REQUEST FOR PROPOSALS

CITY OF CALLAWAY
BOAT RACE ROAD/TYNDALL PARKWAY
WATER IMPROVEMENTS
BID NO: PW2020-07

ADVERTISED: **The Panama City News Herald, Friday, May 29, 2020**

PREBID MEETING: **N/A**

BID DEADLINE: **2:00 p.m. Friday, June 12, 2020**

BIDS/PROPOSALS ARE TO BE SUBMITTED TO:

CITY OF CALLAWAY
ATTN: JANICE L. PETERS, CITY CLERK
6601 EAST HWY. 22
CALLAWAY, FL 32404

BID OPENING: **2:15 p.m. Friday June 12, 2020**
Callaway Arts & Conference Center, 500 Callaway Park Way

ATTACHMENTS:
Notice of Request for Bids/Proposals
General Instructions and Conditions
Special Instructions and Conditions
Minimum Technical Specifications
Sample Agreement
Bid Forms **(To be submitted with bid.)**:
- Bid/Certification Form
- Conflict of Interest Form
- Drug Free Workplace Certification
- Public Entity Crimes Statement
- Proprietary/Confidential Information Form
- Trench Safety Compliance Form
- Anti-Collusion Clause Form

Janice L. Peters, MMC, City Clerk

INSTRUCTIONS TO BIDDERS/PROPOSERS

Qualified firms are invited to submit a Bid/Proposal to the **CITY OF CALLAWAY** for the **CITY OF CALLAWAY BOAT RACE ROAD/TYNDALL PARKWAY WATER IMPROVEMENTS, BID NO: PW2020-07,** by replying to the enclosed specification. In order for the Bid/Proposal to be considered, complete all items in this specification.

All Bids/Proposals must include one **(1) unbound original** and **three (3) copies** and be addressed to:

CITY OF CALLAWAY
ATTN: CITY CLERK
6601 EAST HWY. 22
CALLAWAY, FL 32404

Proposals **must be received** at the address listed above no later than **2:00 p.m. on Friday, June 12, 2020.** Late Proposals will not be accepted, regardless of the reason.

Proposal envelopes must be **sealed and marked** with the Bid number, due date, and name of Proposer so as to identify the enclosed submittal. If more than one package is submitted, please mark "1 of 2", "2 of 2", etc.

INTERPRETATION OF SPECIFICATION

All questions pertaining to the terms and conditions of the scope of work of this Bid/Proposal must be submitted **in writing** via email to the City Clerk as shown below:

Janice L. Peters, MMC, City Clerk
City of Callaway
6601 East Hwy. 22
Callaway, FL 32404
jpeters@cityofCallaway.com

No oral interpretations will be made to any firm as to the meaning of specifications or any other contract documents. **In accordance with Florida Statutes 287.057(23), "Respondents to this solicitation or persons acting on their behalf may not contact, between the release of the solicitation and the end of the 72-hour period following the agency posting the notice of intended award, excluding Saturdays, Sundays, and state holidays, any employee or officer of the executive or legislative branch concerning any aspect of this solicitation, except in writing to the procurement officer or as provided in the solicitation documents. Violation of this provision may be grounds for rejecting a response**." Questions must be submitted as referenced above.

All questions must be received at least five (5) calendar days prior to the scheduled opening of Bids/Proposals. Any interpretation of the Bid/Proposal terms, conditions, and/or specification, if made, will be only by Addendum issued by the City Clerk. A copy of such Addendum will be posted to the City's website at www.cityofcallaway.com and mailed to each proposer that received a copy of the advertisement of the Request for Bids/Proposals. **IT IS THE RESPONSIBILITY OF THE BIDDER/PROPOSER TO CHECK THE CITY'S WEBSITE FOR ANY ADDENDUMS PRIOR TO SUBMITTING A BID/PROPOSAL.** No verbal instructions or interpretations of drawings and specifications will be made other than indicated above.

The City reserves the right to reject any or all proposals, to waive informalities in the Bids/Proposals and to re-advertise for Bids/Proposals. The City also reserves the right to separately accept or reject any item or items of a Bid/Proposal and to award and/or negotiate a contract in the best interest of the City.

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WATER IMPROVEMENTS
BID NO: PW2020-07

*** Note: The GENERAL INSTRUCTIONS AND CONDITIONS (attached hereto) apply, except as set forth below, for this Bid.**

A. Description: ( ) See Attached (X) As Follows

The project will consist of a new 6" water main from an existing 8" water main at the intersection of S. Gay Avenue and Boat Race Road, extend along the east side out to Highway 98/Tyndall Parkway, approximately 1270 LF, and north approximately 230 LF to connect to an existing 2" water main. The new water main will improve the pressures for the three (3) existing water services, as well as provide fire protection to the area.

B. Specifications: (X) See Attached ( ) As follows:

See attached Minimum Technical Specifications

C. Contract/Agreement Required: ( ) None (X) As follows: See enclosed Sample Contract

D. Items to be submitted with Bid: ( ) None (X) As follows:

- One (1) unbound original with three (3) copies of the bid submittal,
- List of three (3) references for similar type work with contact information,
- List of Subcontractors, if applicable,
- Bid/Certification Form(s) with signature page(s),
- State of Florida License Copy,
- Public Entity Crimes Statement,
- Drug Free Workplace Certification,
- Proprietary/Confidential Information Form
- Anti-Collusion Clause Form
- Conflict of Interest Form

E. Deadline and place for submission of Bids:

2:00 p.m., FRIDAY, JUNE 12, 2020 (BID DEADLINE)
City Hall
6601 East Hwy. 22
Callaway, FL 32404

F. Time and place for OPENING of Bids:

2:15 p.m., FRIDAY JUNE 12, 2020,
City of Callaway ARTS & CONFERENCE CENTER
500 CALLAWAY PARK WAY.

G. Insurance Requirements: ( ) None (X) As follows:

	Minimum Coverage
Property Damage:	$ 500,000
General Liability:	$ 1,000,000/2,000,000
Automobile Liability:	$ 1,000,000/2,000,000
Workers' Compensation:	$ Statutory Limit*

Note: Insurance Certificate must be provided by Successful Bidder upon execution of Agreement. City is to be listed on the bidder's/proposer's Certificate of Insurance as additionally insured and certificate holder in order for the City to be notified if the insurance is canceled or modified.

H. Bond Requirements: ( ) None (X) As follows:

	Amount of Bond
Bid Bond	$____ or 5 % of Bid
Performance Bond	$____ or 100 % of Bid
Payment Bond	$____ or N/A % of Bid
Construction Bond	$____ or N/A % of Bid
Other:_____	$____ or N/A % of Bid

I. Number of Copies of Bid Forms with original signature(s) Required:

One (1) unbound original, with notarized Signatures, plus three (3) copies

NOTICE: Proposals may be rejected if all documents are not complete and executed, and the numbers of copies specified/requested of each are not submitted with the proposal.

GENERAL INSTRUCTIONS AND CONDITIONS

(1) NOTICE TO BIDDERS/PROPOSERS

The following general instructions and conditions apply to all Requests for Bids/Proposals unless modified by the provisions set forth in the **"Special Instructions and Conditions"** attached hereto. If there is a conflict between the "Special Instructions and Conditions" and these "General Instructions and Conditions," the provisions in the Special Instructions and Conditions will apply. **Note: the General Instructions and Conditions and the Special Instructions and Conditions are periodically revised; potential Bidders/Proposers should read both carefully prior to submitting a Bid/Proposal. The attached Special Instructions and Conditions apply only to this Bid/Proposal.**

(2) SUBMITTAL OF BIDS/PROPOSALS

Qualified businesses or individuals requesting consideration must submit a complete Bid/Proposal with any/all attachments in a sealed package clearly marked with the **name** and **number of the Bid/Proposal**, to the attention of the City Clerk, prior to closing time at the address shown in the **Special Instructions and Conditions** attached hereto. If not so marked as to this wording, sealed and/or received by the closing time, the Bid/Proposal will not be accepted. Bid/Proposal packages, additional information regarding this Bid/Proposal, or the bidding procedures may be obtained by contacting the City Clerk, 6601 East Hwy. 22, Callaway, FL 32404, (850) 215-6694.

It shall be the sole responsibility of the Bidders/Proposers to have their Bid/Proposal delivered on or before the closing time and date stated in the **Special Instructions and Conditions**. Any Bids/Proposals received after the stated time and/or due to delays caused by mail or courier delivery, or any other reason, shall not be opened or otherwise considered, and will be returned at the bidder's/proposer's expense.

Bids/Proposals shall be opened and publicly announced at the City Clerk's Office, City Hall, 6601 East Hwy. 22, Callaway, Florida, after closing of Bids/Proposals, unless otherwise specified in the Special Instructions and Conditions.

(3) SPECIFICATIONS AND REQUIREMENTS

The detailed specifications and additional requirements relating to this Bid/Proposal are set forth in the Special Instructions and Conditions attached hereto.

SILENCE OF SPECIFICATIONS: The apparent silence of any specification as to any details or any omission of a detailed description concerning any point shall be regarded as meaning that only the best construction practices are to prevail and that only new materials of first quality and correct type, size and design are to be used. All workmanship is to be first quality. All interpretations of specifications shall be made accordingly by the City.

(4) BID/PROPOSAL FORM

Bidders/Proposers shall complete, sign and furnish the "Bid Certification Form", together with the forms, specifications and materials required in the "Special Instructions and Conditions" or any exhibits attached hereto. This will include a properly executed Drug-Free Workplace Certification, and a Sworn Statement on Public Entity Crimes Form, pursuant to Section 287.133(3)(a), Florida Statutes. The minimum number of complete Bid/Proposal packages to be submitted is set forth in the Special Instructions and Conditions.

If the “Special Instructions and Conditions” include a “Scope of Work” provision, and/or provide for a supplemental and or implementing agreement, the City reserves the right to modify the "Scope of Services." Further, the terms and conditions of any such agreement shall be modified prior to execution by the City, if such modifications are determined to be in the best interest of the City.

Bids/Proposals may be considered non-responsive, at the sole option of the City, and may be rejected if they include omissions, alterations of form, additions not called for, conditions or limitations, unauthorized alternate Bids/Proposals, submission of less than the number of bid packages requested, or other irregularities of any kind.

Unless otherwise stated, the price(s) set forth in the Bid/Proposal include(s) all costs and expenses for labor, equipment, materials, commissions, transportation charges and expenses, handling material inspection, and patent fees and royalties, together with any and all other costs and expenses for providing the service, equipment, materials or performing and completing the work as shown according to the plans and specifications herein.

If quotations are requested for the various items of work, they are intended to establish a total price for providing the materials, equipment, services, or completing the work in its entirety. If the Bidder/Proposer determines that the cost for any item of work has not been established by the Proposal Form, the cost for that work is to be included in other applicable Bid/Proposal item(s), so that the Bid/Proposal reflects the total price for completing that work in its entirety.

In the event of a discrepancy between a unit bid price and an extension, the unit bid price will govern. Written prices shall govern over figures.

(5) CLARIFICATION AND ADDENDA

Each Bidder/Proposer shall examine all Bid/Proposal documents and shall judge all matters relating to the adequacy and accuracy of such documents. Any inquiries, suggestions or requests concerning the interpretation, clarification or additional information pertaining to this Invitation to Bid/Request for Bid/Proposal will be accepted by the City Clerk up to and including five (5) working days prior to the closing date and time stated herein. The issuance of a written addendum signed by the City Clerk is the only official method whereby interpretation, clarification or additional information can be given. The City shall not be responsible for oral interpretations given by any City employee, representative or others. If any addenda are issued, the City will attempt to notify all known prospective Bidders/Proposers. However, it shall be the responsibility of each Bidder/Proposer, prior to submitting a Bid/Proposal, to contact the City Clerk's Office to determine if addenda were issued, and to make such addenda a part of the Bid/Proposal. If an addendum has been issued, and was not incorporated in the Bid/Proposal documents submitted by Bidder/Proposer, the Bid/Proposal may not be accepted or considered by the City.

(6) MANUFACTURER’S NAMES AND APPROVED EQUIVALENTS

Unless otherwise specifically stated in the Special Instructions and Conditions, any manufacturer’s names, trade names, brand names, catalog numbers, or similar information listed in a specification, are for the purpose of information and illustration, and are not intended to restrict the submission of alternates meeting minimum specifications. The Bidder/Proposer may offer the same or any alternate for which the Bidder/Proposer is an authorized representative, which meets or exceeds the specifications for any item. If a manufacturer’s name or model is included in the specification, and a Bid/Proposal is based on alternate products or services which Bidder/Proposer maintains is equivalent and meets or exceeds specifications, Bidder/Proposer is to indicate on the Bid/Proposal Form the manufacturer’s name and related information of the alternate; including any

deviation from the specifications. Unless expressly noted on the Bid/Proposal that an alternate is being proposed, and the specification includes a specific manufacturer's model or brand, the Bid/Proposal will be considered as a quotation for the item(s) stated in the specifications.

(7) INFORMATION AND DESCRIPTIVE LITERATURE

Bidders/Proposers must furnish all information requested in the Bid/Proposal packet including but not limited to any sketches, plans, designs, specification, and descriptive literature regarding the product(s)/service(s) being offered. Bids/Proposals which do not comply with these requirements are subject to rejection. Reference to submission of documentation or materials with a previous Bid/Proposal will not satisfy this provision.

(8) BONDS/INSURANCE

If the Bid/Proposal is accepted by the City, it will become a binding contract on both parties. If a bond or cashiers/certified check is required as a bond, it shall be submitted with the Bid/Proposal. If the undersigned shall fail to deliver or perform, or if applicable, execute a contract if provided for herein, then the City may, at its option, determine that the undersigned has abandoned the award/contract, and thereupon such acceptance of the Bid/Proposal and/or award shall be null and void, and any cashiers/certified check or bond accompanying this Bid/Proposal shall be forfeited to and become the property of the City. The full amount of said check, or if a bond, the full amount of such bond, shall be paid to the City as partial liquidated damages; otherwise, any bond or cashiers/certified check accompanying this Bid/Proposal shall be returned to the undersigned within 30 calendar days from the date of award, or if provisions for a Notice to Proceed are included, from the date of the Notice to Proceed.

If a bid or proposal bond is required, the bonds of unsuccessful Bidders/Proposers will be returned within 30 calendar days of the Bid/Proposal due date, except as set forth below.

If a proposal is subject to the Competitive Negotiations Act, the bonds will be returned within 60 days of the proposal due date, except for the bond of the 3 highest ranked proposers. Within 30 days of execution of a contract, bonds from the remaining unsuccessful proposers will be returned.

Bid bond, if required, will be returned within 30 calendar days of delivery/acceptance of the item(s) bid or service(s) provided, unless a standard payment and performance bond is required. When a standard Payment and Performance Bond is required, the bid bond of the successful Bidder/Proposer will be returned within 30 calendar days from the date of the Notice to Proceed.

In the event a bid is awarded, a proposal is accepted, and/or a contract is executed, and the Bidder/Proposer chooses not to proceed, or fails to perform for any reason, the bond will be forfeited and retained by the City as partial liquidated damages. Future Bids/Proposals will not be accepted for consideration from the Bidder/Proposer for five (5) years, or such shorter period as the City Commission may determine.

In the event an award/selection is not made within 90 days after the Bid/Proposal due date and the City does not return all bonds, upon 30 business days written request, a bidders/proposer may withdraw their bid or proposal from consideration, and obtain a refund of the Bid/Proposal bond.

All Awards will be subject to presentation of any required performance bond or certificate of insurance prior to any purchase authorizations, agreements, contract documents, or delivery. The Bidder/Proposer shall maintain any performance bonds or insurance coverage set forth in the Special Instructions and Conditions, at its own expense. If insurance is required, the City is to be listed on the bidder/proposer's Certificate of Insurance as an additional insured and certificate holder in order that the City will be notified if the insurance is canceled or

modified. The certificate shall also list the name of the project/service/equipment purchased, and the expiration date of the policy. At the City's option, an award may be canceled and any bid bond forfeited if any required performance bond or insurance certificate is not delivered within 21 calendar days of the date of award.

***Note**: The provisions of this section are in addition to and not a replacement for, any Bid/Proposal and/or performance bond required in the Special Instructions and Conditions. The foregoing provisions are intended to be in addition to any other legal remedy available to the City for non-performance by a Bidder/Proposer subsequent to the acceptance and/or award of a bid or proposal.*

(9) SERVICE AND WARRANTY

If any warranty repair or replacement service is requested in the Special Instructions and Conditions, any deviation or limitation from the requirements is to be expressly stated on the Bid Request for Proposal Certification Form.

If the service or product provided to the City pursuant to the bid consists of computer hardware, software or firmware, the Bidder/Proposer warrants that said product will accurately process/or reflect data from, into and between the twentieth and twenty-first centuries, including leap-year calculations.

(10) CONTRACT FORMS

Any agreement or contract resulting from the acceptance of a Bid/Proposal shall be on forms either supplied by or approved by the City, and shall contain, as a minimum, applicable provisions of the Invitation to Bid/Request for Proposal, and the Bid/Proposal documents to be submitted by Bidder/Proposer, including the Special Instructions and Conditions, General Instructions and Conditions, and all attachments therewith. The City reserves the right to reject any Bid/Proposal or resulting agreement which does not conform to the Invitation to Bid/Proposal and, if applicable, any City requirement relating to such an Agreement.

The City reserves the right to extend any contract or agreement for an additional period of not more than ninety (90) days beyond the original expiration date. Prices in effect on the last day of the contract shall remain in effect for the contract extension period. Additional extensions shall be subject to agreement of both parties.

The successful Bidder/Proposer will be required to execute any resulting agreement and provide any bonds or insurance certificates required within 10 days of contract execution. Failure to timely execute the necessary bond or insurance certificate will result in cancellation of an award, with no further obligation by the City.

This Bid/Proposal is subject to the appropriation of funds in an amount sufficient to allow continuation of the City's performance in accordance with the terms and conditions of this Bid/Proposal for each and every fiscal year in which this Bid/Proposal is executed and entered into. If funds are not appropriated/available, the City shall provide prompt written notice to the selected Bidder/Proposer that effective thirty (30) days after giving such notice, or upon the expiration of the time for which funds were appropriated, whichever occurs first, the City will thereafter be released of all further obligations related to the Bid/Proposal and/or award.

(11) BID/PROPOSAL EXPENSES

All expenses for preparing and submitting Bids/Proposals to the City are to be borne by the Bidder/Proposer.

(12) VARIANCES

Any variance whatsoever from the Bid/Proposal Specifications are to be clearly identified on the Bid/Proposal form. Acceptance of any proposed variations will be at the sole discretion of the City.

(13) CONFLICT OF INTEREST

The award of a bid or acceptance of proposal is subject to Chapter 112, Florida Statutes. All Bidders/Proposers must disclose with their Bid/Proposal the name of any officer, director, or agent who is a city official or employee, or a member of an official's or employee's immediate family. Further, Bidders/Proposers must disclose the name of any city official or employee, or a member of an official's or employee's immediate family, who owns directly or indirectly an interest of ten percent (10%) or more in the bidder's/proposer's firm or related business.

(14) DELIVERY

All items provided pursuant to an award are to be delivered prepaid to the City Clerk's Office, 6601 East Hwy. 22, Callaway, Florida 32404-2041, unless a different location is specified in the Special Instructions and Conditions. All delivery charges are to be included in the Bid/Proposal price. No Collect on Delivery (C.O.D.) will be accepted. Title and risk of loss or damage to all items shall be the responsibility of the Bidder/Proposer until delivered to the City.

(15) INSPECTION, ACCEPTANCE AND TITLE

All items delivered pursuant to an award are subject to inspection and review prior to acceptance by the City. Acceptance, evidenced by separately written Notice of Acceptance or full payment, will be made only after verification of compliance with all specifications. Acknowledgment of delivery and/or partial payment does not constitute acceptance.

(16) OWNERSHIP RIGHTS AND PUBLIC RECORDS LAW

Public Records Law. Bidder/Proposer acknowledges that they are familiar with the provisions of the Public Records Law of the State of Florida.

Bidder/Proposer agrees to comply with Chapter 119, Florida Statutes, and specifically per Florida Statute 119.0701, Bidder/Proposer agrees to keep and maintain public records that would be required by the City of Callaway in order to perform the services provided for in this agreement; Bidder/Proposer agrees to provide public access to any required public records in the same manner as a public agency; Bidder/Proposer agrees to protect exempt or confidential records from disclosure; Bidder/Proposer agrees to meet public records retention requirement; and Bidder/Proposer agrees that at the end of the term of this agreement, to transfer all public records to the City of Callaway and destroy any duplicate, exempt or confidential public records.

All products generated by the Bidder/Proposer for the City become the property of the City. The City may require submission of any electronic file version of reports, data, maps, or other submission of documentation produced for or as a result of this Bid/Proposal in addition to paper documents.

Further, in accordance with the Public Records Laws of the State of Florida, Section 119.0701, (2013), Contractor must:

A. Keep and maintain public records that ordinarily and necessarily would be required by the public agency in order to perform the service.

B. Provide the public with access to public records on the same terms and conditions that the public agency would provide the records and at a cost that does not exceed the cost provided in this chapter or as otherwise provided by law.

C. Ensure that public records that are exempt or confidential and exempt from public records are not disclosed except as authorized by law.

D. Meet all requirements for retaining public records and transfer, at no cost, to the public agency all public records in possession of the contractor upon termination of the contract and destroy any duplicate public records that are exempt or confidential and exempt from public record disclosure requirements. All records stored electronically must be provided to the public agency in a format that is compatible with the information technology systems of the public agency.

E. If a contractor does not comply with a public records request, the public agency shall enforce the contract provision in accordance with the contract.

(17) RESERVED RIGHTS

The City reserves the right to reject any and all Bids/Proposals, with or without statement of cause, request resubmissions, or to waive any irregularities or technicality or negotiate modifications to any Bid/Proposal which may be in the best interest of the City.

Bidders/Proposers which do not normally engage in providing the types of commodities/services specified herein may be required to demonstrate they have sufficient financial support, equipment, and organization to ensure they can satisfactorily perform if awarded a bid/contract under the terms and conditions herein stated.

The City reserves the right to make such investigations as it deems necessary to determine the ability of any Bidder/Proposer to perform the work or service requested. Any information the City deems necessary to make such determinations shall be provided by the Bidder/Proposer upon request as a condition of further consideration of the Bid/Proposal. The applicability of all information obtained and the City's decision shall be final. By submitting a bid or proposal, Bidder/Proposer authorizes such investigation.

If the contract awarded as a result of this bid is terminated prior to the end of the term, the City reserves the right to award the balance of the contract to the next lowest responsive and responsible bidder.

(18) ADVERTISING

In submitting a Bid/Proposal, Bidder/Proposer agrees not to use the results therefrom as a part of any commercial advertising or marketing purposes without written approval of the City Manager.

(19) GOVERNMENTAL RESTRICTIONS/REQUIREMENTS

In the event any governmental restrictions are imposed which would necessitate alteration of the material, quality, workmanship, or performance of the items offered in a Bid/Proposal, it shall be the responsibility of the successful Bidder/Proposer to immediately notify the City of the specific regulation which required an

alteration, and the specific alterations that will be made to the item(s) bid/proposed. The City reserves the right to accept any such alteration/substitution, including any price adjustments resulting therefrom, or to cancel the award at no expense to the City.

(20) NON-DISCRIMINATION

There shall be no discrimination as to race, sex, color, creed, handicap, or national origin in the selection, award, or operations conducted, or performance related to any bid or proposal.

(21) UNAUTHORIZED EMPLOYEES OR AGENTS

Employment of unauthorized aliens by Bidder/Proposer is considered a violation of Section 274A(e) of the Immigration and Nationality Act. If selected Bidder/Proposer knowingly employs unauthorized aliens, such action shall be cause for unilateral cancellation of this agreement and the City may recover damages from selected Bidder/Proposer resulting from such cancellation. The selected Bidder/Proposer shall be responsible for including this provision in any context with, and requiring compliance by any/all subcontracts performing for selected Bidder/Proposer relating to this agreement.

(22) OTHER GOVERNMENTAL ENTITIES - OPTIONAL APPLICATION

In the State of Florida, other Florida public entities may "piggy-back" on competitive Bid/Proposal awards under the same terms and conditions, if all parties are in agreement.

(23) LEGAL NAME

Bids/Proposals shall clearly indicate the legal name and organizational structure, business address, telephone number, and email address of the Bidder/Proposer. Bids/Proposals shall be signed above the typed or printed name and title of the individual submitting the Bid/Proposal. The signer shall warrant he/she has the authority to bind the Bidder/Proposer to the terms and conditions of the submitted Bid/Proposal.

(24) WAGES

State and Federal minimum wage and hour regulation apply to Bidder/Proposer and all subcontractors.

(25) SELECTION

The City intends to award this bid to the lowest responsive and responsible bidder or bidders. However, the City reserves the right to reject any and all Bids/Proposals. The procedures for the selection/award of Bids/Proposals are provided for by Florida Statutes and the City's Charter, Code of Ordinances, and Administrative Policies. Generally, all Bids/Proposals are reviewed by City staff and evaluated by the City Manager, and if required by law, by a Selection Advisory Committee appointed by the City Manager. The type and price of the product(s) or service(s) being acquired determines if an award or selection may be made by the City Manager or requires City Commission approval. For information on which procedure applies to a particular Bid/Proposal contact the City Clerk.

Bids/Proposals will be evaluated based on, but not limited to, one or more of the following criteria as appropriate:

- compliance with specifications,
- price (if applicable),

- capability/adequacy of Bidder/Proposer,
- past and current projects, services or equipment provided to the City,
- delivery schedule,
- prior government projects, services or equipment provided to other jurisdictions, and
- general reputation, location and references.

Separate procedures and requirements relating to Requests for Bids/Proposals/Qualifications apply for certain grant programs and for professional services, for example the Consultants' Competitive Negotiation Act (Florida Statute 287.055), and by the City's Code. When the City initiates such a Request for Proposals/Qualifications, the selection process and related procedures are included in the Special Instructions and Conditions.

Pursuant to Chapter 287.087 Florida Statutes, in the event two (2) or more bids are equal with respect to price, quantity, and services, preference will be given to Bidders/Proposers which have implemented Drug-Free Workplace Programs.

Further, per 287.087(11) "If two equal responses to a solicitation or a request for quote are received and one response is from a certified minority business enterprise, the agency shall enter into a contract with the certified minority business enterprise." In addition, at the sole discretion of the City, payment terms, conditions, and other consequential information may be utilized in resolving apparent tie Bids/Proposals.
NOTE: For consideration, Bidder/Proposer must return the Bid Certification Form included in the Bid/Proposal package.

(26) INDEMNIFY

After notification of award, the successful Bidder/Proposer agrees to defend, indemnify and hold harmless the City and its officials, officers, employees, agents, and invites, from and against all claims, suits, sections, damages, or causes of action arising from any personal injury, loss of life or damage to property, sustained by reason of, or as a result of constructing, manufacturing, processing, delivery, or performance of the services or work for which the Bid/Proposal was awarded or any resulting agreement executed, and from and against any orders, judgments, or decrees which may be entered thereto, and from and against all costs, attorney's fees, expenses, and liabilities incurred in or by reason of the defense of any such claim, suit or action, and the investigation thereof. Nothing in any resulting agreement shall be deemed to affect the rights, privileges and immunities of the City of Callaway.

The selected Bidder/Proposer, without exception, shall also indemnify and hold harmless the City and its officials, employees, agents, and invites from liability of any nature or kind, including cost and expenses for or on account of any copyrighted, patented or unpatented invention, process or article manufactured or used in the performance of the contract, including its use by the City. If the selected Bidder/Proposer uses any design, device or materials covered by patent or copyright, it is mutually agreed and understood that the Bid/Proposal prices include all royalties or costs arising from the use in any way of such design, device or materials involved in the product and/or services provided to the City.

(27) MODIFICATION - AFTER AWARD

Any changes proposed by a Bidder/Proposer after an award in (a) materials used, (b) manufacturing process, (c) construction or (d) specifications, are to be submitted in writing to the City Manager prior to delivery. No changes shall be approved and binding upon the City unless evidenced by a Change Order issued and signed by the City Manager.

(28) ASSIGNMENT

Any purchase order issued pursuant to this bid invitation/request for proposal and the funds which may become due hereunder, are not assignable, except with the prior written approval of the City Manager.

(29) DISCLOSURE

Bidder/Proposer acknowledges by submitting a Bid/Proposal that all information provided to the City is part of the public domain as defined by Florida Statutes and is considered a public record. Information should not be labeled "confidential," unless specifically exempted under said Statutes, and exempts the City from any liability for releasing all information to the public, including inadvertently releasing information deemed confidential by the Bidder/Proposer.

(30) TAXES

The City is a tax-exempt Florida municipality, Federal Employment Identification Number 59-6000-284, Florida State Tax Number 37-02-008131-54C. Copies of Exemption Certificate and related information may be obtained by contacting the City Clerk, City of Callaway, 6601 East Hwy. 22, Callaway, Florida 32404-2041 or (850) 215-6694.

(31) APPLICABLE LAWS/LEGAL VENUE

All applicable laws, regulations and ordinances of the State of Florida, Bay County and the City of Callaway will apply to consideration and award of any Bid/Proposal and the performance of the Bidder/Proposer pursuant thereto, and shall be governed by the laws of the State of Florida both as to intention and performance. The venue for any action arising from the award or subsequent performance shall lie exclusively in the Circuit Court of Bay County, Florida, or the United States District Court for the Northern District of Florida, as applicable.

NOTE: *ANY AND ALL PROVISIONS SET FORTH IN THE **SPECIAL INSTRUCTIONS AND CONDITIONS** ATTACHED HERETO, WHICH VARY FROM THESE GENERAL INSTRUCTIONS AND CONDITIONS, SHALL HAVE PRECEDENCE.*

CITY OF CALLAWAY
BOAT RACE ROAD/TYNDALL PARKWAY
WATER IMPROVEMENTS
BID NO: PW2020-07

MINIMUM TECHNICAL SPECIFICATIONS

SCOPE OF WORK

The project will consist of a new 6” water main from an existing 8” water main at the intersection of S. Gay Avenue and Boat Race Road, extend along the east side out to Highway 98/Tyndall Parkway, approximately 1270 LF, and north approximately 230 LF to connect to an existing 2” water main. The new water main will improve the pressures for the three (3) existing water services, as well as provide fire protection to the area.

CITY OF CALLAWAY
BOAT RACE ROAD/TYNDALL PARKWAY WATER IMPROVEMENTS
PROJECT NO. 50093563

TABLE OF CONTENTS

MECHANICAL

SECTION 01030
ALTERNATES

PART 1 - GENERAL

Related Documents:

Drawings and general provisions of Contract, including General and Supplementary Conditions, apply to work of this section.

Description of Requirements:

Definition: An alternate is an amount proposed by Bidders and stated on the Bid Form that will be added to, deducted from, or substituted for an item in the Base Bid amount if the Owner decided to accept a corresponding change in either scope of work or in products, materials, equipment, systems or installation methods described in Contract Documents.

"Include as part of each alternate, miscellaneous devices, appurtenances and similar items incidental to or required for a complete installation whether or not mentioned as part of the alternate."

Coordination: Coordinate related work and modify or adjust adjacent work as required to ensure that work affected by each accepted alternate is complete and fully integrated into the project.

END OF SECTION

SECTION 01065
PERMITS AND FEES

PART 1 – GENERAL

1.01 GENERAL REQUIREMENTS

The CONTRACTOR shall:

A. Obtain and pay for any and all permits and licenses as specified in the General Conditions, except as otherwise provided herein, and in effect at the time of bidding.

B. Schedule all inspections and obtain all written approvals of the agencies required by the permits and licenses.

C. Comply with all construction related conditions specified in each permit and license.

A copy of the permits obtained by the OWNER will be furnished to the CONTRACTOR.

1.02 PERMITS BY OWNER

The OWNER will acquire the following permits (when applicable):

A. Florida Department of Environmental Protection (FDEP) Permit to Construct/ Operate Water Distribution System.

B. Florida Department of Environmental Protection (FDEP) Permit to Construct/ Operate Wastewater Collection and Transmission System.

1.03 CONSTRUCTION PERMIT

A. The CONTRACTOR shall be responsible for acquiring all construction permits including local building permits and any permits necessary to comply with the Northwest Florida Water Management District (NWFWMD) dewatering plan and the National Pollutant Discharge Elimination System (NPDES) stormwater discharge from construction site.

B. The dewatering plan shall include sequence of excavation, discharge locations, sediment sump, turbidity control, erosion control, and turbidity monitoring points.

1.04 NPDES GENERAL PERMIT FOR STORMWATER DISCHARGES FROM CONSTRUCTION SITE

A. The CONTRACTOR shall comply with stormwater discharge regulations and Amendments to the Clean Water Act (33 U.S.C. 1251 et seq.).

On September 17, 1992, the State of Florida certified the general permit for stormwater discharges from construction sites for use in Florida. This project is governed by regulations under this general permit and the CONTRACTOR shall comply with all such regulations.

B. Under these regulations, construction projects that disturb more than 5 acres must have and comply with a stormwater pollution prevention plan (SWPPP). The CONTRACTOR shall complete and sign a SWPPP prior to initiation of any construction activities on the site.

C. The CONTRACTOR shall ensure that all employees and subcontractors implement the specified erosion control practices to properly manage stormwater.

PART 2 - PRODUCTS (Not Applicable)

PART 3 – EXECUTION (Not Applicable)

END OF SECTION

SECTION 01090
DEFINITIONS AND STANDARDS

PART 1 - GENERAL

RELATED DOCUMENTS:

Drawings and general provisions of Contract, including General and Special Conditions, apply to work of this section.

DEFINITIONS:

GENERAL EXPLANATION: A substantial amount of specification language constitutes definitions for terms found in other contract documents, including drawings which must be recognized as diagrammatic in nature and not completely descriptive of requirements indicated thereon. Certain terms used in contract documents are defined generally in this article. Definitions and explanations of this section are not necessarily either complete or exclusive, but are general for the work extent not stated more explicitly in another provision of contract documents.

INDICATED: The term "Indicated" is a cross-reference to graphics, notes or schedules on drawings, to other paragraphs or schedules in the specifications, and to similar means of recording requirements in contract documents. Where terms such as "shown", "noted", "scheduled" and "specified" are used in lieu of "indicated", it is for purpose of helping reader locate cross-reference, and no limitation of location is intended except as specifically noted.

DIRECTED, REQUESTED, ETC.: Where not otherwise explained, terms such as "directed", "requested", "authorized", "selected", "approved", "required", "accepted", and "permitted" mean "directed by Engineer", "requested by Engineer", etc. However, no such implied meaning will be interpreted to extend Engineer's responsibility into Contractor's area of construction supervision.

APPROVE: Where used in conjunction with Engineer's response to submittals, requests, applications, inquiries, reports and claims by Contractor, the meaning of term "approved" will be held to limitations of Engineer's responsibilities and duties as specified in General and Special Conditions. In no case will "approval" by Engineer be interpreted as a release of Contractor from responsibilities to fulfill requirements of contract documents.

PROJECT SITE: The space available to Contractor for performance of the work, either exclusively or in conjunction with others performing other work as part of the project. The extent of project site is shown on drawings, and may or may not be identical with description of land upon which project is to be built.

FURNISH: Except as otherwise defined in greater detail, the term "furnish" is used to mean supply and deliver to project site, ready for unloading, unpacking, assembly, installation, etc., as applicable in each instance.

INSTALL: Except as otherwise defined in greater detail, term "install" is used to describe operations at project site including unloading, unpacking, assembly, erection, placing, anchoring, applying, working to dimension, finishing, curing, protecting, cleaning and similar operations, as applicable in each instance.

PROVIDE: Except as otherwise defined in greater detail, term "provide" means furnish and install, complete and ready for intended use, as applicable in each instance.

INSTALLER: The entity (person or firm) engaged by Contractor or its subcontractor or sub-contractor for performance of a particular unit of work at project site, including installation, erection, application and similar required operations. It is a general requirement that such entities (Installers) be expert in operations they are engaged to perform.

TESTING LABORATORY: An independent entity engaged to perform specific inspections of tests of work, either at project site or elsewhere; and to report and (if required) interpret results of those inspections or tests.

SPECIFICATION EXPLANATIONS:

SPECIFICATION CONTENT: Because of methods by which this project specification has been produced, certain general characteristics of content, and conventions in use of language are explained as follows:

SPECIFYING METHODS: The techniques or methods of specifying to record requirements varies throughout text, and may include "prescriptive", "open generic-descriptive", "compliance with standards", "performance", "proprietary", or a combination of these. The method used for specifying one unit of work has no bearing on requirements for another unit of work.

OVERLAPPING AND CONFLICTING REQUIREMENTS: Where compliance with 2 or more industry standards or sets of requirements is specified, and overlapping of those different standards or requirements establishes different or conflicting minimums or levels of quality, most stringent requirement (which is generally recognized to be also most costly) is intended and will be enforced, unless specifically detailed language written into contract documents (not by way of reference to an industry standard) clearly indicates that a less stringent requirement is to be fulfilled. Refer apparently-equal-but-different requirements, and uncertainties as to which level of quality is the more stringent, to Engineer for a decision before proceeding.

CONTRACTOR'S OPTIONS: Except for overlapping or conflicting requirements, where more than one set of requirements are specified for a particular unit of work, option is intended to be Contractor's regardless of whether specifically indicated as such.

MINIMUM QUALITY/QUANTITY: In every instance, quality level or quantity shown or specified is intended as minimum for the work to be performed or provided. Except as otherwise specifically indicated, actual work may either comply exactly with that minimum (within specified tolerances), or may exceed that minimum within reasonable limits. In complying with requirements, indicated numeric values are either minimums or maximums as noted or as appropriate for context of requirements. Refer instances of uncertainty to Engineer for decision before proceeding.

SPECIALISTS; ASSIGNMENTS: In certain instances, specification text requires (or at least implies) that specific work be assigned to specialists or expert entities, who must be engaged for performance of those units of work. These must be recognized as special requirements over which Contractor has no choice or option. These assignments must not be confused with (and are not intended to interfere with) normal application of regulations, union jurisdictions and similar conventions. One purpose of such assignments is to establish which party or entity involved in a specific unit of work is recognized as "expert" for indicated construction processes or operations. Nevertheless, final responsibility for fulfillment of entire set of requirements remains with Contractor.

TRADES: Except as otherwise indicated, the use of title such as "carpentry" in specification text, implies neither that the work must be performed by an accredited or unionized tradesperson or corresponding generic name (such as "carpenter"), nor that specified requirements apply exclusively to work by tradesperson of that corresponding generic name.

ABBREVIATIONS: The language of specifications and other contract documents is of the abbreviated type in certain instances, and implies words and meanings which will be appropriately interpreted. Actual work abbreviations of a self-explanatory nature have been included in texts. Specific abbreviations have been established, principally for lengthy technical terminology and primarily in conjunction with coordination of specification requirements with notations on drawings and in schedules. These are frequently defined in section at first instance of use. Trade association names and titles of general standards are frequently abbreviated. Singular words will be interpreted as singular where applicable and where full context of the contract documents so indicates.

INDUSTRY STANDARDS

GENERAL APPLICABILITY OF STANDARDS: Applicable standards of construction industry have same force and effect (and are made a part of contract documents by reference) as if copied directly into contract documents, or as if published copies were bound herewith.

Referenced standards (referenced directly in contract documents or by governing regulations) have precedence over non-referenced standards which are recognized in industry for applicability to work.

PUBLICATION DATES: Except as otherwise indicated, where compliance with an industry standard is required, comply with standard in effect as of date of contract documents.

COPIES OF STANDARDS: Provide where needed for proper performance of the work; obtain directly from publication sources.

ABBREVIATIONS AND NAMES: Where acronyms or abbreviations are used in specifications or other contract documents they are defined to mean the industry recognized name of trade association, standards generating organization, governing authority or other entity applicable to context of text provision. Refer to "Encyclopedia of Associations", published by Gale Research Co., available in large libraries.

SUBMITTALS

PERMITS, LICENSES AND CERTIFICATES: For the Owner's records, submit copies of permits, licenses, certificates, inspection reports, releases, jurisdictional settlements, notices, receipts for fee payments, judgments, and similar documents, correspondence and records established in conjunction with compliance with standards and regulations bearing upon performance of the work.

PART 2 - PRODUCTS (Not Applicable)

PART 3 - EXECUTION (Not Applicable)

END OF SECTION

SECTION 01155
SCHEDULES, REPORTS, PAYMENTS

PART 1 - GENERAL

RELATED DOCUMENTS:

Drawings and general provisions of Contract, including General and Supplementary Conditions, apply to work of this section.

PRELIMINARY PROGRESS SCHEDULE:

BAR-CHART SCHEDULE: Not more than 7 days after date established for "commencement of the work", submit a bar-chart type progress schedule indicating a time bar for each major category or unit of work to be performed at site, properly sequenced and intermeshed, and showing completion of the work sufficiently in advance of date established for "substantial completion of the work".

PROGRESS MEETING:

INITIAL PROGRESS MEETING: Schedule initial progress meeting, recognized as "Pre-Construction Meeting", for a date not more than 15 days after date of commencement of the work. Use it as an organizational meeting, and review responsibilities and personnel assignments.

UNIT PRICE SCHEDULE:

GENERAL: Refer to individual specification sections for units of work where the establishment of unit prices is required. Methods of measurement and pricing are specified in these sections.

The Owner reserves the right to reject the Contractor's measurement of work-in-place which involves use of established unit prices, and to have this work measured by an independent surveyor acceptable to the Contractor at the Owner's expense.

PAYMENT REQUESTS:

WAIVERS OF LIEN: For final payment application, submit waiver of lien from every entity (including the Contractor) who could lawfully and possibly file a lien in excess of $100 arising out of Contract and related to work covered by payment. Owner reserves right to designate which entities involved in the work must submit waivers.

FINAL PAYMENT APPLICATION: The administrative actions and sub-mittals which must precede or coincide with submittal of final payment application can be summarized as follows, but not necessarily by way of limitation:

Completion of project closeout requirements.

Completion of items specified for completion beyond time of substantial completion (regardless of whether special payment application was previously made).

Assurance, satisfactory to Owner, that unsettled claims will be settled and that work not actually completed and accepted will be completed without undue delay.

Proof, satisfactory to Owner, that taxes, fees and similar obligations of Contractor have been paid.

Removal of temporary facilities, services, surplus materials, rubbish and similar provisions.

Consent of surety for final payment.

APPLICATION TRANSMITTAL: Submit 5 executed copies of each payment application.

PART 2 - PRODUCTS (Not Applicable)

PART 3 - EXECUTION (Not Applicable)

END OF SECTION

SECTION 01205
PROCEDURES AND CONTROLS

PART 1 - GENERAL

RELATED DOCUMENTS:

Drawings and general provisions of Contract, including General and Special Conditions, apply work of this section.

DESCRIPTION OF WORK:

The types of minimum requirements for procedures and performance of control work of a general nature include but are not necessarily limited to the following categories:

Administrative/Supervisory personnel.

Surveys and records or reports.

Trades people and workmanship standards.

Inspections, tests and reports.

General installation provisions.

Cleaning and protection.

Conservation and salvage.

ADMINISTRATIVE/SUPERVISORY PERSONNEL:

GENERAL: In addition to a General Superintendent and other administrative and supervisory personnel required for performance of the work, provide specific coordinating personnel as specified herein.

PROJECT COORDINATOR: Provide a full-time Project Coordinator, who is experienced in administration and supervision of construction including mechanical and electrical work, and who is hereby authorized to act as the general coordinator of interfaces between units of work. For purpose of these provisions, "interface" is defined to include the scheduling and sequencing of work, sharing of access to work spaces, installations, protection of each other's work, cutting

and patching, tolerances, cleaning, selection for compatibility preparation of coordination drawings, inspections, tests, and temporary facilities and services.

SURVEYS AND RECORDS/REPORTS:

GENERAL: Working from lines and levels established by property survey, and as shown in relation to the other work, establish and maintain bench marks and other dependable markers to set lines and levels for the work as needed to properly locate each element of entire project. Calculate and measure required dimensions as shown (within recognized tolerances if not otherwise indicated); do not scale drawings to determine dimensions. Advise tradesmen performing the work, of marked lines and levels provided for their use in layout work.

SURVEYOR: Engage a Land Surveyor or a Professional Engineer experienced and specializing in land survey work, who is registered in State where project is located, to perform services specified in this article. Surveyor shall carry Professional Liability Insurance.

SURVEY PROCEDURES: Verify layout information shown on drawings, in relation to property survey and existing benchmarks, before proceeding with layout of actual work. Record deviations from required lines and levels, and advise Engineer promptly upon detection of deviations exceeding indicated or recognized tolerances. Record deviations which are accepted (not corrected) on record drawings.

TRADESPERSONS AND WORKMANSHIP STANDARDS:

GENERAL: Instigate and maintain procedures to ensure that persons performing work at site are skilled and knowledgeable in methods and craftsmanship needed to produce required quality-levels for workmanship in completed work. Remove and replace work that does not comply with workmanship standards as specified and as recognized in the construction industry for applications indicated. Remove and replace other work damaged or deteriorated by faulty workmanship or its replacement.

INSPECTIONS, TESTS AND REPORTS:

GENERAL: Required inspection and testing services are intended to assist in determination of probable compliances of work with requirements, but do not relieve Contractor of responsibility for those compliances, or for general fulfillment of requirements of contract documents. Specified inspections and tests are not intended to limit Contractor's quality control program. Afford reasonable access to agencies performing tests and inspections.

QUALIFICATION OF TESTING AGENCIES: Except as otherwise indicated and except where manufacturer's testing facilities are located as acceptable, engage independent testing laboratories specializing in required services.

REPORTS: Submit test/inspection reports, including agency's analysis of results and recommendations where applicable, in duplicate to Engineer except as otherwise indicated, and submit copies directly to governing authorities where required or requested.

Tests that will be required but are not limited to the following:

1. Field Density Tests,
2. Compressive Strength Test on Concrete, and
3. LBR's and proctors are required.

PART 2 - PRODUCTS (Not Applicable)

PART 3 - EXECUTION

MANUFACTURER'S INSTRUCTIONS

Where installations include manufactured products, comply with manufacturer's applicable instructions and recommendations for installation, to extent these are more explicit or more stringent than requirements indicated in contract documents.

Inspect each item of materials or equipment immediately prior to installation, and reject damaged and defective items.

Provide attachment and connection devices and methods for securing work properly as it is installed; true to line and level, and within recognized industry tolerances if not otherwise indicated. Allow for expansions and building movements. Provide uniform joint widths in exposed work, organized for best possible visual effect.

Recheck measurements and dimensions of the work, as an integral step of starting each installation.

Install work during conditions of temperature, humidity, exposure, forecasted weather, and status of project completion that will ensure best possible results for each unit of work, in coordination with entire work. Isolate each unit of work from non-compatible work, as required to prevent deterioration.

MOUNTING HEIGHTS: Where mounting heights are not indicated, mount individual units of work at industry-recognized standard mounting heights for applications indicated. Refer questionable mounting height choices to Engineer for final decision.

CLEANING AND PROTECTION

GENERAL: During handling and installation of work at project site clean and protect work in progress and adjoining work on a basis of perpetual maintenance. Apply suitable protective covering on newly installed work where reasonably required to ensure freedom from damage or deterioration at time of substantial completion; otherwise, clean and perform maintenance on newly installed work as frequently as necessary through remainder of construction period. Adjust and lubricate operable components to ensure operability without damaging effects.

LIMITING EXPOSURES OF WORK: To extent possible through reasonable control and protection methods, supervise performance of work in a manner and by means which will ensure that none of the work, whether completed or in progress, will be subjected to harmful dangerous, damaging, or otherwise deleterious exposures during construction period. Such exposures include (where applicable, but not by way of limitation) static loading, dynamic loading, internal pressures, external pressures, high or low temperatures, thermal shock, high or low humidity, air contamination or pollution, water, ice, solvents, chemicals, light, radiation, puncture, abrasion, heavy traffic, soiling, bacteria, insect infestation, combustion, electrical current, high speed operation, improper lubrication, unusual wear, misuse, incompatible interface, destructive testing, misalignment, excessive weathering, unprotected storage, improper shipping/handling, theft and vandalism.

CONSERVATION AND SALVAGE

GENERAL: It is a general procedural requirement for supervision and administration of the work that construction operations be carried out with maximum practical consideration for conservation of energy, water and materials; and with maximum practical consideration for salvaging materials and equipment involved in performance of the work but not incorporated therein. Refer to other sections for required disposition of salvage materials and equipment that are Owner's property (change order procedures).

END OF SECTION

SECTION 01300
SUBMITTALS

1.01 REQUIREMENTS INCLUDED

A. The CONTRACTOR shall submit to the ENGINEER for review such working drawings, shop drawings, test reports and data on materials and equipment (hereinafter in this Section called "Data"), and material samples (hereinafter in this Section called "Samples") as are required for the proper control of work, including but not limited to those working drawings, shop drawings, Data and Samples for materials and equipment specified elsewhere in the Specifications and in the Contract Drawings.

B. The CONTRACTOR shall note that there are specific submittal requirements in other sections of these Specifications.

C. The CONTRACTOR is to maintain an accurate updated submittal log and shall bring this log to each scheduled progress meeting with the PROJECT REPRESENTATIVE and the ENGINEER. This log shall be organized using the 10 character numbering system in Subparagraph 1.6 F. This log should include the following items:

1. Submittal: Description and File Number assigned.
2. Date to ENGINEER.
3. Date returned to CONTRACTOR (from ENGINEER).
4. Status of Submittal
    a. Approved
    b. Approved As Noted
    c. Approved As Noted/Confirm
    d. Not Approved/Resubmit
    e. Not Approved
5. Date of Resubmittal and Return (as applicable).
6. Date material released (for fabrication).
7. Projected date of fabrication.
8. Projected date of delivery to site.
9. Status of O&M submittal.

1.02 SHOP DRAWINGS

A. When used in the Contract Documents, the term "shop drawings" shall be considered to mean CONTRACTOR's plans for material and equipment which become an integral part of the Project. These drawings shall be complete and detailed. Shop drawings shall consist of fabrication, erection and setting drawings and schedule drawings, manufacturer's scale drawings, bills of material, wiring and control diagrams, and inspection and test reports including performance curves and certifications as applicable to the Work.

B. All details on shop drawings submitted for approval shall show clearly the elevations of the various parts to the main members and lines of the structure and/or equipment, and where correct fabrication of the Work depends upon field measurements, such measurements shall be made and noted on the shop drawings before being submitted for approval.

C. See Shop Drawing Schedule requirements in Subparagraph 1.7 CONTRACTOR'S RESPONSIBILITY.

1.03 PRODUCT DATA

Product data as specified in individual sections, include, but are not necessarily limited to, standard prepared data for manufactured products (sometimes referred to as catalog data), such as the manufacturer's product specification and installation instructions, availability of colors and patterns, MANUFACTURER'S printed statements of compliances and applicability, roughing-in diagrams and templates, catalog cuts, product photographs, standard wiring diagrams, printed performance curves and operational-range diagrams, production or quality control inspection and test reports and certifications, mill reports, product operating and maintenance instructions and recommended spare-parts listing storage instructions, and printed product warranties, as applicable to the Work.

1.4 WORKING DRAWINGS

A. When used in the Contract Documents, the term "working drawings" shall be considered to mean the CONTRACTOR's plans for temporary structures such as temporary bulkheads, support of open cut excavation, support of utilities, ground water control systems, forming and false work; for underpinning; and for such other work as may be required for construction but does not become an integral part of the Project.

B. Working drawings shall be signed and sealed by a registered Professional Engineer, currently licensed to practice in the State and shall convey, or be accompanied by, calculations or other sufficient information to completely explain the structure, machine, or system described and its intended manner of use.

C. Prior to commencing such Work, working drawings must have been reviewed without specific exceptions by the ENGINEER. Such review will be for general conformance and will not relieve the CONTRACTOR in any way from his responsibility with regard to the fulfillment of the terms of the Contract. All risks of error are assumed by the CONTRACTOR; the OWNER and ENGINEER shall have no responsibility therefore.

1.05 SAMPLES

A. The CONTRACTOR shall furnish, for the approval of the ENGINEER, samples required by the Contract Documents or requested by the ENGINEER. Samples shall be delivered to the ENGINEER as specified or requested and in quantities and sizes as specified. A minimum of two samples of each item shall be submitted unless otherwise specified. The CONTRACTOR shall pre-pay all shipping charges on samples. Materials or equipment for which samples are required shall not be used in the Work until approved by the ENGINEER.

