Leon County

Board of County Commissioners

301 South Monroe Street, Tallahassee, Florida 32301
(850) 606-5302 www.leoncountyfl.gov

Bid Title: Stormwater Management Facility No. 6 Modifications
Bid No: BC-02-18-11-18
Opening Date: Friday, February 18, 2011 at 2:00 PM
Location: 1800-3 Blair Stone Road, Tallahassee, Florida 32308 (corner of Blair Stone and Miccosukee Roads)

INSTRUCTION TO BIDDERS

To Insure Acceptance of Your Bid, Please Follow These Instructions:

1. Items listed on the bid checklist in this form and all other items required within this invitation to bid must be executed and/or submitted in a sealed envelope. Address your sealed envelope as follows:

   Bid No: BC-02-18-11-18
   Board of County Commissioners
   Leon County Purchasing Division
   1800-3 Blair Stone Road
   Tallahassee, Florida 32308

2. Bid must be typed or printed in ink. All corrections made by the bidder prior to the opening must be initialed and dated by the bidder. No changes or corrections will be allowed after bids are opened.

3. Bid must contain an original, manual signature of an authorized representative of the company.

4. The bid opening shall be public on the date and time specified on the bid. It is the bidder's responsibility to assure that the bid is delivered at the proper time and location. Bids which are received after the bid opening time will be returned unopened to the bidder.

5. Bidders are expected to examine the specifications, delivery schedule, bid prices and extensions and all general and special conditions of the bid prior to submission. In case of error in price extension, the unit price will govern.

6. If you are not submitting a bid but wish to remain on our bid list, please return the "Statement of No Bid" form and provide an explanation in detail where requested.

7. Special Accommodation: Any person requiring a special accommodation at a Pre-Bid Conference or Bid/RFP opening because of a disability should call the Division of Purchasing at (850) 606-1600 at least five (5) workdays prior to the Pre-Bid Conference or Bid/RFP opening. If you are hearing or speech impaired, please contact the Purchasing Division by calling the County Administrator's Office using the Florida Relay Service which can be reached at 1(800) 955-8771 (TDD).

NOTE: ANY AND ALL CONDITIONS OR REQUIREMENTS ATTACHED HERETO WHICH VARY FROM THE INSTRUCTIONS TO BIDDERS WILL BE PRECEDENT.

PURPOSE:

Leon County is seeking the services of a qualified contractor to repair and modify an existing pump and sprinkler system used in the treatment of stormwater. Work items include the construction of a pile stabilized floating platform and associated gangway, installation of new pumps and associated electronic control systems, and construction of new sprinkler distribution system. Stormwater Management Facility No. 6 is located in Section 22 of Township 2 North and Range 1 East in Leon County, Florida.

QUESTIONS:

The last day to submit questions for clarifications is Friday, February 11, 2011 at 5:00PM.

BID DEADLINE:

Bid must be submitted no later than Friday, February 18, 2011 at 2:00 PM.

OFFEROR REGISTRATION:

Offerors who obtain solicitation documents from sources other than the Leon County Purchasing Division or Demandstar.com MUST officially register with the County Purchasing Division in order to be placed on the planholders list for the solicitation. This list is used for communications from the County to prospective Offerors. Also, Offerors should be aware that solicitation documents obtained from sources other than those listed above may be drafts, incomplete, or in some other fashion different from the official solicitation document(s). Failure to register as a prospective Offeror through the Purchasing Division or online through Demandstar.com may cause your submittal to be rejected as non-responsive.

PRE-BID CONFERENCE:

A MANDATORY Pre-Bid Conference is scheduled for Thursday, February 10, 2011 at 9:00AM. The Pre-Bid Conference will be held in the Purchasing Bid Room, 1800-3 Blair Stone Road, Tallahassee, Florida (corner of Blair Stone and Miccosukee Roads).

BID INFORMATION AND CLARIFICATION:

Questions pertaining to bid procedures or regarding the specifications should be addressed to Wendi Sellers, Keith Roberts, or Don Tobin, phone(850) 606-1600; fax (850) 606-1601; E-mail sellersw@leoncountyfl.gov, robertsk@leoncountyfl.gov or tobind@leoncountyfl.gov. Written inquiries are preferred.

