exceed test specifications as set forth in AWWA C509/C515, as applicable.
  12. All internal and external surfaces of the valve body and bonnet shall have a fusion bonded epoxy coating, complying with AWWA C550, applied electrostatically prior to assembly.
  13. Approved manufacturers include American Flow Control, Clow, Kennedy, Mueller Co. or approved equal.
- D. Valve Actuator Pedestal Extensions
1. Pedestals shall be installed as shown on the Drawings to raise motorized actuators 3 feet from the finished grade.
  2. Pedestals shall have mounting plates compatible with the motorized actuators selected and shall come with u-joints and hardware as shown in the Details to connect to 2" buried operating nuts.
  3. Actuator pedestal extensions shall be manufactured by Carbo-Bond Inc. or approved equal.
- E. Tapping Sleeves
1. Tapping sleeves shall be constructed of high strength steel and shall be manufactured in accordance with ASTM A285. Steel tapping sleeves shall be suitable for tapping ductile and cast iron pipe.
  2. All tapping sleeves shall be split sleeve design; one half shall contain the outlet hub, gasket and tapping flange; the other half shall form the back. A 3/4" NPT test plug shall be provided on the outlet throat of the sleeve for pressure testing the sealed sleeve at 150 psi prior to tapping the pipe. All tapping sleeves shall allow a full-size cutting head to pass through the outlet of the hub.
  3. All bolts and nuts joining the two halves of the sleeve shall be high strength, low alloy steel in accordance with AWWA C111, latest revision.

4. All tapping sleeve connection flanges shall be a Class 125 flanged joint, conforming to AWWA C207 Class D, ANSI 150 lb. with a counter bore per MSS SP-60 dimensions.
5. Tapping sleeves shall seal to the pipe by the use of a confined "O" ring gasket around the tap opening between the sleeve and pipe or by a full circumferential gasket between the sleeve and pipe. Gaskets shall be made of ethylene propylene diene (EPDM) rubber.
6. All steel tapping sleeves shall be finished with fusion-bonded epoxy coating both inside and outside, in accordance with AWWA C550, latest revisions.

#### F. Rigid Pipe Couplings

1. Pipe couplings used to join two pieces of plain end pipe shall be sized to suit the outside diameter of the pipe ends to be joined. Transition couplings shall be used to join pipes of different outside diameters. Pipe couplings shall be bolted type with steel middle ring and end followers.
2. All carbon steel parts of the coupling shall be coated on the interior and exterior with a fusion bonded thermosetting epoxy coating with a 12-mil nominal coating thickness. The coating shall be equal to AL-CLAD as manufactured by Dresser Industries, Inc.
3. Gaskets for the coupling shall be wedge type manufactured of ethylene propylene diene (EPDM) rubber.
4. Bolts shall be manufactured of high strength Type 316 stainless steel with Type 316 stainless steel hexagonal nuts. Bolts and nuts shall conform dimensionally to ANSI/AWWA C111/A21.11, latest revision.
5. Couplings shall be Style 38 as manufactured by Dresser Industries, Inc. or an equal approved by the Engineer.

#### G. Dismantling Joints

1. Dismantling joints shall be installed as shown on the Drawings and shall be constructed in accordance with ASTM A36 Carbon Steel.
2. All dismantling joints connection shall be a Class 125 flanged joint conforming to AWWA C207 Class D flanges.
3. Gaskets for the dismantling joint shall be wedge type manufactured of ethylene propylene diene (EPDM) rubber in accordance with ASTM D2000.
4. All tie-rods shall be high strength steel in accordance with ASTM A193.
5. Dismantling joints shall be Style 400 as manufactured by Romac Industries, Inc or approved equal.

#### H. Restrained Rigid Pipe Couplings

1. Restrained pipe coupling to prevent axial separation shall be incorporated into the design of the sleeve or coupling used to connect two plain pipe ends.
2. The restraint mechanism shall consist of a plurality of individually actuated gripping surfaces to maximize restraint capability. Torque limiting twist off nuts shall be used to insure proper actuating of the restraint devices.

3. Ductile Iron components shall be of a minimum of 65-45-12 ductile iron meeting the requirements of ASTM A536 of the latest revision and shall be tested in accordance with the stated standard.
4. The restrained joining system shall meet the applicable requirements of AWWA C219, ANSI/AWWA C111/A21.11, and ASTM D2000.
5. Restrained couplings shall be Series 3800 Mega-Coupling as manufactured by EBBA Iron or approved equal.