B. Samples specified in individual sections, include, but are not necessarily limited to, physical examples of the Work such as sections of manufactured or fabricated work, small cuts or containers of materials, complete units of repetitively-used products, color/texture/pattern swatches and range sets, specimens for coordination of visual effect, graphic symbols, and units of Work to be used by the ENGINEER or PROJECT REPRESENTATIVE for independent inspection and testing, as applicable to the Work.

C. The CONTRACTOR shall prepare a transmittal letter in triplicate for each shipment of samples to the ENGINEER. The CONTRACTOR shall enclose a copy of this letter with the shipment and send a copy of this letter to the PROJECT REPRESENTATIVE. Approval of a sample shall be only for the characteristics or use named in such approval and shall not be construed to change or modify any Contract requirements.

D. Approved samples not destroyed in testing shall be sent to the ENGINEER or stored at the site of the Work. Materials and equipment incorporated in the Work shall match the approved samples. Samples which fail testing or are not approved will be returned to the CONTRACTOR at their expense, if so requested at time of submission.

1.06 SUBMITTAL REQUIREMENTS

A. The CONTRACTOR shall review, approve, and submit, with reasonable promptness and in such sequence as shown on the Shop Drawing Submittal Schedule so as to cause no delay in the Contract Work or in the Work of the OWNER or any separate contractor, all shop drawings, product data, working drawings and samples required by the Contract Documents.

B. The CONTRACTOR shall submit 10 copies of all shop drawings for the ENGINEER to review, of which the ENGINEER will retain eight sets.

C. All submittals shall be directly transmitted to the ENGINEER's office. Submittals to the PROJECT REPRESENTATIVE will not be accepted.

D. Shop drawings, product data, working drawings and Samples shall be furnished with the following information:

1. Number and title of the drawing.

2. Date of drawing or revision.

3. Name of project building or facility.

4. Name of contractor, subcontractor, and manufacturer submitting drawing.

5. Clear identification of contents, location of the work, and the sheet numbers where the product is found in the contract drawings.

6. CONTRACTOR Certification Statement.

7. Submittal Identification Number.

8. Contract Drawing Number Reference.

9. A certification by the CONTRACTOR that states the following: I hereby certify that the (equipment) (material) (article) shown and marked in this submittal is in compliance with the Contract Drawings and Specifications, can be installed in the allocated space, will be stored in accordance with the manufacturers recommendations and the Specifications, and is submitted for approval.

E. In accordance with Subparagraph 1.7 A, each shop drawing, working drawing, Sample, and catalog data submitted by the CONTRACTOR shall have affixed to it the following Certification Statement, signed by the CONTRACTOR: "Certification Statement: By this submittal, I hereby represent that I have determined and verified all field measurements, field construction criteria, materials, dimensions, catalog numbers, and similar data and I have checked and coordinated each item with other applicable approved shop drawings and all contractor requirements."

F. The CONTRACTOR shall utilize a 10-character submittal identification numbering system in the following manner:

1. The first character shall be a D, S, P, M, or R, which represents Shop/Working Drawing and other Product Data (D), Sample (S), Preliminary Submittal (P), Operating/Maintenance Manual (M), or Request for Information (R).

2. The next five digits shall be the applicable Specification Section Number.

3. The next three digits shall be the numbers 001-999 to sequentially number each item or drawing submitted under each specific Section number.

4. The last character shall be a number 1-10, indicating the submission, or resubmission of the same Drawing, i.e., 1=1st submission, 2=2nd submission, 3=3rd submission, etc. A typical submittal number would be as follows:

D-03300-008.2

D	=	**Shop Drawing**
03300	=	**Specification Section for Concrete**
008	=	**The eighth submittal under this specification section**
2	=	**The second submission (first resubmission) of that particular shop drawing.**

G. The CONTRACTOR shall submit a copy of each submittal transmittal sheet (for shop drawings, product data, working drawings and Samples) to the PROJECT REPRESENTATIVE simultaneously with the CONTRACTOR's submission of said drawings, Data, Samples or manual packages to the ENGINEER.

H. All items specified are not necessarily intended to be a manufacturer's standard product. Variations from specified items will be considered on an "or equal" basis. If submittals show variations from Contract requirements because of standard shop practice or for other reasons, the CONTRACTOR shall describe such variations in the letter of transmittal and on the shop drawings along with notification of intent to seek contract adjustment. If acceptable, proper adjustment in the Contract shall be implemented where appropriate. If the CONTRACTOR fails to describe such variations, responsibility will not be waived for executing the Work in accordance with the Contract, even though such drawings have been reviewed. Variations submitted but not described may be cause for rejection. Any variations initiated by the CONTRACTOR will not be considered as an addition to the scope of work unless specifically noted and then approved as such in writing by the ENGINEER.

I. Data on materials and equipment shall include materials and equipment lists giving, for each item thereon, the name and location of the supplier or manufacturer, trade name, catalog reference, material, size, finish, and all other pertinent data.

J. For all mechanical and electrical equipment furnished, the CONTRACTOR shall provide a list including the equipment name, and address and telephone number of the manufacturer's representative and Service Company so that service and/or spare parts can be readily obtained. In addition, a maintenance and lubrication schedule for each piece of equipment shall be submitted.

K. The CONTRACTOR shall use the color "green" to make his remarks on the Submittals. Only the ENGINEER will utilize the color "red" in marking submittals.

L. Facsimiles or copies of facsimiles will not be accepted for review.

1.07 CONTRACTOR'S RESPONSIBILITY

A. It is the duty of the CONTRACTOR to check, and coordinate with the work of all trades, all drawings, Data, schedules and Samples before submitting them to the ENGINEER for review. Each and every copy of any drawing or data sheet larger than 11"x17" shall bear CONTRACTOR's stamp showing that they have been so checked and approved. Drawings or data sheets 11"x17" and smaller shall be bound together in an orderly fashion and bear the CONTRACTOR's stamp on the cover sheet. The cover sheet shall fully describe the packaged data and include a list of all sheet numbers within the package. Shop drawings submitted to the ENGINEER without the CONTRACTOR's stamp will be returned to the CONTRACTOR, without review at the ENGINEER's option, for conformance with this requirement.

B. The CONTRACTOR shall review shop drawings, product data, and Samples prior to submission to determine and verify the following:

1. Field measurements.

2. Field construction criteria.

3. Manufacturer's catalog numbers and similar data.

4. Conformance with Specifications.

C. Shop drawings shall indicate any deviations in the submittal from the requirements of the Contract Documents.

D. At a time decided upon at the preconstruction meeting the CONTRACTOR shall furnish the PROJECT REPRESENTATIVE and ENGINEER a Shop Drawing schedule fixing the respective dates for the initial submission of shop and working drawings, the beginning of manufacture, testing and installation of materials, supplies and equipment. This schedule shall be provided as a separate entity and indicate those submittals that are critical to the progress schedule. The CONTRACTOR shall prepare and transmit each submittal sufficiently in advance of performing the related work or other applicable activities, or within the time specified in the individual work sections of the Specifications, so that the installation will not be delayed by processing times including disapproval and resubmittal (if required), coordination with other submittals, testing, purchasing, fabrication, delivery, and similar sequenced activities. No extension of time will be authorized because of the CONTRACTOR's failure to transmit complete and acceptable submittals sufficiently in advance of the Work.

E. The CONTRACTOR shall not begin any Work affected by a submittal returned not approved. Before starting this Work, all revisions must be corrected by the CONTRACTOR. After resubmittal they will be reviewed and returned by the ENGINEER. If approved or approved as noted, then the CONTRACTOR may begin this Work. Any corrections made to the shop drawings are to be followed without exception.

F. The CONTRACTOR shall submit to the ENGINEER all shop drawings and data sufficiently in advance of construction requirements to provide no less than **21** calendar days for review from the time the ENGINEER receives them. No less than **30** calendar days will be required for major equipment that requires review by more than one engineering discipline.

G. The CONTRACTOR shall be responsible for and bear all cost of damages which may result from the ordering of any material or from proceeding with any part of Work prior to the review and approval by ENGINEER of the necessary shop drawings.

H. All shop drawings, product data, working drawings and Samples submitted by subcontractors for approval shall be sent directly to the CONTRACTOR for checking. The CONTRACTOR shall be responsible for their submission according to the approved shop drawing schedule so as to prevent delays in delivery of materials and project completion.

I. The CONTRACTOR shall check all subcontractors' shop drawings, product data, working drawings and Samples regarding measurements, size of members, materials, and details to satisfy himself that they are in conformance to the Contract Documents. Shop drawings found to be inaccurate or otherwise in error shall be returned to the subcontractors for correction before submission to the ENGINEER.

J. Requests for Information (RFI) shall be submitted on a standard form through the PROJECT REPRESENTATIVE. RFIs shall indicate their importance to the timely completion of the project. RFIs will be processed as a shop drawing unless there is an urgent need for immediate response.

1.08 ENGINEER'S REVIEW OF SHOP DRAWINGS, PRODUCT DATA, WORKING DRAWINGS AND SAMPLES

A. The ENGINEER's review is for general conformance with the design concept and contract drawings. Markings or comments shall not be construed as relieving the CONTRACTOR from compliance with the contract plans and specifications or from departures therefrom. The CONTRACTOR remains responsible for details and accuracy, for coordinating the Work with all other associated work and trades, for selecting fabrication processes, for techniques of assembly, and for performing work in a safe manner.

B. The review of shop drawings, Data, and Samples will be general. They shall not be construed:

1. as permitting any departure from the Contract requirements;

2. as relieving the CONTRACTOR of responsibility for any errors, including details, dimensions, and materials;

3. as approving departures from details furnished by the ENGINEER, except as otherwise provided herein.

C. If the shop drawings, Data or Samples as submitted describe variations per Subparagraph (1.6H), and show a departure from the Contract requirements which ENGINEER finds to be in the interest of the OWNER and to be so minor as not to involve a change in Contract Price or Contract Time for performance, the ENGINEER may return the reviewed drawings without noting an exception.

D. Submittals will be returned to the CONTRACTOR under one of the following codes:

Code 1 - "**APPROVED**" is assigned when there are no notations or comments on the submittal. When returned under this code the CONTRACTOR may release the equipment and/or material for manufacture.

Code 2 - "**APPROVED AS NOTED**" is assigned when notations or comments have been made on the submittal pointing out minor discrepancies as compared with the Contract Documents. Resubmittal or confirmation is not necessary prior to release for manufacturing.

Code 3 - "**APPROVED AS NOTED/CONFIRM**" This combination of codes

is assigned when a confirmation of the notations and comments is required by the CONTRACTOR. The CONTRACTOR may release the equipment or material for manufacture; however, all notations and comments must be incorporated into the final product. This confirmation is to address the omissions and/or nonconforming items that were noted. Only the items to be "confirmed" need to be resubmitted.

Code 4 - "**NOT APPROVED/RESUBMIT**" This combination of codes is assigned when the submittal is in noncompliance with the Contract Documents and must be corrected and the entire package resubmitted. This code generally means that the equipment or material cannot be released for manufacture unless the CONTRACTOR takes full responsibility for providing the submitted items in accordance with Contract Documents.

Code 5 - "**NOT APPROVED**" is assigned when the submittal does not meet the intent of the Contract Documents. The CONTRACTOR must resubmit the entire package revised to bring the submittal into conformance. It may be necessary to resubmit using a different manufacturer/vendor to meet the Contract Documents.

Code 6 - "**COMMENTS ATTACHED**" is assigned where there are comments attached to the returned submittal which provide additional data to aid the CONTRACTOR.

Code 7 - "**FOR YOUR INFORMATION**" is assigned when the package provides information of a general nature that may or may not require a response.

Codes 1 through 5 designate the status of the reviewed submittal with Code 6 showing there has been an attachment of additional data.

Code 7 is used as may be necessary.

E. Resubmittals will be handled in the same manner as first submittals. On resubmittals the CONTRACTOR shall direct specific attention, in writing on the letter of transmittal and on resubmitted shop drawings by use of revision triangles or other similar methods, to revisions other than the corrections requested by the ENGINEER on previous submissions. Any such revisions which are not clearly identified shall be made at the risk of the CONTRACTOR. The CONTRACTOR shall make corrections to any Work done because of this type revision that is not in accordance to the Contract Documents as may be required by the ENGINEER.

F. If the CONTRACTOR considers any correction indicated on the shop drawings to constitute a change to the Contract Documents, the CONTRACTOR shall give

written notice thereof to the PROJECT REPRESENTATIVE at least 7 working days prior to release for manufacture.

G. The ENGINEER will review a submittal a maximum of two times, after which cost of review will be borne by the CONTRACTOR. The cost of engineering shall be equal to the ENGINEER's charges to the OWNER under the terms of the ENGINEER's agreement with the OWNER.

H. When the shop drawings have been completed to the satisfaction of the ENGINEER, the CONTRACTOR shall carry out the construction in accordance therewith and shall make no further changes therein except upon written instructions from the ENGINEER.

I. Partial submittals may not be reviewed. The ENGINEER will be the only judge as to the completeness of a submittal. Submittals not complete will be returned to the CONTRACTOR, and will be considered "Not Approved" until resubmitted. The ENGINEER may, but is not required to, provide a list or mark the submittal directing the CONTRACTOR to the areas that are incomplete

PART 2 – PRODUCTS (Not Applicable)

PART 3 – EXECUTION (Not Applicable)

END OF SECTION

SECTION 01505
MOBILIZATION/DEMOBILIZATION

PART 1 - GENERAL

1.01 DEFINITION AND SCOPE

As required for the proper performance and completion of the Work, mobilization shall include, but not be limited to, the following principal items:

A. Move onto the site all CONTRACTOR's plant and equipment required for the first month's operation.

B. Install temporary construction power, wiring, telephone, and lighting facilities.

C. Establish a fire protection plan and safety program.

D. Secure construction water supply.

E. Provide field office trailers for CONTRACTOR and PROJECT REPRESENTATIVE.

F. Provide on-site sanitary facilities and potable water facilities.

G. Arrange for and erect CONTRACTOR'S lay down and storage yard and employee's parking facilities.

H. Submit all required insurance certificates and bonds.

I. Obtain all required permits.

J. Post all OSHA, FDEP, Department of Labor, and all other required notices.

K. Have CONTRACTOR'S project manager and/or superintendent at the job site full time.

L. Submit a detailed construction schedule acceptable to the PROJECT REPRESENTATIVE.

M. Submit a Schedule of Values of the Work in an approved format acceptable to the PROJECT REPRESENTATIVE.

N. Submit a hurricane preparedness plan acceptable to the PROJECT REPRESENTATIVE.

O. Erect all required Project signs.

1.02 PAYMENT FOR MOBILIZATION

Payment for all mobilization/demobilization work will be made at the lump sum price bid for mobilization and demobilization of all labor, equipment, materials and appurtenances necessary for construction of the project. Mobilization shall include all items listed in the above paragraph. Also included, but not limited to, as part of this bid item is the cost for project performance indemnification's, shop drawings, working drawings, schedules, record drawings and documents, coordination, and phasing and other miscellaneous items associated with the work. Measurement and payment for this bid item will be lump sum. The lump sum price for mobilization/demobilization will be limited to 5.0 percent of the total contract amount. Eighty percent (80%) of the lump sum amount will be payable upon mobilization. The remaining 20% will be payable upon demobilization.

PART 2 – PRODUCTS (Not Applicable)

PART 3 – EXECUTION (Not Applicable)

END OF SECTION

SECTION 01605
PRODUCTS AND SUBSTITUTIONS

PART 1 - GENERAL

RELATED DOCUMENTS

Drawings and general provisions of Contract, including General and Special Conditions, apply to work of this section.

DESCRIPTION OF REQUIREMENTS

Definitions: "Products" is defined to include purchased items for incorporation into the work, regardless of whether specifically purchased for project or taken from Contractor's stock of previously purchased products. "Materials" is defined as products which must be substantially cut, shaped, worked, mixed, finished, refined or otherwise fabricated, processed, installed or applied to form units of work. "Equipment" is defined as products with operational parts, regardless of whether motorized or manually operated, and particularly including products with service connections (wiring, piping, etc.). Definitions in this paragraph are not intended to negate the meaning of the other terms used in contract documents, including "specialties", "systems", "structure", "finishes", "accessories", "furnishings", "special construction", and similar terms, which are self-explanatory and have recognized meanings in the construction industry.

Substitutions: The requirements for substitutions do not apply to specified Contractor options on products and construction methods. Revisions to contract documents, where requested by Owner or Engineer are "changes" not "substitutions". Requested substitutions during bidding period, which have been accepted prior to Contract Date, are included in contract document and are not subject to requirements for substitutions as specified herein. Contractor's determination of and compliance with governing regulations and orders issued by governing authorities do not constitute "substitutions"; and do not constitute a basis for change orders, except as provided for in contract documents. Otherwise, Contractors' requests for changes in products, materials and methods of construction required by contract documents are considered requests for "substitutions", and are subject to requirements hereof.

Standards: Refer to Section 01090 - "Definitions and Standards" for applicability of industry standards to products of project, and for acronyms used in text of specification sections.

QUALITY ASSURANCE

Source Limitations: To the greatest extent possible for each unit of work, provide products, materials or equipment of a singular generic kind and from a single source.

Compatibility of Options: Where more than one choice is available as options for Contractor's selection of a product or material, select an option that is compatible with other products and

materials already selected (which may have been from among options for those other products and materials). Total compatibility among options is not assured by limitations within contract documents, but must be provided by Contractor. Compatibility is a basic general requirement of product/material selections.

SUBMITTALS

Requests for Substitutions: Submit 3 copies, fully identified for product or method being replaced by substitutions, including related specification section and drawing number(s), and fully documented to show compliance with requirements for substitutions. Include product data/drawings, description of methods, samples where applicable, Contractor's detailed comparison of significant qualities between specified item and proposed substitution, statement of effect on construction time and coordination with other affected work, cost information or proposal, and Contractor's statement to the effect that proposed substitution will result in overall work equal-to-or-better-than work originally indicated.

PRODUCT DELIVERY-STORAGE-HANDLING

General: Deliver, handle and store products in accordance with manufacturer's recommendations and by methods and means that will prevent damage, deterioration, and loss including theft. Control delivery schedules to minimize long-term storage of products at site and overcrowding of construction spaces. In particular, provide delivery/installation coordination to ensure minimum holding or storage times for products recognized to be flammable, hazardous, easily damaged, or sensitive to deterioration, theft, and other sources of loss.

WARRANTIES (GUARANTEES)

Coincidental Product Warranty: A warranty which is not specifically required by contract documents (other than as specified in this Section); but which is available on a product incorporated into the work, by virtue of the fact that manufacturer of product has published warranty in connection with purchases and uses of product without regard for specific applications except as otherwise limited by terms of warranty. Refer to individual sections of Division 2 through 16 for the determination of units of work that are required to be specifically or individually warranted, and for the specific requirements and terms of those warranties (or guarantees).

General Limitations: It is recognized that specific warranties are intended primarily to protect Owner against failure of the work to perform as required, and against deficient, defective and faulty materials and workmanship, regardless of sources. Except as otherwise indicated, specific warranties do not cover failures in the work which results from: 1) Unusual and abnormal phenomena of the elements, 2) The Owner's misuse, maltreatment or improper maintenance of the work, 3) Vandalism after time of substantial completion, of 4) Insurrection of acts of aggression including war.

Related Damages and Losses: In connection with Contractor's correction of warranted work which has failed, remove and replace other work of project which has been damaged as a result of such failure, or must be removed and replaced to provide access for correction of warranted work.

Reinstatement of Warranty Period: Except as otherwise indicated, when product warranty has failed and has been corrected by replacement or restoration, reinstate warranty by written endorsement for the following time period, starting on date of acceptance of replaced or restored work: a period of time equal to original warranty period of time.

Replacement Cost, Obligations: Except as otherwise indicated, costs of replacing or restoring failing warranted units or products is Contractor's obligation, without regard for whether Owner has already benefited from use through a portion of anticipated useful service lives.

PART 2 - PRODUCTS

GENERAL PRODUCT COMPLIANCES:

General: The compliance requirements, for individual products as indicated in contract documents, are multiple in nature and may include generic, descriptive, proprietary, performance, prescriptive, compliance with standards, compliance with codes, conformance with graphic details and other similar forms and methods of indicating requirements, all of which must be complied with. Also "allowances" and similar provisions of contract documents will have a bearing on selection process.

Procedures for Selecting Products: Contractor's options for selecting products are limited by contract document requirements, and governing regulations, and are not controlled by industry traditions or procedures experienced by Contractor on previous construction project. Required procedures include, but are not necessarily limited to, the following for various indicated methods of specifying:

Single Product/Manufacturer Name: Provide product indicated except advise Engineer before proceeding, where known that named product is not a feasible or acceptable selection.

Two or More Product/Manufacturer Names: Provide one of the named products, at Contractor's option; but excluding products which do not comply with requirements. Do not provide or offer to provide an unnamed product, except where none of named products comply with requirements or are a feasible selection; advise Engineer before proceeding.

"Or Equal": Where named products in specifications text are accompanied by the term "or equal", or other language of similar effect, comply with those contract document provisions concerning "substitutions" for obtaining Engineer's approval (by change order) to provide an unnamed product.

"Named": Except as otherwise indicated, is defined to mean manufacturer's name for product, as recorded in published product literature, of latest issue as of date of contract documents. Refer to requests to use products of a later (or earlier) model to Engineer for acceptance before proceeding.

Standards, Codes and Regulations: Where only compliance with an imposed standard, code or regulation is required, selection from among products which comply with requirements including those standards, codes and regulations, is Contractor's option.

Performance Requirements: Provide products that comply with specific performances indicated, and which are recommended by manufacturer (in published product literature or by individual certification) for application indicated. Overall performance of a product is implied where product is specified with only certain specific performance requirements.

Prescriptive Requirements: Provide products which have been produced in accordance with prescriptive requirements, using specified ingredients and components, and complying with specified requirements for mixing, fabricating, curing, finishing, testing and similar operations in manufacturing process.

SUBSTITUTIONS

Conditions: Contractor's request for substitution will be received and considered when extensive revisions to contract documents are not required and changes are in keeping with general intent of contract documents; when timely, fully documented and properly submitted; and when one or more of following conditions is satisfied, all as judged by Engineer. Otherwise request will be returned without action except to record non-compliance with these requirements:

Where request is directly related to an "or equal" clause or other language of same effect in contract documents.

Where required product, material or method cannot be provided within Contract Time, but not as a result of Contractor's failure to pursue the work promptly to coordinate various activities properly.

Where required product, material or method cannot be provided in a manner which is compatible with other materials of the work, or cannot be properly coordinated, therewith, or cannot be warranted as required, or cannot be used without adversely affecting Owner's insurance coverage on completed work, or will encounter other substantial non-compliances which are not possible to otherwise overcome except by making requested substitution, which Contractor thereby certifies to overcome such non-compatibility, non-coordination, non-warranty, non-insurability or other non-compliance as claimed.

Where required product, material or method cannot receive required approval by a governing authority, and requested substitution can be so approved.

Where substantial advantage is offered Owner, in terms of cost, time, energy conservation or other valuable considerations, after deducting offsetting responsibilities Owner may be required to bear, including additional compensation to Engineer for redesign and evaluation services, increased cost of other work by Owner or separate contractors, and similar considerations.

Work Related Submittals: Contractor's submittal of, (and Engineer's acceptance of) shop drawings, product data or samples which indicated work not complying with requirements of contract documents, does not constitute an acceptable and valid request for, nor approval of, a substitution.

GENERAL PRODUCT REQUIREMENTS

General: Provide products which comply with requirements, and which are undamaged and unused at time of installation, and which are complete with accessories, trim, finish, safety guards and other devices and details needed for a complete installation and for intended use and effect.

Standard Products: Where available, provide standard products of types that have been produced and used previously and successfully on other projects and in similar applications.

Continued Availability: Where additional amounts of a product, by nature of its application, are likely to be needed by Owner at a later date for maintenance and repair or replacement work, provide a standard, domestically produced product which is likely to be available to Owner at such later date.

Equipment Nameplates: Provide permanent nameplate on each item of service-connected or power operated equipment. Indicate manufacturer, product name, model number, serial number, capacity, speed, ratings and similar essential operating data.

PART 3 - EXECUTION (Not Applicable)

END OF SECTION

SECTION 01705
PROJECT CLOSEOUT

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

Drawings and general provisions of Contract apply to work of this section.

1.02 DESCRIPTION OF REQUIREMENTS

Definitions:

A. Closeout is hereby defined to include general requirements near the end of Contract Time, in preparation for final acceptance, final payment, normal termination of Contract, and similar actions evidencing completion of the Work. Specific requirements for individual units of work are specified elsewhere in these Specifications.

B. Time of closeout is directly related to "Substantial Completion," and therefore; may be either a single time period for entire Work or a series of time periods for individual parts of the Work which have been certified as substantially complete at different dates. That time variation (if any) shall be applicable to other provisions of this section.

1.03 PREREQUISITES FOR SUBSTANTIAL COMPLETION

C. General:

Prior to requesting ENGINEER's inspection for certification of Substantial Completion (for either entire work or portions thereof), complete the following and list known exceptions in request:

1. In progress payment request, coincident with or first following date claimed, show either 100% completion for portion of Work claimed as "substantially complete" or list incomplete items, value of incompletion, and reasons for being incomplete.

2. Include supporting documentation for completion as indicated in these Contract Documents.

3. Submit statement showing accounting of changes to the Contract Sum.

4. Advise OWNER of pending insurance change-over requirements.

5. Submit special warranties, workmanship/maintenance bonds, maintenance agreements, final certifications, and similar documents.

6. Obtain and submit releases enabling OWNER's full and unrestricted use of the work and access to services and utilities, including (where required) operating certificate, and similar releases.

7. Submit record drawings, maintenance manuals, and similar final record information.

8. Deliver tools, spare parts, extra stocks of materials, and similar physical items to the OWNER.

9. Make final change-over of locks and transmit keys to OWNER, and advise OWNER's personnel to change-over in security provisions, applicable.

10. Complete start-up testing of systems, and instructions of OWNER's operating/maintenance personnel. Discontinue (or change over) and remove from Project site temporary facilities and services, along with construction tools and facilities, mock-ups, and similar elements.

11. Complete final cleaning up requirements, including touch-up painting of marred surfaces.

D. Inspection Procedures:

Upon receipt of CONTRACTOR's request, the ENGINEER will either proceed with inspection or advise CONTRACTOR of prerequisites not fulfilled. Following initial inspection, the ENGINEER will either prepare certificate of Substantial Completion, or advice the CONTRACTOR of work which must be performed prior to issuance of certificate; and repeat inspection when requested and assured that work has been substantially completed. Results of completed inspection will form initial "punch-list" for final acceptance.

1.04 PREREQUISITES FOR FINAL ACCEPTANCE

A. General:

Prior to requesting ENGINEER's final inspection for certification of final acceptance and final payment, as required by General Conditions (Section 00100), complete the following and list known exceptions (if any) in request:

1. Submit final payment request with final releases and supporting documentation not previously submitted and accepted. Include certificates of insurance for products and completed operations where required.

2. Submit updated final statement, accounting for additional (final) changes to the Contract Sum.

3. Submit consent of surety.

4. Submit final liquidation damages settlement statement, acceptable to the OWNER.

5. Revise and submit evidence of final continuing insurance coverage complying with insurance requirements.

B. Re-inspection Procedure:

Upon receipt of CONTRACTOR's notice that the work has been completed, including punch-list items resulting from earlier inspections, and excepting incomplete items delayed because of acceptable circumstances, the ENGINEER will re-inspect the Work. Upon completion of re-inspection, the ENGINEER will either prepare a certificate of final acceptance or advise the CONTRACTOR of Work not completed or obligations not fulfilled as required for final acceptance. If necessary, procedure will be repeated.

1.05 RECORD DOCUMENT SUBMITTALS

A. General:

Specific requirements for record documents are indicated in individual sections of these specifications. Other requirements are indicated in General Conditions. General submittal requirements are indicated in Section 01300 (Submittals).

Do not use record documents for construction purposes; protect from deterioration and loss in a secure fire-resistive location; provide access to record documents for engineer's reference during normal working hours.

B. Record Drawings:

1. Maintain a set of contract drawings and shop drawings in clean, undamaged condition, with mark-up of actual installations which very substantially from the work as originally shown.

2. Mark whichever drawing is most capable of showing "field" condition fully and accurately; however, where shop drawings are used for mark-up, record a cross-reference at corresponding location on working drawings.

3. Mark with red erasable pencil and, where feasible, use other colors to distinguish between variations in separate categories of work.

4. Mark-up new information which is recognized to be of importance to the OWNER, but was for some reason not shown on either the Drawings or Shop Drawings. Give particular attention to concealed work, which would be difficult to measure and record at a later date.

5. Note related Change Order numbers where applicable.

C. Record Specifications:

1. Maintain one copy of specifications, including Addenda, Change Orders and similar modifications issued in printed form during construction, and mark-up variation (of substance) in actual work in comparison with text of Specifications and modifications as issued.

2. Give particular attention to substitutions, selection of options, and similar information on Work where it is concealed or cannot otherwise be readily discerned at a latter date by direct observation.

3. Note related Record Drawing information and product data, where applicable. Upon completion of mark-up, submit to ENGINEER for OWNER's records.

D. Maintenance Manuals:

1. Organize maintenance-and-operating manual information into suitable sets of manageable size, and bind into individual binders properly identified and indexed (thumb tabbed). Four sets will be required.

2. Include emergency instructions, spare parts listing, warranties' copies, wiring diagrams, recommended "turn-around" cycles, inspection procedures, shop drawings, product data, and similar applicable information.

PART 2 - PRODUCTS (Not Applicable)

PART 3 - EXECUTION

3.01 CLOSEOUT PROCEDURES

A. General Operating/Maintenance Instructions:

1. Arrange for each installer of work requiring continuing maintenance or operating to meet with OWNER's personnel, at Project site, to provide basic instructions needed for proper operation and maintenance of entire Work.

2. Include instructions by manufacturer's representatives where installers are not expert in the required procedures.

3. Review maintenance manuals, record documentation, tools, spare parts and materials, lubricants, fuels, identification systems, control sequences, hazards, cleaning, and similar procedures and facilities.

4. Demonstrate start-up, shut-down, emergency operations, noise and vibration adjustments, safety, economy/efficiency adjustments, energy effectiveness, and similar operations for operational equipment.

5. Review maintenance and operations in relation with applicable warranties, agreements to maintain, bonds, and similar continuing commitments.

3.02 FINAL CLEANING

A. General:

Special cleaning for specific units of work is specified in other sections. The following are examples, but not by way of limitation, of cleaning levels required:

1. Remove labels which are not required as permanent labels.

2. Wipe surfaces of mechanical and electrical equipment clean and remove excess lubrication and other substances.

3. Clean Project site (yard and grounds), including landscape development areas, of litter and foreign substances.

4. Sweep paved areas to a broom-clean condition; remove stains, petro-chemical spills and other foreign deposits.

5. Rake grounds which are neither planted nor paved, to a smooth, even-textured surface.

B. Compliances:

1. Comply with safety standards and governing regulations for cleaning operations.

2. Do not burn waste materials at site, or bury debris or excess materials on OWNER's property, or discharge volatile or other harmful or dangerous materials into drainage systems.

3. Remove waste materials from site and dispose of in a lawful manner.

4. Dispose of extra materials of value remaining after completion of the associated Work has become the OWNER's property, to OWNER' best advantage as directed.

END OF SECTION

SECTION 02200
EARTHWORK

PART 1 - GENERAL

RELATED DOCUMENTS:

Drawings and general provisions of Contract, including General and Special Conditions, apply to work of this section.

DESCRIPTION OF WORK:

Definition: "Excavation" consists of removal of material encountered to subgrade elevations indicated and subsequent disposal of materials removed.

QUALITY ASSURANCE:

Codes and Standards: Perform excavation work in compliance with applicable requirements of governing authorities having jurisdiction.

Testing and Inspection Service: Employ, at Contractor's expense, a testing laboratory subject to approval by the Engineer to perform soil testing and inspection service for quality control during earthwork operations.

SUBMITTALS:

Test Reports-Excavating: Submit following reports directly to Engineer from the testing services; with copy to Contractor:

Test reports on fill material. (Modified Proctor Tests)

Field density test reports. (Modified Proctor Tests)

Report of actual unconfined compressive strength and/or results of bearing tests of each strata tested.

JOB CONDITIONS:

Existing Utilities: Locate existing underground utilities in areas of work. If utilities are to remain in place, provide adequate means of support and protection during earthwork operations.
Should uncharted, or incorrectly charted, piping or other utilities be encountered during excavation, consult utility owner immediately for directions. Cooperate with Owner, and utility companies in keeping respective services and facilities in operation. Contractor shall bear all costs of repairing damaged utilities to the satisfaction of utility owner.

Do not interrupt existing utilities serving facilities occupied and used by Owner or others, during occupied hours, except when permitted in writing by Engineer and then only after acceptable temporary utility services have been provided.

Provide minimum of 48-hour notice to engineer, and receive notice to proceed before interrupting any utility.

Demolish and completely remove from site existing underground utilities indicated to be removed. Coordinate with utility companies for shut-off of services if lines are active.

Use of explosives: The use of explosives is not permitted.

Protection of Persons and Property: Barricade open excavations occurring as part of this work and post with warning lights.

Operate warning lights as recommended by authorities having jurisdiction.

Protect structures, utilities, sidewalks, pavements, and other facilities from damages caused by settlement, lateral movement, undermining, washout, and other hazards created by earthwork operations.

Perform excavation within drip-line of large trees to remain by hand, and protect the root system from damage or dryout in the manner prescribed in sections under "Sitework".

PART 2 - PRODUCTS

SOILS MATERIALS:

Subbase Material: Naturally or artificially graded mixture of natural or crushed gravel, crushed stone, crushed slag, natural or crushed sand.

Backfill and Fill Materials: Satisfactory soil materials free of clay, rock or gravel larger than 2" in any dimension, debris, waste, frozen materials, vegetable and other deleterious matter. The fill material should be sand containing little fines. Prior to placing the fill material, the existing material shall be stripped of all soils containing a significant percentage of organics and all loose soils which cannot be readily compacted. If existing materials do not meet these requirements, it may be necessary to backfill with select materials other than those on the job site.

PART 3 - EXECUTION

EXCAVATION:

Excavation is Unclassified, and includes excavation to subgrade elevations indicated, regardless of character of materials and obstructions encountered.

Unauthorized excavation consists of removal of materials beyond indicated subgrade elevations or dimensions without specific direction of Engineer. Unauthorized excavation, as well as remedial work directed by Engineer, shall be at Contractor's expense.

Under footings, foundation bases, or retaining walls, fill unauthorized excavation by extending indicated bottom of elevation of footing or base to excavation bottom, without altering required top elevation. Lean concrete fill may be used to bring elevations to proper position, when acceptable to Engineer.

Elsewhere, backfill and compact unauthorized excavations as specified for authorized excavations of same classifications, unless otherwise directed by engineer.

Additional Excavation: When excavation has reached required subgrade elevations, notify Engineer who will make an inspection of conditions.

If unsuitable bearing materials are encountered at required subgrade elevations, notify Engineer who will make an inspection of conditions.

If unsuitable bearing materials are encountered at required subgrade elevations, carry excavations deeper and replace excavated material as directed by the Engineer.

Removal of unsuitable material and its replacement as directed will be paid on basis of contract conditions relative to changes in work.

Stability of Excavations: Slope sides of excavations to comply with local codes and ordinances having jurisdiction. Shore and brace where sloping is not possible because of space restrictions or stability of material excavated.

Maintain sides and slopes of excavations in safe condition until completion of backfilling.

Shoring and Bracing: Provide materials for shoring and bracing, such as sheet piling, uprights, stringers and cross-braces, in good serviceable condition.

Establish requirements for trench shoring and bracing to comply with local codes and authorities having jurisdiction.
Maintain shoring and bracing in excavations regardless of time period excavations will be open. Carry down shoring and bracing as excavation progresses.

Dewatering: Prevent surface water and subsurface or ground water from flowing into excavations and from flooding project site and surrounding area. The cost of all dewatering operations including well pointing shall be the responsibility of the Contractor.

Do not allow water to accumulate in excavations. Remove water to prevent softening of foundation bottoms, undercutting footings, and soil changes detrimental to stability of subgrades and foundations. Provide and maintain pumps, well points, sumps, suction and discharge lines, and other dewatering system components necessary to convey water away from excavations.

Establish and maintain temporary drainage ditches and other diversions outside excavation limits to convey rain water and water removed from excavations to collecting or run-off areas. Do not use trench excavations as temporary drainage ditches.

Material Storage: Stockpile satisfactory excavated materials where directed, until required for backfill or fill. Place, grade, and shape stockpiles for proper drainage.

Locate and retain soil materials away from edge of excavations. Do not store within drip line of trees indicated to remain.

Dispose of excess soil material and waste materials as herein specified.

Excavation for Structures: Conform to elevations and dimensions shown within a tolerance of plus or minus 0.10', and extending a sufficient distance from footings and foundations to permit placing and removal of concrete formwork, installation of service, other construction, and for inspection.

In excavating for footings and foundations, take care not to disturb bottom of excavation. Excavate by hand to final grade just before concrete reinforcement is places. Trim bottoms to required lines and grades to leave solid base to receive other work.

Excavation for Trenches: Dig trenches to the uniform width required for particular item to be installed, sufficiently wide to provide ample working room. Provide 6" to 9" clearance on both sides of pipe or conduit and a maximum of 30" total width.

Excavate trenches to depth indicated or required. Carry depth of trenches for piping to establish indicated flow lines and invert elevations. Beyond building perimeter, keep bottoms of trenches sufficiently below finish grade to avoid freeze-ups.

Where rock is encountered, carry excavation 6" below required elevation and backfill with a 6" layer of crushed stone or gravel prior to installation of pipe.

For pipes or conduit 5" or less in nominal size and for flat-bottomed multiple-duct conduit units, do not excavate beyond indicated depths. Hand excavate bottom cuts to accurate elevations and support pipe or conduit on undisturbed soil.

For pipes or conduit 6" or larger in nominal size, tanks and other mechanical/electrical work indicated to receive subbase, excavate to subbase depth indicated, or, if not otherwise indicated, to 6" below bottom of work to be supported.

Except as otherwise indicated, excavate for waterbearing piping so top of piping is not less that 3'-0" below finished pavement grade, but no less that 2'-6" below finish grade.

Grade bottoms of trenches as indicated, notching under pipe bells to provide solid bearing for entire body of pipe.

Backfill trenches with concrete where trench excavations pass within 18" of column or wall footings and which are carried below bottom of such footings, or which pass under wall footings. Place concrete to level of bottom of adjacent footing.

Use care in backfilling to avoid damage or displacement of pipe systems.

COMPACTION:

General: Control soil compaction during construction, providing minimum percentage of density specified for each area classification indicated below.

All compaction requirements for this section are specified on the construction plans.

Moisture Control: Where subgrade of layer of soil material must be moisture conditioned before compaction, uniformly apply water to surface of subgrade, or layer of soil material, to prevent free water appearing on surface during subsequent to compaction operations.

Remove and replace, or scarify and air dry, soil material that is too wet to permit compaction to specified density.

Soil material that has been removed because it is too wet to permit compaction may be stockpiled or spread and allowed to dry. Assist drying by dicing, harrowing or pulverizing, until moisture content is reduced to a satisfactory value.

BACKFILL AND FILL:

General: Place acceptable soil material in layers to required subgrade elevations, for each area classification listed below:

In excavations, use satisfactory excavated or borrow material.

Under grassed areas, use satisfactory excavated or borrow material.

Under walks and pavements, use subbase material, or satisfactory excavated or borrow material, or combination of both.

Under piping and conduit, use subbase material where subbase is indicated under piping or conduit; shape to fit bottom 90 degrees of cylinder.

Backfill excavation as promptly as work permits, but not until completion of the following;

Acceptance of construction below finish grade.

Inspection, testing, approval, and recording locations of underground utilities.

Removal of concrete formwork.

Removal of shoring and bracing, and backfilling of voids with satisfactory materials. Cut off temporary sheet piling driven below bottom of structures and remove in manner to prevent settlement of the structure or utilities, or leave in place if required.

Removal of trash and debris.

Permanent or temporary horizontal bracing is in place on horizontally supported walls.

Ground Surface Preparation: Remove vegetation, debris, unsatisfactory soil materials, obstructions, and deleterious materials from ground surface prior to placement of fills. Plow, strip, or break-up sloped surfaces steeper than 1 vertical to 4 horizontal so that fill material will bond with existing surface.

When existing ground surface has a density less than that specified under "Compaction" for particular area classification, break-up ground surface, pulverize, moisture-condition to optimum moisture content, and compact to required depth and percentage of maximum density.

Placement and Compaction: The lower portion of backfill, to a compacted level of one foot above the top of the pipe, shall be hand placed in layers of lifts not to exceed six inches of compacted depth and each layer compacted individually by means of hand tampers. Above that level, place lifts in layers not to exceed twelve inches of compacted depth and machine filling and tamping may be used.

Before compaction, moisten or aerate each layer as necessary to provide optimum moisture content. Compact each lift to required percentage of minimum soil density for each area classification as designated herein. Do not place backfill or fill material on surfaces that are muddy, frozen, or contain frost or ice.

Place backfill and fill materials evenly adjacent to structures, piping or conduit to required elevations. Take care to prevent wedging action of backfill against structures or displacement of piping or conduit by carrying material uniformly around structure, piping or conduit to approximately same elevation in each lift.

GRADING:

General: Uniformly grade areas within limits of grading under this section, including adjacent transition areas. Smooth finished surfaces within specified tolerances, compact with uniform levels or slopes between points where elevations are indicated, or between such points and existing grades.

Grading Outside Building Lines: Grade areas adjacent to building lines to drain away from structures and to prevent ponding.

Finish surfaces free from irregular surface changes, and as follows:

Lawn or Unpaved Ares: Finish areas to receive topsoil to within not more than 0.10' above or below required subgrade elevations.

Walks: Shape surface of areas under walks to line, grade and cross-section, with finish surface not more that 0.10' above or below required subgrade elevation.

Pavements: Shape surface of ares under pavement to line, grade and cross-section, with finish surface not more than 1/2" above or below requires subgrade elevations.

Grading Surface of Fill Under Building Slabs: Grade smooth and even, free from voids, compacted as specified, and to required elevation.

Provide final grades within a tolerance of 1/2" when tested with a 10' straightedge.

Compaction: After grading, compact subgrade surfaces to the depth and indicated percentage for each area classification.

FIELD QUALITY CONTROL:

Quality Control Testing During Construction: Provide testing service by a qualified soil testing firm, subject to Engineer's approval, to inspect and approve subgrades and fill layers before further construction work is performed.

Paved Areas: Make at least one field density test of subgrade for every 2000 square feet of paved area but in no case less than 3 tests, nor less than 1 per driveway or crossing. In each compacted fill layer, make one field density test for every 2,000 square feet of paved area but in no case less than 3 tests, nor less than 1 per driveway or crossing.

Non-Paved Areas: Perform at least 1 field density test per 3,000 square feet of fill per every vertical foot of height, and perform at least 1 field density test per 1,000 feet of pipe installed per every 2 feet of vertical trench depth.

If in opinion of Engineer, based on testing service reports and inspection, subgrade or fills which have been placed below are specified density, provide additional compaction and testing at no additional expense.

MAINTENANCE:

Protection of Graded Areas: Protect newly graded areas from traffic and erosion. Keep free of trash and debris.

Repair and re-establish grades in settled, eroded, and rutted areas to specified tolerances.

Reconditioning Compacted Areas: Where completed compacted areas are disturbed by subsequent construction operations or adverse weather, scarify surface, re-shape, and compact to required density prior to further construction.

Grassed Areas: See Section 02210, "Grassing" for requirements of grassed areas.

DISPOSAL OF EXCESS AND WASTE MATERIALS:

Disposal of all spoil material resulting from construction shall be the responsibility of the Contractor.

END OF SECTION

SECTION 02210
GRASSING

PART 1 - GENERAL

RELATED DOCUMENTS:

Drawings and general provisions of Contract, including General and Special Conditions, apply to work of this section.

DESCRIPTION OF WORK:

Extent of grassing work is as specified or shown on the construction plans. All other areas disturbed during construction operations shall be seeded.

QUALITY ASSURANCE:

All seed used shall be labeled in accordance with U. S. Department of Agriculture Rules and Regulations under the Federal Seed Act in effect on the date of invitation for bids. All seed shall be furnished in sealed standard containers, unless exception is granted in writing by Owner. Seed which has become wet, moldy, or otherwise damaged in transit or in storage shall not be used. Fertilizer shall be delivered to the site in the original, unopened containers, each bearing the manufacturer's guaranteed analysis. Any fertilizer which becomes caked or otherwise damaged, making it unsuitable for use, shall not be used. Seed, fertilizer and other grassing materials shall be stored under cover and protected from damage which would make them unacceptable for use.

SUBMITTALS:

Approvals, except those required for field installations, field applications, and field tests shall be obtained before delivery of materials or equipment to the project. The results of laboratory tests performed on the topsoil material shall be submitted. The reports shall include the pH level, the amount of organic matter, and available phosphoric acid and potash of the soil intended for use in the work. Certificate of conformance will be required for the following:

1. Grass seed shall be certified by registered, certified seed association or a registered testing laboratory not more than ten months prior to seeding.
2. Sprigs
3. Fertilizer
4. Topsoil
5. Lime
6. Mulching

PART 2 - PRODUCTS

TOPSOIL:

If the quantity of existing stored or excavated topsoil is inadequate for planting, sufficient additional topsoil shall be furnished. Topsoil furnished shall be a natural, fertile, friable soil, possessing characteristics of representative productive soils in the vicinity. It shall be obtained from naturally well-drained areas. Topsoil shall be without admixture of subsoil and free from johnson grass (Sorghum halepense), nut grass (Cyperus rotundus) and objectionable weeds and toxic substances.

SOIL AMENDMENTS:

Lime: Ground Limestone (Dolomite) containing not less than 85 percent of total carbonates, and shall be ground to such a fineness that 50 percent will pass a 100-mesh sieve and 90 percent will pass a 20-mesh sieve.

Fertilizer: 16-16-16 formulation of which 60 percent of the nitrogen is in the urea-formaldehyde form and shall conform to the applicable State Fertilizer laws. It shall be granulated so that 80 percent is held on a 16-mesh screen, uniform in composition, dry and free-flowing.

Mulch: Clean hay or fresh straw.

GRASS MATERIALS:

Grass Seed: Federal Specifications JJJ-S-181 and shall satisfy the following requirements:

Seed	Min. % Pure Seed	Min. % Germination and Hard Seed	Max. % Weed Seed
Bermuda Grass, (Cynodon Dactylan)	80%	15%	.25%

Seed failing to meet the purity or germination requirements by no more than twenty-five percent may be used, but the quantity shall be increased to yield the required rate of pure live seed. Seed failing to meet the weed seed requirements shall not be used.

PART 3 - EXECUTION

GRADING:

Areas to be grassed shall be graded to remove depressions, undulations, and irregularities in the surface before grassing.

PLACING TOPSOIL:

Areas to be grassed shall have a minimum topsoil cover of two inches. Topsoil shall not be placed when the subgrade is excessively wet, extremely dry or in a condition otherwise detrimental to the proposed planting or proper grading.

TILLAGE:

The area to be grassed shall be thoroughly tilled to a depth of four inches using a plow and disc harrow or rotary tilling machinery until a suitable bed has been prepared and no clods or clumps remain larger than 1-1/2 inches in diameter.

APPLICATION OF LIME:

The pH of the soil shall be determined. If the pH is below 5.0, sufficient lime shall be added to provide a pH between 5.5 and 6.5. The lime shall be thoroughly incorporated into the top three to four inches of the soil. Lime and fertilizer may be applied in one operation.

APPLICATION OF FERTILIZER:

Fertilizer shall be applied at the rate of 6 pounds per 1,000 square feet and shall be thoroughly incorporated into the top three to four inches of soil.

PLANTING SOIL:

All areas disturbed during construction shall be seeded as specified herein. Immediately before seeds are sown and after fertilizer and lime are applied, the ground shall be scarified as necessary and shall be raked until the surface is smooth, friable, and of uniformly fine texture. Areas to be grassed shall be seeded evenly with a mechanical spreader, raked lightly, rolled with a 200-pound roller, and watered with a fine spray.

1. Seed shall be applied at the following rate:

Seed	Rate of Application
Argentine Bahia Grass (Paspalum notatum)	6 lbs./1000 sq. ft. 260 lbs./acre
Bermuda Grass, (Cynodon Dactylan)	6 lbs./1000 sq. ft. 260 lbs./acre

2. Seeded areas shall be mulched at the rate of not less than 1-1/2" loose measurement over all seeded areas. Spread by hand, blower, or other suitable equipment. Mulch shall be cut into the soil with equipment capable of cutting the mulch uniformly into the soil. Mulching shall be done within 24 hours of the time seeding is completed. All seeded areas shall be mulched, no exceptions. Hydro-see must also be mulched.

ROLLING:

After seeding and mulching, a cultipacker, traffic roller, or other suitable equipment shall be used for rolling the grassed areas. Areas shall then be watered with a fine spray.

WINTER COVER:

All areas to be grassed shall be protected against erosion at all times. For protection during winter months (November 1st through March 31st) Italian rye grass shall be planted at the rate of four pounds per 1,000 square feet on all areas which are not protected by permanent grass. This does not alleviate the contractor from the required seeding.

CLEAN-UP:

All excess soil, excess grass materials, stones, and other waste shall be removed from the site daily and not allowed to accumulate.

MAINTENANCE:

Maintenance shall begin immediately following the last operation of grassing and continue until final acceptance. Maintenance shall include watering, mowing, replanting, and all other work necessary to produce a uniform stand of grass. Grassing will be considered for final acceptance when the permanent grass is healthy and growing on 97 percent of the area with no bare areas wider than 12 inches.

ACCEPTANCE:

The Contractor shall submit to the Owner two copies of a written request for final acceptance of the grassing work. The request shall be submitted at least ten days prior to the anticipated date of acceptance. The condition of the grass will be noted, the Contractor will be notified if maintenance is to continue.

END OF SECTION

SECTION 02211
SODDING

PART 1 - GENERAL

WORK INCLUDED:

Sod Installation

REFERENCES:

ASPA - American Sod Producers Association - Guideline Specifications to Sodding.

FS O-F-241 - Fertilizers, Mixed, Commercial.

DEFINITIONS:

Weeds: Includes Dandelion, Jimsonweed, Quackgrass, Horsetail, Morning Glory, Rush Grass, Mustard, Lambsquarter, Chickweed, Cress, Crabgrass, Canadian Thistle, Nutgrass, Poison Oak, Blackberry, Tansy Ragwort, Bermuda Grass, Johnson Grass, Poison Ivy, Nut Sedge, Nimble Hill, Bindweed, Bent Grass, Wild Garlic, Perrenial Sorrel, and Brome Grass.

DELIVERY, STORAGE, AND HANDLING:

Deliver sod on pallets. Protect exposed roots from dehydration. Do not deliver more sod that can be laid within 24 hours.

PART 2 - PRODUCTS

ACCEPTABLE SOD GROWERS:

Nurseries and Sod Growers in the surrounding area who have a five year record are acceptable.

MATERIALS:

Sod: ASPA approved, field grown grade; cultivated grass sod; for low maintenance and traffic durability, with strong fibrous root system, free of stone, burned or bare spots; containing no more than 5 weeds per 1000 square feet.

Approved Sods: Bermuda, (Cynodon Dactylon).

HARVESTING SOD:

Machine cut sod and load on pallets in accordance with ASPA guidelines.

Cut sod in area not exceeding one square yard, with minimum 1/2 inch and maximum one inch topsoil base.

PART 3 - EXECUTION

INSPECTION:

Verify that prepared soil base is ready to receive the work of this Section.

Beginning of installation means acceptance of existing site conditions.

PREPARATION OF SUBSOIL:

Prepare subsoil to eliminate uneven areas and low spots. Maintain lines, levels, profiles and contours. Make changes in grade gradual. Blend slopes into level areas.

Remove foreign materials and undesirable plants and their roots. Do not bury foreign material beneath areas to be sodded. Remove contaminated subsoil.

LAYING SOD:

Moisten prepared surface immediately prior to laying sod.

Lay sod immediately on delivery to site and within 24 hours after harvesting to prevent deterioration.

Lay sod tight with no open joints visible, and no overlapping; stagger end joints 12-inches overlapping; minimum. Do not stretch or overlap sod pieces.