Each Vendor shall examine the Bidding Documents carefully; and, no later than seven days prior to the date for receipt of bids, he shall make a written request to the Owner for interpretations or corrections of any ambiguity, inconsistency or error which he may discover. All interpretations or corrections will be issued as addenda. The County will not be responsible for oral clarifications. No negotiations, decisions or actions shall be initiated or executed by the proposer as a result of any discussions with any County employee prior to the opening of proposals. Only those communications which are in writing from the County may be considered as a duly authorized expression on the behalf of the Board.

Also, only communications from firms which are in writing and signed will be recognized by the Board as duly authorized expressions on behalf of proposers.

PROHIBITED COMMUNICATIONS

Any Form of communication, except for written correspondence, shall be prohibited regarding a particular request for proposal, request for qualification, bid, or any other competitive solicitation between:

1. Any person or person's representative seeking an award from such competitive solicitation; and

2. Any County Commissioner or Commissioner's staff, or any county employee authorized to act on behalf of the Commission to award a particular contract.

For the purpose of this section, a person's representative shall include, but not be limited to, the person's employee, partner, officer, director, consultant, lobbyist, or any actual or potential subcontractor or consultant of the person.

The prohibited communication shall be in effect as of the deadline to submit the proposal, bid, or other response to a competitive solicitation.

The provisions of this section shall not apply to oral communications at any public proceeding, including pre-bid conferences, oral presentations before selection committees, contract negotiations during any public meetings, presentations made to the Board, and protest hearings. Further, the provisions of this section shall not apply to contract negotiations between any employee and the intended awardee, any dispute resolution process following the filing of a protest between the person filing the protest and any employee, or any written correspondence with any employee, County Commissioner, or decision-making board member or selection committee member, unless specifically prohibited by the applicable competitive solicitation process.

The provisions of this section shall terminate at the time the Board, or a County department authorized to act on behalf of the Board, awards or approves a contract, rejects all bids or responses, or otherwise takes action which ends the solicitation process.

The penalties for an intentional violation of this article shall be those specified in §125.69(1), Florida Statutes, as amended, and shall be deemed supplemental to the penalties set forth in Section 1-9 of the Code of Laws, Leon County, Florida.

PREPARATION AND SUBMISSION OF BID:

Each Vendor shall submit Bid Prices and other requested information, including alternates or substitutions if allowed by this invitation to bid, on the proper forms and in the manner herein prescribed. Any erasures or other corrections in the Bid must be explained or noted over the signature of the Vendor. Bids containing any conditions or irregularities of any kind may be rejected by the County. All bids must be submitted in a sealed envelope or other appropriate container. Facsimiles will not be accepted. It is the intention of the County to award this bid based on the low total bid price and/or other criteria herein contained meeting all specifications.

REJECTION OF BIDS:

The Owner reserves the right to reject any and/or all bids when such rejection is in the best interest of the Owner.

RECEIPT AND OPENING OF BIDS:

Bids will be opened publicly at the time and place stated in the Invitation to Bid. The person whose duty it is to open them will decide when the specified time has arrived and no bids received thereafter will be considered. No responsibility shall be attached to any person for the premature opening of a Bid not properly addressed and identified. At the time fixed for the opening of bids, the contents of the bid form will be made public for the information of vendors and other interested parties who may be present either in person or by representative.

A vendor may request, in their bid submittal, a copy of the bid tabulation sheet to be mailed in a vendor provided, stamped self-addressed envelope for their record.

WITHDRAWAL OF BIDS:

Bids may be withdrawn by written or telegraphic request received from Vendors prior to the time fixed for opening. Negligence on the part of the Vendor in preparing the Bid confers no right for the withdrawal of the bid after it has been opened.

AWARD OF BIDS/BID PROTEST:

The bid/proposal will be awarded as soon as possible to the lowest responsive, responsible bidder, unless otherwise stated elsewhere in this invitation to bid. The County reserves the right to waive any informality in bids/proposals and to award a bid/proposal in whole or in part when either or both conditions are in the best interest of Leon County.

Notice of the Intended Decision will be posted on the Leon County website at: http://www.leoncountyfl.gov/Purchasing/Postings/other.asp for a period of seventy-two (72) consecutive hours, which does not include weekends or County observed holidays. Any Bidder/Respondent who desires to protest the Intended Decision must file a notice of intent to protest in writing within seventy-two (72) hours after the posting of the Notice of Intended Decision. Any bid award recommendation may be protested on the grounds of irregularities in the specifications, bid procedure, or the evaluation of the bid. Such notice of intent of bid protest shall be made in writing to the Purchasing Director, 1800-3 Blair Stone Road, Tallahassee, Florida 32308.