#### I. Joint Restraints

##### 1. Mechanical Joints

- a. Joint restraints for mechanical joint fittings 3 inch through 48 inch shall be constructed of ductile iron conforming to ASTM A536 and shall have a working pressure rating of 350 PSI for 3–16 inch fittings and 250 PSI for 18-48 inch fittings.
- b. Restraint shall be accomplished by multiple gripping wedges incorporated into a follower gland meeting the requirements of ANSI/AWWA C110/A21.10.
- c. Restraints shall be Megalug Series 1100 restraints with Mega-Bond coating as manufactured by EBBA Iron or approved equal.

##### 2. Pipe Joints

- a. Joint restraints for push-on pipe joints 3 inch through 54 inch shall be constructed of ductile iron conforming to ASTM A536 and shall have a working pressure rating of 350 PSI for 3-16 inch fittings and 250 PSI for 18-54 inch fittings.
- b. Restraint shall be accomplished by a wedge action restraint ring on the spigot joined to a split ductile iron ring behind the bell. Torque limiting twist off nuts shall be used to insure proper actuation of the restraining wedges.
- c. Restraints shall be Megalug Series 1700 Megalug restraint harnesses with Mega-Bond coating as manufactured by EBBA Iron or approved equals.

#### J. Flange Adapters

1. Adapters shall be suitable for joining plain-end pipe to flanged pipes and fittings.
2. Adapters shall be constructed of ductile iron conforming to ASTM A536 and shall have flange bolt hole circles that are compatible with ANSI/AWWA C110/A21.10.
3. Restraint for the adapters shall consist of individual actuated gripping wedges. Torque limiting actuating screws shall be used to insure proper set of the gripping wedges. The adapters shall be capable of deflection during assembly and allow at least 0.6” of gap between the end of the pipe and the mating flange without affecting the integrity of the seal.
4. Adapters shall be Series 2100 Megaflange restrained flange adapters with Mega-Bond coating as manufactured by EBBA Iron or approved equals.

#### K. Valves Boxes

1. Place a valve box over the operating nut for each buried valve. The valve box shall be designed so as to prevent the transmission of surface loads directly to the valve or piping.
2. Valve boxes shall be of the adjustable slide-type of suitable length with an interior diameter of not less than 5 inches. The valve boxes shall be manufactured of cast iron and shall be of the two piece design including a bottom section and top section with cover. The cast iron cover shall be cast with the applicable service, "WATER", "SEWER," etc., markings. The top section shall be adjustable for elevation and shall be set to allow equal movement above and below finished grade. The valve box shall as shown in the Drawing Details.
3. The castings shall be manufactured of clean, even grain, gray cast iron conforming to ASTM A48, Class 35 for Gray Iron Castings; and shall be smooth, true to pattern, free from blow holes, sand holes, projections, and other harmful defects. The seating surfaces of both the cover and the top section shall be machined so that the cover will not rock after it has been seated.
4. The valve boxes shall be coated inside and outside with an asphaltic coating prior to machining, so that the machined seating surfaces will be free of any coating.
5. Valve extension stems shall be provided for all buried valves when operating nut is deeper than 3 feet below final grade.
6. Cast iron valve box assemblies shall be manufactured by Union/Tyler, Pipeline Components, Inc., or approved equal.

L. Pipe and Valve Identification

1. Identification systems for above ground piping and below-ground valves shall be as specified in Section 09905 – Piping, Valve, and Equipment Identification System.

## **PART 3 - EXECUTION**

### 3.01 INSTALLATION

A. General:

1. All valves and appurtenances shall be installed in the locations shown, true to alignment and rigidly supported. Valves shall be installed in accordance with manufacturer's installation instructions and with the details shown on the Drawings. Any damage to the above items shall be repaired to the satisfaction of the Engineer before they are installed.
2. Valves shall be installed such that they are supported properly in their respective positions, free from distortion and strain. Valves shall be installed such that their weight is not borne by pumps and equipment that are not designed to support the weight of the valve.
3. Valves shall be carefully inspected during installation; they shall be opened wide and then tightly closed and the various nuts and bolts shall be tested for

tightness. Special care shall be taken to prevent any foreign matter from becoming lodged in the valve seat: Check and adjust all valves for smooth operation.