Lay smooth. Align with adjoining grass areas. Place top elevation of sod 1/2 inch below adjoining paving or curbs.

On slopes 6 inches per foot and steeper, lay sod perpendicular to slope and secure every row with wooden pegs at maximum 2 feet on center. Drive pegs flush with soil portion of sod.

Prior to placing sod, on slopes exceeding 8 inches per foot or where indicated, place wire mesh over topsoil. Securely anchor in place with wood pegs sunk firmly into the ground.

Water sodded areas immediately after installation. Saturate sod to 4 inches of soil.
After sod and soil have dried, roll sodded areas to ensure good bond between sod and soil and to remove minor depressions and irregularities.

Sod shall be laid in all ditch areas and slopes that are steeper than or equal to 1 vertical to 3 horizontal. Sod shall be pinned down for stabilization in these areas. Sod shall be placed in all

swales and 24" next to all above ground structures. This includes but not limited to roads, valve boxes, fences, sidewalks, and lift stations.

In erosion areas, the contractor shall sod per the Engineer's direction if erosion persists overtime.

END OF SECTION

SECTION 02222
TRENCHING, BACKFILLING AND COMPACTING

PART 1 - GENERAL

1.01 DESCRIPTION OF WORK

A. The extent of trenching, backfilling and compacting is shown on the drawings.

B. This section includes furnishing equipment, labor and materials, and performing all operations necessary and incidental to perform the required work.

PART 2 – PRODUCTS NOT USED

PART 3 - EXECUTION

3.01 CLEARING THE SITE

A. The site of the work shall be cleared of all trees, shrubs, paving and objectionable material which interfere with the prosecution of the proposed work. Trees and shrubs which will not interfere with construction shall be protected from damage. Clearing shall be considered as an incidental item of excavation.

3.02 EXCAVATION

A. General:

1. Perform excavation described of whatever substance encountered to the dimensions and depths specified or shown on the drawings.

2. Undercutting will not be permitted, except when ordered by the ENGINEER. Material suitable for backfill shall be stockpiled near the site.

3. Rock or other material undesirable for backfill shall be spoiled outside the area in a neat manner, as directed by the ENGINEER.

4. Where it is necessary to cut roots projecting into an excavation or where it is necessary to trim branches for equipment clearance, all severed root ends or cuts to branches over 1/2-inch diameter shall be treated with an asphalt base pruning paint.

5. Backfill over exposed roots as soon as possible.

B. Rock:

1. Where encountered in the trench bed, rock shall be excavated to a depth of 1/4 of the pipe diameter below the bottom of the pipe but in no case less than 4-inches.

2. All undercut trench excavation shall be backfilled and tamped with materials as specified in the following paragraphs under Unstable Subgrade.

C. Unstable Subgrade:

1. In the event that unsuitable material is encountered at or below the excavation depth specified or shown on the drawings, the ENGINEER shall be notified.

2. Such material shall be removed and replaced with suitable material. Methods and materials used for replacement shall be one of the following as directed by the ENGINEER in writing.

a. Suitable earth or sand, compacted in the trench. Materials shall be furnished as a part of the Bid Proposal item covering excavation and backfill.

b. Gravel or crushed limerock, compacted in the trench and paid for under the appropriate item.

c. Existing materials, stabilized after removal and then replaced and compacted in the trench at no additional cost to the OWNER.

2. The Engineer shall determine the methods and materials to be used, based upon the condition of the excavation, the pipe structure to be supported, and the availability and character of stabilizing materials.

D. Trenches:

1. Keep pipe laying operation as close to the excavation operation as possible during the prosecution of the work. The ENGINEER reserves the right to stop the excavation at any time when, in his opinion, the excavation is opened too far in advance of the pipe laying.

2. Pipe trenches shall be excavated to a depth that will insure a minimum of 36-inches of cover for ductile iron and PVC pipe and 54-inches of cover for polyethylene pipe, except service laterals.

a. Trenches shall be only of sufficient width to provide a free working space on each side of the pipe.

b. To prevent excess pressure on the pipe, the maximum width of trench at the top of the pipe and at the bottom of the trench shall not be greater than 2-feet more than the greatest exterior diameter of the pipe.

c. If this maximum width is exceeded, it shall be the CONTRACTOR's responsibility to provide, at no additional cost to the OWNER, such additional bedding or select backfill materials as the ENGINEER may require.

d. The excavation below the spring line shall be made to conform as near as possible to the shape of the lower third of the pipe.

e. To protect the pipe lines from unusual stresses, all work shall be done in open trenches.

f. Excavation shall be made for bells of all pipes and of sufficient depth to permit access to the joint for construction and inspections. In no case will the bells be used to support the body of the pipe.

3. In order to avoid existing utilities, at times it may be necessary for the pipe to be laid deeper than the minimum cover specified in the preceding paragraph. At such time the CONTRACTOR will not be allowed extra compensation for additional excavation involved.

4. In case excavation has been made deeper than necessary, a layer of concrete, fine gravel or other material satisfactory to the ENGINEER shall be placed, at no extra cost, to secure a firm foundation for the lower third of each pipe.

a. Where possible, excavated material shall be placed so as not to interfere with public travel.

b. Bridging shall be provided to afford necessary access to public or private premises.

c. Bridging shall be considered as part of the excavation operation and shall be supplied at no additional cost to the OWNER.

E. Structural: (For inlets, manholes, valve pits and similar structures)

1. Remove sufficient material to allow proper space for erecting and removing forms. The elevations of the bottoms of footings, if shown on the drawings, shall be considered as approximate only, and the ENGINEER may order, in writing, such changes in dimensions or elevations of footings as may be deemed necessary to secure a satisfactory foundation. Excavation for structures shall be sufficient to leave at least 12-inches in the clear between their outer surfaces and the embankment of timber that may be used to protect them. Backfill of earth under structures will not be permitted. Excess excavation for structures shall be filled with thoroughly compacted sand, gravel, or concrete at the expense of the CONTRACTOR.

2. After excavation for a structure is completed, the CONTRACTOR shall notify the ENGINEER to that effect. No concrete or reinforcing steel shall be placed until the ENGINEER has approved the depth of the excavation and the character of the foundation material.

F. Sheeting and Shoring:

1. The CONTRACTOR shall provide all trench and structural bracing, sheeting or shoring necessary to construct and protect the excavation, existing utilities, structures and private property of all types and as required for the safety of the employees. Sheeting shall be removed or cut off by the CONTRACTOR during backfilling operations as directed by the ENGINEER. Sheeting which is left in place by order of the ENGINEER will be paid for under the item, Lumber left in Place. Removal of shoring for structures shall be done in such a manner as not to disturb or mar finished masonry or concrete surfaces.

3.03 DRAINAGE

A. Grading shall be controlled in the vicinity of excavations so that the surface of the ground will be properly sloped to prevent water from running into trenches or other excavated areas. Any water which accumulates in the excavations shall be removed promptly by well point or by other means satisfactory to the ENGINEER in such a manner as to not create a nuisance to adjacent property or public thoroughfare. Trenches shall be kept dry while pipe is being laid. Bridging of dewatering pipe shall be provided where necessary. Pumps and engines for well point systems shall be operated with mufflers, and at a minimum noise level suitable to a residential area. The CONTRACTOR will not be allowed to discharge water into the OWNER's storm drainage system without the written approval of the ENGINEER. Approval will be subject to the condition that the storm sewer be returned to its original condition.

B. The CONTRACTOR is responsible for carrying the water to the nearest ditch or body of water and for obtaining the necessary permission to use same. The CONTRACTOR shall be financially responsible for any nuisance created due to carrying off water from his drainage system.

3.04 BACKFILL

A. Trenches:

1. Trenches shall be backfilled immediately after the pipe is laid unless other protection for the pipeline is provided. Clean earth, sand, crushed limerock or other material approved by the ENGINEER shall be used for backfill. Backfill material shall be selected, deposited and compacted (simultaneously on both sides of the pipe) so as to eliminate the possibility of lateral displacement of the pipe. Backfill material shall solidly tamped around the pipes in layers to a level at least 1-foot above the top of the pipe. Each layer shall be compacted to a maximum thickness of 6-inches.

2. In unpaved areas, the remainder of the backfill shall be deposited and then compacted by puddling, water flooding or mechanical tampers. Mechanical tamping of layers in unpaved areas shall be to a maximum thickness of 12-inches. In areas to be paved or repaved, the entire depth of backfill shall be deposited in layers and compacted by hand or mechanical tampers to a maximum thickness of 6-inches. Compaction shall be carried out to achieve a density of at least 98% of the maximum density as determined by AASHTO, Method T-180. Under areas to be paved, puddling may be used for backfill consolidation after tamping to 1-foot over the pipe, as specified, provided the method is first approved by the ENGINEER and the density requirements are met.

3. In areas to be paved, density tests for determination of the specified compaction shall be made by a testing laboratory and spaced one in every 300-feet of trench cut. It is the intent of this specification to secure a condition where no further settlement of trenches will occur. When backfilling is completed, the roadway base for pavement replacement may be placed immediately. It will be the responsibility of the CONTRACTOR to restore the surface to the original grade wherever settlement occurs.

B. Wet Trenches (CONTRACTOR's Option):

1. Backfill for the pipe bed in wet trenches shall be crushed, graded limerock, compacted in the trench. After the pipe is laid, a graded limerock backfill shall be placed and worked in around the haunches to a point 6-inches above the pipe. The width of the limerock material around the pipe shall not be less than the outside diameter of the pipe plus 6-inches on each side of the pipe. Material shall be carefully distributed along the pipe so as to provide full and uniform support under and around the pipe. Six inches above the top of the pipe and up to the water level, material from the excavations with no rock or earth exceeding 4-inches in any one dimension shall then be lifted to the trench and released at the water level. Material shall be uniformly distributed for the full width of the trench. Backfill and compaction above the eater level in the trench shall be as specified above. All costs for graded limerock placed in wet trenches shall be included in the cost of stage excavation and backfill for the various sizes of pipe.

C. Bedding and Backfill - Flexible Pipe:

1. For polyvinyl chloride pipe, the bedding and backfill materials shall be such as to limit the vertical ring deflection to 5% of the inside pipe diameter. A deflection greater than 5% of the inside diameter shall be cause for rejection of the pipe.

2. Class IV or Class V materials as defined in ASTM D2321-74 shall not be used for bedding, haunching or initial backfill for flexible pipes.

3. For polyvinyl chloride plastic pipe, bedding shall be in accordance with ASTM D2321-74, using Class I, II or III materials, except under wet conditions. In any area where the pipe will be installed below existing or future groundwater levels or where the trench could be subject to inundation, Class I material shall be placed to the springline of the pipe.

4. A minimum of effort is needed to compact the material. However, in the initial stage of placing this type of material, take care to ensure that sufficient material has been worked under the haunch of the pipe to provide adequate side support. Take precautions to prevent movement of the pipe during placing of the material under the pipe haunch. Except for the protection of the pipe from large particles of backfill material, little care need be taken and no compaction is necessary in placing backfill material in the balance of the initial backfill area above the pipe. Where unstable trench wall exist because of migratory materials, such as water-bearing silts or fine sand, take care to prevent the loss of side support through the migratory action. All bedding requirements for flexible pipe

specified in the preceding paragraphs shall be included in the price bid for the applicable pipe material and no additional compensation for bedding material will be allowed.

D. Structural:

1. After completion of foundation footings and walls and other construction below the elevation of the final grades, and prior to backfilling, forms shall be removed and the excavation shall be cleared of all trash and debris.

2. Material for backfilling shall consist of the excavation, borrow sand or other approved materials, and shall be free of trash, lumber or other debris.

3. Backfill shall be placed in horizontal layers not in excess of 9-inches in thickness, and have a moisture content such that a density may be obtained to prevent excessive settlement or shrinkage.

4. Each layer shall be compacted by hand or approved machine tampers with extreme care being exerted not to damage pipe or structures.

5. Backfill shall be placed and compacted evenly against the exposed surfaces to prevent undue stress on any surface.

3.05 RESTORATION OF SURFACE IMPROVEMENTS

A. Roadways, including shoulders, alleys and driveways of shell, limerock, stabilized soil or gravel, grass plots, sod, shrubbery, ornamental trees, signs, fences, or other surface improvements on public or private property which have been damaged or removed in excavation, shall be restored to conditions equal to or better than conditions existing prior to beginning work.

1. Restoration of shoulders shall consist of seeding and mulching or stabilizing with limerock as selected by the ENGINEER.

2. The cost of doing this work shall be included in the cost of the various applicable items.

3. General Quality Control will be used as an aid in determining conditions prior to construction.

B. Materials for unpaved roadways, road shoulders, alleys, or driveways, shall be compacted as described in the plans. The cost of this work and furnishing new materials shall be included in the cost of the applicable items of work as no separate payment will be made, unless a separate bid item is provided.

3.06 FINE GRADING

A. Finished areas around structures shall be graded smooth and hand raked and shall meet the elevations and contours shown on the drawings. Lumber, earth clods, rocks and other undesirable materials shall be removed from the site.

3.07 DISPOSAL OF MATERIALS

A. Such portions of the excavated materials as needed and as suitable, shall be used for backfilling and grading about the completed work to the elevations as shown of the drawings or as directed. Excavated material in excess of the quantity required for this purpose shall be disposed of by the CONTRACTOR in those areas designated by the OWNER and as shown on the drawings. The CONTRACTOR shall leave the earth over the trenches or other excavations in a neat and uniform condition acceptable to the OWNER.

3.08 PAVEMENT REPLACEMENT

A. Asphalt pavement shall be removed by saw cutting on a straight line with edges as vertical as possible. Concrete pavement or asphalt surfaced concrete shall be removed by cutting with a concrete saw in as straight a line and vertically as possible. Materials to replace State Highway paving shall conform to the specifications required by the Florida Department of Transportation Specifications for Type S-I asphaltic concrete surface course, or as specifically shown in the plans.

B. Prior to replacing concrete or asphalt pavement replacement, a limerock base shall be laid. The base for concrete pavement shall be 6-inches of compacted thickness, and that for asphalt pavement shall be 8-inches of compacted thickness. The base course for each shall be compacted to a minimum of 98% of the maximum density as determined by AASHTO, Method T-180. The OWNER will have tests made by an independent testing laboratory to verify compaction results. One test will be made for each block of continuous trench cut.

C. Non-asphalt pavement replacement shall be replaced of like material and thickness. Asphalt or built-up asphalt pavement shall be replaced with like material or concrete as directed by the ENGINEER. Where asphalt or built-up asphalt pavement is replaced by concrete, the concrete shall have a minimum of 6-inches in thickness and be reinforced with 6 by 6 no. 6 gage welded wire fabric. Concrete for paving shall be 3,000 psi design strength. Where the pavement replacement is of like material, it shall be replaced in thickness equal to or better than that existing at the time of removal.

D. Unless the base is sealed or other temporary paving applied over areas to be repaved, pavement shall be replaced not later than 3-weeks after completion of backfill.

3.09 TESTS

A. The CONTRACTOR shall furnish facilities for making all density tests and make such restorations as may be necessary due to test operations. All density tests on backfill or base replacement will be made by a commercial testing laboratory employed by the CONTRACTOR and at such locations as may be recommended by the ENGINEER. If the densities as determined by the specified tests fall below the required minimums, the CONTRACTOR shall pay for all retests.

3.10 SIDEWALK, CURB AND GUTTER REMOVAL AND REPLACEMENT

A. Sidewalk, curb and gutter removal and replacement required in the construction of this work shall be done by the CONTRACTOR. Reasonable care shall be exercised in removing sidewalk and curb and gutter, and the CONTRACTOR shall either stockpile or dispose of this material as directed by the ENGINEER. Brick, concrete or built-up asphalt sidewalk replacement and curb and gutter replacement shall be replaced of like material in a manner and condition equal to or better than that existing at the time of removal. Materials and methods of replacing State Highway sidewalks or curbs shall conform to the Department of Transportation specifications.

END OF SECTION

SECTION 02800
IRRIGATION

PART 1 - GENERAL

SCOPE:

These specifications and accompanying drawings are intended to provide an automatic zones sprinkler system for the appropriate planting and sodded areas. The information contained herein is set forth as a guide and should not be construed to limit the contractor's responsibility to provide a complete and working irrigation system.

RELATED DOCUMENTS:

Drawings and general provisions of Contract, including General and Supplemental Conditions.

JOB CONDITIONS:

Contractor should examine the work site. He should verify all existing site and construction conditions affecting his work and the work of others. Unsatisfactory conditions shall be reported to the engineer in writing via the general contractor before commencement of work is scheduled.

DESCRIPTION OF WORK:

- Extent of irrigated area is shown on drawings.
- All areas required to receive seeding, sodding, and landscaping shall be irrigated unless noted otherwise.

COORDINATION OF WORK:

Special coordination shall be necessary between the plumbing, electrical, paving, landscaping, and utility installers. It is the contractor's responsibility to determine the location of all underground utilities and perform work in a manner which will avoid damages. Damages if any, shall be repaired in manner approved by the Engineer.

QUALITY ASSURANCE:

- Product Delivery, Storage and Handling

  All materials shall be new and unused and shall be delivered to the job site in proper containers. The storage of materials on job site shall be coordinated with other contractors whose work is affected. Special storage requirements shall be coordinated with the project superintendent or general contractor. Handling shall be accomplished in a careful manner to avoid damage to equipment and materials.

- Manufacturer Qualifications

  Provide underground irrigation system as a complete unit produced by a single acceptable manufacturer, including heads, valves, piping circuits, controls and accessories.

- Irrigation Contractor - Credentials and Qualification

  The work shall be accomplished by qualified Irrigation Installers working under the direction of an experienced supervisor. The contractor shall submit references when requested by the engineer showing satisfactory work performed in similar size projects. The contractor, at the discretion of the engineer, may have to post a performance bond. Unless otherwise specified, it is the responsibility of the contractor to provide for all approvals, insurance, inspections, bonds, samplings, testing, and permits necessary to accomplish the work.

SUBMITTALS:

Product Data - submit manufacturer's technical data and installation instructions for underground irrigation system to the engineer for approval before commencement of work schedule.

PART 2 - PRODUCTS AND MATERIALS

ACCEPTABLE MANUFACTURERS:

Subject to compliance with requirements, manufacturers offering commercial grade products which may be incorporated in the work include, but are not limited to, the following:

- Rain Bird Sprinkler Manufacturing Corporation
- Hunter

EQUIPMENT SUBSTITUTIONS:

Deviations from specified equipment must be approved in writing in advance of installationby the owner or his representative. Supportive documents shall be provided to prove acceptability.

MATERIALS:

- Pressure Pipe - Comply with following:

  1. 3" and larger, galvanized steel pipe or PVC schedule 40 ANSI/ASTM D1785, ANSI/ASTM A120, schedule 40.

  2. Under 3", galvanized steel pipe or PVC pipe schedule 40 ANSI/ASTM D1785, ANSI/ASTM A120, schedule 40.

- Circuit Pipe (downstream from circuit valves) Comply with one of the following:

  1. PVC plastic pipe. ANSI/ASTM D1785, schedule 40 or class 200 PVC.

- Pipe Fittings - Comply with one of the following:

  1. For PVC plastic pipe. ANSI/ASTM D2467 socket fittings with ASTM D2564 solvent cement.

- System Components

  All system components, including but not limited to the controller, electric valves, sprinkler heads, bubblers, backflow preventer are to be either Rain Bird or Hunter commercial grade and specified by the irrigation contractor. Sizing and location should ensure coverage of all new landscaping. Every tree shall receive a commercial grade flood bubbler. The quantity of zones should be determined by the contractor after visiting the site and checking available flow and pressure of the existing water service. The controller shall be tamper proof and resistant to a salt air environment. All valves shall be placed in a valve box in an area approved by the engineer.

PART 3 - EXECUTION

SYSTEM DESIGN:

- Location of Heads: Design location is approximate. Make minor adjustments as necessary to avoid plantings and other obstructions.

- Minimum Water Coverage: Shrubs and Trees, 100%

- Layout may be modified, if necessary to obtain coverage, to suit manufacturer's standard heads. Do not decrease number of heads indicated unless otherwise acceptable to Architect/Engineer.

TRENCHING AND BACKFILLING:

- General: Excavate straight and true with bottom uniformly sloped to low points.

- Protect existing lawns and plantings. Remove and replant as necessary to complete installation. Replace damaged lawn areas and plants with new to match existing.

- Trench Depth: Excavate trenches to a depth of 3" below invert of pipe, unless otherwise indicated.

- Minimum Cover: Provide the following minimum cover over top of installed piping:

- PVC Piping, 20" for mainline: 12" for laterals

- Backfill: Backfill with clean material for excavation. Remove organic material as well as rocks and debris larger than 1" diameter. Place acceptable backfill material in 6" lifts, compacting each lift.

- Existing Lawns: Where trenching is required across existing lawns, uniformly cut strips of
  sod 6" wider than trench. Remove sod in rolls of suitable size for handling and keep moistened until replanted.

- Backfill trench to within 6" of finished grade. Continue fill with acceptable topsoil and compact to bring sod even with existing lawn.

- Replant sod within 7 days after removal, roll and water generously.

- Pavements: Where existing pavements must be cut to install landscape irrigation systems, cut smoothly to straight lines 6" wider than trench.

- Excavate trench to required depth and width.

- Remove cut out pavement and excavated material from the site.

- At walkways, jack piping under paving material if possible.

- Backfill with dry sand fill material, placing in 6" lifts.

- Repair or replace pavement cuts with equivalent materials and finishes.

INSTALLATION:

- General: Unless otherwise indicated, comply with requirements of the Uniform Plumbing Code.

- Water Source: Service is existing at the restroom on site.

- Piping: Lay pipe on solid subbase, uniformly sloped without humps or depressions.

  1. Install PVC pipe in dry weather when temperature is above 40 degrees F (4 degrees
     C) in strict accordance with manufacturer's instructions. Allow joints to cure at least 24 hours at temperature above 40 degrees F (4 degrees C) before testing, unless otherwise recommended by manufacturer.

2. Restore plantings disturbed by this work.

- Sprinkler Heads: Flush circuit lines with full head of water and install heads after hydrostatic test is completed.

1. Install pop-up lawn and shrubbery heads at manufacturer's recommended heights.

2. Install fixed riser shrubbery heads at heights indicated. Located part-circle heads to maintain a minimum distance of 4" from walls and 2" from other boundaries, unless otherwise indicated.

TESTING:

- General: Notify Architect/Engineer in writing when testing will be conducted. Conduct tests in presence of Architect/Engineer.

- Hydrostatic Test: Test water piping and valves, before backfilling trenches, to a hydrostatic pressure of not less than 100 PSI. Piping may be tested in sections to expedite work. Remove and repair piping, connections, valves which do not pass hydrostatic testing.

- Operational Testing: Perform operational testing after hydrostatic testing is completed, backfill is in place, and sprinkler heads adjusted to final position.

1. Demonstrate to Engineer that system meets coverage requirements and that automatic
controls function properly.
2. Coverage requirements are based on operation of one circuit at a time.

- After completion of grading, seeding or sodding, and rolling of grass areas, carefully adjust
lawn sprinkler heads so they will be flush with or not more than 1/2" above finish grade.

WARRANTY:

- The contractor will be responsible for the operation of the system for one year after completion of work.

END OF SECTION

SECTION 02960
RESTORATION

PART 1 - GENERAL

1.01 DESCRIPTION OF WORK

A. The work includes the restoration of driveways, lawn areas, trees and plants, roadways, sprinkler systems, walks and any other existing improvement affected by the proposed work.

B. This section includes furnishing equipment, labor and materials, and performing all necessary and incidental operations to perform the required work.

PART 2 – PRODUCTS

2.01 SOD

A. Any slope equal to or steeper than 1 vertical to 3 horizontal shall be sodded and the sod shall be pinned down for stabilization.

B. 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, re-staking sod, filling, leveling and repairing of any washed or eroded areas, as may be necessary.

2.02 PLANTS AND TREES

A. Existing damaged plants and tress shall be replaced by plants and trees of equal type, quality and size whenever possible. All new plants and trees shall be sound, healthy, vigorous and free from defects, decay, disfiguring, bark abrasions, plant diseases, insect pests, their eggs or larvae. The new plants shall be approved by the ENGINEER before placing.

B. Existing plants may be removed, preserved, and replaced at the CONTRACTORs option. Plants shall be handled by an approved nursery.

C. Plants shall be watered and cared for until new growth appears. Dead and dying plants shall be immediately replaced. Plants used shall be in accordance with the standards for Florida No. 1 or better as given in Grades and Standards for Nursery Plants Part 1.

D. Plants shall conform to the sizes indicated by the OWNER.

E. Trees shall be guaranteed for one year. If the replaced tree dies within one year of

project completion it shall be replaced by the CONTRACTOR at no expense to the City.

2.03 MULCH

A. Match existing mulch.

2.04 WATER

A. The water used in the performance of this Contract shall be of drinking water quality, clean and free from injurious amounts of oil, acid, alkali, or organic matter. The CONTRACTOR shall purchase all testing water from the County.

2.05 PLANTING MIXTURE:

A. The 18 inch planting mixture, when required, shall consist of a thorough mixture of 40% peat and 60% sand. The peat shall be Florihome peat or equivalent and the sand shall be clean and free from debris of any kind.

2.06 FERTILIZER

A. Fertilizer shall be pelletized 13-13-13, or approved equal.

PART 3 - EXECUTION

3.01 LANDSCAPING RESTORATION

A. Lawn Areas: Any lawn area affected by the required work shall be restored to a condition equal or better than the conditions existing before the commencement of work.

B. Balled Plants: Plants where required shall be adequately balled with firm natural balls of soil, sized as set forth in "Horticultural Standards." Balls shall be firmly wrapped with burlap or equally approved strong cloth. No balled plant will be planted if the ball is cracked or broken before or during the process of planting.

C. Preparation of Plant Pits: All plant pits shall be circular in outline and have vertical sides. Tree pits shall be two feet wider than the width of the ball and one foot deeper than the depth of the ball. Shrubs that are either B&B or 3 gallons + shall have pits that are two feet wider than the width of the plant ball and 6 inches deeper than the depth of the ball. Smaller shrubs shall have pits that are at least one foot wider than the width of the plant ball and 6 inches deeper than the ball depth.

D. Setting Plants: All plants except as otherwise specified, shall be centered in pits. Deep planting shall be avoided and unless otherwise specified, plants shall be set

at such a level that after settlement they will bear the same relation to the required grade as they have to the natural grade before being transplanted.

E. Balled and burlapped plants and palm trees shall be placed on 6 inches to 12 inches of tamped planting mixture and adjusted so as to be at the proper level. The rope and burlap shall be cut away and the burlap folded down to the bottom of the pit. Very large B&B plants shall remain wrapped until fully backfilled and then just the upper portion of the burlap shall be removed. Backfill of planting mix shall be placed halfway up the pit and then water tamped. After this water has drained away, backfill around the ball to grade and water tamp again. Finally, form a ridge of soil around the edge of the pit to form a saucer and full area three times with water.

F. Water: Water to be used initially during plant installation shall be furnished by the CONTRACTOR. The existing irrigation system, where damaged, shall be promptly repaired after the installation of the plants.

G. Options as to Methods: Any plant may be furnished container grown instead of balled if all other requirements are met.

H. Immediately before sod is placed, 8-8-8 fertilizer shall be applied at the rate of approximately 500 pounds per acre, by broadcasting and raking into the planting area.

I. Sod shall be firmly embedded by light tamping. Wherever necessary to prevent an erosion condition caused by vertical edges at the outer limits of the sodded area, the sod shall be tamped so as to produce a featheredge at the outer limits. The sod shall be kept in a moist condition after it is planted. Water shall not be applied between the hours of 8 A.M., and 4 P.M., nor when there is danger of freezing.

J. The CONTRACTOR shall, at his expense, maintain the planted areas in a satisfactory condition until final acceptance of the project. Such maintenance shall include watering, filling, leveling and repairing of any washed or eroded areas, as may be necessary.

3.02 PAVEMENT REPLACEMENT

A. Asphalt pavement shall be removed by saw cutting on a straight line with edges as vertical as possible. Concrete pavement or asphalt surfaced concrete shall be removed by cutting with a concrete saw in as straight a line and vertically as possible.

1. Non-asphalt pavement replacement shall be replaced of like material and thickness. Asphalt or built-up asphalt pavement replacement shall be replaced with like material or concrete as directed by the ENGINEER.

2. Where asphalt or built-up asphalt pavement is replaced by concrete, the concrete shall have a minimum of 6 inches in thickness and be reinforced with 6 by 6 No. 6 gage welded wire fabric. Where the pavement replacement is of like material, it shall be replaced in thickness equal to or better than that existing at the time of removal.

B. Road cuts across City or County roads shall not be cut.

C. Unless the base is sealed or other temporary paving applied over driveway areas to be repaved, pavement shall be replaced not later than three weeks after completion of backfill.

3.03 CURB REMOVAL AND REPLACEMENT

A. Curb removal and replacement required in the construction of this work shall be done by the CONTRACTOR. Reasonable care shall be exercised in removing the curb, and the CONTRACTOR shall either stockpile or dispose of this material as directed by the ENGINEER. Curb shall be replaced of like material in a manner and condition equal to or better than that existing at the time of removal. Materials and methods of replacing State Highway sidewalks or curbs shall conform to the Department of Transportation specifications.

3.04 TESTS

A. The CONTRACTOR shall furnish facilities for making all density tests and make such restorations as may be necessary due to test operations. All density tests on backfill or base replacement will be made by a commercial testing laboratory employed by the CONTRACTOR at such locations as may be recommended by the ENGINEER. If the densities as determined by the specified tests fall below the required minimums, the CONTRACTOR shall pay for all retests.

END OF SECTION

SECTION 02500
PAVING QUALITY CONTROL SYSTEM

GENERAL REQUIREMENTS:

The Contractor shall furnish and maintain a quality control system that will provide reasonable assurance that all materials and products submitted to the Engineer for acceptance conform to the contract requirements whether manufactured or processed by the Contractor or procured from suppliers or subcontractors. The Contractor shall perform or have performed the inspection and tests required to substantiate product conformance to contract requirements and shall also perform or have performed all inspections and tests otherwise required by the contract. The Contractor shall have a Quality Control Technician, who has been certified by F.D.O.T. as a Certified Asphalt Plant Technician, available at the asphalt plant at all times the Contractor is producing asphalt mix for the contract. The Contractor's quality control procedures, inspection, and tests shall be documented and that information be available for review by the Engineer throughout the life of the contract.

The Contractor's person in responsible charge of the paving operations shall also be certified by the F.D.O.T. as an Asphalt Paving Technician and shall possess a valid certificate of qualification, and be present during all paving operations.

ENGINEER'S INSPECTION:

The Engineer reserves the right to inspect materials not manufactured within the Contractor's facility. The Engineer inspection shall not constitute acceptance nor shall it in any way replace the Contractor's inspection or otherwise relieve the Contractor of his responsibility to furnish an acceptable material or product. When inspection of the subcontractor's or supplier's product is performed by the Engineer, such inspection shall not be used by the Contractor as evidence of effective inspection of such subcontractor's or supplier's product.

END OF SECTION

SECTION 03310
CONCRETE WORK

PART 1 - GENERAL

RELATED DOCUMENTS:

Drawings and general provisions of Contract, including General and Special Conditions, apply to work of this section.

DESCRIPTION OF WORK:

Extent of concrete work is shown on Drawings.

SUBMITTALS:

Product Data: Submit data proprietary materials and items, including reinforcement and forming accessories, admixtures, patching compounds, waterstops, joint systems, curing compounds, dry-shake finish materials, and others as requested by Engineer.

Shop Drawings, Reinforcement: Submit original shop drawings for fabrication, bending, and placement of concrete reinforcement. Comply with ACI 315 "Manual of Standard Practice for Detailing Reinforced Concrete Structures" showing bar schedules, stirrup spacing, diagrams of bent bars, arrangement of concrete reinforcement. Include special reinforcement required for openings through concrete structures.

Engineer's review is for general engineering applications and features only. Design of formwork for structural stability and efficiency is Contractor's responsibility.

Laboratory Test Reports: Submit laboratory test reports for concrete materials and mix design test.

QUALITY ASSURANCE:

Codes and Standards: Comply with provisions of following codes, specifications, and standards, except where more stringent requirements are shown or specified:

ACI 301 "Specifications for Structural Concrete for Buildings".

ACI 318 "Building Code Requirements for Reinforced Concrete".

Concrete Reinforcing Steel Institute (CRSI) "Manual of Standard Practice".

Concrete Testing Services: Engage a testing laboratory acceptable to Engineer to perform material evaluation tests and to design concrete mixes.

Materials and installed work may require testing and retesting at anytime during progress of work. Tests, including retesting of rejected materials for installed work, shall be done at Contractor's expense.

PROJECT CONDITIONS:

Protection of Footings against Freezing: Cover completed work at footing level with sufficient temporary or permanent cover as required to protect footings and adjacent subgrade against possibility of freezing; maintain cover for time period as necessary.

Protect adjacent finish materials against spatter during concrete placement.

PART 2 - PRODUCTS

FORM MATERIALS:

Forms for Exposed Finish Concrete: Plywood, metal, metal-framed plywood faced, or other acceptable panel-type materials, to provide continuous, straight, smooth, exposed surfaces. Furnish in largest practicable sizes to minimize number of joints.

Use plywood complying with U. S. Product Standard PS-1 "B-B (Concrete Form) Plywood", Class I, Exterior Grade or better, mill-oiled and edge-sealed, with each piece bearing legible inspection trademark.

Forms for Unexposed Finish Concrete: Plywood, lumber, metal, or other acceptable material. Provide lumber dressed on at least 2 edges and one side for tight fit.

Form Coatings: Provide commercial formulation form-coating compounds that will not bond with, stain, nor adversely affect concrete surfaces, and will not impair subsequent treatments of concrete surfaces.

Form Ties: Factory-fabricated, adjustable-length, removable or snapoff metal form ties, designed to prevent form deflection and to prevent spalling concrete upon removal. Provide units which will leave no metal closer than 1-1/2" to surface.

Provide ties which, when removed, will leave holes not larger than 1" diameter in concrete surface.

REINFORCING MATERIALS:

Reinforcing Bars: ASTM A 615, Grade 60, deformed.

Steel Wire: ASTM A 82, plain, cold-drawn steel.

Welded Wire Fabric: ASTM A 185, welded steel wire fabric.

Welded Deformed Steel Wire Fabric: ASTM A 497.

Supports for Reinforcement: Bolsters, chairs, spacers, and other devices for spacing, supporting, and fastening reinforcing bars and welded wire fabric in place. Use wire bar type supports complying with CRSI specifications.

For slabs-on-grade, use supports with sand plates or horizontal runners where base material will not support chair legs.

CONCRETE MATERIALS:

Portland Concrete: ASTM C 150, Type I.

Use one brand of cement throughout project, unless otherwise acceptable to Engineer.

Normal Weight Aggregates: ASTM C 33, and as herein specified. Provide aggregates from a single source for exposed concrete.

For exterior exposed surfaces, do not use fine or coarse aggregates containing spalling-causing deleterious substances.

Water: Drinkable.

RELATED MATERIALS:

Polyvinyl Chloride Waterstops: Corps of Engineers CRD-C 572.

Available Manufacturers: Subject to compliance with requirements, manufacturers offering products which may be incorporated in the work include, but are not limited to, the following:

Manufacturer: Subject to compliance with requirements, provide products of one of the following or equal:

AFCO Products
The Burke Co.
Edoco Technical Products
Greenstreet Plastic Products
Harbour Town Products
W. R. Meadows
Progress Unlimited
Schleigel Corp.
Vinylex Corp.

Granular Base: Evenly graded mixture of fine and coarse aggregates to provide, when compacted, a smooth and even surface below slabs on grade.

Vapor Retarder: Provide vapor retarder cover over prepared base material where indicated below slabs on grade. Use only materials which are resistant to decay when tested in accordance with ASTM E 154, as follows:

Polyethylene sheet not less than 8 mils thick.

Non-Shrink Grout: CRD-C 621, factory pre-mixed grout.

Products: Subject to compliance with requirements, provide one of the following or equal:

Metallic:
"Vibrofoil", A. C. Horn, Inc.
"Metallic Spec. Grout", The Burke Co.
"Embeco 636", Master Builders
"Ferrolith GDS", Sonneborn-Rexnord
"Hi-Mod Grout", Euclid Chemical Co.
"Kemox G", Sika Chemical Co.
"Ferrogrout", L & M Const. Chemical Co.
"Supreme Plus", Gifford-Hill/American Admixtures

Non-metallic:
"Set Grout", Master Builders
"Sonogrout", Sonneborn-Rexnord
"Euco-NS", Euclid Chemical Co.
"Supreme", Gifford-Hill/American Admixtures
"Crystex", L &M Const. Chemical Co.
"Sure-Grip Grout", Dayton Superior Corp.
"Horngrout", A. C. Horn, Inc.
"Five Star Grout", U. S. Grout Corp.

Liquid Membrane-Forming Curing Compound: Liquid type membrane-forming curing compound complying with ASTM C 309, Type I, Class A. Moisture loss not more than 0.055 gr./sq. cm. when applied at 200 sq. ft./gal.

Products: Subject to compliance with requirements, provide one of the following or equal:

"Masterseal", Master Builders
"A-H 3 Way Sealer", Anti-Hydro Waterproofing Co.
"Ecocure", Euclid Chemical Co.
"Clear Seal", A. C. Horn, Inc.
"Sealco 309", Gifford-Hill/American Admixtures
"J-20 Acrylic Cure", Dayton Superior
"Spartan-Cote", The Burke Co.
"Sealkure", Toch Div. - Carboline
"Kure-N-Seal", Sonneborn-Rexnord
"Polyclear", Upco Chemical/USM Corp.

"L & M Cure", L & M Construction Chemicals
"Klearseal", Setcon Industries
"LR-152", Protex Industries
"Hardtop", Gifford-Hill

PROPORTIONING AND DESIGN OF MIXES:

Prepare design mixes for each type and strength of concrete by either laboratory trial batch or field experience methods as specified in ACI 301. If trial batch method used, use an independent testing facility acceptable to Engineer for preparing and reporting proposed mix designs. The testing facility shall not be the same as used for field quality control testing.

Submit written reports to Structural Engineer of each proposed mix for each class of concrete at least 15 days prior to start of work. Do not begin concrete production until mixes have been reviewed by Engineer.

Design mixes to provide normal weight concrete with the following properties, as indicated on drawings and schedules:

4000 psi 28-day compressive strength; W/C ratio, 0.44 maximum (non-air-entrained).

3000 psi 28-day compressive strength; W/C ratio, 0.58 maximum (non-air-entrained).

2500 psi 28-day compressive strength; W/C ratio, 0.67 maximum (non-air-entrained).

Lightweight Concrete: Proportion mix as herein specified. Design mix to produce strength and modulus of elasticity as noted on Drawings, with a split-cylinder strength factor (Fct) of not less than 5.5 for 3000 psi concrete and a dry weight of not less than 95 lbs. or more than 110 lbs. after 28 days. Limit shrinkage to 0.03 percent at 28 days.

Adjustment to Concrete Mixes: Mix design adjustments may be requested by Contractor when characteristics of materials, job conditions, weather, test results, or other circumstances warrant; at no additional cost to Owner and as accepted by Engineer. Laboratory test data for revised mix design and strength results must be submitted to and accepted by Engineer before using in work.

Use air-entraining admixture in exterior exposed concrete, unless otherwise indicated. Add air-entraining admixture at manufacturer's prescribed rate to result in concrete at point of placement having total air content with a tolerance of plus-or-minus 1-1/2 percent within following limits:

Slump Limits: Proportion and design mixes to result in concrete slump at point of placement as follows:

Ramps, slabs, and sloping surfaces: Not more than 3 inches.

Reinforced foundation systems: Not less than 1 inch and not more than 3 inches.

Concrete containing HRWR admixture (super-plasticizer): Not more than 8 inches after addition of HRWR to site-verified 2-3 inches slump concrete.

Other concrete: Not less than 1 inch nor more than 4 inches.

CONCRETE MIXING:

Ready-Mix Concrete: Comply with requirements of ASTM C 94, and as herein specified.

During hot weather, or under conditions contributing to rapid setting of concrete, a shorter mixing time than specified in ASTM C 94 may be required.

PART 3 - EXECUTION

GENERAL:

Coordinate the installation of joint materials and vapor retarders with placement of forms and reinforcing steel.

FORMS:

Design, erect, support, brace, and maintain formwork to support vertical and lateral, static, and dynamic loads that might be applied until such loads can be supported by concrete structure. Construct formwork so concrete members and structures are of correct size, shape, alignment, elevation, and position. Maintain formwork construction tolerances complying with ACI 347.

Design formwork to be readily removable without impact, shock, or damage to cast-in-place concrete surfaces and adjacent materials.

Construct forms to sizes, shapes, lines, and dimensions shown, and to obtain accurate alignment, location, grades, level and plumb work in finished structures. Provide for openings, offsets, sinkages, keyways, recesses, moldings, rustications, reglets, chamfers, blocking, screeds, bulkheads, anchorages and inserts, and other features required to work. Use selected materials to obtain required finishes. Solidly butt joints and provide back-up at joints to prevent leakage of cement paste.

Fabricate forms for easy removal without hammering or prying against concrete surfaces. Provide crush plates or wrecking plates where stripping may damage cast concrete surfaces. Provide top forms for inclined surfaces where slope is too steep to place concrete with bottom forms only. Kerf wood inserts for forming keyways, reglets, recesses, and the like, to prevent swelling and for easy removal.

Provide temporary openings where interior area of formwork is inaccessible for cleanout, for inspection before concrete placement, and for placement of concrete. Securely brace temporary openings and set tightly to forms to prevent loss of concrete mortar. Locate temporary openings on forms at inconspicuous locations.

Chamfer exposed corners and edges as indicated, using wood, metal, PVC, or rubber chamfer strips fabricated to produce uniform smooth lines and tight edge joints.

Provisions for Other Trades: Provide openings in concrete formwork to accommodate work of other trades. Determine size and location of openings, recesses, and chases from trades providing such items. Accurately place and securely support items built into forms. Other trades shall provide location and size of openings. The forms for such openings shall be constructed and set in place under this section.

Cleaning and Tightening: Thoroughly clean forms and adjacent surfaces to receive concrete. Remove chips, wood, sawdust, dirt, or other debris just before concrete is placed. Retightening forms and bracing after concrete placement is required to eliminate mortar leaks and maintain proper alignment.

VAPOR RETARDER INSTALLATION:

Following leveling and tamping of granular base for slabs on grade, place vapor retarder sheeting with longest dimension parallel with direction of pour.

Lap joints 6" and seal with appropriate tape.

PLACING REINFORCEMENT:

Comply with Concrete Reinforcing Steel Institute's recommended practice for "Placing Reinforcing Bars", for details and methods of reinforcement placement and supports, and as herein specified.

Avoid cutting or puncturing vapor retarder during reinforcement placement and concreting operations.

Clean reinforcement of loose rust and mill scale, earth, ice, and other materials which reduce or destroy bond with concrete.

Accurately position, support, and secure reinforcement against displacement by formwork, construction, or concrete placement operations. Locate and support reinforcing by metal chairs, runners, bolsters, spacers, and hangers, as required.

Place reinforcement to obtain at least minimum coverages for concrete protection. Arrange, space, and securely tie bars and bar supports to hold reinforcement in position during concrete placement operations. Set wire ties so ends are directed into concrete, not toward exposed concrete surfaces.

Install welded wire fabric in as long lengths as practicable. Lap adjoining pieces at least one full mesh and lace splices with wire. Offset end laps in adjacent widths to prevent continuous laps in either direction.

JOINTS:

Construction Joints: Locate and install construction joints as indicated or, if not indicated, locate so as not to impair strength and appearance of the structure, as acceptable to Engineer.

Place construction joints perpendicular to main reinforcement. Continue reinforcement across construction joints, except as otherwise indicated.

Waterstops: Provide waterstops in construction joints as indicated. Install waterstops to form continuous diaphragm in each joint. Make provisions to support and protect exposed waterstops during progress of work. Fabricate field joints in waterstops in accordance with manufacturer's printed instructions.

Isolation Joints in Slabs-on-Ground: Construct isolation joints in slabs-on-ground at points of contact between slabs-on-ground and vertical surfaces, such as column pedestals, foundation walls, grade beams, and elsewhere as indicated.

INSTALLATION OF EMBEDDED ITEMS:

General: Set and build into work anchorage devices and other embedded items required for other work that is attached to, or supported by, cast-in-place concrete. Use setting drawings, diagrams, instructions, and directions provided by suppliers of items to be attached thereto.

PREPARATION OF FORM SURFACES:

Clean re-used forms of concrete matrix residue, repair and patch as required to return forms to acceptable surface condition.

Coat contact surfaces of forms with a form-coating compound before reinforcement is placed.

Thin form-coating compounds only with thinning agent of type, amount, and under conditions of form-coating compound manufacturer's directions. Do not allow excess form-coating material to accumulate in forms or to come into contact with in-place concrete surfaces against which fresh concrete will be placed. Apply in compliance with manufacturer's instructions.

CONCRETE PLACEMENT:

Preplacement Inspection: Before placing concrete, inspect and complete formwork installation, reinforcing steel, and items to be embedded or cast-in. Notify other crafts to permit installation of their work; cooperate with other trades in setting such work. Moisten wood forms immediately before placing concrete where form coatings are not used.

Apply temporary protective covering to lower 2' of finished walls adjacent to poured floor slabs and similar conditions, and guard against spattering during placement.

General: Comply with ACI 304 "Recommended Practice for Measuring, Mixing, Transporting, and Placing Concrete", and as herein specified.

Deposit concrete continuously or in layers of such thickness that no concrete will be placed on concrete which has hardened sufficiently to cause the formation of seams or planes of weakness. If a section cannot be placed continuously, provide construction joints as herein specified. Deposit concrete as nearly as practicable to its final location to avoid segregation.

Placing Concrete in Forms: Deposit concrete in forms in horizontal layers not deeper than 24 inches and in a manner to avoid inclined construction joints. Where placement consists of several layers, place each layer while preceding layer is still plastic to avoid cold joints.

Consolidate placed concrete by mechanical vibrating equipment supplemented by hand-spading, rodding, or tamping. Use equipment and procedures for consolidation of concrete in accordance with ACI 309.

Do not use vibrators to transport concrete inside forms. Insert and withdraw vibrators vertically at uniformly spaced locations not farther than visible effectiveness of machine. Place vibrators to rapidly penetrate placed layer and at least 6 inches into preceding layer. Do not insert vibrators into lower layers of concrete that have begun to set. At each insertion limit duration of vibration to time necessary to consolidate concrete and complete embedment of reinforcement and other embedded items without causing segregation of mix.

Placing Concrete Slabs: Deposit and consolidate concrete slabs in a continuous operation, within limits of construction joints, until the placing of a panel or section is completed.

Consolidate concrete during placing operations so that concrete is thoroughly worked around reinforcement and other embedded items and into corners.

Bring slab surfaces to correct level with straightedge and strikeoff. Use bull floats or darbies to smooth surface, free of humps or hollows. Do not disturb slab surfaces prior to beginning finishing operations.

Maintain reinforcing in proper position during concrete placement operations.

Cold Weather Placing: Protect concrete work from physical damage or reduced strength which could be caused by frost, freezing actions, or low temperatures, in compliance with ACI 306 and as herein specified.

When air temperature has fallen to or is expected to fall below 40 degrees F (4 degrees C), uniformly heat water and aggregates before mixing to obtain a concrete mixture temperature of not less than 50 degrees F (10 degrees C), and not more than 80 Degrees F (27 degrees C) at point of placement.

Do not use frozen materials or materials containing ice or snow. Do not place concrete on frozen subgrade or on subgrade containing frozen materials.

Do not use calcium chloride, salt, and other materials containing antifreeze agents or chemical accelerators, unless otherwise accepted in mix designs.

Hot Weather Placing: When hot weather conditions exist that would seriously impair quality and strength of concrete, place concrete in compliance with ACI 305 and as herein specified.

Cool ingredients before mixing to maintain concrete temperature at time of placement below 90 degrees F (32 degrees C). Mixing water may be chilled, or chopped ice may be used to control temperature provided water equivalent of ice is calculated to total amount of mixing water. Use of liquid nitrogen to cool concrete is Contractor's option.

Cover reinforcing steel with water-soaked burlap if it becomes too hot, so that steel temperature will not exceed the ambient air temperature immediately before embedment in concrete.

Fog spray forms, reinforcing steel, and subgrade just before concrete is placed.

Use water-reducing retarding admixture (Type D) when required by high temperatures, low humidity, or other adverse placing conditions.

FINISH OF FORMED SURFACES:

Rough Form Finish: For formed concrete surfaces not exposed-to-view in the finish work or by other construction, unless otherwise indicated. This is the concrete surface having texture imparted by form facing material used, with tie holes and defective areas repaired and patched and fins and other projections exceeding 1/4 inch in height rubbed down or chipped off.

Smooth Form Finish: For formed concrete surfaces exposed-to-view, or that are to be covered with a coating material applied directly to concrete, or a covering material applied directly to concrete, such as waterproofing, dampproofing, veneer plaster, painting, or other similar system. This is as-cast concrete surface obtained with selected form facing material, arranged orderly and symmetrically with a minimum of seams. Repair and patch defective areas with fins or other projections completely removed and smoothed.

Grout Cleaned Finish: Provide grout cleaned finish to scheduled concrete surfaces which have received smooth form finish treatment.

Combine one part portland cement to 1-1/2 parts fine sand by volume, and mix with water to consistency of thick paint. Proprietary additives may be used at Contractor's option. Blend standard portland cement and white portland cement, amounts determined by trial patches, so that final color of dry grout will match adjacent surfaces.

Thoroughly wet concrete surfaces and apply grout to coat surfaces and fill small holes. Remove excess grout by scraping and rubbing with clean burlap. Keep damp by fog spray for at least 36 hours after rubbing.

Related Unformed Surfaces: At tops of walls, horizontal offsets, and similar unformed surfaces occurring adjacent to formed surfaces, strike-off smooth and finish with a texture matching adjacent formed surfaces. Continue final surface treatment of formed surfaces uniformly across adjacent unformed surfaces, unless otherwise indicated.

MONOLITHIC SLAB FINISHES:

ASTM E 1155, "Standard Test Method for Determining Floor Flatness and Levelness Using the "F Number System (inch-pound-units)", shall be used for these finishes as follows:

Scratch Finish: Apply scratch finish to monolithic slab surfaces that are to receive concrete floor topping or mortar setting beds for tile, portland cement terrazzo, and other bonded applied cementitious finish flooring material, and as otherwise indicated.

After placing slabs, plane surface to tolerances for floor flatness (FF) of 15 and floor levelness (FL) of 13. Slope surfaces uniformly to drains where required. After leveling, roughen surface before final set, with stiff brushes, brooms, or rakes.

Float Finish: Apply float finish to monolithic slab surface to receive trowel finish and other finishes as hereinafter specified, and slab surfaces which are to be covered with membrane or elastic waterproofing membrane or elastic roofing, or sand-bed terrazzo, and as otherwise indicated.

After screeding, consolidating, and leveling concrete slabs, do not work surface until ready for floating. Begin floating when surface water has disappeared or when concrete has stiffened sufficiently to permit operation of power-driven floats, or both. Consolidate surface with power-driven floats, or by hand-floating if area is small or inaccessible to power units. Check and level surface plane to tolerances of FF 18 - FL 15. Cut down high spots and dill low spots. Uniformly slope surfaces to drains. Immediately after leveling, refloat surface to a uniform, smooth, granular texture.

Trowel Finish: Apply trowel finish to monolithic slab surfaces to be exposed-to-view, and slab surfaces to be covered with resilient flooring, carpet, ceramic or quarry tile, paint, or other thin film finish coating system.

After floating, begin first trowel finish operation using a power-driven trowel. Begin final troweling when surface produces a ringing sound as trowel is moved over surface. Consolidate concrete surface by final hand-troweling operation, free of trowel marks, uniform in texture and appearance, and with surface leveled to tolerances of FF 20 - FL 17. Grind smooth surface defects which would telegraph through applied floor covering system.

Trowel and Fine Broom Finish: Where ceramic or quarry tile is to be installed with thin-set mortar, apply trowel finish as specified, then immediately follow with slightly scarifying surface by fine brooming.

Non-Slip Broom Finish: Apply non-slip broom finish to exterior concrete platforms, steps, and ramps, and elsewhere as indicated.

Immediately after float finishing, slightly roughen concrete surface by brooming with fiber bristle broom perpendicular to main traffic route. Coordinate required final finish with Engineer before application.