Protestor shall file a formal written bid protest within 10 days after the date in which the notice of intent of bid protest has been submitted. Failure to file a notice of intent of bid protest or failure to file a formal written bid protest shall constitute a waiver of all rights granted under this section. The vendor shall be responsible for inquiring as to any and all award recommendation/postings.

Should concerns or discrepancies arise during the bid process, vendors are encouraged to contact the Purchasing Division prior to the scheduled bid opening. Such matters will addressed and/or remedied prior to a bid opening or award whenever practically possible. Vendors are not to contact departments or divisions regarding the vendor complaint.

PLANHOLDERS

As a convenience to vendors, Leon County has made available via the internet lists of all registered planholders for each bid or request for proposals. The information is available on-line at http://www.leoncountyfl.gov/Purchasing/Bid.asp by simply clicking the planholder link to the right of the respective solicitation. A listing of the registered vendors with their telephone and fax numbers is designed to assist vendors in preparation of their responses.

ADDENDA TO SPECIFICATIONS

If any addenda are issued after the initial specifications are released, the County will post the addenda on the Leon County website at http://www.leoncountyfl.gov/purchasing/addenda/index.asp. For those projects with separate plans, blueprints, or other materials that cannot be accessed through the internet, the Purchasing Division will make a good faith effort to ensure that all registered bidders (those vendors who have been registered as receiving a bid package) receive the documents. It is the responsibility of the vendor prior to submission of any bid to check the above website or contact the Leon County Purchasing Division at (850) 606-1600 to verify any addenda issued. The receipt of all addenda must be acknowledged on the bid response sheet.

BID GUARANTEE:

Bids shall be accompanied by a 5% bid guarantee which shall be a Bid Bond, Certified or Cashier's Check or Bank Draft (no cash, company, or personal checks will be accepted), made payable to the Board of County Commissioners, Leon County, Florida. Such check, bank draft, or bond shall be submitted with

the understanding that the bonds will be held until award of bid.

The Owner reserves the right to hold the Bid Guarantee of the Bidders until after a contract has been entered into or a purchase order has been executed. The accepted Bidders bid bond will be held until execution of this contract and may be forfeited due to non-performance.

The check or bond shall be submitted with the understanding that it shall guarantee that the Bidder will not withdraw his bid for a period of 90 days after the scheduled closing time for the receipt of bids. It shall also guarantee that the successful vendor will enter into a contract within ten (10) days after he has received notice of acceptance of his bid. In the event of withdrawal of bid, or failure to enter into and fully execute the contract within ten (10) days the contractor may be deemed in to be in default. In such an event, the contractor shall be liable to the Owner for the full amount of the default.

PAYMENT AND PERFORMANCE BOND

A Payment and Performance Bond in the amount of 100% of the estimated project cost shall be supplied by the Contractor at the time of Agreement execution. Also, a Payment and Material Bond for the Agreement amount shall be supplied by the Contractor at the same time.

Payment and Performance and Material Bonds shall provide that, in the event of non-performance on the part of the Contractor the bond can be presented for honor and acceptance at an authorized representative or institution located in Tallahassee, Florida. The Payment and Performance Bond shall be in the following form:

PUBLIC CONSTRUCTION BOND
Bond No.(enter bond number)

BY THIS BOND, We _____, as Principal and _____ a corporation, as Surety, are bound to , herein called Owner, in the sum of $, for payment of which we bind ourselves, our heirs, personal representatives, successors, and assigns, jointly and severally.

THE CONDITION OF THIS BOND is that if Principal:

1. Performs the contract dated , between Principal and Owner for construction of , the contract being made a party of this bond by reference, at the time and in the manner prescribed in the contract; and

2. Promptly makes payments to all claimants, as defined in Section 255.05(1), Florida Statutes, supplying Principal with labor, materials, or supplies, used directly or indirectly by Principal in the prosecution of the work provided for in the contract; and

3. Pays Owner all losses, damages, expenses, costs, and attorney's fees, including appellate proceedings, that Owner sustains because of a default by Principal under the contract; and

4. Performs the guarantee of all work and materials furnished under the contract for the time specified in the contract, then this bond is void; otherwise it remains in full force.