4. Install all floor boxes, brackets, extension rods, guides, the various types of operators and appurtenances as shown on the drawings that are in masonry floors or walls, and install concrete inserts for hangers and supports as soon as forms are erected and before concrete is poured. Before setting these items, the contractor shall check all plans and figures which have a direct bearing on their location and he shall be responsible for the proper location of these valves and appurtenances during the construction of these structures. In addition, install hangers or supports at all changes in direction at the spacing requirements stated in Section 15126 – Pipe Hangers and Supports.
5. Pipe for use with flexible couplings shall have plain ends as specified in the respective pipe sections in Division 15.
6. Flanged joints shall be made with 316 stainless steel bolts, nuts and washers, unless otherwise noted. All exposed bolts (excluding stainless steel) shall be painted the same color as the pipe. Clean iron flanges by wire brushing before installing flanged valves.
7. Buried flange joints shall be coated in prior to polyethylene encasement, including all nuts, bolts, and other parts of the valve joints with two coats, 10 mils DFT per coat, of bituminous paint, Tnemec Series 46-465, Carboline Bitumastic 50, or equal.
8. Clean threaded joints by wire brushing or swabbing. Apply Teflon joint compound or Teflon tape to pipe threads before installing threaded valves. Joints shall be watertight.
9. Pressure gauges shall not be installed until after the substantial completion date unless otherwise requested by the Engineer.
10. Valve Orientation:
  - a. Install operating stem vertical when valve is installed in horizontal runs of pipe having centerline elevations 4 feet 6 inches or less above finished floor, unless otherwise shown.
  - b. Install operating stem horizontal in horizontal runs of pipe having centerline elevations between 4 feet 6 inches and 6 feet 9 inches above finished floor, unless otherwise shown.
11. Locate valve to provide accessibility for control and maintenance. Install access doors in finished walls or plaster ceilings for valve access.
12. Following installation, all above ground valves shall be painted in accordance with the painting system specified in Section 09910 – Utility System Painting. Following installation of valves installed in valve vaults, repair any scratches, marks and other types of surface damage, etc., with a coating equal to the original coating supplied by the manufacturer.
13. Expansion and Contraction Provisions
  - a. Rigidly support all piping with adequate provisions for expansion and contraction.
  - b. Firmly anchor horizontal runs over 50 feet in length at the midpoint of the runs to force expansion equally toward the ends.

14. Support valves in accordance with Section 15126 – Pipe Hangers and Supports.
15. Pipe couplings shall be installed in strict accordance with the manufacturer's published instructions and recommendations.
16. Tie rods shall be installed in strict accordance with the manufacturer's written installation requirements. Unless otherwise indicated on the Drawings, the size and number of tie rods for a joint or installation shall be as recommended by the manufacturer's design chart for a working pressure of 150 psi.

### 3.02 PAINTING

- A. Identification systems for the valves shall be as specified in Section 09905 – Piping, Valve, and Equipment Identification System.
- B. All carbon steel components shall be painted with Epoxy paint.
- C. Stainless steel components shall not be painted.

### 3.03 FIELD TESTING, PERFORMANCE, AND FINAL CLEARANCE

- A. Pressure Testing: Valves shall be tested hydrostatically, concurrently with the pipeline in which they are installed as specified in Section 15044 – Pressure Testing of Process Piping. Protect or isolate any parts of valves, operators, or control and instrumentation systems whose pressure rating is less than the pressure used for the pressure test(s). If valve joints leak during pressure testing, loosen or remove the nuts and bolts, reseal or replace the gasket, reinstall or retighten the bolts and nuts, and hydrostatically retest the joints. If any joint proves to be defective, it shall be repaired to the satisfaction of the Engineer.
- B. Any excessive noise or vibration shall be resolved by the manufacturer including possible replacement of the valve at the manufacturer's expense.
- C. Disinfection: The Contractor shall disinfect all new equipment as per Section 15045 – Disinfection of Process Piping.

**END OF SECTION**

**SECTION 15126  
PIPE HANGERS AND SUPPORTS**

**PART 1 - GENERAL**

1.01 SCOPE OF WORK

- A. Furnish and install all pipe hangers and supports as indicated and as specified herein.