CONCRETE CURING AND PROTECTION:

General: Protect freshly placed concrete from premature drying and excessive cold or hot temperatures.

Start initial curing as soon as free water has disappeared from concrete surface after placing and finishing. Weather permitting, keep continuously moist for not less than 7 days.

Begin final curing procedures immediately following initial curing and before concrete has dried. Continue final curing for at least 7 days in accordance with ACI 301 procedures. Avoid rapid drying at end of final curing period.

Curing Methods: Perform curing of concrete by curing and sealing compound, by moist curing, by moisture-retaining cover curing, and by combinations thereof, as herein specified.

Provide moisture curing by the following methods:

Keep concrete surface continuously wet by covering with water.

Continuous water-fog spray.

Covering concrete surface with specified absorptive cover, thoroughly saturating cover with water and keeping continuously wet. Place absorptive cover to provide coverage of concrete surfaces and edges, with 4 inch lap over adjacent absorptive covers.

Provide moisture-cover curing as follows:

Cover concrete surfaces with moisture-retaining cover for curing concrete, placed in widest practicable width with sides and ends lapped at least 3 inches and sealed by waterproof tape of adhesive. Immediately repair any holes or tears during curing period using cover material and waterproof tape.

Provide curing slabs and sealing compounds to exposed interior slabs and to exterior slabs, walks, and curbs, as follows:

Apply specified curing and sealing compound to concrete slabs as soon as final finishing operations are complete (within 2 hours). Apply uniformly in continuous operation by power-spray or roller in accordance with manufacturer's directions. Recoat areas subjected to heavy rainfall within 3 hours after initial application. Maintain continuity of coating and repair damage during curing period.

Do not use membrane curing compounds on surfaces which are to be covered with coating material applied directly to concrete, liquid floor hardener, waterproofing, dampproofing, membrane roofing, flooring (such as ceramic or quarry tile, glue-down carpet), painting, and other coatings and finish materials, unless otherwise acceptable to Engineer.

Curing Formed Surfaces: Cure formed concrete surfaces, including undersides of beams, supported slabs, and other similar surfaces by moist curing with forms in place for full curing period or until forms are removed. If forms are removed, continue curing by methods specified above, as applicable.

Curing Unformed Surfaces: Cure unformed surfaces, such as slabs, floor topping, and other flat surfaces by application of appropriate curing method.

Final cure concrete surfaces to receive liquid floor hardener or finish flooring by use of moisture-retaining cover, unless otherwise directed.

Sealer and Dustproofer: Apply a second coat of specified curing and sealing compound only to surfaces given a first coat.

SHORES AND SUPPORTS:

Remove shoring from ground to roof for structures 4 stories or less, unless otherwise permitted.

Remove shores and reshore in a planned sequence to avoid damage to partially cured concrete. Locate and provide adequate reshoring to safely support work without excessive stress or deflection.

Keep shores in place a minimum of 15 days after placing upper tier, and longer if required, until concrete has attained its required 28-day strength and heavy loads due to construction operations have been removed.

REMOVAL OF FORMS:

Formwork not supporting weight of concrete, such as sides of beams, walls, columns, and similar parts of the work, may be removed after cumulatively curing at not less than 50 degrees F (10 degrees C) for 24 hours after placing concrete, provided concrete is sufficiently hard to not be damaged by form removal operations, and provided curing and protection operations are maintained.

Form facing material may be removed 4 days after placement, only if shores and other vertical supports have been arranged to permit removal of form facing material without loosening or disturbing shores and supports.

RE-USE OF FORMS:

Clean and repair surfaces of forms to be re-used in work. Split, frayed, delaminated, or otherwise damaged from facing material will not be acceptable for exposed surfaces. Apply new form coating compound as specified for new formwork.

When forms are extended for successive concrete placement, thoroughly clean surfaces, remove fins and laitance, and tighten forms to close joints. Align and secure joint to avoid offsets. Do not use "patched" forms for exposed concrete surfaces, except as acceptable to Engineer.

MISCELLANEOUS CONCRETE ITEMS:

Filling-In: Fill-in holes and openings left in concrete structures for passage of work by other trades, unless otherwise shown or directed, after work of other trades is in place. Mix, place, and cure concrete as herein specified, to blend with in-place construction. Provide other miscellaneous concrete filling shown or required to complete work.

Curbs: Provide monolithic finish to interior curbs by stripping forms while concrete is still green and steel troweling surfaces to a hard, dense finish with corners, intersections, and terminations slightly rounded.

Equipment Bases and Foundations: Provide machine and equipment bases and foundations, as shown on drawings. Set anchor bolts for machines and equipment to template at correct elevations, complying with certified diagrams or templates of manufacturer furnishing machines and equipment.

Grout base plates and foundations as indicated, using specified non-shrink grout. Use non-metallic grout for exposed conditions, unless otherwise indicated.

Reinforced Masonry: Provide concrete grout for reinforced masonry lintels and bond beams where indicated on drawings and as scheduled including filling of concrete modular unit cavities where called for on plans. Maintain accurate location of reinforcing steel during concrete placement.

CONCRETE SURFACE REPAIRS:

Patching Defective Areas: Repair and patch defective areas with cement mortar immediately after removal of forms, when acceptable to Engineer.

Cut out honeycomb, rock pockets, voids over 1/4 inch in any dimension, and holes left by tie rods and bolts, down to solid concrete but, in no case to a depth of less than 1 inch. Make edges of cuts perpendicular to the concrete surface. Thoroughly clean, dampen with water, and brush-coat the area to be patched with specified bonding agent. Place patching mortar after bonding compound has dried.

Repair of Formed Surfaces: Remove and replace concrete having defective surfaces if defects cannot be repaired to satisfaction of Engineer. Surface defects, as such, include color and texture irregularities, cracks, spalls, air bubbles, honeycomb, rock pockets; fins and other projections on

surface; and stains and other discolorations that cannot be removed by cleaning. Flush out form tie holes, fill with dry pack mortar, or precast cement cone plugs secured in place with bonding agent.

Repair concealed formed surfaces, where possible, that contain defects that affect the durability of concrete. If defects cannot be repaired, remove and replace concrete.

Repair of Unformed Surfaces: Test unformed surfaces, such as monolithic slabs, for smoothness and verify surface plane to tolerances specified for each surface and finish. Correct low and high areas as herein specified. Test unformed surfaces slopped to drain for trueness of slope, in addition to smoothness using a template having required slope.

Repair finished unformed surfaces that contain defects which affect durability of concrete. Surface defects, as such, include crazing cracks in excess of 0.01 inch wide or which penetrate to reinforcement or completely through non-reinforced sections regardless of width, spalling, pop-outs, honeycomb, rock pockets, and other objectionable conditions.

Correct high areas in unformed surfaces by grinding, after concrete has cured at least 14 days.

Correct low areas in unformed surfaces during or immediately after completion of surface finishing operations by cutting out low areas and replacing with fresh concrete. Finish repaired areas to blend into adjacent concrete. Proprietary patching compounds may be used when acceptable to Engineer.

Repair defective areas, except random cracks and single holes not exceeding 1 inch diameter, by cutting out and replacing with fresh concrete. Remove defective areas to sound concrete with clean, square cuts and expose reinforcing steel with at least 3/4 inch clearance all around. Dampen concrete surfaces in contact with patching concrete and apply bonding compound. Mix patching concrete of same materials to provide concrete of same type or class as original concrete. Place, compact, and finish to blend with adjacent finished concrete. Cure in same manner as adjacent concrete.

Perform structural repairs with prior approval of Structural Engineer for method and procedure, using specified epoxy adhesive and mortar.

Repair methods not specified above may be used, subject to acceptance of Engineer.

QUALITY CONTROL TESTING DURING CONSTRUCTION:

The Contractor will employ a testing laboratory, subject to Engineer's approval, to perform tests and to submit test reports.

Sampling and testing for quality control during placement of concrete may include the following, as directed by Engineer.

Sampling Fresh Concrete: ASTM C 172, except modified for slump to comply with ASTM C 94.

Slump: ASTM C 143, one test at point of discharge for each day's pour of each type of concrete, and additional tests when concrete consistency seems to have changed.

Concrete Temperature: Test hourly when air temperature is 40 degrees F (4 degrees C) and below, and when 80 degrees F (27 degrees C) and above, and each time a set of compression test specimens are made.

Compression Test Specimen: ASTM C 31, one set of 4 standard cylinders for each compressive strength test, unless otherwise directed. Mold and store cylinders for laboratory cured test specimens except when field-cure test specimens are required.

Compressive Strength Tests: ASTM C 39, one set for each day's pour exceeding 5 cubic yards plus additional sets for each 50 cubic yards over and above the first 25 cubic yards of each concrete class placed in any one day; one specimen tested at 7 days, two specimens tested at 28 days, and one specimen retained in reserve for later testing if required.

When frequency of testing will provide less than 5 strength tests for a given class of concrete, conduct testing from at least 5 randomly selected batches or form each batch if fewer than 5 are used.

Test results will be reported in writing to Structural Engineer and Contractor within 24 hours after tests. Reports of compressive strength tests shall contain the project identification name and number, date of concrete placement, name of concrete testing service, concrete type and class, location of concrete batch in structure, design compressive strength at 28 days, concrete mix proportions and materials; compressive breaking strength and type of break for both 7-day tests and 28-day tests.

Nondestructive Testing: Impact hammer, sonoscope, or other nondestructive device may be permitted but shall not be used as the sole basis for acceptance or rejection.

Additional Tests: The testing service will make additional tests of in-place concrete when test results indicate specified concrete strengths and other characteristics have not been attained in the structure, as directed by Engineer. Testing service may conduct tests to determine adequacy of concrete by cored cylinders complying with ASTM C 42, or by other methods as directed. Contractor shall pay for such tests when unacceptable concrete is verified.

END OF SECTION

SECTION 05600
MISCELLANEOUS METALS

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

A. Drawings and general provisions of Contract, including General and Special Conditions, apply to work of this section.

PART 2 - PRODUCTS

2.01 ALUMINUM PLATES, SHAPES AND EXTRUSIONS

A. All aluminum plates, shapes and extrusions shall be of Type 6061-T6 alloy or better, except where otherwise noted herein, conforming to applicable requirements of American Society of Testing Materials (ASTM) Designation B 221-67 (Latest Revision).

B. All surfaces in contact with concrete shall be coated with Bitumastic (Kopper's 50, Indurall Ruff Stuff 2100, or equal).

2.02 STAINLESS STEEL PLATES, SHEETS, SHAPES AND HARDWARE

A. All stainless steel plates, sheets, shapes, and hardware shall be Type 304 alloy conforming to applicable requirements of ASTM Designation A-182 (Latest Revision).

2.03 FASTENINGS

A. Fasteners, insofar as practicable, shall be concealed. Where exposed and not indicated otherwise, fastenings shall be of the same material, color and finish as associated metal, and countersunk wherever possible.

B. All fasteners coming into contact with aluminum and/or submerged shall be stainless steel.

2.04 EXPANSION ANCHORS

A. Anchors shall be stainless steel meeting the requirements of Federal Specification FF-S-325, Group II, Type 4, Class 1. The entire anchor (bolts, expansion clip, nut and washer) shall be manufactured from 300 stainless steel. Anchors shall be stainless steel Red Head wedge anchors by ITT, Phillips Drill, Michigan City, or equal.

B. Expansion anchors shall be installed in holes drilled with carbide tipped drill bits conforming to American National Standards Institute (ANSI) Specification B94.12-77.

C. Minimum installation depth and method of expansion shall be as recommended by the anchor manufacturer.

D. Minimum center to center spacing and edge distance shall be as specified below:

Anchor Diameter	**Min. Center to Center Spacing**	**Minimum Edge Distance**
1/4"	3"	1-1/2"
3/8"	4-1/2"	2-1/4"
1/2"	6"	3"
5/8"	7-1/2"	3-3/4"
3/4"	9"	4-1/2"

2.05 ALUMINUM GRATING

A. Aluminum grating shall be made of straight extruded bearing bars laced together by interlocking cross-bridges, securely fastened to the bearing bars.

B. Grating shall be furnished in the sizes called for on the Drawings.

C. All necessary openings for pipes, hatchways, etc., shall be provided.

D. The ends of each grating and openings requiring removal of three or more bearing bars shall be banded with each banding bar.

E. Grating shall be fastened to supporting members by Manufacturer's recommended standard clips where shown on the Drawings.

F. Grating shall be of 6063-T6 aluminum alloy.

G. No grating of the welded type will be acceptable.

H. Aluminum grating shall be as manufactured by McNichols Co., Tampa, Florida, or equal.

I. Grating sections shall weigh a maximum of 100 pounds.

PART 3 - EXECUTION (Not Applicable)

END OF SECTION

SECTION 15010
BASIC MECHANICAL REQUIREMENTS

RELATED DOCUMENTS:

Drawings and general provisions of Contract, including General and Special Conditions, apply to work of this section.

SUMMARY:

This section specifies the basic requirements for mechanical installations. It expands and supplements the requirements specified in sections under "General Requirements".

ACCESSIBILITY:

Install equipment and materials to provide required access for servicing and maintenance. Coordinate the final location of concealed equipment and devices requiring access with final location of required access panels and doors. Allow ample space for removal of all parts that require replacement or servicing.

Extend all grease fittings to an accessible location.

MECHANICAL INSTALLATIONS:

Coordinate mechanical equipment and materials installation with other building components.

Verify all dimensions by field measurements.

Coordinate the installation of required supporting devices and sleeves to be set in poured in place concrete and other structural components, as they are constructed.

Sequence, coordinate, and integrate installations of mechanical materials and equipment for efficient flow of the Work.

Install mechanical equipment to facilitate maintenance and repair or replacement of equipment components. As much as practical, connect equipment for ease of disconnecting, with minimum of interference with other installations.
Coordinate connection of mechanical systems with exterior underground and overhead utilities and services. Comply with requirements of governing regulations, franchised service companies, and controlling agencies. Provide required connection for each service.

MECHANICAL SUBMITTALS:

Submittal of shop drawings, product data, and samples will be accepted only when submitted by the Contractor. Data submitted from subcontractors and material suppliers directly to the Engineer will not be processed. Submit five (5) complete sets of all shop drawings and product data.

NAMEPLATE DATA:

Provide permanent operational data nameplate on each item of power operated mechanical equipment, indicating manufacturer, product name, model number, serial number, capacity, operating and power characteristics labels of tested compliances, and similar essential data. Locate nameplates in an accessible location.

PART 2 - PRODUCTS

DELIVERY, STORAGE, AND HANDLING:

Deliver products to project properly identified with names, model numbers, types, grades, compliance labels, and similar information needed for distinct identifications; adequately packaged and protected to prevent damage during shipment, storage, and handling.

Store equipment and materials at the site, unless off-site storage is authorized in writing. Protect stored equipment and materials from damage.

PART 3 - EXECUTION

RECORD DOCUMENTS:

Refer to the Section 01705 - "Project Closeout" for requirements. The following paragraphs supplement the requirements in sections under "General Requirements".

Mark drawings to indicate revisions to piping, size and location both exterior and interior; actual equipment locations, dimensioned for column lines; actual inverts and locations of underground piping; concealed equipment, dimensioned to column lines; mains and branches of piping systems, with valves and control devices located and numbered, concealed unions located, and with items requiring maintenance located (i.e., traps, strainers, expansion compensators, tanks, etc.); Change Orders; concealed control system devices.

Mark Specifications to indicate approved substitutions, Change Orders, actual equipment and materials used.

OPERATION AND MAINTENANCE DATA:

Refer to Section 01705 - "Project Closeout" for procedures and requirements for preparation and submittal of maintenance manuals.

Include the following information:

Description of function, normal operating characteristics and limitations, performance curves, engineering data and tests, and complete nomenclature and commercial numbers of all replaceable parts.

Manufacturer's printed operating procedures to include start-up, break-in, routine and normal operating instructions; regulation, control, stopping, shut-down, and emergency instructions; and summer and winter operating instructions.

Maintenance procedures for routine preventative maintenance and troubleshooting; disassembly, repair, and reassembly; aligning and adjusting instructions.

Servicing instructions and lubrication charts and schedules.

WARRANTIES:

Compile and assemble the warranties into a separated set of vinyl covered, three ring binders, tabulated and indexed for easy reference.

Provide complete warranty information for each item to include product or equipment to include date of beginning of warranty or bond; duration of warranty or bond; and names, addresses, and telephone numbers and procedures for filing a claim and obtaining warranty services.

CLEANING:

Refer to the Section 01705 - "Project Closeout" for general requirements for final cleaning.

END OF SECTION

SECTION 15051
MECHANICAL RELATED WORK

PART 1 - GENERAL

RELATED DOCUMENTS:

Drawings and general provisions of Contract, including General and Special Conditions, apply to work of this Section.

DESCRIPTION OF WORK:

Extent of mechanical related work and work required by this section is indicated on drawings and/or specified in other sections.

Contractor shall furnish all labor, material and equipment, and shall perform all operations required to satisfactorily and properly install, adjust, test and place into operation all equipment and system shown on the construction drawings. Submittal data and as-built drawings shall also be required for each piece of equipment or installation.

EQUIPMENT INSTALLATION:

All equipment and systems shown on the drawings and/or specified herein shall be installed in a workmanlike manner and in strict accordance with the manufacturer's recommendations. All required piping, electrical connections and other necessary items shall be furnished and connected in order to provide a complete operating facility.

EQUIPMENT TESTING AND ADJUSTING:

After installation, the Contractor shall demonstrate that all equipment is operating in a satisfactory manner. All equipment shall be lubricated according to recommendations of the vendors and all adjustments shall be made to suit anticipated operating conditions. Each piece of equipment shall be tested to show that it operated quietly, without vibration, overheating, or signs of distress, at full specified capacity. Adjustments shall be made as necessary. All defective parts of machinery, equipment or materials, shall be replaced. Vendor's certificates that the installation of equipment is in accordance with the manufacturer's recommendations shall be secured by the Contractor and submitted to the Engineer.

The Contractor shall furnish to the Engineer five copies of all necessary manuals and instructions describing the proper operation and maintenance of each type of equipment furnished.

INSTALLATION SUPERVISION:

Installation and initial start-up and operation of all equipment shall be performed under the supervision of a factory-trained technical representative of the manufacturer. The services of the manufacturer's representative shall include instruction of the Owner's operator in the operation, maintenance and adjustment of the equipment. The Contractor shall give the Engineer and Owner's operator 48 hours notice before start-up. Start-up shall not proceed without the presence of the Engineer.

EQUIPMENT REQUIREMENTS:

The following requirements shall apply to equipment furnished in the Contracts:

Each piece of mechanical equipment and motors shall be provided with a substantial nameplate of non-corrodible metal, securely fastened in place, clearly and permanently inscribed with the manufacturer's name, model or type designation, serial number, rated capacity, electrical or other power characteristics, and other appropriate nameplate data.

All equipment shall be delivered fully lubricated with oil and/or grease insofar as possible. If any point cannot be so serviced, it shall be clearly marked to the effect that it is not lubricated and requires servicing prior to operation. An adequate supply of the proper lubricant, with instructions for its application, shall be supplied with the equipment for each point not lubricated prior to shipment.

The Contractor shall also provide the Owner with a sufficient amount of proper lubricants for one complete change of lubricant for all equipment furnished.

All factory painted equipment shall be provided with two (2) pints of touch up paint to match original finish along with instructions for application.

PART 2 - PRODUCTS (Not Applicable)

PART 3 - EXECUTION (Not Applicable)

END OF SECTION

SECTION 15061
DUCTILE IRON PIPE AND FITTINGS

PART 1 - GENERAL

1.01 SCOPE OF WORK

A. The CONTRACTOR shall furnish all labor, materials, equipment, and incidentals required to install ductile-iron pipe and fittings complete, tested, and ready for use, as shown on the Drawings and/or as specified herein.

B. Omission of a specific item or component obviously necessary for the proper function of the system shall not relieve the CONTRACTOR from the responsibility of supplying that specific item or component at no additional expense to the OWNER.

1.02 SUBMITTALS

A. The CONTRACTOR shall submit to the ENGINEER, within 20 calendar days after receipt of Notice to Proceed, a list of materials to be furnished, and the names of the suppliers and the date of delivery of materials to the site.

B. The CONTRACTOR shall submit shop drawings to the ENGINEER for review in accordance with Section 01300, showing the complete laying plan of all pipes, including all fittings, adapters, valves, and specials along with the Manufacturer's drawings and specifications indicating complete details of all items.

C. The CONTRACTOR shall include a pipe class-laying schedule with pipe details, which specifies pipe class, class coding, joints, station limits, and transition stations, and a list of abbreviated terms with their full meaning.

D. The CONTRACTOR shall provide details of fittings to be furnished.

E. The CONTRACTOR shall submit the above referenced to the ENGINEER for approval before fabrication and shipment of these items.

F. The CONTRACTOR shall verify that locations of all pipes conform to the locations indicated on the Drawings. In most cases, a certain amount of flexibility in the positioning of pipes will be allowed.

G. Horizontal and vertical deflections may require beveled, special deflection; or short pipes.

H. The deflections at joints shall not exceed 75 percent of that recommended by the Manufacturer.

I. The CONTRACTOR shall furnish in duplicate to the ENGINEER, prior to each shipment of pipe, Manufacturer certifications and certified test reports that the pipe and linings and coating for this contract was manufactured and tested in accordance with the American Society of Testing and Materials (ASTM) and American National Standards Institute (ANSI)/American Water Works Association (AWWA) Standards specified herein.

1.03 QUALIFICATIONS

A. All ductile-iron pipe and fittings shall be furnished by Manufacturer's who are fully experienced, reputable, and qualified in the manufacturing of the material to be furnished.

B. The pipe and fittings shall be designed, constructed, and installed in accordance with the best practices and methods and shall comply with these specifications.

1.04 QUALITY ASSURANCE

A. The OWNER may provide an independent testing laboratory to conduct inspections at the foundry for compliance with these specifications for all ductile-iron pipe and fittings installed under this contract. All ductile-iron pipe and fittings shall be from a single Manufacturer.

B. The CONTRACTOR shall require the Manufacturer's cooperation in these inspections.

C. The OWNER will be responsible for any cost associated with the foundry inspections of all pipe approved for this contract.

D. The ENGINEER or other representatives of the OWNER will also inspect the pipe after delivery.

E. The pipe shall be subject to rejection at any time on account of failure to meet any of the specification requirements, even though pipes may have been accepted as satisfactory at the place of manufacture. Pipe rejected after delivery shall be marked for identification and shall immediately be removed from the job.

F. Each joint of ductile-iron pipe shall be hydrostatically tested at the point of manufacture to 500 pounds per square inch (psi) for duration of at least 10 seconds. Testing may be performed prior to machining bell and spigot. Failure of ductile-iron pipe shall be defined as any rupture of pipe wall. Certified test certificates shall be furnished in duplicate to the ENGINEER prior to time of shipment.

1.05 CONNECTION TO EXISTING LINES

A. Lines installed under other Contracts, to which piping of this Contract must connect the following work shall be performed:

1. Removing the temporary or permanent plug provided in the pipe installed under another Contract (if any).

2. Furnishing and installing piping and accessories and making proper connections.

B. For connections to existing lines to which the piping of this Contract must connect, the following work shall be performed:

1. Expose buried lines to confirm or determine end connection, pipe material, and diameter.

2. Furnish and install appropriate piping and make proper connections.

PART 2 - PRODUCTS

2.01 MATERIALS

A. The CONTRACTOR shall use the following project specific pressure classes of ductile-iron pipe for sizes shown:

Pipe and Fitting Sizes	Pressure Class
12"	350
20"	250
24"	200
30"	150
36"	150

B. Ductile-iron pipe and fittings 3-inches through 54-inches for buried service shall meet the following requirements:

1. Ductile-iron pipe shall conform to ANSI A21.51 and AWWA C-151. Ductile-iron pipe shall have a minimum tensile strength of 60,000 psi with minimum yield strength of 42,000 psi and a minimum elongation of 10 percent. Type of bedding conditions used shall be as shown on the Drawings.

2. Unrestrained joint pipe shall be supplied in lengths not in excess of 21 feet. Unrestrained joint pipe shall be the push-on joint pipe. Unrestrained joint pipes for pipe sizes 36 inches and less shall be American Ductile Iron Fastite® or ENGINEER-approved equal.

3. Unrestrained fittings shall meet the requirements of AWWA C-110. Rubber gaskets shall conform to ANSI A21.11 for all joints. Mechanical joint fittings and restrained joint pipe shall be furnished with sufficient quantities of accessories as required for each joint.

4. Restrained joint fittings where shown or specified shall be manufactured in accordance with the requirements of ANSI/AWWA C151/A21.51, C110/A21.10, and C111/A21.11.

5. Push-on joints for such pipe shall be in accordance with ANSI/AWWA C111/A21.11.

6. Pipe thickness shall be designed in accordance with ANSI/AWWA C150/A21.50 and C151/A21.51.

7. Restrained joint fittings shall be ductile iron in accordance with applicable requirements of ANSI/AWWA C110/A21.10.

8. Mechanical joints for such fittings shall be in accordance with ANSI/AWWA C110/A21.10 and C111/A21.11.

9. Restrained joints, where shown or specified, shall be designed to withstand vertical and longitudinal forces and be capable of holding against withdrawal with no axial movement resulting from an internal hydrostatic pressure of 120 psi for the raw sewage force mains and 150 psi for reclaimed water irrigation mains and potable water mains.

10. Restrained pipe joints that achieve restraint by incorporating cut out sections in the wall of the pipe shall have a minimum wall thickness at the point of cut out that corresponds with the minimum specified wall thickness for the rest of the pipe.

11. Restrained joints shall be suitable for 120 or 150 psi working pressure for purpose as specified above and fabricated of heavy section ductile-iron casting. Gaskets shall meet the material requirements of ANSI/AWWA C111.

12. Restrained joint pipe and fittings shall be the push-on joint pipe.

13. Restrained joint pipes and fittings for pipe size 30 inches and less shall be American Ductile Iron Fastite® with Fast-Grip Gasket® or ENGINEER-approved equal.

14. Restrained joint pipe and fittings for pipe size 36 inches and larger shall be American Ductile Iron Flex-Ring® or ENGINEER-approved equal.

15. The minimum number of restrained joints required for resisting forces at fittings and changes in direction of pipe shall be determined from the length of restrained pipe on each side of fittings and changes in direction necessary to develop adequate resisting friction with the soil as shown on the Drawings.

16. All buried service pipe and fittings 12 inches and greater shall be ductile iron. Unless specified differently on the Drawings, all buried service pipe shall have single gasket, compression push-on type line joints.

17. All buried fittings shall be mechanical joint.

18. All fittings shall be mechanically restrained with Fast-Grip®, Flex Ring®, or Megalug Series 1100 or ENGINEER-approved equal.

19. Ductile-iron fittings, valves, and other appurtenances shall not be wrapped with polyethylene film.

20. Adapters to connect ductile-iron fittings to pipe or fittings of dissimilar materials shall be supplied by the CONTRACTOR in accordance with the pipe Manufacturer recommendations and as approved by the ENGINEER.

21. Pipe outlets where shown shall be made with tees, tapping saddles, or factory welded-on bosses for aboveground piping. Bosses shall be ductile iron, factory welded on ductile-iron pipe having a minimum Pressure Class 350 for 6- to 12-inch sizes, Pressure Class 250 for 16- to 36-inch sizes, and Pressure Class 150 for 42- to 48-inch sizes.

22. The CONTRACTOR may supply short body ductile iron fittings in conformance with AWWA C153 in lieu of C110 and C111 for 3- through 36-inch sizes.

23. All fittings shall be cast and machined at one foundry location to assure quality control and test data. The standard grade of iron shall be 70-50-05. Analyses of the ductile iron shall be made with the chemical limits set in this standard (C110 and/or C153). Results of chemical analyses shall be provided to the ENGINEER as part of the Shop Drawings.

C. Ductile iron pipe and fittings 3- through 54-inches for aboveground service or in below ground concrete pits shall meet the following requirements:

1. All aboveground ductile-iron pipes shall be flanged. Ductile-iron pipe shall conform to ANSI A21.51 and AWWA C-151.

2. Flanged ductile-iron pipe shall conform to current AWWA/ANSI Specification C115/A21.15 and C110/A21.10 with factory-applied screwed long hub flanges except as otherwise specified hereinafter.

Flanges shall be fully machined faced and drilled after being screwed tight on the pipe, with flanges true to 90 degrees with the pipe axis and shall be flush with end of pipe conforming to ANSI B161.1, 125 pound standard or Class 250, for the purpose intended. No welding of flanges or accessories in the field will be acceptable.

3. Pipe for use with split-type flexible coupling joints shall have radius grooved ends.

4. Wall sleeve with integral water stops or wall pipe casings with integral thrust collars shall be continuously welded on each side of the waterstop or thrust collar and shall be of the sizes and types as shown on the Drawings.

5. Wall sleeves, where specified, shall be fabricated of Schedule 40 Type 304 stainless steel or polyvinyl chloride (PVC) and shall have integral water stops continuously welded on each side of the waterstop.

6. Seal strips for wall sleeves, where required on the Drawings, shall be Link Seal as manufactured by Thunderline Corp., Wayne, Michigan, or equal.

7. Full-face type 1/16-inch thick red rubber ring gaskets shall conform to ANSI A21.11. Ring gaskets shall be of approved composition suitable for the required service.

8. Pipe and fittings exposed to view in the finished work and to be painted in accordance with Section 09902 shall not receive the standard tar or asphalt coat on the outside surfaces but shall be shop primed on the outside with one coat of Kop Coat No. 622 Rust Inhibitive Primer or equal. Should portions of the pipe inadvertently be given the outside bituminous coating instead of the rust inhibitive primer as required for exposed piping, the surfaces shall be sealed with a non-bleeding sealer coat such as Kop Coat Tar Stop, Mobil Anti-Bleeding Aluminum Sealer or Aqua Lock Glidden. Sealing shall be a part of the work of this section.

9. Bolts and nuts on flanged pipe and fittings shall be low-alloy, high-strength steel equal to "Corten," conforming to ANSI A21.11 and A21.15 or 304 stainless steel and shall be drilled to match ANSI B16.1 Class 125 or 250 flanges for the purpose intended.

2.02 LINING AND COATINGS

A. All pipe and fittings for potable water service and reclaimed water irrigation reuse mains shall have a cement mortar lining and a bituminous seal coat on the inside in accordance with ANSI A21.4 and be coated on the exterior with a 1-2 mils thick bituminous coat in accordance with ANSI A21.51.

B. All ductile-iron pipe and fittings for wastewater service (including but not limited to raw sewage lines, all process lines, and reject water lines) including pressure and gravity mains, unless otherwise noted, shall have a ceramic epoxy lining on the interior and bituminous coating on the exterior except for 6 inches back from the spigot end. The bituminous coating shall not be applied to the first 6 inches of the exterior of the spigot ends. All pipe and fittings shall be delivered to the application facility without asphalt, cement lining, or any other lining on the interior surface. Because removal of old linings may not be possible, the intent of this specification is that the entire interior of the pipe and fittings shall be as cast without ever having been lined with any substance prior to the application of the specified lining. Any pipe or fittings furnished for this project must not have been lined prior to the awarding of the contract for this project.

1. Lining Material:

The material used for the lining shall be a two component amine cured epoxy of at least 87 percent solids. Protecto 401 by Vulcan Painters, Birmingham, Alabama or Permite 9043, Type II Glass Filled Epoxy by Permite Corporation, Atlanta, Georgia are the Standards of Quality.

The following test requirements shall be certified by the material supplier, and a history of satisfactory performance for the material in the service required and upon the surface specified shall be submitted. The following are the minimum requirements to be met:

a. A permeability rating of zero permeance when a film of at least 40 mils is tested according to ASTM D1653 or a permeability rating of 0.0 perms when measured using Method A of ASTM E66 procedure A with a test duration of 42 days.

b. The material shall contain at least 20 percent by volume of ceramic quartz pigment in the dried film.

c. The following test must be run on ductile iron panels with the results certified by the lining material supplier of the material being submitted.

Test		Rating/Method
1.	Direct Impact	ASTM D-2794
2.	3% Sulfuric Acid Immersion @ 120/F	ASTM D-714
3	25% Sodium Hydroxide Immersion @ 140/ F	ASTM D-714
4.	Deionized Water Immersion @ 160/ F	ASTM D-714
5.	Moisture and Ultraviolet Light Cycle 8 hours light 4 hours 100% humidity	ASTM G-5377

2. Application of Lining - The lining shall be applied by a competent firm with at least a 5-year history of applying linings to the interior of ductile pipe and fittings.

   a. Surface Preparation:

      1) Prior to abrasive blasting the entire area which will receive the protective compound shall be inspected for oil, grease, etc.

      2) Any areas where oil, grease, or any substance that can be removed by solvent is present, it shall be solvent cleaned using the guidelines outlined in SSPC-SP-1 Solvent Cleaning.

      3) After the surface has been made free of grease, oil, or other substances, all areas that are to receive the protective compounds shall be abrasive blasted using compressed air nozzles with sand or grit abrasive media.

      4) The blast media shall strike 100 percent of the surface area at sufficient force to remove rust and oxides.

      5) The entire surface to be lined shall be struck with the blast media so that all rust, loose, oxides, etc., are removed from the surface.

      6) Only slight stains and specks of tightly adhering oxides may be left on the surface. Any area where rust appears before coating must be reblasted to remove all rust.

   b. Lining:

      1) After surface preparation and within 8 hours of surface preparation of the barrel of the pipe from the inside shoulder of the gasket groove to the end of the interior spigot shall receive a minimum coating of 40 mils dry film thickness of the protective lining.

      2) If flange fittings or pipe are included in the project the linings must not be used on the face of the flange; however, full-face gaskets must be used to protect the ends of the pipe.

      3) All fittings shall be lined with a minimum of 40 mils of the protective lining.

4) Push-on type fittings shall be lined from the gasket groove to the gasket groove.

5) The 40 mils system shall not be applied in the gasket grooves.

c. Coating of Gasket Groove and Spigot Ends:

1) Due to the tolerances involved, the gasket groove and spigot end up to 6 inches back from the end of the spigot end must be coated with a minimum of 10 mils dry of Protecto Joint Compound.

2) This coating shall be applied by brush to ensure coverage.

3) Care should be taken that the coating is smooth without excess buildup in the gasket groove or on the spigot end.

4) All materials for the gasket groove and spigot end shall be applied after the application of the lining.

d. Number of Coats:

1) The number of coats of lining material applied shall be as recommended by the lining Manufacturer. However, in no case shall the material be applied above the dry thickness per coat recommended by the lining Manufacturer in printed literature.

2) The time between coats shall never exceed that time recommended by the lining material Manufacturer. If at any time the lining must be recoated beyond the lining material Manufacturer's recommended recoat time, the surface of the existing lining shall be roughened sufficiently to prevent delamination between coats.

3. Inspection:

a. All pipe shall be checked for thickness using a magnetic film thickness gauge. The thickness testing shall be done using the method outlined in SSPC-PA-2 film thickness testing.

b. The barrel of all pipe and fittings shall be pinhole detected with a nondestructive 2,500-volt pinhole test.

c. Each pipe joint and fitting shall be marked with the date of application of the lining system and with its numerical sequence of application on that date.

4. Certification: The pipe or fitting Manufacturer must supply a certificate attesting to the fact that:

a. The Applicator met the requirements of this specification.

b. The material used was as specified.

c. The material was applied as required by the specification.

5. Repair: All pinholes and damaged lined areas shall be repaired in accordance with written repair procedure furnished by the Manufacturer of the lining material so that the repaired area is equal in performance to the undamaged lined areas.

6. The exterior of the pipe shall receive a bituminous coating approximately 1-2 mils thick in accordance with ANSI A21.51.

7. Pipe and fittings exposed to view in the finished work shall not receive the standard tar or asphalt coat on the outside surfaces but shall be shop primed on the outside with one coat of Kop Coat No. 622 Rust Inhibitive Primer or equal.

8. Should portions of the pipe inadvertently be given the outside coating of coal tar enamel instead of the rust inhibitive primer as required for exposed piping, the surfaces shall be sealed with a non-bleeding sealer coat such as Kop Coat Tar Stop, Mobil Anti-Bleeding Aluminum Sealer, or equal. Sealing shall be a part of the work of this section.

2.03 IDENTIFICATION

A. Each length of pipe and each fitting shall be marked with the name of the Manufacturer, size, and class. All gaskets shall be marked with the name of the Manufacturer, size, and proper insertion directions.

B. All aboveground piping and fittings shall be completely primed and painted in accordance to the below color code.

C. All below ground ductile iron pipe and fittings shall have an identification color code.

1. Raw sewage force mains and gravity sewer pipe - Green, similar to Kop Coat, No. 0336.

2. Reclaimed water irrigation reuse mains and service tubing - Purple, similar to Pantone 522C.

3. Potable water mains and service tubing - Blue, similar to Kop Coat No. 8155.

D. All buried ductile-iron pipe shall be painted along its entire length with 2-inch stripes on at least three quarter points for pipe sizes 12 inches and larger. For pipe sizes smaller than 12 inches, a single 2-inch wide stripe along the top of the pipe shall be provided. Paint and marking tape colors shall be as described above.

E. The CONTRACTOR shall install, 12 inches above the ductile-iron pipe, a 3-inch wide detector tape running the length of the pipe (color as described above).

2.04 FUTURE STRUCTURE AND MANHOLE CONNECTIONS

A. Pipe stubs for all future manhole or pipe connections shall not be less than 24 inches in length. Watertight plugs or caps shall be furnished.

PART 3 - EXECUTION

3.01 INSTALLING DUCTILE IRON PIPE AND FITTINGS

A. All water, sewer, and reclaimed water mains shall be installed in accordance with recommendations of the pipe Manufacturer and as specified herein.

B. All pipe deflection or bends deflected more than 6% shall be restrained in accordance with the Restrained Pipe Joint Table. All fittings and valves shall be restrained in accordance with the Restrained Pipe Joint Table. See detail sheet.

C. Care shall be taken in the handling, storage, and installation of pipe and fittings to prevent injury to the pipe or coatings. All pipe and fittings shall be examined before installing, and no pipe shall be installed which is found to be defective. Pipe or fittings shall not be dropped. All damage to the pipe coatings shall be repaired according to the Manufacturer's recommendations.

D. All pipe and fittings shall be kept clean and shall be thoroughly cleaned before installation.

E. Pipe shall be laid to the lines and grades shown on the Drawings with bedding and backfill as shown on the Drawings and as specified in Section 02222. Blocking under the pipe will not be permitted.

F. All pipe and fittings shall be thoroughly cleaned before laying, shall be kept clean until they are used in the work, and when laid, shall conform to the lines and grades required.

Ductile-iron pipe and fittings shall be installed in accordance with requirements of AWWA Standard Specification C600 except as otherwise provided herein.

A firm, even bearing throughout the length of the pipe shall be constructed by tamping FDOT No. 89 stone at the sides of the pipe up to 6 inches over the top of the pipe, and then an additional 6 inches of selected material for a total of 12 inches over the top of the pipe. Blocking will not be permitted. If any defective pipe is discovered after it has been laid, it shall be removed and replaced with a sound pipe in a satisfactory manner by the CONTRACTOR, at his own expense.

G. When installation is not in progress, including lunchtime, or the potential exists for dirt of debris to enter the pipe, the open ends of the pipe shall be closed with watertight plugs or other approved means.

H. Under no circumstances shall the pipe or accessories be dropped into the trench.

I. All plugs, caps, bends and other locations where unbalanced forces exist shall be anchored by restrained joints. The length of pipe for which restrained joints shall be used are shown on the Drawings.

J. In all cases where ductile iron pipe is installed, a marking tape shall be located above the top of the pipe.

K. When cutting pipe is required, the cutting shall be done by machine, leaving a smooth cut at right angles to the axis of the pipe. Cut ends of pipe to be jointed with a bell shall be beveled to conform to the manufactured spigot end. Cement lining shall be undamaged.

3.02 PUSH-ON JOINTS

A. Push-on joints shall be made in accordance with the Manufacturer's instructions.

B. Pipe shall be laid with bell ends looking ahead.

C. A rubber gasket shall be inserted in the groove of the bell end of the pipe, and the joint surfaces cleaned and lubricated.

D. The plain end of the pipe to be laid shall then be aligned and inserted in the bell of the pipe to which it is to be joined, and pushed home with a jack or by other means.

E. After joining the pipe, a metal feeler shall be used to make certain that the rubber gasket is correctly located.

3.03 FLANGED JOINTS

A. Flanged joints shall be installed where shown on the Drawings. Extreme care

shall be exercised to insure that there is no restraint on opposite ends of pipe or fitting which will prevent uniform gasket compression, cause unnecessary stress, bending or torsional strains to flanges or flanged fittings.

B. Adjoining push-on joints shall not be assembled until flanged joints have been tightened. Bolts shall be tightened alternately and evenly.

C. After installation apply a bitumastic coating to bolts and nuts.

3.04 RESTRAINED JOINTS

A. Restrained joints shall be installed in accordance with the Restrained Pipe Joint Table. See detail sheet.

B. Restrained joints shall be installed at all fittings, bends deflected more than 6 degrees and valves as shown on the Drawings and specified herein.

C. The joint assembly's for pipe sizes 30 inches and smaller shall be Fastite® Joint with Fast-Grip® Gasket by American Pipe Co. or ENGINEER approved equal.

D. The joint assembly's for pipe sizes 36 inches shall be Flex-Ring® Joint by American Pipe Co. or ENGINEER approved equal.

E. Restrained joints shall be installed in accordance with the Manufacturer's recommendations.

3.05 SLEEVE TYPE COUPLINGS

A. Couplings shall be installed where shown.

B. Couplings shall not be assembled until adjoining push-on joints have been assembled.

C. After installation, apply a heavy bitumastic coating to all bolts, nuts and accessories.

3.06 TESTING (PRESSURE PIPING)

A. All pressure mains shall be field-tested.

B. Hydrostatic pressure and leakage tests shall conform with Section 4 of AWWA C600 Specification with the exception that the CONTRACTOR shall furnish all gauges, meters, pressure pumps and other equipment needed to test the line.

C. The pressure required for the field hydrostatic pressure test shall be 100 psi for the raw sewage lift/pump stations and force mains and 150 psi for potable water mains and reclaimed water irrigation mains, unless otherwise noted.

D. The CONTRACTOR shall provide temporary plugs and blocking necessary to maintain the required test pressure. Fill line slowly with water. Maintain flow velocity of less than 2.0 feet per second.

E. Corporation cocks at least 1 inch in diameter, pipe riser and angle globe valves shall be provided at each pipe dead-end in order to bleed air from the line. Duration of pressure test shall be at least 2 hours. The cost of these items shall be included as a part of testing.

F. The leakage test shall be a separate test at the maximum operating pressure as determined by the ENGINEER following the pressure test and shall be of not less than 2 hours duration.

G. All leaks evident at the surface shall be repaired and leakage eliminated regardless of total leakage as shown by test.

H. Lines which fail to meet tests shall be repaired and retested as necessary until test requirements are complied with.

I. Defective materials, pipes, valves and accessories shall be removed and replaced.

J. The pipe lines shall be tested in such sections as may be approved by the ENGINEER by shutting valves or installing temporary plugs as required.

K. The line shall be filled with water and all air removed and the test pressure shall be maintained in the pipe for the entire test period by means of a force pump to be furnished by the CONTRACTOR.

L. Accurate means shall be provided for measuring the water required to maintain this pressure. The amount of water required is a measure of the leakage.

M. The amount of leakage which will be permitted shall be in accordance with AWWA C600 Standards for all pressure. No pipe installation shall be accepted if the leakage is greater than that determined by the following formula:

$$L = \frac{SD(P)^{1/2}}{133{,}200}$$

N. In which L is the allowable leakage in gallons per hour; S is the length of pipe tested, in feet; D is the nominal diameter of the pipe, in inches; and P is the average test pressure during the leakage test, in pounds per square inch gauge.

O. The CONTRACTOR must submit his plan for testing to the ENGINEER for review at least 10 days before starting the test.

P. The CONTRACTOR shall remove and adequately dispose of all blocking material and equipment after completion and acceptance of the field hydrostatic test, unless otherwise approved by the ENGINEER. Any damage to the pipe coating shall be repaired by the CONTRACTOR. Lines shall be totally free and clean prior to final acceptance.

3.07 CHLORINATION OF POTABLE PIPELINES

A. Before being placed in service, all new potable water pipelines and reclaimed water irrigation mains including service connections and accessories shall be chlorinated using the continuous feed method specified in AWWA C651 "Standard Procedure for Disinfecting Water Mains." The procedure shall be approved by the ENGINEER in advance.

B. The location of the chlorination and sampling points shall be determined by the ENGINEER in the field. Taps for chlorination and sampling shall be installed by the CONTRACTOR. The CONTRACTOR shall uncover and backfill the taps as required.

C. The general procedure for chlorination shall be first to flush all dirty or discolored water from the lines, and then introduce chlorine in approved dosages through a tap at one end, while water is being withdrawn at the other end of the line. The chlorine solution shall remain in the pipeline for about 24 hours.

D. Following the chlorination period, all treated water shall be flushed from the lines at their extremities, and replaced and water from the distribution system. All treated water flushed from the lines shall be disposed of by discharging to the nearest sanitary sewer or by other approved means. No discharge to any storm sewer or natural water course will be allowed.

E. Bacteriological sampling and analysis of the replacement water shall then be made by the ENGINEER in full accordance with AWWA Specification C651.

F. The CONTRACTOR will be required to rechlorinate, if necessary. The line shall not be placed in service until the requirements of the State of Florida Department of Health (DOH) and the jurisdictional County Public Health Department are met.

G. Special disinfecting procedures shall be used in connections to existing mains and where the method outlined above is not practical.

H. The CONTRACTOR shall make all arrangements necessary with the jurisdictional County Health Department for examination of water samples from disinfected water mains.

I. These samples shall be examined for compliance with DOH requirements.

J. Sampling shall be made daily and continuously until two successive examinations are found satisfactory.

K. Should three examinations be found unsatisfactory, the line shall be flushed and disinfected again.

L. The cost of all sampling, flushing and disinfecting shall be included in the contract price and no additional charge shall be made to the OWNER for this work.

M. The complete disinfection program and methods followed, especially if materially different from those specified, shall be in accordance with directives of the Florida Department of Environmental Protection (FDEP) and all methods employed shall have their approval.

N. Definite instructions as to the collection and shipment of the samples shall be requested from the FDEP and shall be followed in all respects.

O. Final approval of the bacterial samples shall be received from the FDEP prior to the time that the system is placed into operation.

P. The cost for all flushing, disinfecting and testing shall be borne by the CONTRACTOR.

3.08 FLUSHING

A. After the mains have been laid and pressure tested, each run of pipe shall be thoroughly flushed so as to remove all debris and foreign matter from the lines.

B. Flushing will ordinarily be done by opening fire hydrants or blowoffs along the pipe line.

C. Where fire hydrants or blowoffs are not available or are of insufficient capacity to permit adequate flushing, the pipe line shall be opened and flumes or piping shall be provided by the CONTRACTOR to waste the water to the nearest approved disposal point.

D. A minimum volume of water equal to six times the volume of the main shall be used to flush the mains.

E. The water shall be introduced into the mains to produce a velocity of not less than 3-feet per second, and this rate of flow shall be continued until the discharge is clear and no evidence of silt or foreign matter is visible.

3.09 CLEANING

A. At the conclusion of the work the CONTRACTOR shall thoroughly clean all of the new pipelines by flushing with water and pigged to remove all dirt, stones, pieces of wood, or other material which may have entered during the construction period.

B. Debris cleaned from the lines shall be removed from the job site. If, after this cleaning, any obstructions remain, they shall be removed.

C. After the pipelines are cleaned and if the groundwater level is above the pipe, or following a heavy rain, the ENGINEER will examine the pipe for leaks.

D. If defective pipes or joints are discovered at this time, they shall be repaired or replaced by the CONTRACTOR.

END OF SECTION

SECTION 15070
HDPE PIPE

PART 1 - GENERAL

1.1 DESCRIPTION OF WORK

A. This section includes material and installation requirements necessary for furnishing and installing HDPE pipe, fittings and specials in the locations and quantities as shown on the drawings. Quantities shown on the plans may not be the exact length needed for directional bores. The Contractor shall investigate this before the Bid and shall inform the Engineer prior to the bid if additional HDPE pipe will be needed. Any additional HDPE pipe needed after the Bid will be the responsibility of the Contractor and shall not require any additional costs to the Owner.

1.2 QUALITY CRITERIA

A. Reference to industry standards as contained herein shall be construed as to be in reference to the latest revision or edition.

B. The pipe fittings and specials shall be made by a manufacturer experienced in producing pipe, fittings, and specials of the type, size, configuration, and quality specified herein. The manufacturer shall have produced pipe, fittings and specials having a record of at least five years successful performance.

1.3 SUBMITTALS

A. The Contractor shall submit shop drawings showing the pipe lengths, design details, joint details, specials, etc., for the Engineer's approval. Pipe shall be fabricated in accordance with these plans.

B. The Contractor shall submit a notarized statement of certification from the pipe manufacturer as to conformance with the specified ANSI/AWWA Specifications listed herein, and modifications thereto, at the time of submitting shop drawing data on the pipe and fittings.

1.4 DELIVERY, STORAGE AND HANDLING

A. The Contractor shall be responsible for the acceptability of all material furnished by him and shall assume responsibility for the replacement of all such material found damaged in shipping, or defective in manufacture. This shall include the furnishing of all material and labor required for the replacement of installed material discovered to be defective prior to the final acceptance of the work.

B. The interior, as well as all sealing surfaces of all pipe, fittings, and other accessories shall be kept free from dirt and foreign matter. Consult the manufacturer for specific storage recommendations.

C. Materials shall, at all times, be handled properly to prevent damage in accordance with manufacturer's recommendations. Pipe and fittings shall not be thrown, dropped, or dragged.

PART 2 - PRODUCTS

2.1 HDPE PIPE

A. Polyethylene pipe shall be manufactured in accordance with ASTM F714. All HDPE pipe used for force mains shall have an embedded green stripe on each side symbolizing wastewater and all pipe used for water mains shall have an embedded blue stripe on each side symbolizing water.

B. The polyethylene pipe shall be rated for use with water at 73.4°F. at a hydrostatic design stress of 800 psi and a minimum working pressure of 160 psi.

C. Dimension Ratio (DR) shall be DR11 for the HDPE pipe shown on the drawings. All pipes shall be DIP size.

D. Polyethylene extrusion compound from which the polyethylene pipe is extruded shall comply with application requirements for PE-3408 high molecular weight polyethylene plastic material. Material shall be as described in ASTM D1248 and shall comply with the following:

1. Pipe resin shall have a minimum inherent viscosity of 2.5 when run according to ASTM D1601.
2. Exceed 5,000 hours on ESC as determined by ASTM D-1248-345434C.
3. Have a specific gravity of between 0.9141 and 0.955.
4. Contain a minimum of 2% and a maximum of 3% of carbon black and shall produce a finish product that is uniformly black.

E. Marking on the pipe shall include: the nominal pipe or tubing size; the type of plastic material, i.e., PE-3408; the standard thermoplastic pipe dimension ratio or the pressure rating in psi for water at 73.4°F. (160 psi); the ASTM designation with

which the pipe complies; and manufacturer's name or trade mark and code.

2.2 FITTINGS AND JOINTS

Fittings shall be fabricated to the same standards as the pipe from the same raw materials

by thermal fusion. Jointing shall be by the thermal butt fusion method as recommended by the manufacturer. Fittings and joints shall have a pressure rating equal to the pipe and shall have machined fusion ends matched to pipe wall. The Contractor shall use mechanical joint fusion welded adapters with ductile iron mechanical joint sleeves for transition connections as shown on the plans.

PART 3 - EXECUTION

3.1 GENERAL REQUIREMENTS

A. Installation of all polyethylene pipe, fittings, specials and appurtenances shall be in accordance with Section 02730 and Manufacturers Instructions.

B. Openings such as stubs, tees and other services along the lines shall be securely closed by means of an approved stopper that fits into the pipe and is recommended by the pipe manufacturer. This stopper shall be jointed in such a manner that it may be removed at some future time without injury to the pipe itself. At the close of each day's work and other times when the pipe is not being laid, the end of the pipe shall be temporarily closed with a close-fitting stopper.

C. Cleaning - All necessary precautions shall be taken to prevent the entrance of mud, sand or other obstructing material into the pipelines. As the work progresses, the interior of the main shall be cleaned of all dirt, jointing material, and superfluous materials of every description.