Any action instituted by a claimant under this bond for payment must be in accordance with the notice and time limitation provisions in Section 255.05(2), Florida Statutes.

Any changes in or under the contract documents and compliance or noncompliance with any formalities connected with the contract or the changes does not affect Surety's obligation under this bond.

DATED on this the day of , 20__.

_____
(Name of Principal)

By: _____
(As Attorney-In-Fact)

_____
(Name of Surety)

Payment bonds executed as a result of the requirements herein by a surety shall make reference to Section 255.05, Florida Statutes, by number and shall contain reference to the notice and time limitation provisions in Section 255.05, Florida Statutes.

UNAUTHORIZED ALIEN(S)

The Contractor agrees that unauthorized aliens shall not be employed nor utilized in the performance of the requirements of this solicitation. The County shall consider the employment or utilization of unauthorized aliens a violation of Section 274A(e) of the Immigration and Naturalization Act (8 U.S.C. 1324a). Such violation shall be cause for unilateral termination of this Agreement by the County. As part of the response to this solicitation, please complete and submit the attached form "AFFIDAVIT CERTIFICATION IMMIGRATION LAWS."

TIME AND LIQUIDATED DAMAGES

The work to be performed under this contract shall be commenced within fifteen (15) days of the Notice to Proceed. All work to be performed under this Contract shall be completed within ninety (90) consecutive calendar days of the Notice to Proceed. If the work to be performed under this Contract is not completed within the time set forth above, or within such extra time as may be granted by the County, the Contractor shall be deemed to be in default. For each day the Contractor is in default, the Contractor or its Surety shall pay to the County, not as a penalty, but as liquidated damages, the sum of $580.00.

Permitting the Contractor to continue and finish the work or any part of it after the expiration of the contract time allowed, including extensions, if any, shall in no way act as a waiver on the part of County of the liquidated damages due under the contract.

MINORITY and WOMEN BUSINESS ENTERPRISE AND EQUAL OPPORTUNITY POLICIES

A. Minority Business Enterprise (MBE) and Women (WBE) Business Enterprise Requirements

1. The purpose of the Minority and Women-Owned Business Enterprise (MWBE) Program is to effectively communicate Leon County procurement and contracting opportunities, through enhanced business relationships, to end disparity and to increase participation opportunities for certified minority and women-owned business enterprises in a competitive environment. This program shall:

    a. Eliminate any policies and/or procedural barriers that inhibit MBE and WBE participation in our procurement process.

    b. Established targets designed to increase MBE and WBE utilization proportionate to documented under utilization.

    c. Provide increased levels of information and assistance available to MBE's and WBEs.

    d. Implement mechanisms and procedures for monitoring MBE and WBE compliance by prime contractors.

2. The term "Certified Minority Women Business Enterprise" (MWBE) is defined as Minority Business Enterprise (MBE) and Women Business Enterprise (WBE) firms certified by Leon County or the City of Tallahassee. Some firms with MBE or WBE certification by the State of

Florida may be accepted under a reciprocal agreement but those from other governmental organizations are not accepted by Leon County.

3. Each Respondent is strongly encouraged to secure MBE and WBE participation through purchase(s) of those goods or services to be provided by others. Firms responding to this bid are hereby made aware of the County's targets for MBE and WBE utilization. Respondents that require assistance or guidance with these MBE or WBE requirements should contact: Iranetta Dennis, Leon County Minority, Women, and Small Business Enterprise Director, by telephone at (850) 606-1650; fax (850) 606-1651 or by e-mail dennisi@leoncountyfl.gov .

   Respondent must complete and submit the attached Minority and Women Business Enterprise Participation Plan form. **Failure to submit the completed** Minority and Women Business Enterprise Participation Plan form will result in a determination of non-responsiveness for the bid.