1.02 RELATED WORK

- A. Division 1 – General Requirements
- B. Section 15062 – Ductile Iron Pipe and Fittings
- C. Section 15100 – Valves and Piping Appurtenances

1.03 REFERENCES

- A. American Water Works Association (AWWA)/American National Standards Institute (ANSI) Standards
- B. American Society for Testing and Materials (ASTM) Standards

1.04 GENERAL DESIGN

- A. The Drawings depict only minimum pipe support locations. Adequate pipe supports shall be supplied for all piping systems to provide a rigid overall installation and additional support for pipe ends when equipment is disconnected.

1.05 QUALITY ASSURANCE

- A. Hangers and supports shall be of approved standard design where possible and shall be adequate to maintain the supported load in proper position under all operating conditions. The minimum working factor of safety for pipe supports shall be five (5) times the ultimate tensile strength of the material, assuming 10 feet of water filled pipe being supported.
- B. All pipe and appurtenances connected to equipment shall be supported in such a manner as to prevent any strain being imposed on the equipment. When manufacturers have indicated requirements that piping loads shall not be transmitted to their equipment, the Contractor shall submit a certification stating that such requirements have been compiled with.

1.06 SUBMITTALS

- A. Shop Drawings: Refer to Section 01340. Provide the following:

1. Manufacturer's literature, catalog cuts, and specifications showing dimensions and materials of construction.

1.07 DELIVERY STORAGE AND HANDLING

- A. Delivery and Storage: The equipment provided under this section shall be shipped, handled and stored in accordance with the Manufacturer's written instructions, and in accordance with Section 01600.

1.08 WARRANTY AND GUARANTEES

- A. Provide equipment warranties in accordance with Section 01740 – Warranties and Bonds.

**PART 2 - PRODUCTS**

2.01 GENERAL

- A. Structural design and selection of support system components shall withstand the dead loads imposed by the weight of the pipes filled with water, plus any insulation. Commercial pipe supports and hangers shall have a minimum safety factor of 5. All supports shall be designed to adequately secure the pipe. All pipe supports shall be approved prior to installation.
- B. All support anchoring devices, including anchor bolts, inserts and other devices used to anchor the support onto a concrete base, roof, wall or structural steel works, shall be of the proper size, strength, and spacing to withstand the shear and pullout loads imposed by loading and spacing on each particular support.
- C. All materials used in manufacturing hangers and supports shall be capable of meeting the respective ASTM Standard Specifications with regard to tests and physical and chemical properties, and be in accordance with MSS SP-58.
- D. Hangers and support shall be spaced in accordance with ANSI B31.1.0 except that the maximum unsupported span shall not exceed 10 feet unless otherwise specified herein.
- E. Unless otherwise specified herein, pipe hangers and supports shall be stainless steel (SS 316) or where noted, galvanized steel, as manufactured by Anvil International, Carpenter and Paterson, Inc., Atkore International, Inc, or approved equal. Any reference to a specific figure number of a specific manufacturer is for the purpose of establishing a type and quality of product, and shall not be considered as proprietary. Any item comparable in type, style, quality, design, and performance will be considered for approval.

2.02 MATERIALS AND EQUIPMENT

- A. Pipe Hangers and Supports for Metal Pipe:

1. Floor supported pipes 3 inches and larger in diameter shall be supported by either cast-in-place concrete supports or adjustable pipe saddle supports as directed by the Engineer. In general, concrete supports shall be used when lateral displacement of the pipes is probable (unless lateral support is provided), and adjustable pipe saddle type supports shall be used where lateral displacement of pipes is not probable.
  - a. Each concrete support shall conform to the details shown on the Drawings. Concrete shall be poured after the pipe is in place with temporary supports. Concrete piers shall conform accurately to the bottom  $\frac{1}{3}$  to  $\frac{1}{2}$  of the pipe. Top edges and vertical corners of each concrete support shall have 1 inch bevels. Each pipe shall be secured on each concrete support by wrought iron or steel anchor strap anchored to the concrete with cast-in-place bolts or with expansion bolts. Where directed by the Engineer, vertical reinforcement bars shall be grouted into drilled holes in the concrete floor to prevent overturning or lateral displacement of the concrete support. Unless otherwise approved by the Engineer, maximum support height shall be five (5) feet.
  - b. Concrete piers used to support base elbows and tees shall be similar to that specified above. Piers may be square or rectangular.
  - c. Each pipe saddle support shall be screwed or welded to the corresponding size 150 pound companion flanges or slip-on welding flanges respectively. Supporting pipe shall be of stainless steel pipe construction. Each flange shall be secured to the concrete floor by a minimum of two (2) expansion bolts per flange. Where used under base fittings, a suitable flange shall be substituted for the saddle.