D. Joining of piping shall be performed by experienced fusion technicians with a minimum of five (5) years or more experience in field application involving large diameter (over 12-inches) polyethylene pipe. Experience record shall be submitted for review 15 days prior to directional boring activities.

If the Contractor feels that the length of HDPE pipe shown on the plans is not adequate, then the Contractor shall notify the Engineer prior to the bid. Contractor shall not ask for additional directional boring cost after the bid.

E. Handling:

1. Pipe must be handled in a way to insure that it is not gouged or scratched to a depth of more than 10% of the wall thickness.

2. Pipe shall not be bent to a radius of less than 20 diameters at any time during installation.

3. Pipe shall be handled at all times with strapping that a combined width at each load area of at least half the pipe diameter to prevent point damage to the pipe. No wire rope slings shall be used. Contractor shall use the locator wire on all HDPE pipe.

3.4 INSPECTION OF SYSTEM

A. Inspection of the system shall be as specified in Section 02730 - Sanitary Piping.

PART 4 – TESTING

4.1 TESTING IN THE TRENCH

Fill the pipeline with water after it has been laid; bleed off any trapped air. Subject the lowest element in the system to a test pressure that is 1.5 times the design pressure, and check for any leakage. When in the pinion of the engineer, local conditions require that the trenches be backfilled immediately after the pipe has been laid, apply the pressure test after backfilling has been completed but not sooner that a time which will allow sufficient curing of any concrete that may have been used. Typical minimum concrete curing times are 36 hours for early strengths and seven days for normal strengths.

The test procedures consist of two steps: the initial expansion and the test phase. When test pressure applied to a water-filled pipe, the pipe expands. During the initial expansion of the pipe under test sufficient make-up water must be added to the system at hourly intervals for three hours to maintain the test pressure. After about four hours, initial expansion should be complete and the actual test can start.

When the test is to begin, the pipe is full of water and is subjected to a constant test pressure of 1.5 times the system design pressure. The test phase should not exceed three hours, after which time any water deficiency must be replaced and measured. Add and measure the amount of make-up water required to return to the test pressure and compare this to the maximum allowance in Figure 4.1.

An Alternate leakage test consists of maintaining the test pressure (described above) over a period of four hour, and then dropping the pressure by 10 psi (0.069Mpa). If the pressure then remains within %5 of the target value of one hour, this indicates there is no leakage in the system.

NOTE: Under no circumstances shall the total time under test exceed eight (8) hours at 1 ½ times the system pressure rating. If the test is not complete within this time limit (due to leakage, equipment failure, etc.), the test section shall be permitted to "relax" for eight (8) hours prior to the next test sequence. Air testing is not recommended. Additional safety precautions may be required.

FIGURE 4.1
ALLOWANCE FOR EXPANSION UNDER TEST PRESSURE

Nominal Pipe Size inches (1)	U.S. Gals/100 feet of Pipe (2)			Nominal Pipe Size Inches (1)	U.S. Gals/100 feet of Pipe (2)		
	1-Hour	2-Hour	3-Hour		1-Hour	2-Hour	3-Hour
2	0.08	0.12	0.15	20	2.80	5.50	8.00
3	0.10	0.15	0.25	22	3.50	7.00	10.50
4	0.13	0.25	0.40	24	4.50	8.90	13.30
5	0.21	0.41	0.63	28	5.50	11.10	16.80
6	0.30	0.60	0.90	30	6.20	12.60	19.10
8	0.50	1.00	1.50	32	7.00	14.30	21.50
10	0.75	1.30	2.10	36	9.00	18.00	27.00
12	1.10	2.30	3.40	42	12.00	24.00	36.00
14	1.40	2.80	4.20	48	15.00	27.00	43.00
16	1.70	3.30	5.00	54	18.00	30.00	50.00
18	2.20	4.30	6.50				
(1) mm* 0.03937 (2) multiply by 11.53 to convert to liter/100 meters of pipe							

END OF SECTION

SECTION 15100
VALVES AND GATES

PART 1 - GENERAL

RELATED DOCUMENTS:

Drawings and general provisions of Contract apply to work of this section.

DESCRIPTION OF WORK:

Extent of valves and gates required by this section is indicated on drawings.

Types of valves and gates specified in this section include the following:

- Gate Valves
- Plug Valves
- Check Valves
- Tapping Valves
- Telescoping Valves
- Mud Valves
- Aluminum Slide Gates
- Stop Gates

Valves furnished as part of factory-fabricated equipment, are specified as part of equipment assembly in other.

QUALITY ASSURANCE:

Manufacturer's Qualifications: Firms regularly engaged in manufacture of valves, of types and sizes required, whose products have been in satisfactory use in similar service for not less than 3 years.

Valve Types: Provide valves of same type by same manufacturer.

Valve Identification: Provide valves with manufacturer's name (or trademark) and pressure rating clearly marked on valve body.

Codes and Standards:

ANSI Compliance: For face-to-face and end-to-end dimensions of flanged or welded-end valve bodies, comply with ANSI B16.10 "Face to Face and End-to-End Dimensions of Ferrous Valves".

UL and FM Compliance: Provide valves used in fire protection piping, which are UL-listed and FM approved.

SUBMITTALS:

Product Data: Submit manufacturer's technical product data, including installation instructions for each type of valve. Include pressure drop curve or chart for each type and size of valve. Submit valve schedule showing manufacturer's figure number, size, location, and valve features for each required valve.

Shop Drawings: Submit manufacturer's assembly-type (exploded view) shop drawings for each type of valve, indicating dimensions, weights, materials, and methods of assembly of components.

Maintenance Data: Submit maintenance data and spare parts lists for each type of valve. Include this data, product data, and shop drawings in Maintenance Manual.

PART 2 - PRODUCTS

VALVES:

General: Provide factory-fabricated valves recommended by manufacturer for use in service indicated. Provide valves of types and pressure ratings indicated. Provide proper selection as determined by Installer to comply with installation requirements. Provide end connections which properly mate with pipe, tube, and equipment connections. Where more than one type is indicated, selection is Installer's option.

Pressure sewer shutoff valves are to be full diameter opening and are to be rated for 250 pounds per square inch (psi) minimum.

Buried Valves: Provide 2" square nut operator. For quarter-turn valves 8" and larger, provide gear operator also. Provide one (1) valve key fabricated of carbon steel of suitable length for each four (4) valves of suitable strength.

Exposed Valves: Provide handwheels for all valves except quarter-turn valves, 6" and smaller. Provide lever handle for quarter-turn valves 6" and smaller. Provide one (1) lever handle for each valve pit.

GATE VALVES:

Three Inches and Smaller: Bronze construction with threaded ends or fanged ends.

Over Three Inches: All gate over three inches shall be of the iron body, non-rising bronze stem resilient seat wedge type with fanged, mechanical joint or spigot ends, depending on installation,

furnished with all necessary joint materials. Fanged gate valves shall be provided with 125 lb. American Standard flanges. Valves shall conform to AWWA Specifications C509-80.

Gate valves shall be M & H Valve Co., AWWA C 509, resilient seated gate valve or approved equal.

PLUG VALVES:

Valves shall be of the non-lubricated eccentric type with resilient seat seal unless otherwise specified and shall be furnished with end connections as shown on the plans. Flanged valves shall have flanges in full compliance to ANSI B16.1 Class 125 Standards, including facing, drilling and thickness. Face to face dimensions of flanged valves through 12" size shall be that of standard gate valves. Mechanical joint ends shall be in full conformance to ANSI Standard A21.11.

Port areas for all valves shall be at least 80% of full pipe area.

Valve bodies shall be of ASTM A-126 Class B, cast iron. All exposed nuts, bolts, springs, washers, etc., shall be zinc plated. Resilient seat seals shall be of Buna-N or Neoprene, suitable for use in sewage service.

Seats shall be non-metallic with seat coating thermally bonded and in full conformance to AWWA Standard C550. Valves shall be furnished with permanent corrosion resistant bearing surfaces in the upper and lower journals design to withstand full rated bearing loads and provide long life in sewage service. Valves furnished shall have their internal wetted surfaces protected by nonmetallic coatings factory applied, thermally bonded and in full conformance to AWWA Standard C550.

Nominal valve pressure ratings, body flanges and wall thicknesses shall be in full conformance to ANSI B16.1-1975. Valves shall seal leak-tight against full rated pressure n both directions. Valve seats shall be tested and provide leak-tight shut-off to 175 psi for valves 14" and larger, with pressure in each direction. A hydrostatic shall e\test at twice rating shall be performed with plug open to demonstrate overall pressure envelope integrity.

Manual valves shall have lever or gear actuators and tee wrenches, extension stems, floorstands, etc., as indicated on the plans. All manual valves 8" and larger shall be equipped with handwheel actuators. All gearing shall be fully enclosed in a suitable housing and be suitable for running in a lubricant with seals provided on all shafts to prevent entry of dirt and water into the actuator. Actuators shall provide clear indication of valve position. A suitable stop shall be set to provide water tight shut off in the closed position at full rated pressure. All exposed nuts, bolts and washers shall be zinc plated.

Valve actuators for buried or submerged service shall have seals on all shafts and gaskets on the valve and actuator covers to prevent the entry of water. Actuator mounting brackets for buried or submerged service shall be totally enclosed and shall have gasket seals. All exposed nuts, bolts, springs and washers used in buried service shall be electro plated steel.

Valves and actuators shall be as manufactured by DeZurik, Valmatic, M & H, or approved equal.

CHECK VALVES:

Over Three Inches: The check valve over three inches shall be iron-body, bronze-mounted, spring and lever with flanged ends, except as specified herein. All working parts shall be spring-loaded to prevent slamming. The check valves shall be M & H 259 - lever/spring or approved equal.

Under Three Inches: Check valves under three inches shall be screwed or flanged ends, bronze-body, silent check valves as manufactured by Crane Co., No. 37, or approved equal.

FLUSHING HYDRANTS:

Flushing hydrants shall be 2" post-type with one hose nozzle, Aquarius One-O-Two HH 2" as manufactured by Gill Industries, Pensacola, Florida, or approved equal.

TAPPING VALVE AND SLEEVE:

Tapping valves and sleeves shall be ductile iron and used for tie-ins at the locations and of the size shown on the construction plans. The tapping sleeve shall be a full bolt around and shall have a flanged outlet. The tapping valve shall be a flanged mechanical joint valve. Valves shall be M & H Style 3751 or approved equal. The installation of the tapping sleeve shall be on a clean surface and shall have a minimum of 12 pipe diameters to the nearest existing joint. The tapping valve and sleeve shall be mounted and the wet tap made in accordance with the manufacturer's recommendation. The tapping sleeve shall be as manufactured by Ford (FTS coated) or approved equal.

TELESCOPING VALVES:

Telescoping Valve(s) shall be as manufactured by Vulcan Industries, Waterman Industries, or other prior approved supplier of such equipment.

The telescoping valves described in this specification shall be manufactured with new components of the highest quality available. The following codes and standards shall apply wherever applicable.

NEMA - NATIONAL ELECTRICAL MANUFACTURERS ASSOCIATION
CEMA - CANADIAN ELECTRICAL MANUFACTURERS ASSOCIATION
ASTM - AMERICAN SOCIETY FOR TESTING AND MATERIALS
AGMA - AMERICAN GEAR MANUFACTURER ASSOCIATION
ANSI - AMERICAN NATIONAL STANDARD INSTITUTE

Valves shall consist of type (RS-rising stem)(NRS-non-rising stem)(RP-rack and pinion) floorstands. Valves shall have travel as shown on drawings. For greater than 4'0" travel on NRS valves, indicator shall be reduced to ½ of travel. On type RS or NRS, valve stem and nut shall be

made of brass and shall have Acme thread (4" through 8" shall be 1" diameter), (10" through 16" shall be 1" diameter), (18" through 24" shall be 1-1/4" diameter). All assembly bolts shall be stainless steel.

Floorstands shall be fabricated from 304 Stainless Steel. Handwheels shall be (Cast Alum). All extension stems shall be Schedule 40 stainless steel pipe and terminate at the tube bracket with 6" of thread for field adjustment and be fastened to bracket with double stainless steel nuts and lock washers.

Telescoping tube shall be manufactured from stainless steel and shall be rolled and smooth seam weld 12 gauge stainless steel. Tubes shall be at least 6" longer than travel. Tube bail shall be fabricated stainless steel channel.

Indicator shall be furnished on all units and shall be as follows:

(RS) Clear plastic stem covers with rule scale.

A galvanized steel mating flange not more than ½" larger diameter than the O.D. of slip tube shall be furnished with 3/8" thick neoprene gasket (receiving pipe and flange by others).

Options:

a. V-notch weirs shall be furnished on opposite sides of tube and shall be (2-1/2" 90 degree).

b. Scum baffle shall be furnished on tube and shall be 10" high and have 4" clearance be-tween tube and baffle. Baffle shall be 16 gauge stainless steel and held in place by 1/4" x 2" stainless steel bail.

MUD VALVE:

Mud valve shall be of the heavy duty flange type with rising stems. Frame, cover, yoke and stem extension connection shall be cast iron. Stems shall be brass or stainless steel. Lift nuts shall be bronze.

Seating surfaces are to be bronze and flat configuration. Flange drilling on frame will be suitable for mounting to flange per ASA-B-16.1 (125 lbs. drilling).

Gate will be operated by a Tee handle on a standard AWWA 2" valve nut or with stainless steel stem extension to the height required.

When shown, pedestal lifts, stem guides, and wall brackets will be furnished by the manufacturer of the mud valve to make a complete and operable unit.

On rising stem valves, stem guides shall be provided such that the L/r ratio of the unsupported part of the stem shall not exceed 200.

Paint will be as shown under painting specifications.

Valves and accessories shall be Waterman Model MV-11 or approved equal.

ALUMINUM SLIDE GATES:

Aluminum Slide Gates, where shown on the plans or indicated in the specifications shall be Model AC-31 Aluminum Slide Gates with resilient seal as manufactured by Waterman Industries, Inc. or equal.

The gates will be self-contained, rising stem of the flange design with drilling suitable for attachment to 25 or 125 lb. ASI companion flange.

Guide frames shall be of extruded aluminum shape, of sufficient section to carry the operating forces of the gate, and shall have UHMW polyethylene inserts on which the slide assembly travels to minimize friction. A spigot ring will b e welded to the guides and have a seating surface at minimum 1-1/2 degree angle to which a resilient Jbulb seal shall be attached or held in place by a substantial section ring.

Dual Headrails (Yokes) shall be welded to the guide rails and so positioned that the slide is removable from the gate. The slide shall be aluminum plate suitable reinforced with extruded structural shapes for the head requirements specified and will not deflect more than 1/360 of the gate width under the design head. Suitable side guides will be welded to the slide, which will travel within the guides, and place the cover in an angle corresponding to the seat surface of the guide frame assembly. A rising stainless steel stem having modified acme type threads shall attach to the slide with a clevis and pin arrangement.

The stem will be designed to have a L/r of 200 or less and to withstand in compression at least twice the rated output of the lift at 40 lb. pull. A suitable handwheel or gear type operator should be mounted on the headrails (yoke) of the gate and will require a maximum 40 lb. pull on the handwheel rim or crank handle to operate the gate.

Flatback gates shall be attached to headwalls with anchor bolts or expansion anchors. Gates shall be installed on the anchors with nuts both behind and on the flange face so as to position the gate without stress or distortion. See manufacturer's installation instructions. Sealing between headwall and gate flange will be by dry-pack non-shrink grout or other suitable mastic sealant.

Spigotback gates will be attached to corrugated metal pipe by field drilling the pipe with 7/16" holes and secured with 3/8" stainless steel bolts, maximum spacing to be 8" on circumference of pipe. Sealing between pipe and gate will be made with suitable mastic sealing material to assure water tightness at this joint.

The gate, when installed, shall have no more than 0.05 gpm leakage per foot of sealing periphery for seating or unseating heads up to 15 feet.

Aluminum and stainless steel will be mill finish. Paint for lifts will be manufacturer's standard (or prime paint as specified elsewhere).

Material:

- Aluminum Plate and Shapes - ASTM-B211 Alloy 6061-T6
- J-Bulb Seal - Neoprene ASTM-CB610-625, D-2000
- Fasteners - ASTM F593 & F594 Type 304 or 316
- Stem - ASTM A-276 Type 304 and 316
- Handwheel Lift - Cast iron ASTM A-126 CL B W/manganese bronze lift nut per ASTM B-584 alloy 865
- Enclosed Gear Lift - Cast iron ASTM A-126 CL B W/manganese bronze lift nut per ASTM B-584 alloy 865

STOP GATES:

The fabricated aluminum stop gates, where shown on the drawings or indicated in the specifications, shall be furnished with aluminum frames with the guides designed to embed in the concrete or to mount to the face of the concrete. The gates shall be manufactured by Armtec, or Engineer approved equal.

The stop gates shall be the product of a manufacturer having at least ten years experience in the design and manufacture of low leakage stop gates under similar design conditions. Stop gates that are the product of a metals fabricator will not be acceptable. All welds shall be performed by qualified, experienced welders.

Maximum allowable leakage for the stop gates shall be as per AWWA (American Water Works Association) standards.

In addition to submittal information required by other sections of these specifications, the stop gate manufacturer may be required to submit design calculations and supporting data for all gates showing stresses, loads and deflection of critical parts under the design head conditions.

The frame shall consist of 1/4" minimum thickness extruded aluminum, alloy 6061-T6. The embedded members of the extruded frame shall be at least 1/8" thickness. The guides and invert shall be arranged for concrete embedment. An aluminum member shall be welded or bolted to the top of each frame to prevent distortion during shipment and installation. The member shall be removed by the contractor after installation. A soft closed cell neoprene gasket shall be supplied by the manufacturer for installation between the aluminum frame and the concrete wall.

The frame guides shall incorporate black UV treated low density extruded poly side seals press fitted into the extruded frame and fastened with #8 stainless steel self tapping flat head screws on both the upstream and downstream sides of the slide. Each seat/seal will be shaped to provide two bearing surfaces and two sealing edges. Neoprene seals shall be attached to the guides, if necessary, to meet leakage criteria. A removable neoprene seal shall be contained in the invert member.

The slide shall be a minimum thickness of 1/4" aluminum plate, alloy 5083 or 6061-T6. The slide shall be reinforced with stiffeners as required so that under the maximum head, the slide will not deflect more than 1/16" of its width and stress is limited to 7,000 psi. The slide shall be provided with two slotted handles for operating the stop plate from the frame.

All aluminum in contact with concrete will have a heavy shop coat of bitumastic paint.

VALVE BOXES:

Cast-iron boxes shall be provided for all underground valve installations. They shall consist of a base covering the operating nut and head of the valve, vertical shaft, at least 5-1/4 inches in diameter, and a top section extending to a point even with the finished ground surface. Provide a cast-iron cover marked "WATER" or "SEWER" as appropriate and placed concentrically over the operating nut. The valve boxes shall be Clow F-2454 screw-type valve box USF 7500 or approved equal.

VALVE FEATURES:

General: Provide valves with features indicated and, where not otherwise indicated, provide proper valve features as determined by Installer for installation requirements. Comply with ASME B31.9 for building services piping, and ASME B31.1 for power piping.

Flanged: Valve flanges complying with ANSI B16.1 (cast iron), ANSI B16.5 (steel), or ANSI B16.24 (bronze).

Threaded: Valve ends complying with ANSI B2.1.

PART 3 - EXECUTION

INSTALLATION:

General: Except as otherwise indicated, comply with the following requirements:

Install valves where required for proper operation of piping and equipment, including valves in branch lines where necessary to isolate sections of piping. Locate valves so as to be accessible and so that separate support can be provided when necessary.

Install valves with stems pointed up, in vertical position where possible, but in no case with stems pointed downward from horizontal plane unless unavoidable. Install valve drains with hose-end adapter for each valve that must be installed with stem below horizontal plane.

Insulation: Where insulation is indicated, install extended-stem valves, arranged in proper manner to receive insulation.

ADJUSTING AND CLEANING:

Valve Adjustment: After piping systems have been tested and put into service, but before final testing, adjusting, and balancing, inspect each valve for possible leaks. Adjust or replace packing to stop leaks, replace valve if leak persists.

Cleaning: Clean factory-finished surfaces. Repair any marred or scratched surfaces with manufacturer's touch-up paint.

END OF SECTION

SECTION 15101
VALVES AND ACCESSORIES

PART 1 - GENERAL

1.01 SCOPE OF WORK

The CONTRACTOR shall furnish all labor, materials, equipment and incidentals required and install complete and ready for operation and test all buried and non-buried valves as shown on the Drawings and as specified herein.

1.02 SUBMITTALS

A. Submit materials required to establish compliance with these Specifications in accordance with Section 01300. Submittals shall include the following:

1. Certified drawings showing all important details of construction and dimensions.

2. Descriptive literature, bulletins and/or catalogs of the equipment.

3. The total weight of each item.

4. A complete bill of materials.

5. Additional submittal data, where noted with individual pieces of equipment.

B. Test Reports: Provide certified hydrostatic test data, per MANUFACTURERS standard procedure or MSS-SP-61 for all valves.

C. Certificates: For each valve specified to be manufactured, tested and/or installed in accordance with AWWA and other standards, submit an affidavit of compliance with the appropriate standards, including certified results of required tests and certification of proper installation.

D. MANUFACTURER's Installation and Application Data

E. Operating and Maintenance Data: Operating and maintenance instructions shall be furnished to the ENGINEER as provided in Section 01730. The instructions shall be prepared specifically for this installation and shall include all required cuts, drawings, equipment lists, descriptions and other information required to instruct operating and maintenance personnel unfamiliar with such equipment.

1.03 REFERENCE STANDARDS

A. American Society for Testing and Materials (ASTM):

1. ASTM A48 - Specification for Gray Iron Castings.

2. ASTM A126 - Specification for Gray Iron Castings for Valves, Flanges and Pipe Fittings.

3. ASTM A159 - Specification for Automotive Gray Iron Castings.

4. ASTM A240 - Standard Specification for Heat-Resisting Chromium and Chromium-Nickel Stainless Steel Plate, Sheet and Strip for Pressure Vessels.

5. ASTM A276 - Standard Specification for Stainless and Heat-Resisting Steel Bars and Shapes.

6. ASTM A436 - Specification for Austenitic Gray Iron Castings.

7. ASTM A536 - Specification for Ductile Iron Castings.

8. ASTM B30 - Specification for Copper-Base Alloys in Ingot Form.

9. ASTM B62 - Standard Specification for Composition Bronze or Ounce Metal Castings

B. American Water Works Association (AWWA):

1. AWWA C111 - Rubber-Gasket Joints for Ductile-Iron and Gray-Iron Pressure Pipe and Fittings.

2. AWWA C500 - Gate Valves, 3-in Through 48-in NPS, for Water and Sewage Systems

3. AWWA C504 - Rubber-Seated Butterfly Valves

4. AWWA C507 - Ball Valves 6-in Through 48-in

5. AWWA C508 - Swing-Check Valves for Waterworks Service, 2-in Through 24-in NPS

6. AWWA C509 - Resilient-Seated Gate Valves, 3-in Through 12-in NPS, for Water and Sewage Systems

7. AWWA C511 - Reduced Pressure Principle Backflow Prevention Assembly

8. AWWA C540 - Power-Actuating Devices for Valves and Sluice Gates

9. AWWA C550 - Protective Interior Coatings for Valves and Hydrants

10. AWWA C800 - Underground Service Line Valves and Fittings

11. AWWA C515 – Resilient Seated Valves for 14" and Larger

C. American National Standards Institute (ANSI):

1. ANSI B2.1 - Specifications, Dimensions, Gauging for Taper and Straight Pipe Threads (except dry seals).

2. ANSI B16.1 - Cast Iron Pipe Flange and Flanged Fittings Class 25, 125, 250 and 800

3. ANSI B16.10 - Face-to-Face and End-to-End Dimensions of Valves

4. ANSI B16.104 - Butterfly Valves

D. American Iron and Steel Institute (AISI).

E. Manufacturer's Standardization Society of the Valve and Fittings Industry (MSS):

1. MSS-SP-61 - Pressure Testing of Steel Valves.

2. MSS-SP-67 - Butterfly Valves.

3. MSS-SP-70 - Cast Iron Gate Valves, Flanged and Threaded Ends.

4. MSS-SP-71 - Cast Iron Swing Check Valves, Flanged and Threaded Ends.

5. MSS-SP-72 - Ball Valves with Flanged or Butt-Welding Ends for General Services.

6. MSS-SP-78 - Cast Iron Plug Valves, Flanged and Threaded Ends.

7. MSS-SP-80 - Bronze Gate, Globe, Angle and Check Valves.

8. MSS-SP-82 - Valve Pressure Testing Methods

9. MSS-SP-98 - Protective Epoxy Coatings for Interior of Valves and Hydrants.

F. National Electrical Manufacturers Association (NEMA).

G. Underwriters Laboratories (UL).

H. Factory Mutual Insurance (FM).

I. 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. Qualifications:

1. Valves and appurtenances shall be products of well established firms who are fully experienced, minimum 10 years, reputable and qualified in the manufacture of the particular equipment to be furnished.

2. The equipment shall be designed, constructed and installed in accordance with the best practices and methods and shall comply with these Specifications as applicable.

3. All units of the same type shall be the product of one MANUFACTURER.

B. Certifications:

1. The MANUFACTURER'S shall furnish an affidavit of compliance with Standards referred to herein as specified in paragraph 1.03C.

2. Refer to Part 3 for testing required for certain items in addition to that required by referenced standards.

C. Provide the services of a qualified and factory-trained service representative of the MANUFACTURER to provide operational and maintenance instruction, for a one-day, eight hour period for:

1. Valve motor operators.

2. Valve hydraulic operators.

3. Valve pneumatic operators.

4. Pressure regulating valves.

5. Air release, air and vacuum valves.

D. Inspection of the units may also be made by the ENGINEER or other representative of the OWNER after delivery. The equipment shall be subject to rejection at any due to failure to meet any of the Specification requirements, even though submittal data may have been accepted previously. Equipment rejected after delivery shall be marked for identification and shall be removed from the job site at once.

1.05 SYSTEM DESCRIPTION

A. All of the equipment and materials specified herein is intended to be standard for use in controlling the flow of wastewater, sludges, reclaimed water, potable water, air or chemicals, depending on the individual systems, as noted on the Drawings.

B. Valves, appurtenances and miscellaneous items shall be installed as shown on the Drawings and as specified, so as to form complete workable systems.

C. Unless otherwise noted all powered valve operators shall have:

1. Valves smaller than 8 inches: electric operators 120V, single phase, 60 Hz.

2. Valves larger than 8 inches: electric operators 480 volt, 3 phase, 60 Hz.

3. Solenoid valves: 120 volt, single phase, 60 hz, NEMA 4 enclosure, continuous duty Class F coils and manual operator.

4. See other paragraphs for additional requirements.

D. Packing and Shipping:

1. Care shall be taken in loading, transporting and unloading to prevent injury to the valves, appurtenances, or coatings. Equipment shall not be dropped. All valves and appurtenances shall be examined before installation and no piece shall be installed which is found to be defective. Any damage to the coatings shall be repaired as acceptable to the ENGINEER.

2. Prior to shipping, the ends of all valves shall be acceptably covered to prevent entry of foreign material. Covers shall remain in place until after installation and connecting piping is completed.

a. All valves 3-in and larger shall be shipped and stored on site until time of use with wood or plywood covers on each valve end.

b. Valves smaller than 3-in shall be shipped and stored as above except that heavy cardboard covers may be used on the openings.

c. Rising stems and exposed stem valves shall be coated with a protective oil film which shall be maintained until the valve is installed and put into use.

d. Any corrosion in evidence at the time of acceptance by the OWNER shall be removed, or the valve shall be removed and replaced.

E. Storage and Protection:

Special care shall be taken to prevent plastic and similar brittle items from being directly exposed to the sun, or exposed to extremes in temperature, to prevent deformation. See the individual piping specifications and MANUFACTURER's information for further requirements.

1.06 MAINTENANCE

A. Special tools and the MANUFACTURER's standard spare parts, if required for normal operation and maintenance, shall be supplied with equipment.

B. Provide all special tools required for normal maintenance.

C. Tools shall be packaged in a steel case, clearly and indelibly marked on the exterior to indicate equipment for which tools are intended.

D. Provide to the OWNER a list of all spare and replacement parts with individual prices and location where they are available.

E. Prices shall remain in effect for a period of not less than one year after start-up and final acceptance.

PART 2 - PRODUCTS

2.01 MATERIALS AND EQUIPMENT - GENERAL

A. Reference is made to Division 1 for additional requirements, including nameplates, provisions for temporary pressure gages, protection against electrolysis and anchor bolts.

B. The use of a MANUFACTURER's name and/or model or catalog number is for the purpose of establishing the standard of quality and general configuration desired.

C. Valves and appurtenances shall be of the size shown on the Drawings or as noted and as far as possible equipment of the same type shall be identical and from one MANUFACTURER.

D. Valves and appurtenances shall have the name of the maker, nominal size, flow directional arrows, working pressure for which they are designed and standard referenced, cast in raised letters or indelibly marked upon some appropriate part of the body.

E. Unless otherwise noted, items shall have a minimum working pressure of 150 psi or be of the same working pressure as the pipe they connect to, whichever is higher and suitable for the pressures noted where they are installed.

F. Joints, size and material - unless otherwise noted or required by the ENGINEER:

1. Except where noted, all joints referred to herein shall be of the same type, nominal diameter, material and with a minimum rating equal to the pipe or fittings they are connected to.

2. Valves and appurtenances shall be of the same nominal diameter as the pipe or fittings they are connected to.

3. All valves exposed to view, or in vaults.

a. 3-in and smaller - threaded ends

b. 4-in and larger flanged ends.

G. Provide all special adaptors as required to ensure compatibility between valves, appurtenances and adjacent pipe.

H. Valves and actuators located outdoors but not within a building; within maximum 2-ft above liquid; in vaults; or where otherwise noted shall be especially designed for submerged service where water may completely submerge the valve and operator. All other units shall be as a minimum weather tight.

2.02 VALVE ACTUATORS - GENERAL

A. The valve MANUFACTURER shall supply and integrally, rigidly mount all actuators, including any type of manual or powered actuators, on valves at the factory. The valves and their individual actuators shall be shipped as a unit.

B. Unless otherwise noted, valves shall be manually actuated; nonburied valves shall have an operating wheel, handle or lever mounted on the operator; buried valves and those with operating nuts shall have a non-rising stem with an AWWA 2-in nut. At least two tee handles shall be provided for all operating nuts.

C. Except as otherwise shown on the Drawings or specified herein, all valves 3-in diameter or larger, with the valve center line located 7-ft or more above the operating floor, shall be provided with chain wheel operators complete with chain guides and hot dipped galvanized steel chain, which loop within 4-ft of the operating floor.

D. All actuators shall be capable of moving the valve from the full open to full close position and in reverse and holding the valve at any position part way between full open or closed.

E. Each operating device shall have cast on it the word "OPEN" and an arrow

indicating the direction of operation.

F. Floor boxes for operating nuts recessed in concrete shall be standard cast iron type, cast-in-place, with fastening top by Clow or equal.

G. Stem guides shall be of the adjustable wall bracket type, bronze bushed, with maximum spacing of 10-ft as manufactured by Clow; Rodney Hunt or equal. Extended operating nuts and/or stems shall have universal joints and pin couplings, if longer than 10-ft and a rating of at least five times the maximum operating torque. Stem adaptors shall be provided.

H. Where required by the installation, or as specified, provide the following: extended stem; floor stand and handwheel; position indicator and etched or cast arrow to show direction of rotation to open the valve; resilient seal around stem penetration of slab.

2.03 BUTTERFLY VALVES FOR FLUID SERVICE (METAL BODY)

A. Butterfly valves and operators up to 72 inches diameter shall conform to AWWA C504, Class 150B, except as hereinafter specified. The MANUFACTURER shall submit an affidavit of compliance stating that the valves have been manufactured and tested in accordance with AWWA C504 and specifically listing all exceptions. Valves shall have a minimum 150 psi pressure rating or higher as noted on the Drawings or in the Specifications and be manufactured by Val-Matic Pratt, Dezurik or equal.

B. Butterfly valves for above grade shall be flanged end with face to face dimensions in accordance with Table 2 of AWWA C504 Standard for short-body valve. All valves for dead end shut off service shall be flanged type. Butterfly valves for buried service shall be mechanical joint ends conforming to ANSI/AWWA C111/A21.11 and shall be mechanically restrained with Megalug Series 1100 or ENGINEER approved equal.

C. Valve seats shall be full resilient seats retained in the body or on the disc edge in accordance with AWWA C504. Valve discs shall be constructed of cast iron, ASTM A48, Class 40; Ni-resist, ASTM A126, Class B; or ductile iron, ASTM A536, Grade 65-45-12.

1. For valves 24-inch in diameter and larger, when the resilient seats are attached to the body, discs shall have Type 316 stainless steel seating edges. When the resilient seat is attached to the disc, it shall be fastened with a one piece Type 316 stainless steel retaining ring, Type 316 stainless steel Nylock set screws and a mating Type 316 stainless steel ring shall be installed in the valve body.

2. Resilient seats shall be Hycar or equal. Seats shall be fully adjustable and replaceable with the valves in place for all valves.

D. The valve body shall be constructed of close grain cast iron per ASTM A126, Class B with integrally cast hubs for shaft bearing housings of the through boss-type. Permanently self-lubricating body bushings shall be provided and shall be sized to withstand bearing loads. Stuffing box of liberal dimensions shall be provided at the operator end of the vane shaft.

1. Packing shall be of the self compensating v-type. A sealing element utilizing O-rings shall also be acceptable for up to and including 24-in valves. Over 24-in, pull down seals using a square braid of graphited asbestos is an acceptable alternate.

2. Packing shall be held in place by a bolted corrosion resistant retainer plate or gland; retainer clips are not acceptable. For 30-in or larger, use a stuffing box with follower gland.

3. Replacement of seals, for all size butterfly valves, shall not require removal of the valve from the line. In addition adjustment or replacement of seals on valves of 30-in or larger shall not require disturbing any part of the valve or operator assembly, except any packing follower gland.

E. The valve shaft shall be of Type 316 stainless steel and designed for both torsional and shearing stresses when the valve is operated under its greatest dynamic or seating torque. No reductions of shaft diameter will be allowed except at the operator connection. Any reduction shall have a full radius fillet.

F. In general, the butterfly valve actuator shall conform to the requirements of AWWA C504, insofar as applicable and as herein specified.

G. Gearing for the actuators where required shall be totally enclosed in a gear case in accordance with AWWA C504.

H. The manual actuators shall conform to AWWA C504, insofar as applicable. Actuators shall have permanent indicators with raised or engraved marks to show position of the valve disc.

2.04 GATE VALVES (2-1/2-IN AND SMALLER)

A. Gate valves 2-1/2-in diameter and smaller shall have flanged, screwed, or solder ends as required and shall be brass, or bronze, or Type 304 stainless steel solid wedge, union bonnet, rising-stem gate valves such as Figures 47 and 48 as manufactured by Jenkins Brothers or equal products as manufactured by Crane; Fairbanks; Lukenhiemer or equal.

B. All water valves 2-1/2-in and 3-in unless noted otherwise, shall be brass body gates and shall be Jenkins No. 1240, or Hammond 1B-647.

2.05 GATE VALVES (3-IN AND LARGER)

A. General Requirements:

1. Unless otherwise specified below, these requirements shall apply to all gate valves.

2. Gate valves shall meet the requirements of AWWA C500 and AWWA C509 as applicable to the type of valve specified.

3. Buried and submerged valves shall be furnished with mechanical joints and stainless steel hardware; non-rising stem design.

4. Exposed valves shall be furnished with Class 125 flanged ends and hand wheel; provide valves with outside screw and yoke.

5. All-metal valves shall be manufactured of ASTM A536, Ductile Iron, with bronze mounting design.

6. Rising stem valves shall be sealed with adjustable and replaceable packing; valve design must permit packing replacement under operating system pressures with only moderate leakage.

7. Non-rising stem valves shall use a double O-ring stem seal, except that packing shall be used where geared operators are required.

8. Except as otherwise specified, valves shall be rated for the following working water pressures:

Valve Size	Pressure (psig)
3-in to 12-in	250
14-in to 20-in	250
24-in and greater	250

All valve bodies shall be hydrostatically tested to at least twice the rated working water pressure. In addition, valves shall be seat-tested, bi-directional at the rated working pressure, with seat leakage not to exceed one fluid ounce per inch of valve diameter per hour. Provide certificates of testing.

9. Flanged valves to have face-to-face dimensions per ANSI B16.1 and flanges per ANAI B16.10.

10. Exposed valves 16-in and larger to have valve by-pass.

11. All bonnet and packing gland bolts shall be zinc or cadmium electroplated steel; packing gland bolts shall have bronze nuts.

12. Exposed valves 16-in and greater indicated for horizontal stem installation shall be furnished with rollers, tracks and scrapers and enclosed bevel gear grease case.

13. Provide geared operator and chainwheel, chain and chain guides for valves with handwheel centerline more than 7-ft above operating level.

14. All valves shall be marked per AWWA Standards, including name of MANUFACTURER, valve size and working pressure and year of manufacture.

15. Unless otherwise indicated, valves 12-in and smaller shall be capable of installation in the vertical or horizontal position, sealing in both directions at the rated pressure.

16. Valve operation shall be counterclockwise for potable water; clockwise for wastewater and other non-potable waters. Provide permanent label showing "OPEN" and arrows.

17. Metal-seated valves shall be coated internally and externally with an asphaltic varnish, per AWWA C500. Resilient seated valves shall be coated, interior and exterior, with fusion bonded epoxy per AWWA C550.

B. Valve Applications:

1. Valves for Non-Potable Water Service:

a. Resilient seat gate valves shall be ductile iron bodied, bronze mounted, with wedge type disk, hand wheel and rubber seat. Valves shall be manufactured in accordance with AWWA C509. Valves shall be suitable for above ground service, be designed for 150 psi working pressure, shall be of O-ring type, with non-rising stem, and opening counterclockwise. Valves shall have flanged ends ends. Valves shall be coated in accordance with AWWA C550.

b. Resilient seated design manufactured by American R-B Clow, Mueller, M&H Valve Company or equal.

2. Valves for Wastewater Service (NOT USED)

3. At the CONTRACTOR's option and unless otherwise indicated, any of the listed valve styles may be used, at no additional cost to the OWNER.

C. Valve Requirements:

1. Double Disc (NOT USED)

2. Double Revolving Disc (NOT USED)

3. Solid Wedge (NOT USED)

4. Resilient Seated:

a. Conform to AWWA C509. Also UL and FM approved.

b. Internal and external epoxy coating of valve body, including bonnet, per AWWA C550.

c. Gate shall be encapsulated with synthetic rubber. It shall be bonded and vulcanized in accordance with ASTM B429 Method B.

d. No recesses in valve body.

D. Buried Valves:

1. Conform to the requirements above, except mechanical joint bell ends per AWWA C111. The valve shall be mechanically restrained with Megalug Series 1100 or ENGINEER approved equal. All exposed valve hardware (nuts, bolts, washers, etc.) including bonnet, bonnet cover, stuffing box, gear adaptor and joints shall be Type 304 stainless steel.

2. Non-rising stem design, double o-ring seals for non-geared valves and shall incorporate packing for geared valves.

3. Provide valve box, 2-in operating nut and extension stem and stem cover.

E. Tapping Valves and Sleeves:

1. Tapping valves shall comply with the same requirements as resilient seated gate valves or double revolving disc gate valves except they shall have the flanged end and port opening modified for tapping service. Valves shall be capable of passing a full nominal sized cutter without damage to the valve. The tapping sleeve shall be gray cast iron or ductile iron mechanical joint type with the outlet flange conforming to MSS-SP-60.

2. All water valves, 4-in and larger, shall be iron body gates, bronze trim, flanged ends, O.S. & Y. pattern, solid wedge, rising spindle, Jenkins No. 651, or Hammond 1R-1140.

2.06 PLUG VALVES

A. Plug valves shall be of the offset disc type, ¼ turn, non-lubricated, serviceable

(able to be repacked) under full line pressure and capable of sealing in both directions at the rated pressure. The disc shall be completely out of the flow path when open. Plug valves specified herein shall be by DeZurik, Clow, M&H, Val-Matic, or equal. All Manufacturers, named or otherwise, must comply completely with the specification.

1. For clean liquid or screened sewage, all size plug valves shall have a minimum port area of 80 percent.

2. On sludge and scum lines, all valves 24-in and larger shall have a minimum 100 percent open port area; for all other valves, a minimum port area shall be 80 percent when measured by the percent cross-sectional area of equivalent size (nominal same diameter) pipe.

3. All plug valves for what ever service, shall be capable of passing "pigging" cleaning equipment (using a Girard or similar cleaning pig of full nominal pipeline diameter) in either direction and MANUFACTURER shall so certify that this may be done without the use of special equipment.

B. Valves shall be rated at minimum 175 psi W.O.G. (Water, Oil, and Gas) working pressure for sizes 4-in to 12-in inclusive and at minimum 150 psi W.O.G. working pressure for sizes 14-in and larger.

1. All plug valves under this paragraph shall be performance, leakage and hydrostatically tested in accordance with AWW A C504, except as herein modified. '

2. At the above rated minimum working pressures, the valves shall be certified by the MANUFACTURER as permitting zero leakage for a period of at least one-half hour with pressure applied to the seating face.

3. At the request of the ENGINEER, the valve MANUFACTURER may have to perform a valve seat leakage test, witnessed by the ENGINEER to prove compliance with these Specifications.

C. Valve bodies shall be of cast iron, 30,000 psi tensile strength, ASTM A 126, Grade B, or of ductile iron, ASTM A536 and of the top entry, bolted bonnet design, cast with integral flanges conforming to the connecting piping. All exposed bolts, nuts and washers shall be zinc or cadmium-plated, except for buried or submerged valves, which shall have Type 316 stainless steel hardware.

The valve disc shall:

1. Be cast iron ASTM A 126, Grade B, or ductile iron, ASTM A536, Grade 65-45-12.

2. Be removable without removing the valve from the line.

3. Have an integral upper and lower shaft which shall have seals on the upper and lower journals to prevent entrance of solids into the journals.

4. Be one piece for valves up to 14-in and maximum two piece for larger valves.

D. Shaft bearings shall be permanently lubricated, rigidly backed TFE, stainless steel or bronze at both upper and lower stem journals. The operator shaft shall have easily replaceable seals, which shall be externally adjustable and repackable without removing the bonnet from the valve, or shall have self adjusting packing.

E. The valve seating surface shall provide full 360 degree seating by contact of a resilient seating material on the disc mating with welded-in high nickel content overlay seating surface in the body.

1. The seating design shall be resilient and of the continuous interface type having consistent opening and closing torques and shall be non-jamming in the closed position. Screw-in seats shall not be acceptable.

2. Discs shall have a full resilient facing of neoprene or Buna-N.

F. The methods of mounting the actuator to the valve shall provide an air gap between the two. Actuator shall clearly indicate valve position and an adjustable stop shall be provided. Construction of actuator housing shall be semi-steel. Hardware on actuators shall be of the same materials as the valves.

G. Unless otherwise required, due to location or operation, each valve 6-in and smaller shall be provided with its own securely attached lever. Provide adjustable limit stops for both opening and closing and a clearly marked position indicator.

H. Plug valves shall be installed so that the direction of flow through the valve and the shaft orientation is in accordance with the MANUFACTURER's recommendations. Unless otherwise noted, shaft shall be horizontal, with plug opening up.

2.07 BALL VALVES

A. Ferrous Ball Valves:

1. Ball valves for mainline or water service shall be either ductile iron or carbon steel body, full bore, fire-safe, rated for a line pressure of 150 psig. Except as noted, ball valves shall comply with AWWA C507.

2. The design of the valve shall be such that it shall provide suitable seating in both directions. In order to determine the position of the ball within the

valve (open or closed), there shall be an easily visible, permanent, indicator located conspicuously on the valve. Ball valves shall have Type 316 stainless steel seating surfaces. Seats shall be Type 304 stainless steel. The fully open port area shall be approximately 100 percent of the nominal pipe area.

3. Valve shafts shall be ground and polished and shall be Type 304 stainless steel. Teflon-lined bearings shall be supplied in both trunnions of the valve body.

4. The valves shall be constructed so that the seals, seats and balls are accessible for replacement without dismantling the piping. The valves shall not require lubrication but shall have stuffing boxes which can be packed with the valve in service without undue leakage. Ball valves shall be as manufactured by Henry Pratt Co., Aurora, IL; Williamette, Portland, or equal.

5. Valve actuators shall conform to AWWA C507 and as specified herein.

B. Ball valves for water piping shall be manual or electric actuated (as shown on the Drawings), bronze, resilient seated, regular port, threaded two piece bolted body type valves. The body and cap shall be of brass, ASTM B30, the ball and stem of Type 316 stainless steel and the seats and seals of TFE. The valves shall have full floating ball and shall be non lubricated. Valve seats shall be easily accessible and replaceable. Valves shall be rated to 250 psi and shall be as manufactured by Neles-Jamesbury; WKM or equal.

2.08 CHECK VALVES

A. Swing check valves, sizes 2-1/2 inches through 12 inches shall be spring and lever operated with bronze disc facing and flanged ends with a maximum working pressure of 175 psig and test pressure of 350 psig.

B. Swing check valves, sizes 14 inches through 24 inches shall be spring and lever operated with bronze disc facing and flanged ends with a maximum working pressure of 150 psig and test pressure of 300 psig.

C. Swing check valves, sizes 4 inches and smaller shall use bronze disc ASTM B584.

D. Valves shall meet all applicable parts of ANSI/AWWA C508 Standard.

E. Valves for above grade shall be flanged end. Flanged end dimensions and drilling shall comply with ANSI B16.1, Class 125. Swing check valves for buried service shall be mechanical joint ends.

F. The valve body shall be constructed of ductile or cast iron per ASTM A126, Class B, or ASTM A536, bronze mounted (IBBM).

G. Valves shall be located above grade unless otherwise noted in the Drawings and Specifications.

H. Valves shall have an O-ring sealed stuffing box.

I. Valves shall have adjustable spring tension to control opening and closing of the clapper.

J. Valves shall be installed so that the direction of flow through the valve and the shaft orientation is in accordance with the MANUFACTURER'S recommendations.

K. Swing check valves specified herein shall be by Mueller Company, Model No. 2600 for above grade installations, or ENGINEER approved equal. All Manufacturers, named or otherwise, must comply completely with the specification.

2.09 AIR RELEASE VALVES

A. Air release valve assembly shall be furnished and installed on the reuse water transmission main as shown on the drawings.

B. Air release or valve assembly shall consist of a combination short body, air release-vacuum breaker valves, installed in a manhole with vented manhole cover, gate valve, fittings, tapping saddle and connecting piping to the main.

C. Air release valves shall be installed to release any small accumulations of air, which may collect while pipe is in operation and under pressure.

D. Air release valves on a HDPE pipe shall utilize an electrofusion corp saddle with stainless steel outlet as manufactured by Central Plastics or equal.

E. The air release valves shall be Val-Matic Model 42 or engineer approved equal.

F. The small orifice assembly air release valve shall automatically release air accumulations from the pipe while under positive pressure.

G. When the valve body fills with air, the float ball shall fall to open the small orifice and exhaust the air to atmosphere.

H. When the air has been exhausted, the float ball shall be buoyed up and tightly close the small orifice.

I. The small orifice assembly shall be furnished with cast iron body and cover (ASTM A126-B).

J. The float ball shall be constructed of stainless steel and attached to a stainless steel lever mechanism.

K. A resilient, Buna-N seat shall be attached to the lever mechanism for drop-tight closure.

L. Valves shall be corrosion resistant, suitable for reuse water transmission main application, and shall automatically function to release to the atmosphere both large and small amounts of air that accumulate in the pipeline.

M. Once the air has been exhausted, both valves shall seal tightly to prevent liquid leakage.

N. The valve shall also function to admit air into a line, tank, or chamber under emergency conditions or when it is being drained.

O. The capacity and pressure rating of the valve is dependent on the diameter of the precision orifice in the cover.

P. The Orifice Size shall be 5/32-inch. A large inlet connection is required for proper air and water exchange.

Q. The reuse water air release valves inlet size shall be 2-inch NPT for reuse water

mains.

R. The reuse water air release valves outlet size shall be 1/2-inch NPT for reuse water mains.

S. The Air Release Valves shall be automatic float operated valves designed to release accumulated air from a piping system while the system is in operation and under pressure and installed in a concrete box as shown on the drawings.

T. Box and like shall be of the necessary size to the valve.

U. To connect the air valve, a corporation stop shall be tapped into the main using the procedures as recommended by the ductile iron pipe manufacturer.

V. The corporation stop shall be Mueller H-10045 or approved equal.

W. The valve body shall be threaded with NPT inlets and outlets.

X. The body inlet connection shall be hexagonal for a wrench connection.

Y. The valve shall have two additional NPT connections for the addition of gauges, testing and draining.

Z. The valve body and cover shall be constructed of ASTM A126 Class B cast iron working pressures of 300 psig, with resilient seats, rubber covered floats and no levers.

AA. The cover shall be bolted to the valve body and sealed with a flat gasket.

BB. Resilient seats shall be replaceable and provide drop tight shut off to the full valve pressure rating.

CC. Floats shall be unconditionally guaranteed against failure including pressure surges.

DD. Mechanical linkage shall provide sufficient mechanical advantage so that the valve will open under full operating pressure.

EE. The orifice, float and linkage mechanisms shall be constructed of Type 304 stainless steel.

FF. Non-metallic floats or linkage mechanisms are not acceptable.

GG. The manufacturer shall demonstrate a minimum of five (5) years experience in the manufacture of air valves.

HH. The valves shall be manufactured and tested in accordance with American Water Works Association Standard (AWWA) C512.

II. The manufacturer shall provide test certificates, dimensional drawings; parts list drawings, and operation and maintenance manuals.

JJ. The exterior of the valve shall be coated with a universal alkyd primer.

KK. Air Release Valves shall be as manufactured by Val-Matic Valve & Mfg. Corporation Model No. 38.6, Elmhurst, IL. USA or approved equal.

2.10 AIR/VACUUM VALVES (NORMAL OPERATION)

A. The large orifice assembly air and vacuum valve shall automatically exhaust air from a pipeline during the initial filling of the pipeline.

B. The large orifice assembly shall not blow shut while exhausting air, even while venting air at sonic velocity.

C. When all air has been exhausted from the pipeline, the large orifice float ball shall be buoyed up to seat tightly against a resilient seat ring.

D. The large orifice float ball shall remain tightly closed while the pipeline is under positive pressure.

E. Should the pipeline pressure fall below atmospheric pressure (such as during draining or a line break), the large orifice float ball shall automatically fall away from the seat ring and permit air to enter the pipeline.

F. The large orifice assembly shall be furnished with cast iron body and cover (ASTM A126-B).

G. A resilient, Buna-N seat ring shall be affixed to the valve cover.

H. The float ball shall be constructed of stainless steel with a minimum pressure rating of 1,000 psi. [The float ball shall be free floating within the valve body; guide stems, linkages or levers attached to the float are not acceptable.]

I. Unit shall be manufactured by GA; APCO; Val-Matic or equal. Special type for use with non-clean fluids shall be provided.

2.11 COMBINATION AIR AND AIR/VACUUM OR VACUUM RELIEF VALVES

A. Valves shall be corrosion resistant, suitable for reuse water application. Combination air valve assembly shall be furnished and installed on the reuse water transmission main as shown on the drawings.

B. Combination air valve assembly shall consist of a single body, combination air release and air/vacuum valves, installed in a manhole with vented manhole cover, gate valve, fittings, tapping saddle and connecting piping to the reuse water main.

Manhole and like shall be of the necessary size to the valve.

C. Combination air valves shall be automatic float operated valves and installed to release large accumulations of air during the filing of the piping system and close upon liquid entry.

D. The valve shall open during draining or if a negative pressure occurs.

E. The valve shall also release accumulated from a piping system while the system is in operation and under pressure.

F. The capacity and pressure rating of the valve is dependent on the diameter of the precision orifice in the cover.

G. The large orifice diameter shall be 2-inch and the air release orifice shall be 3/32."

H. A large inlet connection is required for proper air and water exchange.

I. The reuse water combination air valves inlet and outlet size shall be 2-inch NPT.

J. To connect the air valve, a corporation stop shall be tapped into the main using the procedures as recommended by the ductile iron pipe manufacturer.