   If the aspirational target is not met, you must denote your good faith effort on the Participation Plan Form. All respondents, including MBE's, and WBE's shall either meet the aspirational target(s), or if not met, demonstrate in their bid response that a good faith effort was made to meet the aspirational target(s). Failure to complete such good faith effort statement will result in the bid being non-responsive. Below, are policy examples of good faith efforts that respondents can use if they are not meeting the aspirational target. These examples can be used to demonstrate the good faith effort.

   a. Advertised for participation by M/WBEs in non-minority and minority publications within the Market area, including a copy of the advertisement and proof of the date(s) it appeared – or by sending correspondence, no less than ten (10) days prior to the submission deadline, to all M/WBEs referred to the respondent by the MWSBE Division for the goods and services to be subcontracted and/or supplied

   b. Documented that the bidding Prime Contractor provided ample time for potential MBE and/or WBE subcontractors to respond to bid opportunities, including a chart outlining the schedule/time frame used to obtain bids from MBE and WBE Vendors as applicable to the aspirational Target.

   c. Contacted the MWSBE Division for a listing of available M/WBEs who provide the services needed for the bid or proposal.

   d. Contacted MBEs and/or WBEs who provide the services needed for the bid or proposal.

   e. Documented follow-up telephone calls with potential M/WBE subcontractors seeking participation.

   f. Allowed potential M/WBE Subcontractors to review bid specifications, blueprints and all other Bid/RFP related items at no charge to the M/WBEs.

   g. Contacted the MWSBE Division, no less than five (5) business days prior to the Bid/RFP deadline, regarding problems the with respondent is having in achieving and/or reaching the aspirational targets.

   h. Other documentation indicating their Good Faith Efforts to meet the aspirational targets. Please provide details below.

4. For goods and/or services to be performed in this project, the following are the aspirational targets for participation by certified MBE's and/or WBE's.

   Construction Sub-Contractor Targets: Minority Business Enterprise - 17%
   Woman Business Enterprise - 9%

5. Definitions for the above targets follow:

   a. Minority/Women Business Enterprise (MWBE) - a business that is owned and controlled by at least 51% by one or more minority persons or by at least 51% by one or more women, and whose management and daily operations are controlled by one or more such persons shall constitute a Minority/Women business Enterprise. No business owned or controlled by a white female shall be considered a minority business for the purpose of this program if the ownership was brought about by transfer of ownership interest to the woman or women, other than by decent, within two (2) years following the sale or transfer of ownership. For the purpose of this program, all applicants for certification as a bona fide MWBE shall be an independent business entity which provides a commercially useful function. No business owned and controlled by a white male and transferred or sold to a minority or woman/women, for the purpose of participation in the County's MWBE Program, shall be considered eligible for MWBE Certification.

   b. Minority Person - an individual who is a citizen of the United States or a lawfully admitted permanent resident and who is a(n):

      1) African/Black Americans - All persons having origins in any of the Black African racial groups not of Hispanic origins and having community identification as such.

      2) Hispanic Americans - All persons (Mexican, Puerto Rican, Cuban, Central or South American or other Spanish Culture or origin, regardless of race) reared in a Hispanic environment and whose surname is Hispanic and having community identification as such.

      3) Asian American - All persons having origins in any of the original peoples of the Far East, Southeast Asia, the Indian Subcontinent, or the Pacific Islands and having community identification as such.

      4) American Indians, Alaskan Natives and American Aleuts - All persons having origins in any of the original people of North America, maintaining identifiable tribal affiliations through membership and participation and having community identification as such.

   c. Women - American Woman

6. Prime contractors will negotiate in good faith with interested MWBE's, not rejecting a MWBE as unqualified or unacceptable without sound business reasons based on a through investigation of their capabilities. **The basis for rejecting any MWBE deemed unqualified or unacceptable by the Prime Contractor shall be included in the Good Faith Effort documentation**. The Prime Contractor shall not impose unrealistic conditions of performance on MWSBE's seeking subcontracting opportunities.

7. Leon County reserves the right to request supporting documentation as evidence of good faith efforts indicated above at any time. Failure to provide supporting documentation when requested shall deem your bid/proposal as non-responsive.

B. Equal Opportunity/Affirmative Action Requirements

The contractors and all subcontractors shall agree to a commitment to the principles and practices of equal opportunity in employment and to comply with the letter and spirit of federal, state, and local laws and regulations prohibiting discrimination based on race, color, religion, national region, sex, age, handicap, marital status, and political affiliation or belief.

For federally funded projects, in addition to the above, the contractor shall agree to comply with Executive Order 11246, as amended, and to comply with specific affirmative action obligations contained therein.

In addition to completing the Equal Opportunity Statement, the Respondent shall include a copy of any affirmative action or equal opportunity policies in effect at the time of submission.