### **PART 3 - EXECUTION**

#### **3.01 PREPARATION**

- A. Prior to prime coating, all pipe hangers and supports shall be thoroughly clean, dry and free from all mill-scale, rust, grease, dirt, paint, and other foreign substances to the satisfaction of the Engineer.
- B. All submerged pipe supports shall be prime coated with Epoxy Primer or equal. All other pipe supports shall be prime coated with rust-inhibitive Primer as manufactured Carboline or equal.
- C. Do not coat/paint stainless steel hangers or components.

#### **3.02 INSTALLATION**

- A. All pipes, horizontal and vertical, shall be rigidly supported from the structure by approved supports. Supports shall be provided at changes in direction and elsewhere as shown in the Drawings or specified herein. No piping shall be supported from other piping or from metal stairs, ladders, and walkways, unless it is so indicated on the Drawings, or specifically directed or authorized by the Engineer.

- B. All pipe supports shall be designed with liberal strength and stiffness to support the respective pipes under the maximum combination of peak loading conditions to include pipe weight, liquid weight, liquid movement, and pressure forces, thermal expansion and contraction, vibrations, and all probable externally applied forces. Prior to installation, all pipe supports shall be approved by the Engineer.
- C. Pipe supports shall be provided to minimize lateral forces through valves, both sides of split type couplings, and sleeve type couplings and to minimize all pipe forces on pump housings. Pump housings shall not be utilized to support connecting pipes.
- D. All vertical pipes shall be supported at each floor or at intervals of at least 15 feet by approved pipe collars, clamps, brackets, or wall rests, and at all points necessary to insure rigid construction.
- E. Effects of thermal expansion and contraction of the pipe shall be accounted for in pipe support selection and installation.
- F. Responsibility for the proper location of pipe supports is included under this Section.
- G. Continuous metal inserts shall be embedded flush with the concrete surface.
- H. Standard Pipe Supports:
  - 1. Horizontal Suspended Piping:
    - a. Single Pipes: Adjustable swivel-ring, splint-ring, or clevis hangers.
    - b. Grouped Pipes: Trapeze hanger systems.
    - c. Furnish galvanized steel protection shield and oversized hangers for all insulated pipe.
    - d. Furnish precut sections of rigid insulation with vapor barrier at hangers for all insulated pipe.
  - 2. Horizontal Piping Supported from Walls:
    - a. Single pipes shall use wall brackets or wall clips attached to wall with anchors. Clips attached to wall mounted framing also acceptable.
    - b. Stacked Piping
      - i. Wall mounted framing system and clips acceptable for piping smaller than 3-inch minimal diameter.
      - ii. Piping clamps which resist axial movement of pipe through support not acceptable.
    - c. Wall mounted piping clips not acceptable for insulated piping.
  - 3. Horizontal Piping Supported From Floors:
    - a. Stanchion Type:
      - i. Pedestal type; adjustable with stanchion, saddle, and anchoring flange.
      - ii. Use yoke saddles for piping whose centerline elevation is 18 inches or greater above the floor and for all exterior installations.

- iii. Provide neoprene waffle isolation pad under anchoring flanges, adjacent to equipment or where otherwise required to provide vibration isolation.
4. Vertical Pipe: Support with wall brackets and base elbow or riser clamps on floor penetrations.
- a. Floor Mounted Channel Supports:
    - i. Use for piping smaller than 3 inch nominal diameter running along floors and in trenches at piping elevations lower than can be accommodated using pedestal pipe supports.
    - ii. Attach channel framing to floors with anchor bolts.
    - iii. Attach pipe to channel with clips or pipe clamps
  - b. Concrete Cradles: Use for piping larger than 3-inch along floor and in trenches at piping elevations lower than can be accommodated using stanchion type.
5. Standard Attachments
- a. To Concrete Ceilings: Concrete inserts.
  - b. To Steel Beams: I-beam clamp or welded attachments.
  - c. To Wooden Beams: Lag screws and angle clips to members not less than 2-½ inches thick.
  - d. To Concrete Walls: Concrete inserts or brackets or clip angles with anchor bolts.
6. Existing Walls and Ceilings: Install as specified for new construction, unless shown otherwise.

**END OF SECTION**