K. The corporation stop shall be Mueller H-10045 or approved equal.

L. The single body valve shall be threaded with NPT inlets and outlets. The NPT inlets and outlets shall be equal to the nominal valve size.

M. The body inlet connection shall be hexagonal for a wrench connection.

N. The valve shall have two additional NPT connections for the addition of gauges, testing and draining.

O. The combination air valve shall be furnished with cast iron body and cover (ASTM A126-B).

P. The float ball, guide shafts, and bushings shall be constructed of type 304 stainless steel and attached to a stainless steel lever mechanism.

Q. A resilient, Buna-N seat shall be attached to the lever mechanism for drop-tight closure. Non-metallic floats or linkage mechanisms are not acceptable.

R. Single body combination valves shall have an expanded outlet to provide full are around the guide mechanism.

S. The valve shall have a double guided plug and an adjustable threaded orifice.

T. The plug shall be protected against direct water impact by an internal baffle.

U. The plug shall have a precision orifice drilled through the center stem.

V. The cover shall be bolted to the valve body and sealed with a flat gasket.

W. Resilient seats shall be replaceable and provide drop tight shut off to the full valve pressure rating.

X. Floats shall be unconditionally guaranteed against failure including pressure surges.

Y. Mechanical linkage shall provide sufficient mechanical advantage so that the valve will open under full operating pressure.

Z. The exterior of the valve shall be coated with a universal alkyd primer.

AA. The manufacturer shall demonstrate a minimum of five- (5) years experience in the manufacture of air valves.

BB. The valves shall be manufactured and tested in accordance with American Water Works Association Standard (AWWA) C512.

CC. The manufacturer shall provide test certificates, dimensional drawings; parts list drawings, and operation and maintenance manuals.

DD. Air Valves shall be as manufactured by Val-Matic Valve & Mfg. Corporation engineer approved equal.

2.12 PRESSURE RELIEF VALVES FOR AIR

A. Pressure relief valves shall be designed for air and built to ASME standards and shall be National Board Certified.

B. The Valve shall have a one-piece brass body, chrome steel ball on brass seat, silicone rubber seal, and stainless steel spring.

C. The Preset pressure limit of 100 psi shall be tested and sealed by the manufacturer.

D. The pressure relief valve shall have a bubble tight seal within 10% of set pressure.

E. The pressure relief valve shall be manufactured by Control Devices, Inc. or ENGINEERed approved equal.

2.13 INSULATING FITTINGS

Fittings shall be of type to provide control of electrolysis and equal to "Dielectric" as manufactured by Watts Regulator Co., or equal.

2.14 SURFACE PREPARATION AND SHOP COATINGS

A. Not withstanding any of these Specifications, all coatings and lubricants in contact with non-potable water shall be certified as acceptable for use with that fluid.

B. In case of a conflict, the requirements of this Section govern.

C. If the MANUFACTURER's requirement is not to require finished coating on any interior surfaces, then MANUFACTURER shall so state and no interior finish coating will be required, if acceptable to the ENGINEER.

D. The exterior surface of various parts of valves, operators, floor-stands and miscellaneous piping shall be thoroughly cleaned of all scale, dirt, grease or other foreign matter and thereafter one shop coat of an approved rust-inhibitive primer such as Inertol Primer No. 621 shall be applied in accordance with the instructions of the paint MANUFACTURER or other primer compatible with the finish coat provided.

E. Unless otherwise noted, interior ferrous surfaces of all valves shall be given a shop finish of an asphalt varnish conforming to AWWA C509, (except mounting faces/surfaces) or epoxy AWWA C550 with a minimum thickness of 4 mil.

F. Ferrous surfaces obviously not to be painted shall be given a shop coat of grease or other suitable rust-resistant coating.

G. Mounting surfaces shall be especially coated with a rust preventative.

H. Special care shall be taken to protect uncoated items and plastic items, especially from environmental damage.

2.15 FACTORY INSPECTION, TESTING AND CORRECTION OF DEFICIENCIES

A. Factory inspection, testing and correction of deficiencies shall be done in accordance with the referenced Standards and as noted herein.

B. See Division 1 for additional requirements. Also refer to Part 1 of this Section, especially for required submission of test data to the ENGINEER.

C. In addition to all tests required by the referenced Standards, the following shall also be factory tested:

1. Pressure regulating valves shall be factory tested at the specified pressures and flows.

2. The non-cavitating butterfly valves, to demonstrate its non-cavitating capabilities.

3. All types of air and vacuum valves.

2.16 VALVE BOXES

A. Valve boxes shall be provided for all buried valves.

B. Valve boxes shall consist of cast iron base and adjustable top section with cover, which shall be marked "Water, Sewer, or Reuse."

C. Cast iron extensions shall be provided as required to meet grade.

PART 3 - EXECUTION

3.01 INSTALLATION - GENERAL

A. All valves and appurtenances shall be installed per the MANUFACTURER's instructions in the locations shown, true to alignment and rigidly supported.

B. Any damage to the above items shall be repaired to the satisfaction of the ENGINEER before they are installed.

C. Install all brackets, extension rods, guides, the various types of operators and appurtenances as shown on the Drawings, or otherwise required.

D. Before setting these items, the CONTRACTOR shall check all Drawings and figures which have a direct bearing on their location.

E. The CONTRACTOR shall be responsible for the proper location of valves and appurtenances during the construction of the Work.

F. All materials shall be carefully inspected for defects in construction and materials. All debris and foreign material shall be cleaned out of openings, etc.

G. All valve flange covers shall remain in place until connected piping is in place.

H. All operating mechanisms shall be operated to check their proper functioning and all nuts and bolts checked for tightness.

I. Valves and other equipment which do not operate easily, or are otherwise defective, shall be repaired or replaced at no additional cost to the OWNER.

J. Where installation is covered by a Referenced Standard, installation shall be in accordance with that Standard, except as herein modified, and the CONTRACTOR shall certify such. Also note additional requirements in other parts of this Specification.

K. Unless otherwise noted, joints for valves and appurtenances shall be made up utilizing the same procedures as specified under the applicable type connecting pipe joint and all valves and other items shall be installed in the proper position as recommended by the MANUFACTURER.

L. CONTRACTOR shall be responsible for verifying MANUFACTURER'S torquing requirements for all valves.

3.02 INSTALLATION OF MANUAL OPERATIONAL DEVICES

A. Unless otherwise noted, all operational devices shall be installed with the units of the factory, as shown on the Drawings or as acceptable to the ENGINEER to allow accessibility to operate and maintain the item and to prevent interference with other piping, valves and appurtenances.

B. For manually operated valves 3-inch in diameter and smaller, valve operators and indicators shall be rotated to display toward normal operation locations.

C. Floor boxes, valve boxes, extension stems and low floor stands shall be installed vertically centered over the operating nut, with couplings as required and the elevation of the box top shall be adjusted to conform with the elevation of the finished floor surface or grade at the completion of the Contract.

D. Boxes and stem guides shall be adequately supported during concrete pouring to maintain vertical alignment.

3.03 INSPECTION, TESTING AND CORRECTION OF DEFICIENCIES

A. See also Division 1. Take care not to over pressure valves or appurtenances during pipe testing.

B. If any unit proves to be defective, it shall be replaced or repaired to the satisfaction of the ENGINEER.

C. Functional Test:

1. Prior to plant start-up, all items shall be inspected for proper alignment, quite operation, proper connection and satisfactory performance.

2. All units shall be operated continuously while connected to the attached piping for at least 8 hours, without vibration, jamming, leakage, or overheating and perform the specified function.

D. The various pipe lines in which the valves and appurtenances are to be installed are specified to be field tested.

E. During these tests any defective valve or appurtenance shall be adjusted, removed and replaced, or otherwise made acceptable to the ENGINEER.

F. Various regulating valves, strainers, or other appurtenances shall be tested to demonstrate their conformance with the specified operational capabilities and any deficiencies shall be corrected or the device replaced or otherwise made acceptable to the ENGINEER.

3.04 IDENTIFICATION OF VALVES

A. All valves shall be designated by distinguishing numbers and/or letters on required chart(s) and/or diagram(s).

B. The CONTRACTOR shall install approved brass tags for all designated items with numbers and/or letters on the tags corresponding to those on the chart(s) and/or diagram(s).

C. Each valve identification tag to be minimum 19 gauge polished brass: 2-inch diameter.

D. Each tag to designate appropriate service (1/4 inch stamped black-filled letters) and appropriate valve number (1/2 inch stamped black-filled number).

E. Tags shall be securely fastened to valves with approved stainless steel screws or rivets, or brass jack chain, in a manner to permit easy reading.

F. CONTRACTOR shall prepare piping flow diagrams (or re-use those on the contract plans) indicating valve numbers, service, normal position, etc., of each valve.

G. Diagrams shall be mounted on an ornamental iron frame with hinged plexiglass face for wall mounting. Four (4) frames with plexiglass are required.

H. The requirements for valve identification specified above applies equally to all valves installed under this and under other sections of these specifications.

3.05 CLEANING

All items (including valve interiors) shall be cleaned prior to installation, testing, disinfection and final acceptance.

3.06 DISINFECTION

Disinfection of valves and appurtenances shall be in accordance with AWWA Requirments.

3.07 SETTING VALVES AND BOXES

A. Valves and valve boxes as specified in the preceding paragraphs shall be installed where shown on the drawings unless otherwise directed.

B. Valves shall be set plumb with the base of the valve box centered over the valve and resting on compacted backfill.

C. The top section of the box shall be set to allow equal movement above and below finished grade.

D. After being correctly positioned, fill shall be carefully tamped around the valve box for a distance of 4-feet on all sides of the box.

E. In paved areas, top of the cover shall be flush with the finished paving.

F. In off-street areas, the cover shall be set 1-inch above existing grade unless otherwise directed by the ENGINEER and a concrete pad shall be poured around the tope of the box as shown in the standard details.

END OF SECTION

SECTION 15120
DIRECTIONAL BORES

PART 1 - GENERAL

DESCRIPTION OF WORK

The extent of directional boring is shown on the drawings.

The work included in this section covers the installation of carrier pipe by the directional boring (trenchless installation) method as described herein, within the limits indicated on the drawings. In general, include bore pit, pilot hole (as required), drilling fluids, carrier pipe, removal and disposal of drilling fluids and soil cuttings, soil reports as required by jurisdictional agencies beyond those already provided by the Owner, siltation and sediment control, and all other work required to install the carrier pipe as specified herein and as shown on the drawings.

The Contractor will furnish all labor, equipment, materials and supplies and will perform all work necessary to provide Owner with a complete, finished reclaimed water and sewer force main crossing via horizontal directional drilling.

The proposed alignment length, profile and grade to which the reclaimed water and sewer force main shall be installed are noted on the applicable drawings. This profile indicates the minimum grade to which the pipe will be installed.

The Contractor shall have an FDOT inspector on the job site for all directional bores crossing a state highway. Contractor must also conform to the FDOT Specification on Directional Boring.

DESIGN/PERFORMANCE REQUIREMENTS

Provide design engineering for the work as described in paragraph 1.2 and as described herein and on the contract drawings, including, but not limited to, the following elements:

1. Bore hole diameter and length,
2. Location of borehole entry and exit points,
3. Drilling procedures,
4. Pipeline pulling operations,
5. Method of drilling fluid disposal,
6. Area required for drilling operations and storage of pipe,
7. Drilling fluids management plan, and
8. Review of plan and profile drawings and proposed horizontal and vertical alignment of the pipeline, with written certification of agreement with them, or recommended departure from them.

The Contractor's submitted design shall be signed and sealed by a Professional Engineer whose specialty includes design of horizontal drilling operations. The cost of these engineering services will be included in the bid price.

The Contractor shall be responsible for conducting the job in accordance with all applicable federal, state and local permits, codes and statutes.

SUBMITTALS

Drawings: Working drawings showing in detail the size and location of boring pits together with all sheeting and shoring to be used in supporting embankments and trench walls, and any other details of the proposed methods of installation required to allow adequate review by the engineer. The Contractor shall prepare a drilling plan indicating equipment proposed for each location, pull-back forces anticipated and shall verify that the DR of the pipe specified is adequate to withstand the anticipated pull-back forces in addition to the earth, line and groundwater loads.

Shop Drawings: Complete layout and details for fabrication and installation of pipeline; including design data and calculations. Submittal shall include, but not be limited to, elements listed in the above Design/Performance Requirements paragraph.

Task Schedule: Detailed schedule of tasks for each stage or operation involved in the work of this section. Include as a minimum the following major tasks:

1. Preparatory earthwork operations,
2. Drilling rig mobilization and set-up,
3. Pipe delivery and on-site pipe joining operations,
4. Pilot hole drilling and reaming operations,
5. Pipeline pulling operations,
6. Pipeline hydrostatic testing,
7. Drilling fluid disposal, and
8. Restoration and demobilization.

Task Schedule shall conform to contract schedule as outlined in the General Provisions.

On completion of pilot hole phase of each drill site, a complete set of "as-built" records shall be submitted in duplicate to the Engineer. These records shall include copies of the plan and profile drawing, as well as directional survey reports as recorded during the drilling operation. Upon completion drawings shall be submitted to the engineer in ACAD 2000 file format.

Technical data of equipment to be utilized.

Prior to approval, submit the names of supervisory field personnel and historical information of directional boring experience.

Submit MSDS (Material Safety Data Sheets) information for the drilling slurry compounds.

Disposal Plan: The plan shall describe the Contractor's plans for disposal of the drilling fluid and the names, addresses and telephone numbers of any and all subcontractors who will be performing any

portion of the disposal activities. At a minimum the plan shall include:

1. Disposal method,
2. Disposal hauler(s),
3. Disposal locations,
4. Estimated quantity to be disposed,
5. Type of vehicle hauling drilling fluids,
6. Signed statement that all hauling equipment (ie., vehicle, tanker, dump truck, trailer, etc.) meets all requirements of state agencies, and
7. Letter from proposed disposal site(s) accepting material.

Erosion Control Plan: The erosion control plan shall be submitted prior to the preconstruction conference. It shall be a written, detailed plan for the accomplishment of acceptable erosion control on the project. The plan shall describe all necessary temporary measures to be implemented for preventing soil erosion from the construction site until permanent erosion control and finished surfaces are installed. The plan shall comply with all state and local requirements.

Pipe Connection Procedures: The Contractor shall submit pipe connection procedures to the Engineer prior to connecting any pipe. For plastic (HDPE) pipe, the Contractor shall submit the pipe manufacturer's representative's written approval of his procedures.

PERMITS

The Owner shall obtain Corps of Engineer and FDEP wetland impact permits. Copies of the permits shall be kept on-site during construction operations.

QUALITY ASSURANCE

Crossings must conform to applicable requirements of all utility companies affected, State Highway Department, and environmental agencies.

Qualifications: The Contractor shall be thoroughly experienced in the type construction contemplated herein.

Upon completion of carrier pipe installation, Contractor shall pass a mandrel through the entire length of the bore in the presence of the Owners representative to inspect for roughness and necking. Mandrel shall not be more than two-inches in diameter smaller than the ID of the carrier pipe installed. Mandrel and towrope shall be constructed of materials that will not scar or harm the carrier pipe in any manner.

Pipe Manufacturer's Quality Control: The pipe manufacturer shall have an on going Quality Control program for incoming and outgoing materials. High-density polyethylene (HDPE) resins for manufacturing of pipe shall be checked for density, melt flow rate, and contamination. These incoming resins shall be approved by NSF before being converted to pipe. Pipe shall be checked for outside diameter, wall thickness, length, roundness, and surface finish on the inside and outside and

end cut.

Fittings Manufacturer's Quality Control: The fitting manufacturer shall have an on-going quality control program for incoming and outgoing materials. Molded fittings shall be inspected for voids and knit lines. All fabricated fittings shall be inspected for joint quality and alignment. All fabricated fitting welds shall be made using a Data Logger. A record of the temperature, pressure and graph of the fusion cycle shall be maintained by the fitting manufacturer.

PRODUCT DELIVERY, STORAGE, AND HANDLING

The pipe and fitting manufacturer shall package products for shipment in a manner suitable for safe transport on commercial carriers. When delivered, a receiving inspection shall be performed, and any shipping damage reported to the pipe and fittings manufacturer. Pipe and fittings shall be handled, installed, and tested in accordance with manufacturer's recommendations and the requirements of this specification.

Deliver and store materials within limits of rights-of-way and/or property lines as shown on the drawings or as directed by the owner.

The Contractor shall be responsible for securing all project materials and shall bear the cost of replacing any materials which may become misplaced or stolen.

JOB CONDITIONS

The Contractor shall be held fully responsible for protecting against surface subsidence, damage, or disturbance of adjacent property and facilities from his construction methods.

Each directional boring crew shall have a reasonable proportion of experienced men. A superintendent and/or engineer experienced in directional boring methods and techniques, and who represents the boring contractor, shall be present at all times while work is proceeding. He shall also be responsible for the frequent checking of line and grade, if needed. Tolerances should be agreed to in the light gradient and easement requirements.

Contractor shall be held responsible for the coordination and scheduling of all construction work.

SAFETY

All drilling equipment must have a permanent, inherent alarm system capable of detecting an electrical current. The ground system shall be equipped with an audible alarm to warn the operator when the drill head nears electrified cable.

All crews shall be provided with grounded safety mats, heavy gauge ground cables with connectors, and hot boots and gloves.

All supervisory personnel must be adequately trained and have direct supervisory experience in

directional boring.

PART 2 - PRODUCTS

MATERIALS

Drilling fluid shall be a gel-forming colloidal fluid consisting of at least 10% of high-grade bentonite, which is totally inert and contains no environmental risk, or equal.

Carrier Pipe:

1. Pipe and fittings shall be high-density polyethylene manufactured from NSF approved PLEXCO P34CH compound, PE 3408, or equal.
2. Pipe shall meet AWWA C-906, PE Pressure Pipe and Fittings 4" – 53" for Distribution and be marked with the NSF-pw logo.
3. Hydrostatic design stress (HDS) shall be 800 psi at 73.4°F with a minimum pipe DR of 11 and operating pressure of 200 psi at 73.4°F.
4. Pipe and fittings shall be produced by the same manufacturer from identical materials meeting the requirements of this specification.
5. Molded fittings shall meet the requirements of ASTM D-3261 and this specification. At the point of fusion, the outside diameter and minimum wall thickness of fitting butt fusion outlets shall meet the outside diameter and minimum wall thickness specifications of ASTM F-714 for the same size of pipe.
6. Pipe shall be manufactured in accordance with ASTM F-714, ASTM D-3035, or the applicable dedicated service specification. Print line markings shall include a production code from which the location and date of manufacture can be identified. Upon request, the manufacturer shall provide an explanation of his production code.
7. Pipe Marking: HDPE color coding shall be in accordance with the marking requirements specified herein.

Acceptable Pipe Manufacturer:

Performance Pipe, Driscoplex 4000, PE 3408, AWWA C-906, DIPS sizing, Richardson TX, (800) 527-0662; Supplier: ISCO Industries, Grand Bay, AL, 1-800-345-4726, or engineer approved equal.

Butt fusion Fittings: HDPE fittings shall be PE 3408 HDPE, Cell Classification of 345464C as determined by ASTM D3350-99, and approved for AWWA use. Butt fusion fittings shall have a manufacturing standard of ASTM D3261. Molded and fabricated fittings shall have a pressure rating equal to the pipe unless otherwise specified in the plans. Fabricated fittings are to be manufactured using Data Loggers. Temperature, fusion pressure and a graphic representation of the fusion cycle shall be part of the Quality Control records. All fittings shall be suitable for use as pressure conduits, and per AWWA C906, have nominal burst values of three and one-half times the working pressure rating of the fitting.

Transition Fittings: Terminate all HDPE pipe with fusion welded flanges (125 lb bolt pattern). See

paragraph above for alternate fusion procedures.

EQUIPMENT

Directional Drilling Equipment:

1. General: The directional drilling equipment shall consist of a directional drilling rig of sufficient capacity to perform the bore and pull back the pipe, a drilling fluid mixing, delivery and recovery system of sufficient capacity to successfully complete the installation, a drilling fluid recycling system to remove solids from the drilling fluid so that the fluid can be reused (if required), a magnetic guidance system or walk over system to accurately guide boring operations, a vacuum truck of sufficient capacity to handle the drilling fluid volume, trained and competent personnel to operate the system. All equipment shall be in good, safe condition with sufficient supplies, materials and spare parts on hand to maintain the system in good working order for the duration of this project.

2. Drilling Rig: The directional drilling machine shall consist of a hydraulically powered system to rotate and push hollow drilling pipe into the ground at a variable angle while delivering a pressurized fluid mixture to a guidable drill (bore) head. The machine shall be anchored to the ground to withstand the pulling, pushing and rotating pressure required to complete the installation. The hydraulic power system shall be self-contained with sufficient pressure and volume to power drilling operations. Hydraulic system shall be free of leaks. Rig shall have a system to monitor and record maximum pullback pressure during pullback operations. There shall be a system to detect electrical current from the drill string and an audible alarm which automatically sounds when an electrical current is detected.

3. Drill Head: The drill head shall be steerable by changing its rotation and shall provide necessary cutting surfaces and drilling fluid jets.

Guidance System:

1. General: An electronic walkover tracking system or a Magnetic Guidance System (MGS) probe or proven gyroscopic probe and interface shall be used to provide a continuous and accurate determination of the location of the drill head during the drilling operation. The guidance shall be capable of tracking at all depths up to fifty feet and in any soil condition, including hard rock. It shall enable the driller to guide the drill head by providing immediate information on the tool face, azimuth (horizontal direction), and inclination (vertical direction). The guidance system shall be accurate and calibrated to manufacturer's specifications of the vertical depth of the borehole at sensing position at depths up to fifty feet and accurate to 2-feet horizontally.

2. Components: The Contractor shall supply all components and materials to install,

operate, and maintain the guidance system.

3. The guidance System shall be of a proven type, and shall be set up and operated by personnel trained and experienced with the system. The operator shall be aware of any geo-magnetic anomalies and shall consider such influences in the operation of the guidance system.

JOINING METHODS

Butt fusion joining: Plain end pipe and fittings shall be made using butt fusion. The butt fusion procedures shall be in accordance with the manufacturer or the PPI. The fusion equipment operator shall receive training using the recommended procedure. The Contractor shall be responsible to verify that the fusion equipment is in good operating condition and that the operator has been trained within the past twelve months. The fusion equipment shall be equipped with a Data Logger. Records of the welds (heater temperature, fusion pressure, and a graph of the fusion cycle) shall be maintained for five (5) years. Fusion beads shall not be removed.

Mechanical Joining: Polyethylene pipe and fittings may be joined together using flanges or mechanical joint adapters. These fittings shall be made from PE 3048 HDPE, with a Cell Classification of 345464C as determined by ASTM D3350-99. Flanged and MJ adapters shall have a manufacturing standard of ASTM D3261. They shall have a pressure rating equal to the pipe unless otherwise specified on the plans.

Electrofusion couplings: Polyethylene pipe and fittings may be joined using approved electrofusion couplings. Fittings shall be PE 3408 HDPE, Cell Classification of 345464C as determined by ASTM D3350-99. Electrofusion fittings shall have a manufacturing standard of ASTM F1055. Fittings shall have a pressure rating equal to the pipe unless otherwise specified on the plans. All electrofusion fittings shall be suitable for use as pressure conduits, and per AWWA C906, have nominal burst values of three and one-half times the working pressure rating of the fitting.

PART 3 - EXECUTION

EXECUTION

The Utility bore depth will equal or exceed 10 times the bore size. The Contractor shall be responsible for setting all grade stakes, lines, and levels.
Coordinate the locations of underground utilities with appropriate companies. Advise Engineer immediately if conflict exists.

Contractor shall operate and maintain all equipment as required to keep the work free from excessive spoil and environmental risks.

Install siltation fences, sediment barriers, etc., as required or shown on the Contractor's Erosion Control Plan drawings.

The Contractor shall perform the necessary general earthwork operations as required for the directional drilling and pipe pulling operations.

The Contractor shall be responsible for restoring all areas impacted by contractors work effort to pre-work conditions. The Contractor shall be responsible for constructing all means of temporary access to the designated work sites and shall be liable for all damages caused as a result of the work.

INSTALLATION

Installation shall be in a trenchless manner producing continuous bores. The entry point shall be where shown on the plan submitted as required in 1.2 above. The exit point for the drilled hole shall be within 10 feet laterally and within 20 feet longitudinally of where shown on the plan submitted as required in 1.2 above. No exception to this requirement will be allowed.

The tunneling system shall be remotely steerable and permit electronic monitoring of tunnel depth and location.

Tunneling must be performed by a fluid-cutting process (high pressure-low volume) utilizing a liquid clay, i.e., bentonite. The clay lining will maintain tunnel stability and provide lubrication in order to reduce frictional drag while the pipe is being installed. In addition, the clay fluid must be totally inert and contain no environmental risk.

The Contractor must also have a mobile vacuum spoils recovery vehicle on site to remove the drilling spoils from the access pits. The spoils must then be transported from the job site and be properly disposed of. Under no circumstances will the drilling spoils be permitted to be disposed of into sanitary, storm, or other public or private drainage systems.

Mechanical, pneumatic, or water-jetting methods will be considered unacceptable due to the possibility of surface subsidence.

After an initial bore has been completed, a reamer will be installed at the termination pit and the pipe will be pulled back to the starting pit. The reamer must also be capable of discharging liquid clay to facilitate the installation of the pipe into a stabilized and lubricated tunnel.

The Contractor shall provide all material, equipment, and facilities required for directional drilling. Proper alignment and elevation of the borehole shall be consistently maintained throughout the directional drilling operation. The method used to complete the directional drill shall conform to the requirements of all applicable permits.

The entire drill path shall be accurately surveyed with entry and exit stakes placed in the appropriate locations within the areas indicated on drawings. If Contractor is using a magnetic guidance system, drill path will be surveyed for any surface geo-magnetic variations or anomalies.

Contractor shall place silt fence between all drilling operations and any drainage, well-fields, wetland, waterway or other area designated for such protection necessary by documents, state,

federal and local regulations. Additional environmental protection necessary to contain any hydraulic or drilling fluid spills shall be put in place, including berms, liners, turbidity curtains and other measures. Fuel may not be stored in bulk containers within 200 feet of any water body or wetland.

Readings shall be recorded after advancement of each successive drill pipe, (no more than 15') and the readings plotted on a scaled drawing of 1" = 5', both vertical and horizontal. Access to all recorded readings and plan and profile information shall be made available to the Engineer, or his representative, at all times. At no time shall the deflection radius of the drill pipe exceed the deflection limits of the carrier pipe as specified herein.

A complete list of all drilling fluid additives and mixtures to be used in the directional operation will be submitted to the Engineer, along with their respective Material Safety Data Sheets. All drilling fluids and loose cuttings shall be contained in pits or holding tanks for recycling or disposal, no fluids shall be allowed to enter any unapproved areas or natural waterways. Upon completion of the directional drill project, the drilling mud and cuttings shall be disposed of by the Contractor at an approved dumpsite.

The pilot hole shall be drilled on bore path with no deviations greater than 5% of depth over a length of 100-feet. In the event that pilot does deviate from the bore path more than 5-feet of depth in 100-feet, Contractor will notify Engineer and Engineer may require Contractor to pullback and re-drill from the location along bore path before the deviation. In the event that a drilling fluid fractures, inadvertent returns or returns loss occurs during pilot hole drilling operations, Contractor shall cease drilling, wait at least 30 minutes, inject a quantity of drilling fluid with a viscosity exceeding 120 seconds as measured by a March funnel and wait another 30 minutes. If mud fracture or returns loss continues, Contractor will discuss additional options with the Engineer and work will then proceed accordingly.

Flange/MJ Adapter Installation: Flanges/MJ Adapters shall be attached to pipe and fittings using butt fusion. The flanges/MJ adapters shall be aligned and centered relative to the pipe. Flanges/MJ adapters should be square with the valve or other flange before tightening of bolts. Bolts should not be used to draw flanges into alignment. Bolt threads shall be lubricated, and flat washers shall be used under flange nuts. Bolts shall be tightened using a "star tightening pattern". See manufactures recommendations. Twenty-four hours after first tightening the flange bolts, they must be re-tightened using the same "star tightening patter" used above. The final tightening torque shall be as indicated by the manufacturer.

On each day butt fusions are to be made, the first fusion of the day shall be a trial fusion. The trial fusion shall be allowed to cool completely, then fusion test straps shall be cut out. The test strap shall be 12" or 30 times the wall thickness in length (minimum) and 1" or 1.5 times the wall thickness in width (minimum). Bend the test strap until the ends of the strap touch. If the fusion fails at the joint, a new trial fusion shall be made, cooled completely and tested. Butt fusion of pipe to be installed shall not commence until a trial fusion has passed the bent strap test.

Socket and saddle fusions shall be tested by a bent strap test as described by the pipe manufacturer.

The pipe manufacturer shall provide visual guidelines for inspecting the butt, saddle and socket fusions joints.

The Contractor shall be liable for retrieving or sealing any pipe that becomes lodged in the drill hole.

PIPE PULLING OPERATIONS

The full length of the pipe to be installed shall be laid out, welded and tested in one complete unit before being pulled back through the drilled hole. Once started, pipeline pullback shall be continuous unless approved otherwise in writing by the Owner or Owner's designated representative.

The pulling head shall be designed by the Contractor to withstand the continuous tensile pull stresses with intermittent sudden occasional surges. The Contractor shall be responsible for determining the pulling loads.

The pipe shall be continuously lubricated with a bentonite slurry and the assembled pipeline shall be laid on rollers, or other apparatus, to facilitate pullback and prevent damage to pipe.

The Contractor shall continue pull back until 10 linear feet (minimum) of pipe is above ground for the purpose of pipe inspection.

A blind flange shall be bolted to the fusion welded flange and the pipe shall be marked and buried with a minimum cover of 36-inches. Connections, which will be made under another contract, will require the removal of the blind flange and a flanged ductile iron adapter shall be bolted to the fusion welded flange suitable for the transitional material. Provide restrained joints or Megalug joint restraint as required.

TESTING

In addition to the water system testing requirements specified for the entire system, the Contractor shall conduct a low pressure air test of the HDPE reclaimed water and sewer force main above ground prior to pullback as follows:

1. Secure and brace ends of pipe to be tested.
2. Provide calibrated low range air pressure gauge on high end of pipe.
3. Fill pipe to maximum pressure of 20.0 psig. Add air as necessary to compensate for internal/external pipe temperature and initial pipe expansion. Check all pipe joints and test fittings with mild soap solution. Repair or replace all leaking joints, pipe and/or fittings.
4. Once air pressure has stabilized, pipe should hold constant air pressure for two hours. If pipe does not hold pressure, check all joints and test fittings with soap solution.
5. Repair or replace sources of leakage and completely retest entire section.

In addition to the water system testing requirements specified for the entire system, the Contractor shall conduct a hydrostatic test of the HDPE reclaimed water and sewer force main in-ground after

pullback as follows:

1. Flush the HDPE main with potable water to remove any sediment, solids and/or foreign material prior to any in place testing. Then, fill the pipe with potable water and after all free air is removed from the test section, raise the pressure at a steady rate to the required pressure. The pressure in the section shall be measured with calibrated pressure gauges at each end of the pipe section.
2. Test pressure shall be 150 psi. The initial pressure test shall be applied and allowed to stand without makeup water for a sufficient time to allow for diametric expansion or pipe stretching to stabilize. This usually occurs within 2-3 hours. After this equilibrium period, the test section can be returned to 150 psi operating pressure, the pump turned off, and a final test pressure held for three hours.
3. Immediately following the pressure test, the results shall be furnished to the Engineer or Inspector. Leaking pipes that cannot be repaired to meet pressure test must be removed, filled with concrete, or otherwise placed out of service.

DAMAGED OR IMPROPERLY INSTALLED PIPE

If the pipe is damaged before installation, or does not meet the specifications, it shall be replaced at no expense to the Owner. If the pipe is damaged during installation by the Contractor's operations, placed at the improper grade or line, or cannot be advanced because of an unseen obstruction or any other reason, it shall, at the discretion of the Engineer, be retrieved or abandoned in place and the void filled with concrete by pressure grouting as soon as possible. If it becomes necessary to drill another hole, an alternate installation shall be made as directed by the Engineer. The Contractor shall re-drill the hole and furnish all additional labor and materials required to complete the job as indicated on the plans and specifications at no additional cost to the Owner. The cost for retrieval or abandonment of pipe shall be at the expense of the Contractor. No additional payment shall be made for pipe which is retrieved, abandoned, or damaged beyond use, including dewatering, excavation, drilling, backfilling, etc.

Sections of pipe having been discovered with cuts or gouges in excess of 10% of the pipe wall thickness shall be cut out and removed. The undamaged portions of the pipe shall be rejoined using one of the joining methods allowed in the Section.

END OF SECTION

AGREEMENT FOR CONTRACTOR SERVICES
CITY OF CALLAWAY BOAT RACE ROAD/TYNDALL PARKWAY
WATER IMPROVEMENTS
BID NO: PW2020-07

This Agreement made as of this ___ day of, _____, 2020, by and between the **City of Callaway**, Florida - (the "CITY"), and _____ authorized to do business in the State of Florida (the "CONTRACTOR"), and whose address is _____, Phone: _____ Fax: _____.

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

ARTICLE 1 - SERVICES

The CONTRACTOR'S responsibility under this Agreement is to furnish, deliver, and construct all materials, labor, and equipment and to perform all operations in accordance with the plans and specifications and as listed in the Bid Form for the **CITY OF CALLAWAY BOAT RACE ROAD/TYNDALL PARKWAY WATER IMPROVEMENTS BID NO: PW2020-07.**

Services of the CONTRACTOR shall be under the general direction of the CITY MANAGER, who may designate a person to act as the CITY'S representative (hereinafter "REPRESENTATIVE") during the performance of this Agreement.

The CITY shall furnish to the CONTRACTOR up to four (4) sets of the Contract Documents for execution of the Work. Additional copies of the Contract Documents are available at the cost of reproduction.

ARTICLE 2 – SCHEDULE

The substantial completion date for this project will be 60 days from the date of the Notice to Proceed.

ARTICLE 3 - PAYMENTS TO CONTRACTOR

A. The CITY shall pay to the CONTRACTOR for services satisfactorily performed **$**_____, which includes all direct charges, indirect charges and reimbursable expenses, if any. The CONTRACTOR will bill the CITY monthly.

B. The invoices received from the CONTRACTOR pursuant to this Agreement will be reviewed and approved by the City Manager's office, indicating that services have been rendered in conformity with the Agreement, and then will be sent to the Finance Department for payment. The invoice must specify the work performed. Ten percent (10%) of each invoiced amount will be withheld and retained by the CITY until completion of the work to the satisfaction of the CITY.

C. In order for both parties herein to close their books and records, the CONTRACTOR will clearly state "final invoice" on the CONTRACTOR'S final/last billing to the CITY. This indicates that all services have been performed and all charges and costs have been invoiced to the CITY. Since this account will thereupon be closed, any and other further charges if not properly included on this final invoice shall be waived by the CONTRACTOR.

D. CONTRACTOR acknowledges that it has reviewed the scope of work and inspected the work site and does not anticipate having any CONTRACTOR requested change orders.

ARTICLE 4 - TERMINATION

This Agreement may be terminated by the CONTRACTOR on 60 days prior written notice to the CITY in the event of substantial failure by the CITY to perform in accordance with the terms hereof through no fault of the CONTRACTOR. It may also be terminated by the CITY, with or without cause, immediately upon written notice to the CONTRACTOR. Unless the CONTRACTOR is in breach of this Agreement, the CONTRACTOR shall be paid for services rendered to the CITY'S satisfaction through the date of termination. After receipt of a termination notice and except as otherwise directed by the CITY the CONTRACTOR shall:

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

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

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

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

ARTICLE 5 - PERSONNEL

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

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

The CONTRACTOR warrants that all services shall be performed by skilled and competent personnel to the highest professional standards in the field.

ARTICLE 6 - SUBCONTRACTING

The CITY reserves the right to accept the use of a subcontractor or to reject the selection of a particular subcontractor and to inspect all facilities of any subcontractors in order to make a determination as to the capability of the subcontractor to perform properly under this Agreement. The CONTRACTOR is encouraged to seek minority and women business enterprises for participation in subcontracting opportunities.

If a subcontractor fails to perform or make progress, as required by this Agreement, and it is necessary to replace the subcontractor to complete the work in a timely fashion, the CONTRACTOR shall promptly do so, subject to acceptance of the new subcontractor by the CITY.

ARTICLE 7 - FEDERAL AND STATE TAX

The CONTRACTOR shall be responsible for payment of its own FICA and Social Security benefits with respect to this Agreement and the personnel it employs.

ARTICLE 8 – INSURANCE & BONDS

A. The CONTRACTOR shall not commence work under this Agreement until it has obtained all insurance and bonds required under this paragraph and such insurance has been verified by the CITY.

B. All insurance policies shall be issued by companies authorized to do business under the laws of the State of Florida.

The CONTRACTOR shall maintain, during the life of this Agreement, comprehensive automobile liability insurance in the amount of $1,000,000 and $2,000,000 combined single limit for property damage and bodily injury liability covering claims which may arise from the ownership, use, or maintenance of owned and non-owned automobiles, including rented automobiles, whether such operations be by the CONTRACTOR or by anyone directly or indirectly employed by the CONTRACTOR. CONTRACTOR shall purchase and maintain a policy or policies of commercial general liability insurance satisfactory in all respects to CITY, and casualty and extended coverage insurance. All policies shall be occurrence form policies and shall name CITY as an additional insured, with the premium thereon fully paid by CONTRACTOR on or before their due date. The general liability insurance policy shall afford minimum protection of $1,000,000 and $2,000,000 combined single limit coverage for bodily injury.

Required insurance shall be documented in Certificates of Insurance which provide that CITY shall be notified at least 30 days in advance of cancellation, non-renewal or adverse change. New Certificates of Insurance are to be provided to CITY at least 15 days prior to coverage renewals. City of Callaway, Florida is to be named as an additional insured entity.

If requested by CITY, CONTRACTOR shall furnish complete copies of its insurance policies, forms and endorsements.

For commercial general liability coverage, CONTRACTOR shall, at the option of CITY, provide an indication of the amount of claims, payments or reserves chargeable to the aggregate amount of liability coverage.

Receipt of certificates or other documentation of insurance or policies or copies of policies by CITY, or by any of its representatives, which indicate less coverage than required does not constitute a waiver of CONTRACTOR'S obligation to fulfill the insurance requirements herein.

CONTRACTOR shall also purchase and maintain workers compensation insurance for all obligations imposed by law, with employer's liability limits of at least the statutory limit, or provide notarized affidavit of exemption listing relevant statutes. CONTRACTOR shall also purchase any other coverage required by law.

CONTRACTOR'S maintenance of the insurance policies required hereunder shall not limit or otherwise affect its liability hereunder.

C. In the event that a performance or payment bond is required due to use of grant funds for the project, by City Commission or as otherwise required, the CONTRACTOR shall not commence work under this Agreement until it has obtained the required bonds and provided such bonds to the CITY.

ARTICLE 9 - EXCUSABLE DELAYS

The CONTRACTOR shall not be considered in default by reason of any failure in performance if such failure arises out of causes reasonably beyond the CONTRACTOR'S control and without its fault or negligence. Such causes may include, but are not limited to: acts of God; the City's omissive and commissive failures; natural or public health emergencies; labor disputes; freight embargoes; and severe weather conditions. If failure to perform is caused by the failure of the CONTRACTOR'S subcontractor(s) and is without the fault or negligence of them, the CONTRACTOR shall not be deemed to be in default.

Upon the CONTRACTOR'S request, the CITY shall consider the facts and extent of any failure to perform the work and, if the CONTRACTOR'S failure to perform was without its fault or negligence as determined by the CITY, any affected provision of this Agreement shall be revised accordingly; subject to the CITY's rights to change, terminate, or stop any or all of the work at anytime.

ARTICLE 10 - LIQUIDATED DAMAGES

Liquidated damages shall be paid to the CITY at the rate of $500 per day for all work awarded under the contract until the work has been satisfactorily completed as provided by the Contract Documents. Sundays and Legal Holidays shall be excluded in determining days in default.

It is agreed that the amount is the per-diem rate for damage incurred by reason of failure to complete the work. The said amount is hereby agreed upon as the reasonable costs which may be accrued by the CITY after the expiration of the time of completion. It is expressly understood and agreed that this amount is not to be considered in the nature of a penalty, but as liquidated damages which have accrued against the CONTRACTOR. The CITY shall have the right to deduct such damages from any amount due, or that may become due the CONTRACTOR, or the amount of such damages shall be due and collectable from the CONTRACTOR or Surety.

ARTICLE 11 - ARREARS

The CONTRACTOR shall not pledge the CITY'S credit or make it a guarantor of payment or surety for any contract, debt, obligation, judgment, lien, or any form of indebtedness.

ARTICLE 12 - DISCLOSURE AND OWNERSHIP OF DOCUMENTS

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

All written and oral information not in the public domain or not previously known, and all information and data obtained, developed, or supplied by the CITY or at its expense will be kept confidential by the CONTRACTOR and will not be disclosed to any other party, directly or indirectly, without the CITY'S prior written consent.

Such information and data shall be and will remain the CITY'S property and may be reproduced and reused at the discretion of the CITY.

All products generated by the CONTRACTOR for the CITY become the property of the CITY. The CITY may require submission of any electronic file version of reports, data, maps, or other submission of documentation produced for or as a result of this project in addition to paper documents.

The CITY and the CONTRACTOR shall comply with the provisions of the Florida Public Records Law.

PUBLIC RECORDS LAW. CONTRACTOR acknowledges that it is familiar with the provisions of the Public Records Law of the State of Florida.

CONTRACTOR agrees to comply with Chapter 119, Florida Statutes, and specifically per Florida Statute 119.0701, CONTRACTOR agrees to keep and maintain public records that would be required by the City of Callaway in order to perform the services provided for in this Agreement; CONTRACTOR agrees to provide public access to any required public records in the same manner as a public agency; CONTRACTOR agrees to protect exempt or confidential records from disclosure; CONTRACTOR agrees to meet public records retention requirement; and CONTRACTOR agrees that at the end of term of this Agreement, to transfer all public records to the City of Callaway and destroy any duplicate exempt or confidential public records.

All products generated by the CONTRACTOR for the CITY become the property of the CITY. The CITY may require submission of any electronic file version of reports, data, maps or other submission of documentation produced for or as a result of this Bid/Proposal in addition to paper documents.

Further, in accordance with the Public Records Laws of the State of Florida, Section 119.0701, (2013), Contractor must:

A. Keep and maintain public records that ordinarily and necessarily would be required by the public agency in order to perform the service.

B. Provide the public with access to public records on the same terms and conditions that the public agency would provide the records and at a cost that does not exceed the cost provided in this chapter or as otherwise provided by law.

C. Ensure that public records that are exempt or confidential and exempt from public records are not disclosed except as authorized by law.

D. Meet all requirements for retaining public records and transfer, at no cost, to the public agency all public records in possession of the contractor upon termination of the contract and destroy any duplicate public records that are exempt or confidential and exempt from public record disclosure requirements. All records stored electronically must be provided to the public agency in a format that is compatible with the information technology systems of the public agency.

E. If a contractor does not comply with a public records request, the public agency shall enforce the contract provision in accordance with the contract.

All covenants, agreements, representations, and warranties made herein, or otherwise made in writing by any party pursuant hereto shall survive the execution and delivery of this Agreement and the consummation of the transactions contemplated hereby.

If the CONTRACTOR has questions regarding the application of Chapter 119, Florida Statutes, to the CONTRACTOR'S duty to provide public records relating to this contract, contact the custodian of public records, Janice Peters, City Clerk, at 850-215-6694, by email at jpeters@cityofcallaway.com, or via mail, at 6601 E. Hwy. 22, Callaway, FL 32404.

ARTICLE 13 - INDEPENDENT CONTRACTOR RELATIONSHIP

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

The CONTRACTOR does not have the power or authority to bind the CITY in any promise, agreement or representation.

The CONTRACTOR shall hold the CITY, its officers, agents and employees harmless and free from any loss, damage or expense arising out of any occurrence relating to this Agreement or its performance and shall indemnify the CITY, its officers, agents and employees, customers, and successors against any damage or claim of any type arising from the negligent or intentional acts or omission of the CONTRACTOR.

ARTICLE 14 - CONTRACT ASSIGNMENT

The CONTRACTOR shall not sublet, sell, transfer, assign or otherwise dispose of the CONTRACT or any portion thereof, or of his right, title, or interest therein, without written consent of the CITY. The CONTRACTOR shall complete the work contemplated by the terms and conditions of this Agreement in an amount equivalent to at least 50 percent (50%) of the dollar value of work to be performed under this Contract utilizing its own business or corporate entity, so that no single labor, material man, or subcontractor shall be permitted to perform more than 50% of the work contemplated by this Contract.

ARTICLE 15 - AMENDMENT

None of the provisions, terms and conditions contained in this Agreement may be added to, modified, superseded or otherwise altered, except by a written instrument executed by the parties hereto.

ARTICLE 16 - ENFORCEMENT COSTS

If any legal action or other proceeding is brought for the enforcement of this Agreement, or because of an alleged dispute, breach, default, or misrepresentation in connection with any provision, the successful or prevailing party or parties shall be entitled to recover reasonable attorney's fees, court costs and all expenses even if not taxable as court costs (including, without limitation, all such fees, costs and expenses incident to appeals), incurred in that action or proceeding, in addition to any other relief to which such party or parties may be entitled.

ARTICLE 17 - AUTHORITY TO PRACTICE

The CONTRACTOR hereby represents and warrants that it has and will continue to maintain all licenses and approvals required to conduct its business, and that it will at all times conduct its business activities in a reputable manner.

ARTICLE 18 - SEVERABILITY

If any term or provision on this Agreement, or the application thereof to any person or circumstances shall, to any extent, be held invalid or unenforceable, the remainder of this Agreement, or the application of such

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

ARTICLE 19 - CITY'S REPRESENTATIVE AND AUTHORITY

The person designated by the CITY MANAGER shall serve as the CITY'S REPRESENTATIVE and shall decide questions which may arise as to quality and acceptability of materials furnished and work performed, and shall interpret the intent of the Contract Documents with reasonable promptness.

The REPRESENTATIVE will not be responsible for the construction means, controls, techniques, sequences, procedures, or construction safety.

The REPRESENTATIVE may assign Project Inspector(s) who shall serve to assist the REPRESENTATIVE in determining if the work performed and the materials used meet the Contract requirements. The Project Inspector shall be authorized to issue Field Orders. The Project Inspector shall be authorized to stop all or any portion of the work if in his opinion the work is not proceeding according to the requirements of the plans and specifications.

ARTICLE 20 - MODIFICATION

The CITY reserves the right to make changes in the work, including alterations, reductions therein or additions thereto. Upon receipt by the CONTRACTOR of the CITY'S notification of a contemplated change, the CONTRACTOR shall (1) if requested by CITY, provide an estimate for the increase or decrease in cost due to the contemplated change, (2) notify the CITY of any estimated change in the completion date, and (3) advise the CITY in writing if the contemplated change shall affect the CONTRACTOR'S ability to meet the completion dates or schedules of this Agreement.

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

If the CITY elects to make the change, the CITY shall issue a contract amendment or change order and the CONTRACTOR shall not commence work on any such change until such written amendment or change order has been issued and signed by each of the parties.

ARTICLE 21 - CONTRACT DOCUMENTS

The other documents which comprise the entire Agreement are attached hereto, made a part hereof and consist of the following:

A. Advertisement for Bids,
B. Special Instructions and Conditions,
C. General Instructions and Conditions,
D. Minimum Technical Specifications,
E. Bid Forms
   - Bid Certification Form
   - Drug-Free Workplace Certification
   - Public Entity Crimes Statement
   - Anti-Collusion Clause
   - Proprietary/Confidential Information Disclosure
G. Addenda (if any),
H. Performance & Payments Bonds,
I. Change Orders (if any),
J. Notice of Award,
K. Engineered Drawings, if required.

In the event of a conflict between the terms of the above documents and the terms of this Agreement, the terms of this Agreement shall prevail.

There are no contract documents other than those listed above and there are no promises or understandings other than those stated herein.

ARTICLE 22 - VENUE

All applicable laws, regulations and ordinances of the State of Florida, Bay County and the City of Callaway will apply to consideration and award of any Bid/Proposal and the performance of the bidder/proposal pursuant thereto, and shall be governed by the laws of the State of Florida both as to intention and performance. The venue for any action arising from the award or subsequent performance shall lie exclusively in the Circuit Court of Bay County, Florida, or the United States District Court for the Northern District of Florida, as applicable.

ARTICLE 23 - NOTICE

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

City of Callaway
6601 East Hwy. 22
Callaway, Florida 32404
Attention: Janice L. Peters, City Clerk
Phone: (850) 215-6694
Fax: (850) 871-2224
Email: jpeters@cityofCallaway.com

With a copy to: Kevin D. Obos, Esq. City Attorney
Hand Arendall Harrison Sale
P.O. Drawer 1579
Panama City, FL 32402
Phone: (850) 769-3434
Fax: (850) 769-6121

and if sent to the CONTRACTOR shall be mailed to:

_____

_____

_____

_____

Either party may change its address noted above by giving written notice to the other party in accordance with the requirements of the Section.

This Agreement is entered into as of the day and year first written above and is executed in at least two original copies of which one is to be delivered to the CONTRACTOR, and one to the CITY CLERK for filing in the official records.

CITY CLERK

Attest: _____
Janice L. Peters, MMC
City Clerk

Contractor Witnesses:
(2 REQUIRED)

Witness: _____
Name

_____
Signature

Witness: _____
Name

_____
Signature

CITY OF CALLAWAY, FLORIDA

By: _____
Eddie Cook, City Manager

Contractor:

_____
Business Name

By: _____
Signature

_____
Print Name and Title

APPROVED AS TO FORM FOR THE RELIANCE OF THE CITY OF CALLAWAY ONLY:

_____
KEVIN D. OBOS, CITY ATTORNEY
HAND ARENDALL HARRISON SALE

PROPOSAL CHECKLIST

CITY OF CALLAWAY
BOAT RACE ROAD/TYNDALL PARKWAY
WATER IMPROVEMENTS
BID NO: PW2020-07

FORMS/ITEMS TO BE RETURNED WITH YOUR PROPOSAL!

The following forms are to be completed/signed by the Proposer and submitted to the City:

1. Bid/RFP Certification Form(s),
2. One (1) unbound set of bid packet with original notarized signatures, plus three (3) copies
3. Bid Bond or Cashier's Check/Certified Check in the amount of 5% of bid,
4. Proof of Insurance in amounts required by the City with the City listed as Certificate Holder and Additionally Insured (See Special Instructions & Conditions),
5. State of Florida or Bay County Contractor License or Certificate
6. Public Entity Crime Statement, [Complete items 1 and 6; notarized signature required]
7. Drug-Free Workplace Certification Form, [Complete Part I; notarized signature, or sign Part II]
8. List of Subcontractors with names of directors or owners, addresses, telephone numbers, and email address (if applicable),
9. List of references for similar type work with contact information.
10. Proprietary/Confidential Information Form
11. Anti-Collusion Clause Form

Note: Incomplete Bid/Proposal submissions may not be accepted/considered. Do not modify the forms! Any additional information you desire to present may be included as an attachment.

Reminder: Submit requested number of copies! (See Special Instructions and Conditions)

BID/RFP CERTIFICATION FORM
CITY OF CALLAWAY
BOAT RACE ROAD/TYNDALL PARKWAY WATER IMPROVEMENTS
BID NO: PW2020-07

PROPOSERS CERTIFICATION TO THE CITY OF CALLAWAY:

1. The undersigned warrants that: (A) This Proposal is submitted in response to, and is in compliance with, all terms and conditions applicable thereto as set forth in the Advertisement, Instructions to Proposers, General Instructions and Conditions, Special Instructions and Conditions, Bid/RFP Certification Forms, the Minimum Technical Specifications, Addendum, Exhibits, Agreement, Bonds, and Insurance Requirements, each of which has been carefully examined, (B) Proposer or Proposer's representative has made such investigation as is necessary to determine the character and extent of the work and their capability to perform the work, and (C) agrees that if the Proposal is accepted by the City, Proposer will provide the necessary labor, materials, machinery, equipment, tools or apparatus, and perform all the work or services required to complete the assignment and/or contract within the time specified according to the requirements of the City as herein and hereinafter set forth, and (D) he/she is authorized to legally execute binding contracts for and on behalf of the Proposer.

2. Please check one:
   - ☐ Proposer declares that the only person, persons, company, or parties interested in this Proposal are named in the Proposal.

   - ☐ Proposer, or one or more of Proposer's officers, principals, or any owner of more than 5% in or of proposer, or members of their immediate families: (A) have a financial interest in another company, project, or property that could benefit financially from this proposed project; and/or (B) another individual or business will be compensated by (or on behalf of proposer) if Proposer is selected by the City for the requested services. (Attach a detailed explanation for either.)

3. Bid Bond - If the Proposal is accepted by the City, it will become a binding contract on both parties. If a Bid Bond or Cashier's Check/Certified Check is required, it shall be submitted with the Proposal. If the undersigned shall fail to deliver or perform, or if applicable, execute a Contract as stated herein, then the City may, at its option, determine that the undersigned has abandoned the Award/Contract, and thereupon such Bid and/or Award shall be null and void, and any Cashier's Check/Certified Check or Bond accompanying this Bid shall be forfeited to and become the property of the City, and the full amount of said check, or if a Bid Bond, the full amount of such bond, shall be paid to the City as partial liquidated damages; otherwise, any Bond or Cashier's Check/Certified Check accompanying this Bid shall be returned to the undersigned within 30 calendar days from the date of Award, or if provisions for a Notice to Proceed are included, from the date of the Notice to Proceed.

4. Vendor proposes and agrees to provide all materials, services or equipment required for the City of Callaway **BOAT RACE ROAD/TYNDALL PARKWAY WATER IMPROVEMENTS BID NO: PW2020-07**, for the Total Sum(s) as follows: (*Totals must match breakdown of costs for each part on next page.)* Dollar Amount ($_____)
   Written Amount: _____

5. Number of days from date of the Notice to Proceed that will be required for the final completion of all work as described herein.

   _____
   (Maximum 60 Calendar Days)

6. The City reserves the right to accept any or all prices itemized in any combination that best serves the interests of the City. The City further reserves the right to accept or reject any of the components of this Proposal, including alternates.

BOATRACE ROAD WATERMAIN IMPROVEMENTS
6-INCH MAIN
BASE BID ITEMS

ITEM	DESCRIPTION	QTY	UNIT	UNIT PRICE	TOTAL COST
A.	**GENERAL COSTS**				
1.	Mobilization (5%)	1	LS	$_____	$_____
2.	Layout	1	LS	$_____	$_____
3.	Erosion Control	1	LS	$_____	$_____
4.	Bonds & Insurance (4%)	1	LS	$_____	$_____
5.	Testing	1	LS	$_____	$_____
6.	MOT	1	LS	$_____	$_____
				GENERAL COST SUBTOTAL A:	**$_____**
B.	**SITE IMPROVEMENTS**				
1.	6" PVC Watermain	1200	LF	$_____	$_____
2.	6" FPVC Bore with Transition Fittings	450	LF	$_____	$_____
3.	6" Gate Valve	2	EA	$_____	$_____
4.	6" Tapping Saddle & Valve	2	EA	$_____	$_____
5.	6" Cap	2	EA	$_____	$_____
6.	6" 45 Degree Bend	2	EA	$_____	$_____
7.	6" Tee	2	EA	$_____	$_____
8.	6"x2" Reducer	1	EA	$_____	$_____
9.	Water Service Connections	4	EA	$_____	$_____
10.	Fire Hydrant	2	EA	$_____	$_____
11.	Driveway/Roadway Restoration	1	LS	$_____	$_____
12.	Demo/Restoration	1	LS	$_____	$_____
				SITE IMPROVEMENTS SUBTOTAL B:	**$_____**
				Contingency (5%)	$_____
				Surveying	$_____
				Engineering & Permitting	$_____
				Deliverables	$_____
				Construction Phase Services	$_____
				TOTAL ESTIMATED COST	**$_____**

7. BIDDER HEREBY ACKNOWLEDGES RECEIPT OF THE FOLLOWING ADDENDUMS: _____

Name of Bidder: _____

Business structure: ( ) Corporation, ( ) Partnership, ( ) Individual, ( ) Other: _____

If a Partnership: _____

Name(s) of Partner(s):_____

If a Corporation: _____

Incorporated in State of: _____ Date of Incorporation: _____

Business Address: _____

City:_____ State_____ Zip _____

Telephone Number: ( ) _____Fax ( ) _____

E-mail Address: _____

Submitted By: _____ Affix Corporate Seal
(Print) (If Corporation)

Title:_____

Signature: _____

ATTEST: _____

Secretary

By: _____
Print Name

State of Florida
County of _____

The foregoing instrument was acknowledged before me by means of ☐ Physical Presence or ☐ Online Notarization

The foregoing instrument was acknowledged before me this ___ day of _____, 20__, by _____, who is personally known to me or who presented _____ as identification, and who (did) (did not) take an oath.

_____ _____
[Signature of Notary Public] [Printed, typed or stamped name of Notary Public)

NOTE: BIDS MAY BE REJECTED IF ALL DOCUMENTS ARE NOT COMPLETE AND EXECUTED, AND THE NUMBER OF COPIES SPECIFIED/REQUESTED OF EACH ARE NOT SUBMITTED WITH THE BID.

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

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

1. This sworn statement is submitted to ***City of Callaway, Florida, a Municipal Corporation, 6601 East Hwy. 22, Callaway, Florida 32404*** by_____
[print individual's name and title]

for_____ whose business
[print name of entity submitting sworn statement]

address is_____

_____and (if applicable) it's Federal Identification Number

(FEIN) is_____ (If the entity has no FEIN, include the Social Security

Number of the individual signing this sworn statement_____)

2. I understand that a "public entity crime" as defined in Paragraph 287.133(1)(g), **Florida Statutes,** means a violation of any state or federal law by a person with respect to and directly related to the transaction of business with any public entity or with an agency or political subdivision of any other state or of the United States, including, but not limited to, any bid or contract for goods or services to be provided to any public entity or any agency or political subdivision of any other state or of the United States and involving antitrust, fraud, theft, bribery, collusion, racketeering, conspiracy, or material misrepresentation.

3. I understand that "convicted" or "conviction" as defined in Paragraph 287.133(1)(b), **Florida Statutes,** means a finding of guilt or a conviction of a public entity crime, with or without an adjudication of guilt, in any federal or state trial court of record relating to charges brought by indictment or information after July 1, 1989, as a result of a jury verdict, non-jury trial, or entry of a plea of guilty or nolo contendere.

4. I understand that an "affiliate" as defined in Paragraph 287.133(1)(a), **Florida Statutes,** means:

   a. A predecessor or successor of a person convicted of a public entity crime; or

   b. An entity under the control of any natural person who is active in the management of the entity and who has been convicted of a public entity crime. The term "affiliate" includes those officers, directors, executives, partners, shareholders, employees, members, and agents who are active in the management of an affiliate. The ownership by one person of shares constituting a controlling interest in another person, or a pooling of equipment or income among persons when not for fair market value under an arm's length agreement, shall be a prima facie case that one person controls another person. A person who knowingly enters into a joint venture with a person who has been convicted of a public entity crime in Florida during the preceding 36 months shall be considered an affiliate.

5. I understand that a "person" as defined in Paragraph 287.133(1)(e), **Florida Statutes,** means any natural person or entity organized under the laws of any state or of the United States with the legal power to enter into a binding contract and which bids or applies to bid on contracts for the provision of goods or services let by a public entity, or which otherwise transacts or applies to transact business with a public entity. The term "person" includes those officers, directors, executives, partners, shareholders, employees, members, and agents who are active in management of an entity.

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

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

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

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

I UNDERSTAND THAT THE SUBMISSION OF THIS FORM TO THE CONTRACTING OFFICER FOR THE PUBLIC ENTITY IDENTIFIED IN PARAGRAPH 1 (ONE) ABOVE IS FOR THAT PUBLIC ENTITY ONLY AND, THAT THIS FORM IS VALID THROUGH DECEMBER 31 OF THE CALENDAR YEAR IN WHICH IT IS FILED. I ALSO UNDERSTAND THAT I AM REQUIRED TO INFORM THE PUBLIC ENTITY PRIOR TO ENTERING INTO A CONTRACT IN EXCESS OF THE THRESHOLD AMOUNT PROVIDED IN SECTION 287.017, FLORIDA STATUTES FOR CATEGORY TWO OF ANY CHANGE IN THE INFORMATION CONTAINED IN THIS FORM.

_____ PW2020-07

[signature] **[Reference: RFP Number]**

Sworn to and subscribed before me this ___ day of _____, 20__. Personally known _____ or produced identification _____.

[Type of identification]

The foregoing instrument was acknowledged before me by means of ☐ Physical Presence or ☐ Online Notarization

Notary Public - State of _____

My Commission expires: _____

_____

[Signature of Notary]

_____

[Printed, typed or stamped commissioned name of Notary Public]

CITY OF CALLAWAY
DRUG-FREE WORKPLACE CERTIFICATION

Please complete Part I or Part II as applicable.

In order to be given preference in the award process for having implemented a drug-free workplace program prior to the Bid/Proposal submission date, the Bidder/Proposer is requested to certify that as part of their drug-free workplace program, they have:

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

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

3. Given each employee engaged in providing the commodities or contractual services that are under bid a copy of the statement specified in Subsection 1.

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

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

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

Part I - PROGRAM IMPLEMENTED

I certify that I/we have established a drug-free workplace program meeting the foregoing minimum requirements.

_____ _____

[Printed, typed name] [Signature]

State of Florida
County of _____

The foregoing instrument was acknowledged before me this ____ day of _____, 20__, by_____, who appeared by means of ☐ Physical Presence or ☐ Online Notarization, is personally known to me or who presented _____ as identification, and who (did) (did not) take an oath.

_____ _____

[Signature of Notary Public] [Printed, typed or stamped name of Notary Public]

_____

[Commission Number of Notary Public]

Part II - PROGRAM NOT IMPLEMENTED

A program meeting the above stated requirements has not been established or has not been fully implemented prior to Bid/Proposal closing date, and therefore I/we are not eligible for certification as a drug-free workplace.

_____ _____

[Signature] [Date]

PROPRIETARY/CONFIDENTIAL INFORMATION
CITY OF CALLAWAY BOAT RACE ROAD/TYNDALL PARKWAY WATER IMPROVEMENTS
BID NO. PW2020-07

Name of Firm of Bidder/Vendor: _____

Trade secrets or proprietary information submitted by a Vendor shall not be subject to public disclosure under the Freedom of Information Act; however, the Vendor must invoke such protections provided by state law, in writing, either before or at the time the data or other material is submitted. The written notice must specifically identify the data or materials to be protected, including the section of the proposal in which it is contained, as well as the page number(s), and state the reasons why protection is necessary. The proprietary or trade secret material submitted must be identified by some distinct method such as highlighting or underlining and must indicate only the specific words, figures, or paragraphs that constitute a trade secret or proprietary information. In addition, a summary of proprietary information provided shall be submitted on this form. The designation of an entire proposal document, line item prices, and/or total proposal prices as proprietary or trade secrets is not acceptable. If, after being given reasonable time, the Vendor refuses to withdraw such a classification designation, the proposal will be rejected.

SECTION/TITLE	PAGE NUMBER(S)	REASON(S) FOR WITHHOLDING FROM DISCLOSURE

☐ **Check this box if there are none.**

This document must be completed and returned with proposal.

CITY OF CALLAWAY
BOAT RACE ROAD/TYNDALL PARKWAY
WATER IMPROVEMENTS
BID NO. PW2020-07

CERTIFICATE OF COMPLIANCE WITH THE FLORIDA TRENCH SAFETY ACT

Bidder acknowledges sole responsibility for complying with the Florida Trench Safety Act (Act) and Occupational Safety and Health Administration's excavation safety standard 29 CFR 1926.650 (Subpart P as amended). Bidder further acknowledges that included in the various items of the proposal and in the Grand Total Base Bid Price are costs for complying with the Florida Trench Safety Act (90-96, Laws of Florida) effective October 1, 1990. The bidder further identifies the costs to be summarized below:

	Trench Safety Method (Description)	Units of Measure (LF, SY)	Unit (Quantity)	Unit Cost	Extended Cost
A.					
B.					
C.					
D.					

Total: $ _____

Failure to complete the above may result in the bid being declared non-responsive. The costs indicated above are provided to comply with the Act and shall not constitute grounds for any additional compensation to that listed for the separate line items of the Bid Form.

By: _____

Bidder _____

Date _____

_____

Authorized Signature

CITY OF CALLAWAY
BOAT RACE ROAD/TYNDALL PARKWAY
WATER IMPROVEMENTS
BID NO. PW2020-07

ANTI-COLLUSION CLAUSE FORM

The award of a bid or acceptance of proposal is subject to Chapter 112, Florida Statutes*. All Bidders/Proposers must disclose with their Bid/Proposal the name of any officer, director, or agent who is a city official or employee, or a member of an official's or employee's immediate family. Further, Bidders/Proposers must disclose the name of any city official or employee, or a member of an official's or employee's immediate family, who owns directly or indirectly an interest of ten percent (10%) or more in the bidder's/proposer's firm or related business.

CERTIFICATION

☐ I declare that I do not have any matters which might give rise to a real or perceived conflict of interest.

☐ I hereby disclose that the following named person(s) is an Officer, Director, or Agent who is also a City Official, Employee, or member of a City Official or Employee's immediate family and could pose a possible conflict of interest:

Name: _____

Affiliation: _____

By signing below, I affirm that I have read and understood the principles of conflict of interest disclosure and I have made full disclosure of all matters that may put me in a conflict of interest situation in performing my role.

I acknowledge that non-disclosure could result in action being taken to terminate my work with the City of Callaway and potentially bar me from submissions of Bids/RFPs in the future.

_____
Signature

_____
Printed Name

_____
Company

Project/Bid/RFP Number: _____ Date: _____

*Florida Statutes Chapter 112.311(5) It is hereby declared to be the policy of the state that no officer or employee of a state agency or of a county, city, or other political subdivision of the state, and no member of the Legislature or legislative employee, shall have any interest, financial or otherwise, direct or indirect; engage in any business transaction or professional activity; or incur any obligation of any nature which is in substantial conflict with the proper discharge of his or her duties in the public interest.

CONSTRUCTION PLANS FOR:

BOAT RACE ROAD / TYNDALL PARKWAY WATER IMPROVEMENTS

PREPARED FOR:

CITY OF CALLAWAY

BAY COUNTY, FLORIDA

PREPARED BY:

Dewberry®

Dewberry Engineers Inc.
203 Aberdeen Pkwy, Panama City, FL 32405
(850) 522-0644

PROJECT NUMBER - 50093563

MAY, 2020

48 HOURS
BEFORE YOU DIG
CALL SUNSHINE ONE
1-800-432-4770
www.callsunshine.com

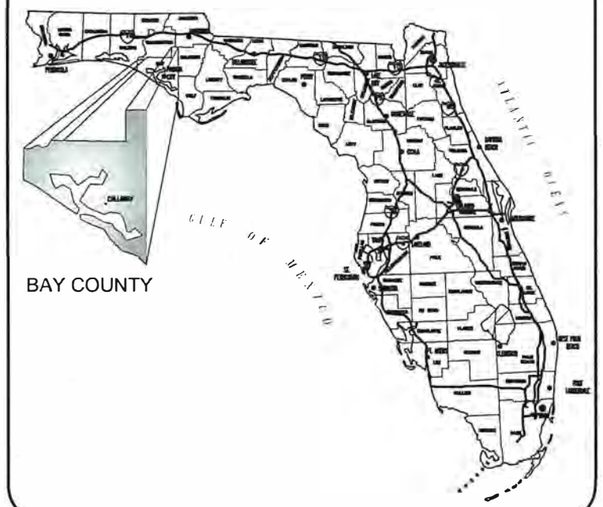
PERMITTING SET
NOT FOR CONSTRUCTION

REV NO.	REV. DATE	REVISION DESCRIPTION	RELEASED TO	RELEASE DATE
1				
2				
3				
4				
5				

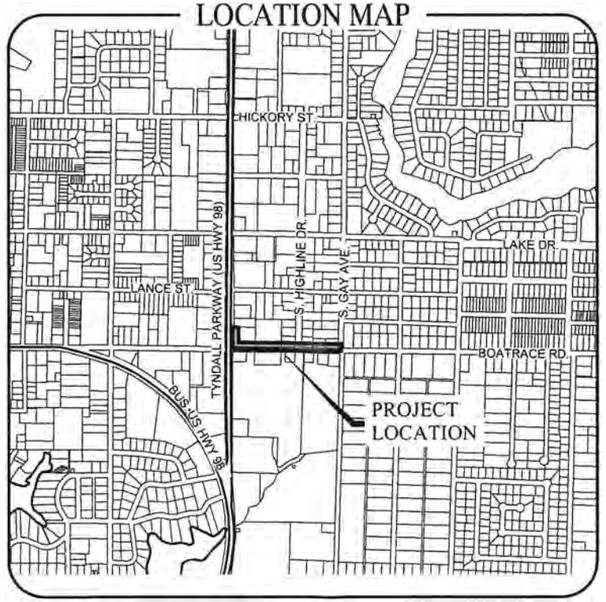
CITY OFFICIALS

PAMN HENDERSON	MAYOR
SCOTT DAVIS	COMMISSIONER - WARD I
DAVID GRIGGS	COMMISSIONER - WARD II
BOB PELLETIER	COMMISSIONER - WARD III
FRANK MANCINELLI	COMMISSIONER - WARD IV
EDDIE COOK	CITY MANAGER
BILL FRYE	PUBLIC WORKS DIRECTOR

VICINITY MAP



LOCATION MAP



DRAWING INDEX

May 11, 2020 (09:41:40 EST)
K:\50093563_CITY OF CALLAWAY_BOATRACE RD TYNPKWY_CIVIL\3DFOLDER_PRODUCTION\50093563_COVER.DWG COVER BY:HLASSIK

GENERAL NOTES:

1. THE BENCHMARK DATUM USED FOR THE PLANS IS NAVD88.
2. ANY PUBLIC LAND CORNER OR MONUMENT THAT PERPETUATES BAY COUNTY WITHIN THE PROJECT LIMITS IS TO BE PROTECTED BY THE CONTRACTOR. IF A MONUMENT IS IN DANGER OF BEING DESTROYED THE CONTRACTOR IS TO ENSURE THAT IT IS PROPERLY REFERENCED AND RESET PRIOR TO PROJECT COMPLETION. THE MONUMENTS SET SHALL MEET MINIMUM TECHNICAL STANDARDS AS DEFINED IN 61G17, F.A.C. AND CURRENT BAY COUNTY SURVEYING STANDARDS.
3. ANY PROJECT CONTROL MONUMENT THAT IS WITHIN THE LIMITS OF CONSTRUCTION IS TO BE PROTECTED. IF A MONUMENT IS IN DANGER OF BEING DESTROYED AND HAS NOT BEEN PROPERLY REFERENCED, THE PROJECT ADMINISTRATOR SHOULD NOTIFY THE BAY COUNTY SURVEYOR, ROB ZIERDEN, WITHOUT DELAY, BY TELEPHONE 850-248-8301.
4. THE CONTRACTOR IS TO MAINTAIN AND KEEP STREET NAME IDENTIFICATION (STREET SIGNS) VISIBLE DURING CONSTRUCTION OPERATIONS, IN ORDER TO FACILITATE EMERGENCY VEHICLE TRAFFIC.
5. THE CONTRACTOR SHALL NOT BRING ANY HAZARDOUS MATERIALS ONTO THE PROJECT. SHOULD THE CONTRACTOR REQUIRE SUCH MATERIALS FOR PERFORMING THE CONTRACTED WORK, THE CONTRACTOR SHALL REQUEST, IN WRITING, WRITTEN PERMISSION FROM THE PROJECT ADMINISTRATOR. THE CONTRACTOR SHALL PROVIDE THE PROJECT ADMINISTRATOR WITH A COPY OF THE MATERIAL SAFETY DATA SHEET (MSDS) FOR EACH HAZARDOUS MATERIAL PROPOSED FOR USE. THE CONSTRUCTION PROJECT ADMINISTRATOR SHALL COORDINATE WITH THE ENGINEER OF RECORD PRIOR TO ISSUING WRITTEN APPROVAL TO THE CONTRACTOR. SINCE STATE LAW DOES NOT TREAT PETROLEUM PRODUCTS THAT ARE PROPERLY CONTAINERIZED AND INTENDED FOR EQUIPMENT USE AS A HAZARDOUS MATERIAL, SUCH PRODUCTS DO NOT NEED A MSDS SUBMITTAL.
6. ANY KNOWN OR SUSPECTED HAZARDOUS MATERIAL FOUND ON THE PROJECT SHALL IMMEDIATELY BE REPORTED TO THE CONSTRUCTION PROJECT ADMINISTRATOR WHO SHALL DIRECT THE CONTRACTOR TO PROTECT THE AREA OF KNOWN OR SUSPECTED CONTAMINATION FROM FURTHER ACCESS. THE CONSTRUCTION PROJECT ADMINISTRATOR IS TO NOTIFY THE PROJECT MANAGER OF DISCOVERY. THE PROJECT MANAGER WILL ARRANGE AN INVESTIGATION, IDENTIFICATION AND REMEDIATION OF THE HAZARDOUS MATERIAL. THE CONTRACTOR SHALL NOT RETURN TO THE AREA OF CONTAMINATION UNTIL APPROVAL IS PROVIDED BY THE CONSTRUCTION PROJECT ADMINISTRATOR.
7. THE CONTRACTOR SHALL DISPOSE OF ALL DEBRIS UPON COMPLETION OF THE PROJECT.
8. UPON COMPLETION OF THE WORK, ALL MATERIALS AND DEBRIS SHALL BE REMOVED AND ELEVATIONS IN THE WORK AREAS SHALL BE GRADED TO RESEMBLE THE ADJACENT NATURAL AREAS.
9. THE CONTRACTOR SHALL NOTIFY UTILITY OWNERS THROUGH SUNSHINE ONE CALL OF FLORIDA, INC. TWO BUSINESS DAYS IN ADVANCE OF BEGINNING CONSTRUCTION ON THE JOB SITE. CALL 1-800-432-4770 AND 811 (NATIONWIDE TOLL FREE UTILITY LOCATE). THE LOCATION OF THE UTILITIES SHOWN ON THE PLANS ARE APPROXIMATE ONLY. THE EXACT LOCATION SHALL BE DETERMINED BY THE CONTRACTOR DURING CONSTRUCTION.
10. ALL DETECTABLE WARNING MATS SHALL EXTEND THE FULL WIDTH OF THE LANDING AREA AND SHALL BE OF A MINIMUM TWO FOOT WIDTH. ALL DETECTABLE WARNINGS SHALL BE IN ACCORDANCE WITH FDOT INDEX 304 AND SHALL BE REPLACEABLE COMPOSITE (WET-SET) TACTILE OR CAST-IN-PLACE COMPOSITE TACTILE (BY ADA SOLUTIONS, INC. OR APPROVED EQUAL). COLOR YELLOW.
11. ALL FILL MATERIAL SHALL BE SELECT FILL. SELECT SAND FILL NOT TO EXCEED 8% PASSING -200.
12. SWEEPING SHALL OCCUR DAILY OR AFTER SUCH EVENTS AS CAUSE TRACKING ONTO STREET.
13. INFORMATION SHOWN ON THE PLANS CONCERNING THE TYPE AND LOCATION OF UNDERGROUND AND OVERHEAD UTILITIES IS BASED ON DATA PROVIDED BY UTILITY OWNERS, AVAILABLE RECORDS, AND FIELD SURVEYS. THE PLANS MAY NOT SHOW ALL UTILITIES WITHIN PROJECT LIMITS, EITHER ACTIVE OR PLACED OUT-OF-SERVICE, OR THAT SAID UTILITIES ARE ACTUALLY IN THE HORIZONTAL OR VERTICAL POSITIONS SHOWN IN THE PLANS. DETERMINE THE TYPE AND LOCATION OF ALL UTILITIES TO ESTABLISH THEIR LOCATIONS AND TO AVOID DAMAGE TO UNDERGROUND UTILITIES.
14. THE CONTRACTOR SHALL TAKE WHATEVER PRECAUTIONS NECESSARY TO AVOID TRESPASSING AND DAMAGING PRIVATE PROPERTY.
15. ALL CONSTRUCTION SHALL CONFORM WITH FDEP, FDOT AND CITY OF CALLAWAY STANDARDS AND SPECIFICATIONS.

UTILITY GENERAL NOTES:

1. ALL MAINS SHALL BE INSTALLED ACCORDING TO ENGINEERING PLANS AND SPECIFICATIONS.
2. ALL UTILITY WORK (WATER, SEWER, RECLAIMED WATER, IRRIGATION) MUST BE IN PLACE PRIOR TO PAVING OPERATIONS.
3. ALL VALVES AND MATERIALS SHALL COMPLY WITH AWWA (AMERICAN WATER WORKS ASSOCIATION) STANDARDS, LATEST EDITION.
4. ALL MAIN LINE VALVES SHALL BE RESILIENT SEATED GATE VALVES.
5. THE CONTRACTOR WILL BE REQUIRED TO REMOVE AND REPLACE ITEMS ENCOUNTERED IN THE FIELD, I.E. SIGNS, FENCING, POST, ETC..
6. MAINS SHALL HAVE A MINIMUM OF 36" COVER UNLESS APPROVED BY ENGINEER.
7. CONTRACTOR IS TO FURNISH "AS BUILT PLANS" INDICATING LOCATIONS OF ALL FITTINGS, VALVES, AND DEAD END RUNS WITH THREE (3) PHYSICAL FEATURES (LOT CORNERS, TREES, ETC.)
8. ALL WATER MAINS SHALL BE DISINFECTED IN ACCORDANCE WITH AWWA C651. PRESSURE TESTING SHALL BE IN ACCORDANCE WITH AWWA C600.
9. CONTRACTOR SHALL NOTIFY AND COORDINATE WITH ENGINEER 48 HOURS PRIOR TO PRESSURE TESTING, DISINFECTION, AND BACTERIOLOGICAL TESTING. PRESSURE TESTING SHALL BE VALVE TO VALVE. CONTRACTOR SHALL USE 2" AIR RELEASE VALVE PORTS OR SHALL TAP THE WATER MAIN WITH A 1" TAPPING SADDLE.
10. BASE AND BACKFILL MATERIALS SHALL BE EITHER OF THE SAME TYPE AND COMPOSITION AS THE MATERIALS REMOVED, OR OF EQUAL OR GREATER STRUCTURAL ADEQUACY. MATERIALS CONTAMINATED WITH DELETERIOUS SUBSTANCES DURING EXCAVATION SHALL NOT BE USED FOR FILL.
11. CONTRACTOR SHALL BE RESPONSIBLE FOR ALL FITTINGS, TAPS, EQUIPMENT AS REQUIRED FOR FLUSHING SYSTEM, PRESSURE TESTING, DISINFECTION, AND BACTERIOLOGICAL TESTING.
12. THE CONTRACTOR SHALL BE RESPONSIBLE FOR DETERMINING THE EXACT LOCATION OF EXISTING UTILITIES, AND TO DETERMINE IF OTHER UTILITIES WILL BE ENCOUNTERED DURING THE COURSE OF THE WORK, AND TAKE WHATEVER STEPS NECESSARY TO PROVIDE FOR THEIR PROTECTION.
13. UTILITIES SHOWN ON THE PLAN MAY NOT BE ACCURATE AND ALL UTILITIES MAY NOT BE SHOWN.
14. THE CONTRACTOR SHALL NOTIFY ALL UTILITY OWNERS 48 HOURS PRIOR TO COMMENCING CONSTRUCTION AND SHALL VERIFY THE LOCATION OF ALL UTILITIES PRIOR TO EXCAVATION.
15. ALL VALVE BOXES SHALL BE INSTALLED PER DETAIL SHOWN. PRE-CAST VALVE PADS SHALL NOT BE USED. ALL VALVE BOX RISERS SHALL BE DUCTILE IRON, NOT PVC.
16. ALL PAVEMENT SHALL BE CUT AND PATCHED IN ACCORDANCE WITH ENGINEERING PLANS AND SPECIFICATIONS.
17. ALL CONCRETE ENCASED DUCTILE IRON SHALL BE WRAPPED WITH A PLASTIC MATERIAL AND TAPED TOGETHER BEFORE CONCRETE IS PLACED AROUND THE PIPE.
18. WHERE THERE IS LESS THAN 12" CLEARANCE BETWEEN PVC/DI PIPE AND OTHER PIPE OR SPECIFIED AREAS, THE PIPE SHALL BE ENCASED WITH 6" THICKNESS AROUND THE PIPE AND 6" CLEARANCE EACH WAY IN THE AXIAL DIRECTION.
19. THE CONTRACTOR SHALL REMOVE AND REPLACE, TO THEIR ORIGINAL NATURE, ALL DISTURBED MATERIALS OR OBJECTS WITHIN THE PATH OF THE NEW UTILITIES AS NECESSARY. ALL REPLACED MATERIALS SHALL BE EQUAL OR BETTER AND SHALL BE APPROVED BY THE ENGINEER. THIS INCLUDES ALL LANDSCAPING WITHIN THE RIGHT OF WAY IN THE PATH OF THE NEW UTILITIES.
20. THE CONTRACTOR SHALL VISIT THE SITE PRIOR TO BIDDING. THE SURVEY MAY NOT SHOW ALL OBJECTS WITHIN THE PATH OF THE NEW UTILITIES. IF OBJECTS ARE NOT SHOWN ON THE SURVEY, THE CONTRACTOR SHALL NOTIFY THE ENGINEER WITHIN 7 DAYS PRIOR TO THE BID DATE. CONTRACTOR WILL BE RESPONSIBLE FOR REPLACEMENT OF ALL OBJECTS NOT SHOWN ON THE SURVEY.
21. ALL SPOIL MATERIAL SHALL BE PLACED ON THE UPLAND SIDE OF ANY SLOPED CONSTRUCTION AREA.
22. THE CONTRACTOR SHALL USE RESTRAINED JOINT PIPE FOR ALL BENDS, TEES, VALVES, AND TRANSITION FITTINGS.
23. INSULATED 12 GA. LOCATING WIRE SHALL BE INSTALLED ON TOP OF ALL NON-METALIC PIPE, WHICH INCLUDES SERVICE CONNECTIONS. ALL LOCATING WIRE SHALL BE CONNECTED AND SHALL TERMINATE IN VALVE BOXES AND METER BOXES AS SHOWN IN THE DETAILS.
24. ALL PIPE SHALL BE INSTALLED IN DRY CONDITIONS. WELL POINTING MAY BE REQUIRED AT THE DIRECTION OF THE ENGINEER. WELL POINTS OR SOCK PIPE MAY BE USED.
25. THE FLUSHING VELOCITY SHALL BE A MINIMUM OF 3 FEET PER SECOND FOR 10 TIMES THE PIPE VOLUME FOR POTABLE WATER MAINS. THE OWNER WILL PAY FOR THE FIRST FLUSH AND PRESSURE TEST WATER. THE CONTRACTOR WILL PAY FOR ANY WATER FOR ADDITIONAL REPAIRS, FLUSHING, AND TESTING. THE CONTRACTOR SHALL PROVIDE ALL TEMPORARY ABOVE GROUND OUTLETS AND VALVES FOR FLUSHING THE PIPES ON THIS PROJECT.
26. CONTRACTOR SHALL FOLLOW ALL OSHA REQUIREMENTS FOR CONSTRUCTION.
27. THE CONTRACTOR SHALL FOLLOW ALL CONDITIONS OF THE PERMIT REQUIREMENTS. SEE SPECIFICATIONS FOR COPY OF PERMITS.
28. ALL DISTURBED AREAS SHALL BE SODDED.
29. A ONE FOOT STRIP OF SOD SHALL BE INSTALLED ON THE EDGE OF ALL ASPHALT OVERLAY AREAS AND AROUND ALL ABOVE GROUND CONCRETE STRUCTURES INCLUDING BUT NOT LIMITED TO VALVE PADS, BLOW OFF VAULTS, AND AIR RELEASE VAULTS.
30. CONTRACTOR SHALL PROVIDE ALL FITTINGS, SLEEVES AND TRANSITION ADAPTERS AS NECESSARY TO COMPLETE THIS PROJECT.
31. ALL PVC WATER MAINS AND REUSE MAINS LESS THAN FOUR INCHES (4") SHALL BE ASTM D2241, SDR-21. ALL PVC WATER MAINS AND REUSE MAINS (4 INCH THROUGH 8 INCH) SHALL BE C900, CLASS 235, DR18. ALL PVC WATER MAINS AND REUSE MAINS (10 INCHES TO 12 INCHES) SHALL BE C900, CLASS 235, DR25.
32. ALL EXISTING WATER UTILITIES TO BE ABANDONED MUST BE CAPPED IN THE PRESENCE OF CITY OF CALLAWAY STAFF.
33. ALL POTABLE WATER MAINS SHALL BE COLOR BLUE.
34. ALL VALVES 4" AND LARGER SHALL BE EPOXY COATED RESILIENT SEAT GATE VALVES.
35. ALL ABOVE GROUND UTILITIES ARE TO BE SCREENED BY LANDSCAPING.

UTILITY CONTACTS:

OWNER	CONTACT	PHONE
BAY COUNTY TRAFFIC	BOB EDMUNDS	850-248-8760
CITY CALLAWAY	BILL PRYE	850-871-2418
KNOLOGY HOLDINGS	STEVE THOMAS	850-215-2138
COMCAST CABLE	JEFFERY SMITH	850-770-8056
SOUTHERN LIGHT	ANDRO BRAMBLETT	251-562-1170
GULF POWER	KENNY DOUGLAS	850-905-5597
AT&T	NANCY SPENCE	770-918-5424
AT&T DISTRIBUTION	DANNEY WATSON	334-850-7781
TECO GAS	ROLAND MOORE	850-914-6129

RIGHT OF WAY CONSTRUCTION NOTES:

ALL WORK IN THE FDOT AND CITY RIGHT OF WAY SHALL CONFORM TO THE FOLLOWING:

1. FLORIDA DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION (LATEST EDITION), FLORIDA DEPARTMENT OF TRANSPORTATION ROADWAY AND TRAFFIC DESIGN STANDARDS FOR DESIGN, CONSTRUCTION, MAINTENANCE AND UTILITY OPERATIONS FOR STREETS AND HIGHWAYS (LATEST EDITION). COMPLIANCE WITH ALL APPLICABLE FDOT STANDARD INDICES IS REQUIRED.
2. CONTRACTOR SHALL NOTIFY FDOT MAINTENANCE OFFICE 24 HOURS IN ADVANCE OF STARTING PROPOSED WORK WITHIN THE RIGHT OF WAY. CALL 850-784-4060.
3. MAINTENANCE OF TRAFFIC SHALL BE IN ACCORDANCE WITH STANDARD FDOT INDICES 600, 612 AND 616.
4. ALL DISTURBED AREAS IN THE RIGHT OF WAY NOT RESTORED AS PAVEMENT SHALL BE SODDED.
5. NO LANE CLOSURES DURING THE HOURS OF 6:00 A.M. TO 9:00 A.M. OR 4:00 P.M. TO 7:00 P.M.
6. NOTE: REFLECTIVE PAVEMENT MARKERS (RPM) SHALL BE INSTALLED IN ACCORDANCE WITH FDOT STANDARD INDEX 17352.
7. ALL PERMANENT STRIPING IN COUNTY RIGHT OF WAY SHALL BE THERMOPLASTIC.

EROSION AND SEDIMENT CONTROL NOTES:

CONSTRUCTION:

1. CONTRACTOR SHALL STAGE AND TIME CONSTRUCTION TO MINIMIZE THE SIZE OF EXPOSED SOIL AREAS AND THE TIME BETWEEN EXPOSING THE SOIL AREA AND FINISHING THE SOIL AREA.
2. AS SOON AS GRADING IS COMPLETE IN AN AREA, THE CONTRACTOR WILL STABILIZE THE SOIL. FOR LONG, NARROW AREAS, THE CONTRACTOR SHALL STABILIZE CONTINUOUSLY DURING GRADING OPERATIONS. ROUGH GRADED AREAS SHOULD BE STABILIZED WITH TEMPORARY EROSION CONTROL IF FINAL GRADING AND STABILIZATION WILL NOT BE PERFORMED WITHIN FIVE (5) DAYS. FAILURE TO STABILIZE EXPOSED SOIL AREAS IN A TIMELY MANNER AFTER GRADING MAY BE CONSIDERED A VIOLATION OF CHAPTERS 17-3, 17-12, AND/OR 17-25, FLORIDA ADMINISTRATIVE CODE, BY THE FLORIDA DEPARTMENT OF ENVIRONMENTAL PROTECTION (FDEP) AND SUBJECT TO CORRECTIVE ACTION, PURSUANT TO SECTION 403.121- 403.161 FLORIDA STATUTES. ALL STABILIZATION MEASURES WILL BE AT THE CONTRACTOR'S SOLE EXPENSE.
3. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR PERFORMING A TASK TO PROVIDE EROSION CONTROL UNLESS ANOTHER PARTY HAS BEEN PREVIOUSLY SPECIFIED AS RESPONSIBLE FOR THE EROSION CONTROL ASSOCIATED WITH THAT TASK. IN THE EVENT ANOTHER PARTY IS RESPONSIBLE FOR EROSION CONTROL, THE CONTRACTOR SHALL STILL BE RESPONSIBLE FOR COORDINATION WITH THE PARTY RESPONSIBLE. IN THE EVENT THAT DAMAGE TO THE CONSTRUCTED ITEM RESULTS ARE DUE TO LACK OF EROSION CONTROL, THE CONTRACTOR SHALL REPAIR OR REPLACE THE ITEM AT NO CHARGE TO THE OWNER.
4. TEMPORARY EROSION CONTROL SHALL CONSIST OF TEMPORARY GRASS, TEMPORARY MULCH, TEMPORARY SOD, ARTIFICIAL COVERINGS, BALED HAY OR STRAW, SILT FENCES, AND TURBIDITY BARRIERS. TEMPORARY EROSION CONTROL SHALL BE IN ACCORDANCE WITH SECTION 104 OF THE FLORIDA DEPARTMENT OF TRANSPORTATION (FDOT) STANDARD SPECIFICATIONS.
5. PERMANENT EROSION CONTROL SHALL CONSIST OF SEED, SEED AND MULCH, HYDRO-SEEDING, SOD, AND/OR ARTIFICIAL COVERINGS. PERMANENT EROSION CONTROL SHALL BE IN ACCORDANCE WITH SECTIONS 570 AND 575 OF THE FDOT STANDARD SPECIFICATIONS. SEED OR GRASS TYPE SHALL MATCH EXISTING OR BE AS SPECIFIED BY OWNER UNLESS NOTED OTHERWISE.
6. GRASS BY SEEDING SHALL BE IN ACCORDANCE WITH SECTIONS 104, 570, 981, 982, AND 983 OF FDOT STANDARD SPECIFICATIONS. THIS SHALL BE USED ONLY IN AREAS SUBJECT TO LIGHT EROSION SUCH AS FLAT AREAS.
7. GRASS BY HYDRO-SEEDING SHALL BE IN ACCORDANCE WITH SECTIONS 104, 570, 981, 982, AND 983 OF FDOT STANDARD SPECIFICATIONS. HYDRO-SEEDING MAY BE USED FOR FLAT AREAS AND SIDE SLOPES WHICH DO NOT EXCEED 2:1. DRAINAGE DITCHES OR LARGE SWALES MUST HAVE ADDITIONAL PROTECTION BESIDES HYDRO-SEEDING.
8. GRASS AND MULCH SHALL BE IN ACCORDANCE WITH SECTIONS 104, 570, 981, 982, AND 983 OF FDOT STANDARD SPECIFICATIONS. GRASS AND MULCH MAY BE USED IN ALL AREAS EXCEPT LARGE SWALES OR DITCHES. MULCH SHALL BE ANCHORED IN ACCORDANCE WITH SECTION 570. SOLID SOD SHALL BE IN ACCORDANCE WITH SECTIONS 104, 575, 981, 982, AND 983 OF FDOT STANDARD SPECIFICATIONS. SOD MAY BE USED IN ALL AREAS FOR SIDE SLOPES LESS THAN 2:1. SOD SHOULD NOT BE USED ON SLOPES GREATER THAN 1:2 (V:H). EROSION CONTROL BLANKETS WITH GRASSING OR OTHER SLOPE STABILIZATION TECHNIQUES SHOULD BE USED ON SLOPES GREATER THAN 1:2. SOD SHALL BE STAGGERED SO AS TO AVOID A CONTINUOUS SEAM. IN AREAS WITH SLOPES 3:1 OR STEEPER, EACH PIECE OF SOD SHALL BE PEGGED WITH SOD PEGS. IN DIFFICULT SOIL CONDITIONS WITH STEEP SLOPES, IT MAY NECESSARY TO COVER SOD WITH ARTIFICIAL COVERINGS SUCH AS JUTE MESH UNTIL SOD BECOMES ESTABLISHED.
9. TEMPORARY EROSION CONTROL BY ARTIFICIAL COVERINGS SHALL CONSIST OF STRAW BLANKETS, COCONUT FIBER BLANKETS, POLYESTER BLANKETS, JUTE MESH, AND DRAINAGE FABRICS. MATERIALS SHALL BE INSTALLED IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS. SEEDING SHALL BE INCLUDED IF MATERIAL REQUIRES VEGETATION TO FUNCTION PROPERLY.
10. THE CONTRACTOR IS TO PROVIDE EROSION CONTROL/ SEDIMENTATION BARRIER (HAY BALES, SILT FENCE, TURBIDITY BARRIER, OR AS SPECIFIED IN THE CONSTRUCTION DRAWINGS) TO PREVENT SILTATION OF ADJACENT PROPERTY, STREETS, STORM SEWERS, WATERWAYS, AND WETLAND OR JURISDICTIONAL AREAS. IF, IN THE OPINION OF THE ENGINEER, AND/OR REGULATORY AUTHORITIES, EXCESSIVE QUANTITIES OF MATERIAL ARE TRANSPORTED OFFSITE BY EROSION OR STORM WATER RUNOFF, THE CONTRACTOR SHALL IMPROVE CONDITIONS TO THE SATISFACTION OF THE ENGINEER AND/OR AUTHORITIES. IN NO CASE SHALL CONSTRUCTION COMMENCE PRIOR TO INSTALLATION OF EROSION CONTROL/SEDIMENTATION BARRIER.
11. CONTRACTOR SHALL PLACE STRAW, MULCH, OR OTHER SUITABLE MATERIAL ON GROUND IN AREAS WHERE CONSTRUCTION RELATED TRAFFIC IS TO ENTER AND EXIT SITE.
12. IF WIND EROSION BECOMES SIGNIFICANT DURING CONSTRUCTION, THE CONTRACTOR SHALL STABILIZE THE AREA USING SPRINKLING IRRIGATION OR OTHER ACCEPTABLE METHODS.

MAINTENANCE:

13. THE CONTRACTOR SHALL PROVIDE ROUTINE MAINTENANCE OF PERMANENT AND TEMPORARY EROSION CONTROL FEATURES UNTIL THE PROJECT IS COMPLETED AND ACCEPTED. THEN MAINTENANCE SHALL BE IN ACCORDANCE WITH SECTION 104 OF THE FLORIDA DEPARTMENT OF TRANSPORTATION (FDOT) STANDARD SPECIFICATIONS OR BAY COUNTY SPECIFICATIONS.
14. SILT FENCES AND TURBIDITY BARRIERS SHALL BE CHECKED DAILY FOR EFFECTIVENESS, BREACHES, AND ROUTINE MAINTENANCE.

SURVEYOR'S NOTES:

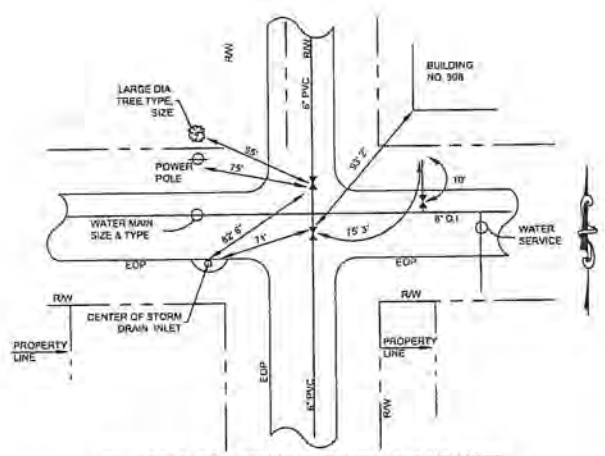
1. BEARINGS SHOWN HEREON ARE REFERENCED TO FLORIDA STATE PLANE COORDINATES, NORTH ZONE, NAD 1983/2011, U.S. SURVEY FEET, ESTABLISHED WITH SPECTRA PRECISION EPOCH 80 GNSS RTK GPS SYSTEM, TOGETHER WITH THE FLORIDA DEPARTMENT OF TRANSPORTATION PERMANENT REFERENCE NETWORK (FPRN).
2. VERTICAL DATUM SHOWN HEREON IS REFERENCED TO NAVD 1988.
3. THIS SURVEY, MAP, AND REPORT IS NOT VALID WITHOUT THE SIGNATURE AND ORIGINAL RAISED SEAL OF A FLORIDA LICENSED SURVEYOR AND MAPPER. ADDITIONS OR DELETIONS TO SURVEY MAPS OR REPORTS BY OTHER THAN THE SIGNING PARTY OR PARTIES IS PROHIBITED WITHOUT WRITTEN CONSENT OF THE SIGNING PARTY OR PARTIES.
4. NO UNDERGROUND UTILITIES, UTILITY LINES, FOUNDATIONS, OR OTHER UNDERGROUND STRUCTURES HAVE BEEN LOCATED BY DEWBERRY, EXCEPT AS SHOWN.
5. NO ATTEMPT HAS BEEN MADE BY DEWBERRY TO LOCATE OR DETERMINE ENVIRONMENTAL WETLAND LINES, IF ANY EXIST.
6. THE SURVEY DEPICTED HEREON WAS PREPARED IN ACCORDANCE WITH THE STANDARD OF PRACTICE FOR PROFESSIONAL SURVEYORS AND MAPPERS AS DEFINED IN CHAPTER 5J-17 OF THE FLORIDA ADMINISTRATIVE CODE AS SET FORTH BY THE FLORIDA BOARD OF PROFESSIONAL SURVEYORS AND MAPPERS PURSUANT TO SECTION 472.027 OF THE FLORIDA STATUTES.

SITE BENCHMARKS:

1. SET NAIL AND DISK (NO.8011) IN UTILITY POLE - ELEVATION = 16.02'
2. FOUND RAILROAD SPIKE IN UTILITY POLE - ELEVATION = 14.01'

SITE CONTROL POINTS:

	DESCRIPTION	NORTHING	EASTING	ELEV. (NAVD 1988)
T1	SET CAPPED IRON ROD LB.8011	412992.054'	1624382.942'	16.24'
T2	SET CAPPED IRON ROD LB.8011	412952.926'	1624020.890'	13.36'
T3	SET CAPPED IRON ROD LB.8011	413014.715'	1623640.545'	14.78'



EXAMPLE FOR AS BUILT DRAWINGS OF WATER LINES AND VALVES

NOTES:
1. AS BUILT DRAWINGS WILL BE PREPARED INDICATING LOCATIONS OF ALL SERVICES, LOCATIONS AND TYPES OF ALL FITTINGS, WITH RESPECT TO LOT CORNERS, LOCATIONS OF ALL VALVE AND DEAD END RUNS WITH THREE (3) TIES TO PHYSICAL FEATURES (BUILDING CORNERS, MAN HOLES, EXISTING STRUCTURES, POWER POLES, STORM DRAIN INLETS, CENTER OF FIRE HYDRANTS, FACE OF LARGE DIAMETER TREES >18").
2. AS BUILT DRAWINGS MUST BE SUBMITTED TO THE ENGINEER FOR REVIEW AND APPROVAL BEFORE A LETTER OF ACCEPTANCE WILL BE ISSUED.
3. CONTRACTOR SHALL ALSO PROVIDE CERTIFIED AS-BUILTS BY A P.S.M. REGISTERED IN THE STATE OF FLORIDA IN DIGITAL AND HARD COPY SIGNED AND SEALED. THE AS-BUILTS SHALL BE IN STATE PLANE COORDINATES.

DETAIL AS-BUILT REQUIREMENTS
SCALE: N.T.S.

Dewberry
203 Aberdeen Parkway
Panama City, FL 32405
850.522.0644

BOAT RACE RD. / TYNDALL PKWY.
WATER IMPROVEMENTS
CITY OF CALLAWAY
CALLAWAY
BAY COUNTY, FLORIDA

STATE OF FLORIDA
JONATHAN MICHAEL SKLARSKI
LICENSE
No. 67361
STATE OF FLORIDA
JONATHAN MICHAEL SKLARSKI, P.E. 67361
05/12/20
PROFESSIONAL ENGINEER

PERMITTING SET
NOT FOR CONSTRUCTION

SCALE
NO SCALE

REVISIONS

NO.	DESCRIPTION	DATE

DRAWN BY	M.MORE
APPROVED BY	J.SKLARSKI
CHECKED BY	E.PITTS
DATE	MAY, 2020

TITLE
GENERAL NOTES

PROJECT NO. 50093563

C1

SHEET NO.

May 11, 2020 (09:41:45 EST)
K:\50093563_CITY OF CALLAWAY_BOAT RACE RD TYN PKWY_CIVIL\3CP\SHEETS\PRODUCTION\50093563_COVERSHEET.DWG C1 GENERAL NOTES BY RJASKAK

STORMWATER POLLUTION PREVENTION PLAN (SWPPP):

1. SITE DESCRIPTION:
   A. CONSTRUCTION ACTIVITY; INSTALLATION OF APPROXIMATELY 1,500 L.F. OF WATER LINE ALONG BOAT RACE ROAD/TYNDALL PARKWAY
      PROJECT LIMITS: SEE SHEET C3 AND C4.
      MAJOR SOIL DISTURBING ACTIVITIES: INSTALLATION OF WATER LINE AND ASSOCIATED APPURTENANCES.
   B. TOTAL PROJECT AREA: 23,000 SF (0.516 AC)
      TOTAL SOIL AREA TO BE DISTURBED: 23,000 SF (0.516 AC)
   C. (1) RUNOFF COEFFICIENTS BEFORE, DURING, AND AFTER CONSTRUCTION: BEFORE: 0.50, DURING: 0.69, AFTER: 0.50
      (2) DESCRIPTION OF SOIL OR QUALITY OF DISCHARGE: SEE GEOTECHNICAL REPORT
      (3) ESTIMATES OF SIZE OF DRAINAGE AREA FOR OUTFALL: N/A
   D. FOR LOCATIONS OF DRAINAGE AREAS AND OUTFALLS:
   E. (1) NAME OF RECEIVING WATERS: N/A
      (2) WETLAND AREA: N/A

2. CONTROLS:
   NARRATIVE - SEQUENCE OF SOIL DISTURBING ACTIVITIES AND IMPLEMENTATION OF CONTROLS
   THE SOIL DISTURBING ACTIVITIES FOR THIS PROJECT ARE AS FOLLOWS: ONLY UPON PROPER PLACEMENT OF ALL EROSION CONTROLS CAN SOIL DISTURBING ACTIVITIES TAKE PLACE. SILT FENCE AND TURBIDITY BARRIERS WILL BE USED LATERALLY AT SPECIFIED INTERVALS. SILT FENCE SHALL BE USED TO PREVENT SEDIMENTATION FROM ESCAPING PROJECT LIMITS. EROSION CONTROLS SHALL REMAIN IN PLACE UNTIL THE SITE IS STABILIZED.

   A. EROSION AND SEDIMENT CONTROLS:
      (1) STABILIZATION PRACTICES:
      - TEMPORARY SODDING
      - TEMPORARY GRASSING
      - X PERMANENT PLANTING, SODDING, OR SEEDING
      - TEMPORARY MULCHING
      - ARTIFICIAL COVERING
      - BUFFER ZONES
      - X PRESERVATION OF NATURAL RESOURCES

      (2) STRUCTURAL PRACTICES:

SAND BAGGING	SEDIMENT TRAPS
X SILT FENCES	SEDIMENT BASINS
X HAY BALES	STORM INLET SEDIMENT TRAP (ROCK BAGS)
BERMS	STONE OUTLET STRUCTURES
DIVERSION, INTERCEPTOR, OR PERIMETER DITCHES	X CURBS AND GUTTERS
PIPE SLOPE DRAINS	X STORM SEWERS
FLUMES	VELOCITY CONTROL DEVICES
ROCK BEDDING AT CONSTRUCTION EXIT	TURBIDITY BARRIER
TIMBER BEDDING AT CONSTRUCTION EXIT	RIP RAP
DITCH LINER	

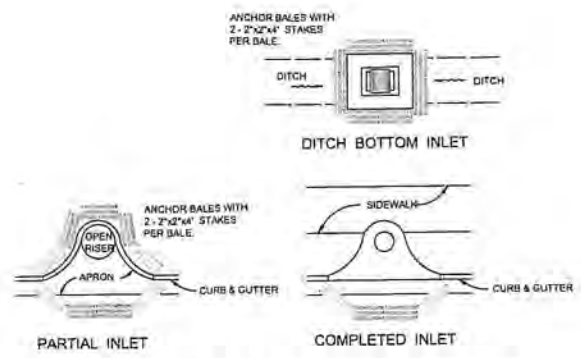
   B. DESCRIPTION OF STORMWATER MANAGEMENT: STORMWATER TO BE MANAGED ON-SITE BY EXISTING DRAINAGE SYSTEM.
   C. OTHER CONTROLS:
      (1) WASTE DISPOSAL: NO CONSTRUCTION WASTE MATERIAL WILL BE BURIED ON SITE.
      (2) OFFSITE VEHICLE TRACKING:
      - X HAUL ROADS DAMPENED FOR DUST CONTROL
      - X LOADED HAUL TRUCKS TO BE COVERED WITH TARPAULIN
      - X EXCESS DIRT ON ROAD REMOVED DAILY
      - STABILIZED CONSTRUCTION ENTRANCE

      (3) SANITARY WASTE: N/A
      (4) FERTILIZERS AND PESTICIDES: FERTILIZERS AND/OR PESTICIDES SHALL BE APPLIED ACCORDING TO MANUFACTURERS RECOMMENDATIONS BY A LICENSED OR CERTIFIED APPLICATOR AS DIRECTED BY THE PROJECT ENGINEER.
      (5) NON-STORMWATER DISCHARGE (INCLUDING SPILL REPORTING): TO BE USED DURING DEWATERING PROPER BMPS
   D. APPROVED STATE, LOCAL PLANS, OR STORMWATER PERMITS: FDEP POTABLE WATER PERMIT, BAY COUNTY/FDOT CONSTRUCTION IN RIGHT OF WAY PERMIT, BAY COUNTY DEVELOPMENT ORDER, AND FDEP/NWFWMD ENVIRONMENTAL RESOURCE PERMIT

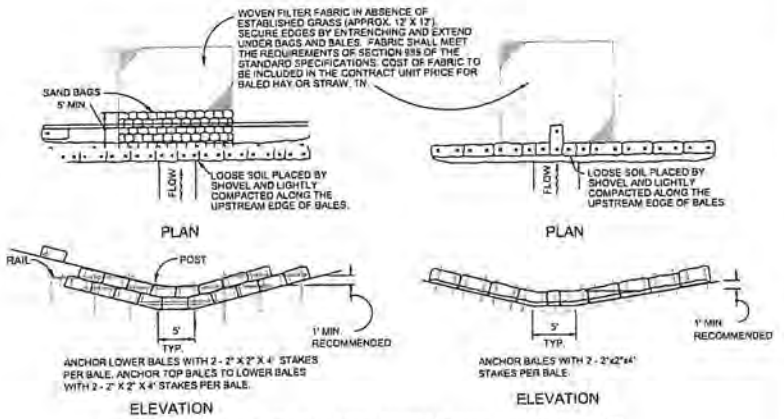
3. MAINTENANCE:
   ALL OF THE CONTROLS SHALL BE MAINTAINED AT ALL TIMES. IF A REPAIR IS NECESSARY, IT WILL BE DONE AT THE EARLIEST DATE POSSIBLE, BUT NO LATER THAN (7) CALENDAR DAYS AFTER THE SURROUNDING EXPOSED AREA HAS DRIED SUFFICIENTLY TO PREVENT FURTHER DAMAGE FROM HEAVY EQUIPMENT.

4. INSPECTION:
   ALL CONTROLS SHALL BE INSPECTED WEEKLY BY THE CONTRACTOR AS WELL AS AFTER ONE HALF INCH (0.50") OR MORE OF RAIN. AN INSPECTION AND MAINTENANCE REPORT WILL BE MADE PER EACH INSPECTION. BASED ON INSPECTION RESULTS THE CONTROLS SHALL BE REVISED PER THE INSPECTION REPORTS.
   A. THE CONTRACTOR SHALL INITIATE REPAIRS WITHIN 24 HOURS OF INSPECTION THAT INDICATE ITEMS ARE NOT IN GOOD WORKING ORDER. TO COMPLY, THE CONTRACTOR SHALL INSTALL AND MAINTAIN RAIN GAGES AND DAILY RAINFALL RECORDS. WHERE SITES HAVE BEEN PERMANENTLY STABILIZED, INSPECTIONS SHALL BE CONDUCTED AT LEAST ONCE EVERY MONTH. THE CONTRACTOR SHALL ALSO INSPECT AND CERTIFY THAT CONTROLS INSTALLED IN THE FIELD AGREE WITH THE LATEST STORMWATER POLLUTION PREVENTION PLAN.
   B. IF INSPECTIONS INDICATE THAT THE INSTALLED STABILIZATION AND STRUCTURAL PRACTICES ARE NOT SUFFICIENT TO MINIMIZE EROSION, RETAIN SEDIMENT, AND PREVENT DISCHARGING POLLUTANTS, THE CONTRACTOR SHALL PROVIDE ADDITIONAL MEASURES, AS NEEDED.
   C. RECORDS OF THE INSPECTION AND THE CONSTRUCTION PERMIT MUST BE MAINTAINED AT THE CONSTRUCTION SITE AND BE READILY AVAILABLE FOR INSPECTION.

5. THE DEVELOPER AND/OR CONTRACTOR IS RESPONSIBLE FOR OBTAINING COVERAGE UNDER THE GENERAL PERMIT FOR STORMWATER DISCHARGE FROM LARGE AND SMALL CONSTRUCTION ACTIVITIES PRIOR TO START OF CONSTRUCTION OR ANY DISTURBANCE OF LAND GREATER THAN ONE ACRE. THE DEVELOPER/CONTRACTOR WILL FORWARD A COPY OF THE PERMIT AND WILL PROVIDE 24 HOUR NOTIFICATION TO THE CITY AND COUNTY PRIOR TO COMMENCEMENT OF WORK. ALL REQUIRED ELEMENTS OF THE STORMWATER POLLUTION PREVENTION PLAN MUST BE IN PLACE PRIOR TO COMMENCEMENT OF CONSTRUCTION. FAILURE TO COMPLY COULD RESULT IN CODE ENFORCEMENT ACTION AND FINES.
6. THE DEVELOPER AND/OR CONTRACTOR IS RESPONSIBLE FOR FOLLOWING REQUIRED WASTE MANAGEMENT PRACTICES AS DEFINED IN THE BAY COUNTY MUNICIPAL CODE SECTION 23-81 "UNLAWFUL DISPOSAL OF WASTE. FAILURE TO DELIVER WASTE," WHICH MAKES IT UNLAWFUL FOR ANY PERSON TO DUMP, LEAVE OR BURY ANY SOLID WASTE ON PUBLIC OR PRIVATE PROPERTY
7. THE DEVELOPER AND/OR CONTRACTOR IS RESPONSIBLE FOR OBTAINING THE DEWATERING PERMIT AS REQUIRED.



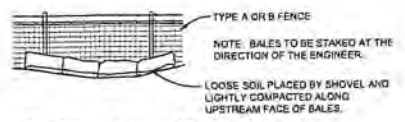
PROTECTION AROUND INLETS OR SIMILAR STRUCTURES



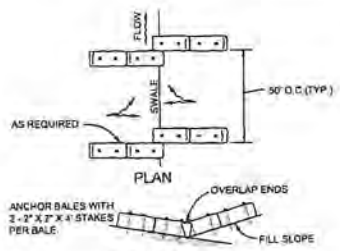
APPLICATION AND SPACING: THE USE OF TYPES I & II BALE BARRIERS SHOULD BE LIMITED TO THE CONDITIONS OUTLINED IN THE CHART BELOW.

TYPE II — TYPE I

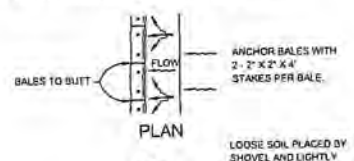
BARRIER FOR UNPAVED DITCHES



BALES BACKED BY FENCE

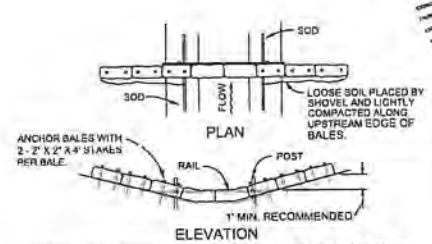


TO BE USED AT SELECTED SITES WHERE THE NATURAL GROUND SLOPES TOWARD THE TOE OF SLOPE



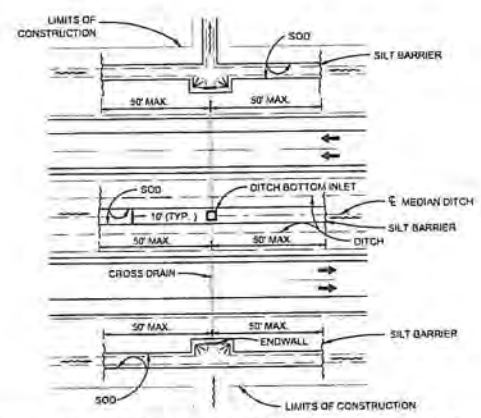
TO BE USED AT SELECTED SITES WHERE THE NATURAL GROUND SLOPES AWAY FROM THE TOE OF SLOPE

BARRIERS FOR FILL SLOPES

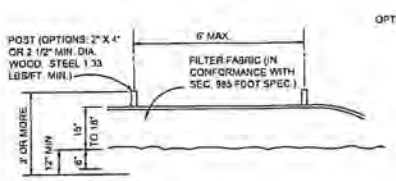


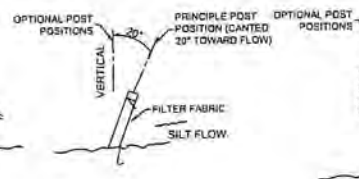
SPACING: BALE BARRIERS FOR PAVED DITCHES SHOULD BE SPACED IN ACCORDANCE WITH THE CHART BELOW

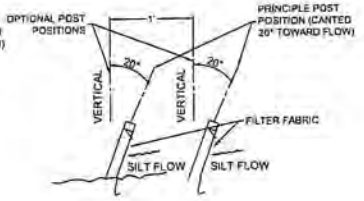
BARRIER FOR PAVED DITCH

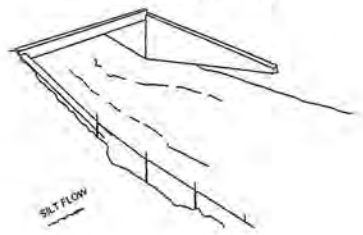


DITCH INSTALLATIONS AT DRAINAGE STRUCTURES

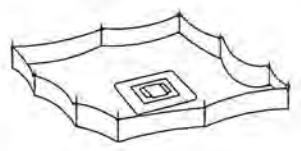








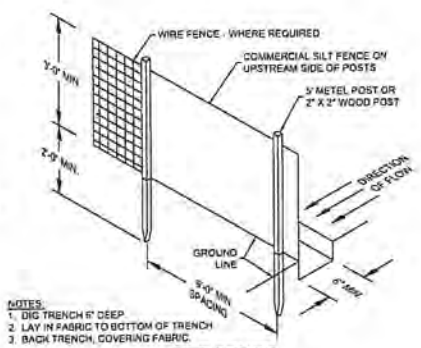
TYPE III SILT FENCE



TYPE III SILT FENCE PROTECTION AROUND DITCH BOTTOM INLETS.

NOTE: SPACING FOR TYPE III FENCE TO BE IN ACCORDANCE WITH CHART 1, SHEET 1 OF 3 AND DITCH INSTALLATIONS AT DRAINAGE STRUCTURES SHEET 2 OF 3.

TYPE III SILT FENCE



NOTES:
1. DIG TRENCH 6" DEEP
2. LAY IN FABRIC TO BOTTOM OF TRENCH
3. BACK TRENCH, COVERING FABRIC.

SILT FENCE

DO NOT DEPLOY IN A MANNER THAT SILT FENCES WILL ACT AS A DAM ACROSS PERMANENT FLOWING WATERCOURSES. SILT FENCES ARE TO BE USED AT UPLAND LOCATIONS AND TURBIDITY BARRIERS USED AT PERMANENT BODIES OF WATER.

NOTE:
1) SILT FENCE SHALL BE USED/PLACED AT THE DIRECTION OF THE ENGINEER AND TO COMPLY WITH THE FDEP/NPDES PERMITTING

TYPE III SILT FENCE

Dewberry
203 Aberdeen Parkway
Panama City, FL 32405
850.522.0644

BOAT RACE RD. / TYNDALL PKWY.
WATER IMPROVEMENTS
CITY OF CALLAWAY
CALLAWAY
BAY COUNTY, FLORIDA

JONATHAN MICHAEL SKLARSKI LICENSE NO. 67361 STATE OF FLORIDA PROFESSIONAL ENGINEER
05/12/20
JONATHAN SKLARSKI, P.E. 67361
EB 0006794
CONSULTING SET NOT FOR CONSTRUCTION

SCALE: NO SCALE

REVISIONS

NO.	DESCRIPTION	DATE

DRAWN BY	M.MORE
APPROVED BY	J.SKLARSKI
CHECKED BY	E.PITTS
DATE	MAY, 2020

TITLE:

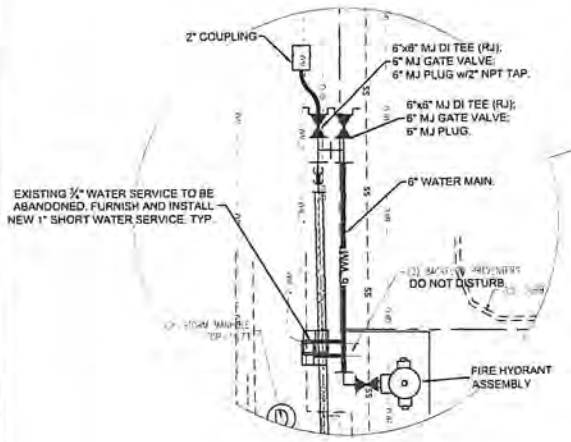
STORMWATER POLLUTION PREVENTION PLAN

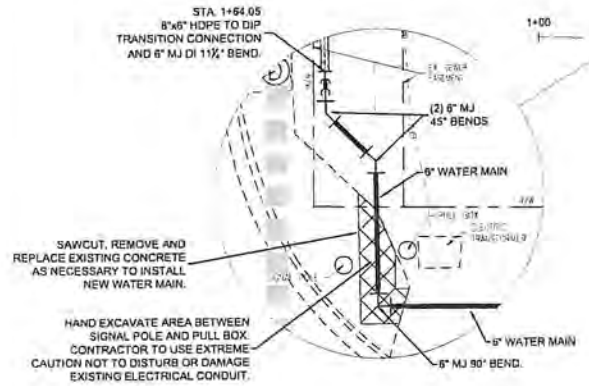
PROJECT NO. 50093563

C2

SHEET NO.

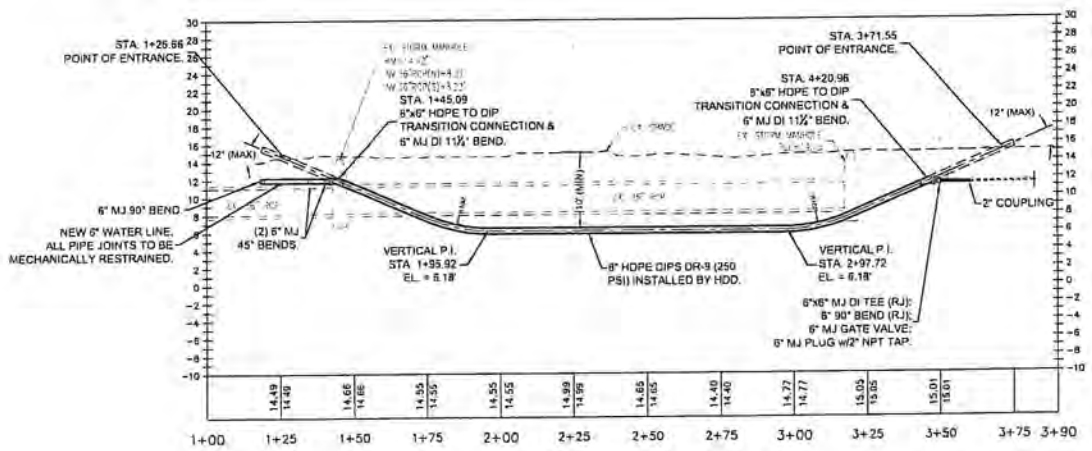
WARNING !!
GAS MAIN IN AREA OF CONSTRUCTION



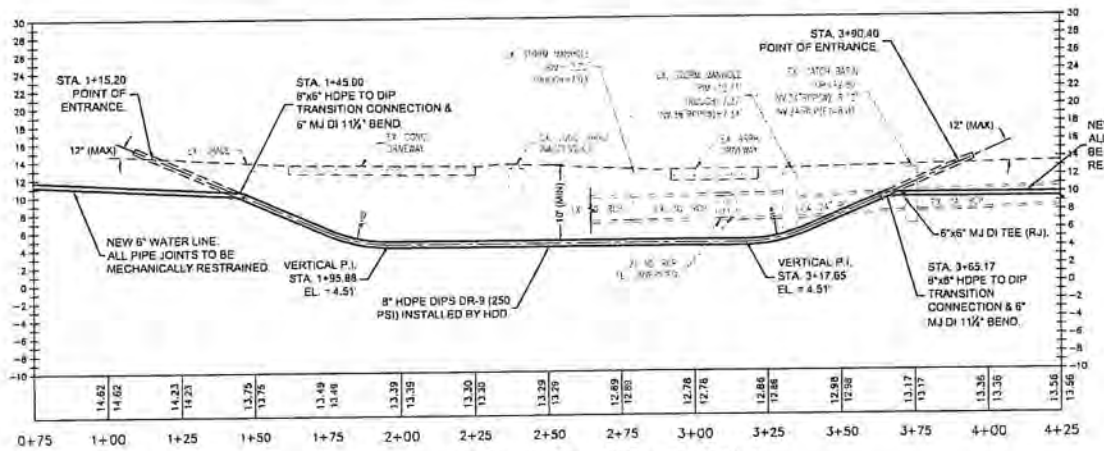


TYNDALL PARKWAY - PLAN
BOAT RACE ROAD - PLAN
SCALE: 1" = 30'

NOTES:
1. EXISTING UTILITIES SHOWN ON THE PLANS MAY NOT BE ACCURATE AND ALL UTILITIES MAY NOT BE SHOWN.
2. ALL EXISTING UTILITY LOCATIONS - HORIZONTAL AND VERTICAL - ARE SHOWN AS APPROXIMATE. IT IS THE CONTRACTORS RESPONSIBILITY TO FIELD VERIFY THE LOCATION - BOTH HORIZONTAL AND VERTICAL - OF ALL EXISTING UTILITIES PRIOR TO EXCAVATION.
3. CONTRACTOR SHALL BE AWARE THAT TRAFFIC CONTROL MUST BE IMPLEMENTED, MAINTAINED AND ENFORCED BY THE CONTRACTOR AT THE PROJECT SITE AT ALL TIMES DURING THE CONSTRUCTION OF THE PROJECT. THE PROJECT SITE IS LOCATED ALONG A HEAVILY TRAVELED STREET. A TRAFFIC CONTROL PLAN MUST BE SUBMITTED TO THE CITY FOR REVIEW. ALL COSTS ASSOCIATED WITH TRAFFIC CONTROL SHALL BE INCLUDED IN THE TOTAL LUMP SUM PRICE OF THE PROJECT.



TYNDALL PARKWAY - PROFILE
DIRECTIONAL BORE NO. 1
SCALE: 1" = 30' H
1" = 10' V



BOAT RACE ROAD - PROFILE
DIRECTIONAL BORE NO. 2
SCALE: 1" = 30' H
1" = 10' V

Dewberry
203 Aberdeen Parkway
Panama City, FL 32405
850.522.0644

BOAT RACE RD. / TYNDALL PKWY.
WATER IMPROVEMENTS
CITY OF CALLAWAY
CALLAWAY
BAY COUNTY, FLORIDA

JONATHAN MICHAEL SKLARSKI ★ LICENSE ★ No. 67361 ★ STATE OF FLORIDA ★ PROFESSIONAL ENGINEER
JONATHAN SKLARSKI, P.E. 67361
05/11/20
PERMITTING SET
NOT FOR CONSTRUCTION

SCALE
0' 15' 30' 60'
SCALE: 1" = 30'

REVISIONS

NO.	DESCRIPTION	DATE

DRAWN BY	M.MORE
APPROVED BY	J.SKLARSKI
CHECKED BY	E.PITTS
DATE	MAY, 2020

TITLE
PLAN & PROFILE

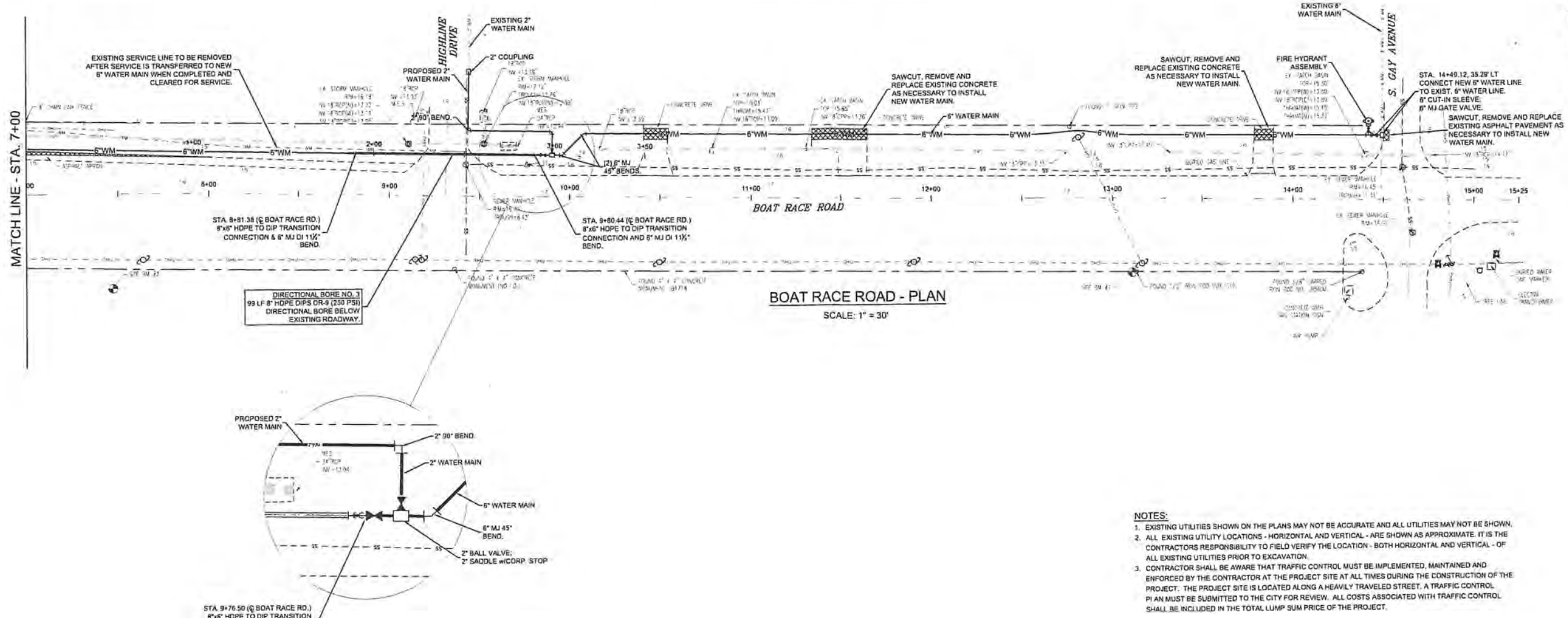
PROJECT NO. 50093563

C3

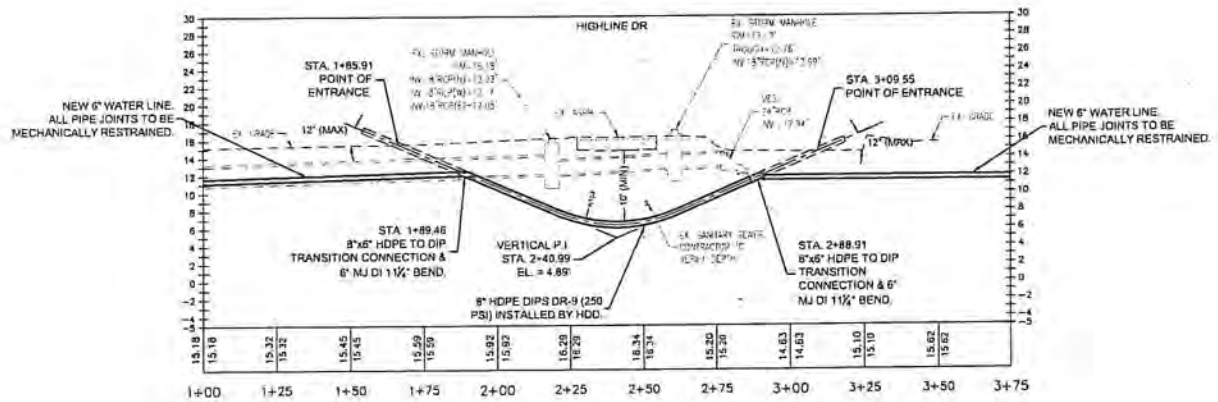
SHEET NO.

March 25, 2020 (11:29:48 EST)
K:\50093563 CITY OF CALLAWAY BOAT RACE RD TYN PKWY_CIVIL\3DFOLDER_REFERENCE\50093563 DESIGN.DWG, C3 PL_PR-01 BY: KLARSAK

WARNING !!
GAS MAIN IN AREA OF CONSTRUCTION



BOAT RACE ROAD - PLAN
SCALE: 1" = 30'



BOAT RACE ROAD - PROFILE
DIRECTIONAL BORE NO. 3
SCALE: 1" = 30' H
1" = 10' V

NOTES:
1. EXISTING UTILITIES SHOWN ON THE PLANS MAY NOT BE ACCURATE AND ALL UTILITIES MAY NOT BE SHOWN.
2. ALL EXISTING UTILITY LOCATIONS - HORIZONTAL AND VERTICAL - ARE SHOWN AS APPROXIMATE. IT IS THE CONTRACTORS RESPONSIBILITY TO FIELD VERIFY THE LOCATION - BOTH HORIZONTAL AND VERTICAL - OF ALL EXISTING UTILITIES PRIOR TO EXCAVATION.
3. CONTRACTOR SHALL BE AWARE THAT TRAFFIC CONTROL MUST BE IMPLEMENTED, MAINTAINED AND ENFORCED BY THE CONTRACTOR AT THE PROJECT SITE AT ALL TIMES DURING THE CONSTRUCTION OF THE PROJECT. THE PROJECT SITE IS LOCATED ALONG A HEAVILY TRAVELED STREET. A TRAFFIC CONTROL PLAN MUST BE SUBMITTED TO THE CITY FOR REVIEW. ALL COSTS ASSOCIATED WITH TRAFFIC CONTROL SHALL BE INCLUDED IN THE TOTAL LUMP SUM PRICE OF THE PROJECT.

Dewberry
203 Aberdeen Parkway
Panama City, FL 32405
850.522.0644

BOAT RACE RD. / TYNDALL PKWY.
WATER IMPROVEMENTS
CITY OF CALLAWAY
CALLAWAY
BAY COUNTY, FLORIDA

JONATHAN MICHAEL SKLARSKI
LICENSE
No. 67361
STATE OF FLORIDA
PROFESSIONAL ENGINEER
JONATHAN SKLARSKI P.E. 67361
ED0886F9F

PERMITTING SET
NOT FOR CONSTRUCTION

SCALE
0' 15' 30' 60'
SCALE: 1" = 30'

REVISIONS

NO.	DESCRIPTION	DATE

DRAWN BY	M.MORE
APPROVED BY	J.SKLARSKI
CHECKED BY	E.PITTS
DATE	MAY, 2020

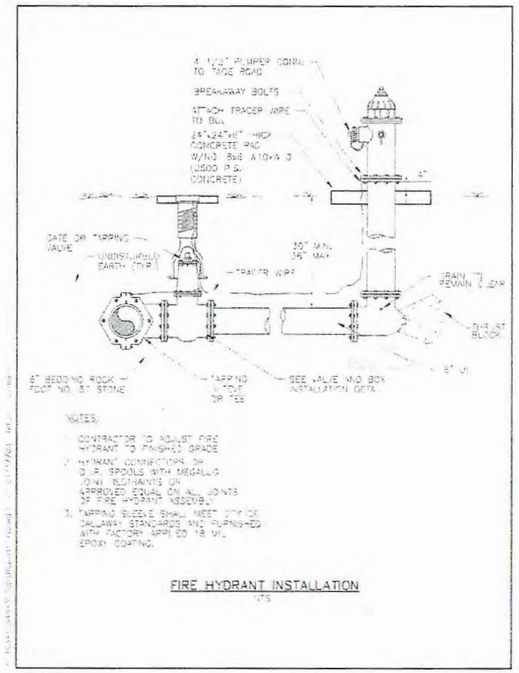
TITLE
PLAN & PROFILE

PROJECT NO. 50033563

C4

SHEET NO.

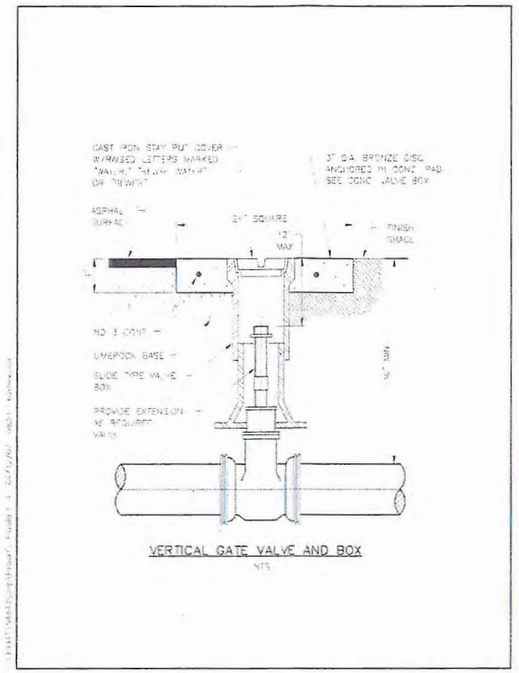
March 25, 2020 (10:22:16 EST)
K:\50033563 CITY OF CALLAWAY_BOAT RACE RD TYN PKWY\ CIVIL\DGN\COLOR\ REFERENCES\50033563 DESIGN.DWG C4 PL PW-02 BY: MJASAK



FIRE HYDRANT INSTALLATION

NTS

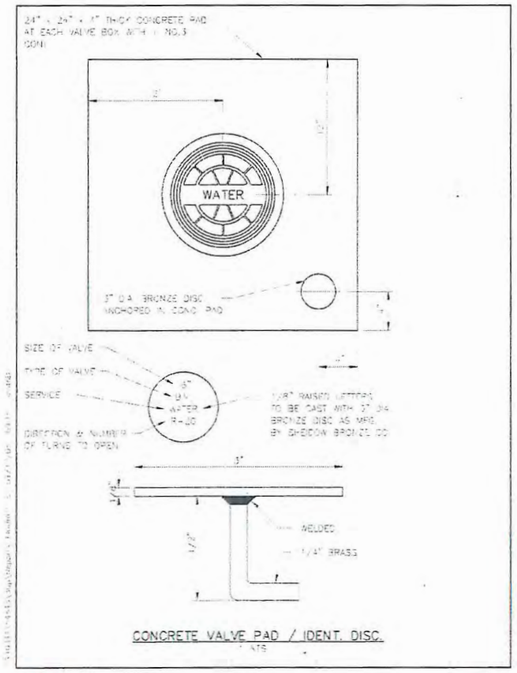
Figure 1-1
City of Callaway
Fire Hydrant Installation



VERTICAL GATE VALVE AND BOX

NTS

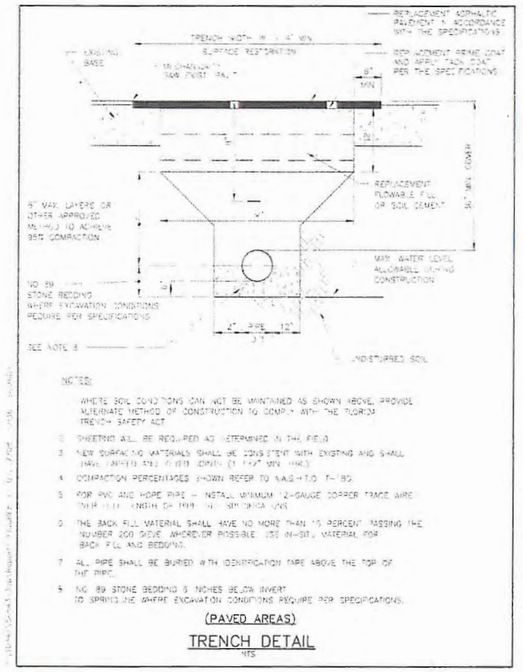
Figure 1-4
City Of Callaway
Vertical Gate Valve and Box



CONCRETE VALVE PAD / IDENT. DISC.

NTS

Figure 1-6
City Of Callaway
Concrete Valve Pad / Ident. Disc.

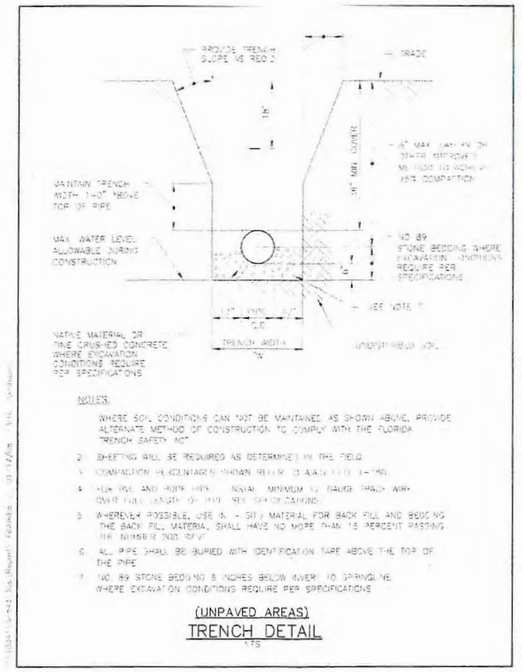


(PAVED AREAS)

TRENCH DETAIL

NTS

Figure 9-1
City Of Callaway
Trench Detail

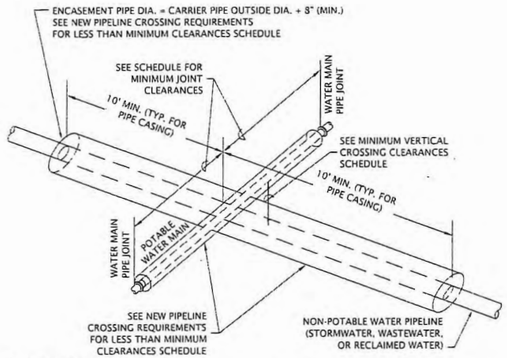


(UNPAVED AREAS)

TRENCH DETAIL

NTS

Figure 9-2
City Of Callaway
Trench Detail



MINIMUM VERTICAL CROSSING CLEARANCES
1. WATER MAIN ABOVE STORMWATER (GRAVITY) OR WASTEWATER (GRAVITY & VACUUM): 6" (MIN.) 12"+ (PREFERRED)
2. WATER MAIN BELOW STORMWATER (GRAVITY) OR WASTEWATER (GRAVITY & VACUUM). 12" (MIN.)
3. WATER MAIN ABOVE OR BELOW STORMWATER, WASTEWATER & RECLAIMED WATER (PRESSURE): 12" (MIN.)

MINIMUM WATER MAIN JOINT SPACING
1. STORMWATER (GRAVITY & PRESSURE), WASTEWATER (VACUUM) OR RECLAIMED WATER (PRESSURE): 3' O.C.
2. WASTEWATER (GRAVITY & PRESSURE): 6' O.C.

NEW PIPELINE CROSSING REQUIREMENTS FOR LESS THAN MINIMUM VERTICAL CROSSING CLEARANCES
1. POTABLE WATER MAIN:
WATER MAIN OR WATER MAIN IN CASING PIPE OF AWWA C-150 DUCTILE IRON PIPE (DIP):
4"-12" - CLASS 350 OR EQUIVALENT WALL STRENGTH PIPE
14"-24" - CLASS 250 OR EQUIVALENT WALL STRENGTH PIPE
30"+ - CLASS 150 OR EQUIVALENT WALL STRENGTH PIPE

2. WASTEWATER / RECLAIMED WATER MAIN:
WASTEWATER / RECLAIMED WATER MAIN OR WASTEWATER / RECLAIMED WATER MAIN IN CASING PIPE OF AWWA C-150 DUCTILE IRON PIPE (DIP):
4"-12" - CLASS 350 OR EQUIVALENT WALL STRENGTH PIPE
14"-24" - CLASS 250 OR EQUIVALENT WALL STRENGTH PIPE
30"+ - CLASS 150 OR EQUIVALENT WALL STRENGTH PIPE

VERTICAL CROSSING SEPARATION REQUIREMENTS (SEE F.D.E.P. RULE 62-555.314(1) & (2) F.A.C.)

DETAIL PIPELINE SEPARATION REQUIREMENTS

SCALE: N.T.S.

Dewberry

203 Aberdeen Parkway
Panama City, FL 32405
850.522.0644

BOAT RACE RD. / TYNDALL PKWY.
WATER IMPROVEMENTS
CITY OF CALLAWAY
CALLAWAY
BAY COUNTY, FLORIDA

JONATHAN MICHAEL SKLARSKI
LICENSE
No. 67361
STATE OF FLORIDA
PROFESSIONAL ENGINEER
05/01/20
JONATHAN SKLARSKI, P.E. 67361
DEWBERRY - FBPE 00670

PERMITTING SET
NOT FOR CONSTRUCTION

SCALE
NO SCALE

REVISIONS

NO.	DESCRIPTION	DATE

DRAWN BY	M.MORE
APPROVED BY	J.SKLARSKI
CHECKED BY	E.PITTS
DATE	MAY, 2020

TITLE

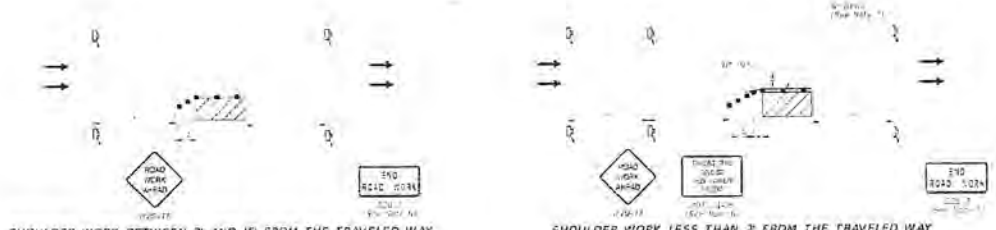
MISCELLANEOUS DETAILS

PROJECT NO. 50093563

D1

SHEET NO.

May 11, 2020 (09:41:40 EST)
K:\50093563_CITY OF CALLAWAY, BOAT RACE RD TYN PKWY_CIVIL\3DFOLDER_PRODUCTION\50093563_COVERDWG D1 MISC DETAILS BY: NLASSAK



SHOULDER WORK BETWEEN 2' AND 15' FROM THE TRAVELED WAY
(Multilane Roadway Shown, Two-Lane Roadway Similar)

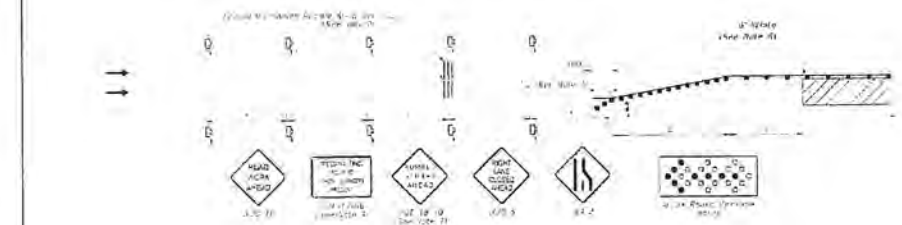
SHOULDER WORK LESS THAN 2' FROM THE TRAVELED WAY
WITH WORK ZONE SPEED OF 45 MPH OR LESS
(Multilane Roadway Shown, Two-Lane Roadway Similar)

NOTES:

SYMBOLS:

APPLIES TO TWO-LANE AND MULTILANE ROADWAYS

LAST REVISION 11/01/19	DESCRIPTION	FDOT FY 2020-21 STANDARD PLANS	WORK ON THE SHOULDER	INDEX 102-010	SHEET 1 of 1



NOTES:

SYMBOLS:

LAST REVISION 11/01/19	DESCRIPTION	FDOT FY 2020-21 STANDARD PLANS	MULTILANE ROADWAY SINGLE LANE CLOSURE	INDEX 102-045	SHEET 1 of 1

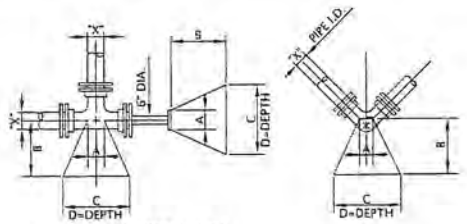
REQUIRED LENGTH OF RESTRAINED JOINT PIPE FOR DR-18 PVC PIPE

MAIN PIPE SIZE	HORIZ. BENDS 90°	45°	22.5°	TEES SIZE / LENGTH	REDUCERS SIZE / LENGTH	PLUGS & VALVES
24	90	38	18	X24 / 189 X20 / 133 X16 / 90 X12 / 58 X10 / 6	X16 / 117 X13 / 155	214
20	78	32	16	X20 / 141 X16 / 101 X12 / 63 X10 / 24 X8 / 1	X16 / 155 X12 / 115 X10 / 149	184
16	66	27	13	X16 / 111 X12 / 67 X10 / 41 X8 / 12	X12 / 54 X10 / 107 X8 / 111	151
12	52	22	10	X12 / 80 X10 / 56 X8 / 31 X6 / 1	X10 / 58 X8 / 92 X6 / 88	118
10	44	18	9	X10 / 63 X8 / 40 X6 / 17	X8 / 33 X6 / 61 X4 / 81	100
8	37	15	7	X8 / 49 X6 / 18 X4 / 1	X6 / 35 X4 / 60	83
6	29	12	6	X6 / 29 X4 / 1	X4 / 33	63
4	21	8	4	X4 / 12		45

NOTES:

1. RESTRAIN 11.25° BENDS 50% OF LENGTH FOR 22.5° BENDS.
2. ALL VALVES AND FITTINGS SHALL BE RESTRAINED TO THE CONNECTING SECTIONS OF PIPE.
3. ALL ISOLATION VALVES MUST BE PROPERLY ANCHORED OR RESTRAINED TO RESIST A 180 PSI TEST PRESSURE IN EITHER DIRECTION.
4. PIPE SIZES ARE GIVEN IN INCHES.
5. RESTRAINED PIPE LENGTHS ARE GIVEN IN FEET.
6. LENGTHS SHOWN ARE FOR A TEST PRESURE OF 180 PSI.
7. THE RESTRAINED LENGTHS SHOWN IN THESE TABLES ARE BASED ON SOIL CLASSIFICATION SP WITH AWWA TYPE 3 TRENCH CONDITIONS, 180 PSI TEST PRESSURE, 3 FEET OF COVER AND 1.5 FACTOR OF SAFTEY. ACTUAL BURY CONDITIONS MUST BE DETERMINED BY THE ENGINEER OF RECORD AND THE RESTRAINED LENGTHS MODIFIED ACCORDINGLY.
8. RESTRAINED LENGTHS TO BE APPLIED TO PIPELINES PER DETAIL RESTRAINED LENGTHS FOR PIPE.

DETAIL RESTRAINED JOINT REQUIREMENTS - PVC PIPE
SCALE: N.T.S.

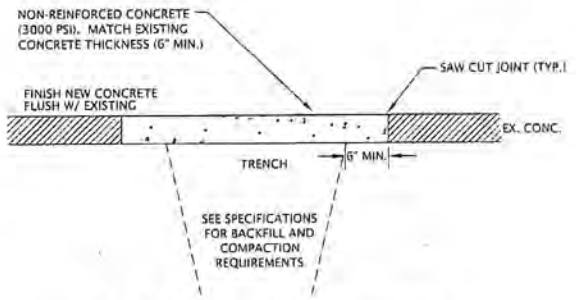


150 PSI TEST PRESSURE
2000 PSF SOIL BEARING

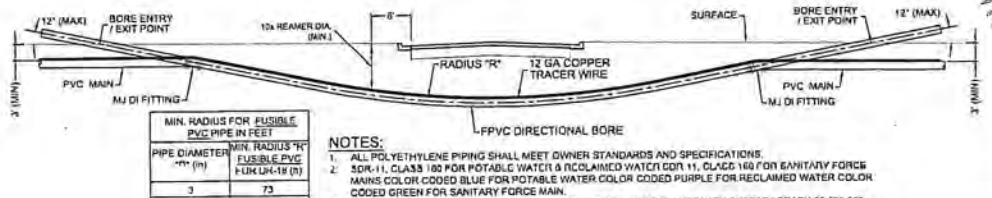
		X'	A	B	C	D
DEAD END & TEES		16"	1'-3"	3'-6"	7'-6"	4'-9"
		12"	1'-0"	3'-0"	5'-6"	3'-6"
		10"	1'-0"	2'-6"	4'-9"	3'-0"
		8"	0'-10"	2'-0"	4'-0"	2'-6"
		6"	0'-8"	1'-6"	2'-9"	1'-9"
BENDS	90°	16"	1'-3"	5'-6"	9'-0"	5'-6"
		12"	1'-0"	4'-0"	6'-9"	4'-3"
		10"	1'-0"	3'-0"	5'-9"	3'-6"
		8"	0'-10"	2'-6"	4'-9"	3'-0"
		6"	0'-8"	1'-6"	3'-6"	2'-9"
	45°	16"	1'-3"	3'-6"	6'-9"	4'-3"
		12"	1'-0"	2'-3"	5'-3"	3'-3"
		10"	1'-0"	2'-3"	4'-6"	2'-9"
		8"	0'-10"	1'-6"	3'-6"	2'-3"
		6"	0'-8"	1'-3"	2'-6"	1'-6"
	22 1/2	16"	1'-3"	1'-6"	4'-9"	3'-0"
		12"	1'-0"	1'-6"	3'-6"	2'-3"
		10"	1'-0"	1'-3"	3'-0"	2'-0"
		8"	0'-10"	1'-0"	2'-6"	1'-6"
		6"	0'-8"	1'-0"	1'-9"	1'-3"
	11 1/4	16"	1'-3"	1'-6"	3'-3"	2'-0"
		12"	1'-0"	1'-6"	2'-6"	1'-6"
		10"	1'-0"	1'-0"	2'-3"	1'-3"
		8"	0'-10"	1'-0"	1'-9"	1'-0"
		6"	0'-8"	1'-0"	1'-6"	0'-9"

X' = DIAMETER OF PIPE TO BE BLOCKED

DETAIL CONCRETE THRUST BLOCK REQUIREMENTS
SCALE: N.T.S.



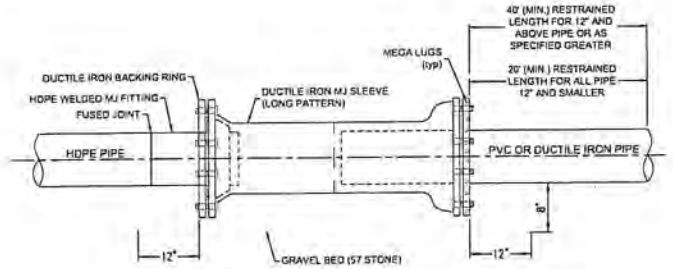
DETAIL CONCRETE PAVEMENT REPLACEMENT
SCALE: N.T.S.



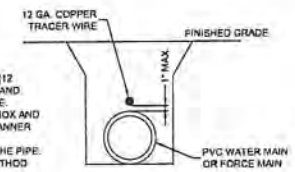
PIPE DIAMETER "D" (in)	MIN. RADIUS FOR FUSIBLE PVC PIPE IN FEET MIN. RADIUS "R" FUSIBLE PVC IPS DR-18 (ft)
3	73
4	100
6	144
8	188
10	231
12	275
16	363
18	406
20	450

NOTES:
1. ALL POLYETHYLENE PIPING SHALL MEET OWNER STANDARDS AND SPECIFICATIONS.
2. SDR-11, CLASS 160 FOR POTABLE WATER & RECLAIMED WATER CODE 11, CLASS 160 FOR SANITARY FORCE MAINS COLOR CODED BLUE FOR POTABLE WATER COLOR CODED PURPLE FOR RECLAIMED WATER COLOR CODED GREEN FOR SANITARY FORCE MAIN.
3. THE COLOR CODING SHALL MEETING REQUIREMENTS IN ACCORDANCE WITH SUBPARAGRAPH 62-555.320 (21)(B) 3 F.A.C. AND SHALL BE CO-EXTRUDED DURING PIPE MANUFACTURING.
4. ALL BORES SHALL BE A MIN. OF 10 TIMES REAMER DIAMETER BELOW EOP OF ROADWAY AND START AND TERMINATE A MIN. OF 6 FEET FROM EOP.
5. CONTRACTOR SHALL PROVIDE A DETAILED "AS-BUILT" PROFILE OF ALL DIRECTIONAL BORE AND JACK AND BORE LOCATION OF ACTUAL PIPE ELEVATIONS AT 10 FOOT INTERVALS ON AS-BUILT PLAN SHEETS.

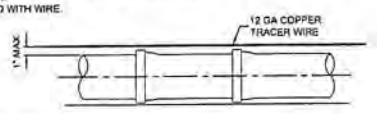
DETAIL FUSIBLE PVC DIRECTIONAL BORE
SCALE: N.T.S.



DETAIL HDPE TRANSITION CONNECTION
SCALE: N.T.S.



NOTES:
1. PVC PIPE SHALL REQUIRE INSULATED METALLIC LOCATING WIRE (12 GAUGE COPPER) CAPABLE OF DETECTION BY A CABLE LOCATOR AND SHALL BE BURIED DIRECTLY ABOVE THE CENTERLINE OF THE PIPE.
2. LOCATING WIRE SHALL TERMINATE AT THE TOP OF EACH VALVE BOX AND BE CAPABLE OF EXTENDING 12" ABOVE TOP OF BOX IN SUCH A MANNER SO AS NOT TO INTERFERE WITH VALVE OPERATION.
3. USE DUCT TAPE AS NECESSARY TO HOLD WIRE ON THE TOP OF THE PIPE.
4. ALL SPLICES SHALL BE MADE USING A WATER-TIGHT SEALING METHOD APPROVED BY THE ENGINEER.
5. PIPE SHALL NOT BE WRAPPED WITH WIRE.



DETAIL PVC PIPE LOCATING WIRE
SCALE: N.T.S.

Dewberry
203 Aberdeen Parkway
Panama City, FL 32405
850.522.0644

BOAT RACE RD. / TYNDALL PKWY.
WATER IMPROVEMENTS
CITY OF CALLAWAY
CALLAWAY
BAY COUNTY, FLORIDA

JONATHAN MICHAEL SKLARSKI
LICENSE
No. 67361
STATE OF FLORIDA
PROFESSIONAL ENGINEER
JONATHAN M. SKLARSKI, P.E. No. 67361
ES 0000794
05/01/2020

PERMITTING SET
NOT FOR CONSTRUCTION

SCALE
NO SCALE

REVISIONS

NO.	DESCRIPTION	DATE

DRAWN BY M.MORE
APPROVED BY J.SKLARSKI
CHECKED BY E.PITTS
DATE MAY, 2020

TITLE
MISCELLANEOUS DETAILS

PROJECT NO. 50093563

D2

SHEET NO.

May 11, 2020 08:14:49 EDT
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