PURCHASES BY OTHER PUBLIC AGENCIES:

With the consent and agreement of the successful bidder(s), purchases may be made under this bid by other governmental agencies or political subdivisions within the State of Florida. Such purchases shall be governed by the same pricing, terms and conditions stated herein with no deviations allowed. This agreement in no way restricts or interferes with the right of any public agency or political subdivision to bid any or all of the items or services independently.

OCCUPATIONAL LICENSES AND REGISTRATIONS:

The contractor shall be responsible for obtaining and maintaining throughout the contract period any required occupational license and other licenses required pursuant to the laws of Leon County, the City of Tallahassee, or the State of Florida. Every vendor submitting a bid on this invitation for bids shall include a copy of the company's local business or occupational license(s) or a written statement on letterhead indicating the reason no license exists.

If the contractor is operating under a fictitious name as defined in Section 865.09, Florida Statutes, proof of current registration with the Florida Secretary of State shall be submitted with the bid. A business formed by an attorney actively licensed to practice law in this state, by a person actively licensed by the Department of Business and Professional Regulation or the Department of Health for the purpose of practicing his or her licensed profession, or by any corporation, partnership, or other commercial entity that is actively organized or registered with the Department of State shall submit a copy of the current licensing from the appropriate agency and/or proof of current active status with the Division of Corporations of the State of Florida or such other state as applicable.

Failure to provide the above required documentation may result in the bid being determined as non-responsive.

LOCAL PREFERENCE IN PURCHASING AND CONTRACTING

1. Preference in bidding. In purchasing of, or letting of contracts for procurement of, personal property, materials, contractual services, and construction of improvements to real property or existing structures in which pricing is the major consideration, the authorized purchasing authority of Leon County may give a preference to local businesses in making such purchase or awarding such contract, as follows:

    a) Individuals or firms which have a home office located within Leon, Gadsden, Wakulla, or Jefferson County, and which meet all of the criteria for a local business as set forth in this article, shall be given a preference in the amount of five percent of the bid price.

b) Individuals or firms which do not have a home office located within Leon, Gadsden, Wakulla, or Jefferson County, and which meet all of the criteria for a local business as set forth in this article, shall be given a preference in the amount of three percent of the bid price.

The maximum cost differential shall not exceed $20,000.00. Total bid price shall include the base bid and all alternatives or options to the base bids which are part of the bid and being recommended for award by the appropriate authority.

2. Preference in bidding for construction services in projects estimated to exceed $250,000. Except where otherwise prohibited by federal or state law or other funding source restrictions, in the purchasing of, or letting of contracts for procurement of construction services for improvements to real property or existing structures that are estimated to exceed $250,000 in value, the County may give preference to local businesses in the following manner:

a) Under a competitive bid solicitation, when the lowest responsive and responsible bid is submitted by an individual or firm that is not a local business , then the local business that submitted the lowest responsive and responsible bid shall be offered the opportunity to perform the work at the lowest bid amount, if that local business's bid was not greater than 110% of the lowest responsive and responsible bid amount.

b) All contractual awards issued in accordance with the provisions of this subsection (paragraph 2) shall contain aspirational trade contractor work targets, based on market and economic factors, of 85 percent as follows: The successful individuals or firms shall agree to engage not less than 85 percent of the dollar value of trade contractor work with local businesses unless the successful individuals or firms prove to the County's satisfaction, that the trade contractor work is not available locally with the Leon, Gadsden, Wakulla or Jefferson County area. The term "trade contractor" shall mean a subcontractor who contracts with the prime contractor and whose primary activity is performing specific activities (e.g., pouring concrete, masonry, site preparation, framing, carpentry, dry wall installation, electrical, plumbing, painting) in a construction project but is not responsible for the entire project.

3. Local business definition. For purposes of this section, "local business" shall mean a business which:

a) Has had a fixed office or distribution point located in and having a street address within Leon, Gadsden, Wakulla, or Jefferson County for at least six (6) months immediately prior to the issuance of the request for competitive bids or request for proposals by the County; and

b) Holds any business license required by the County, and, if applicable, the City of Tallahassee; and

c) Is the principal offeror who is a single offeror; a business which is the prime contractor and not a subcontractor; or a partner or joint venturer submitting an offer in conjunction with other businesses.

3. Certification. Any vendor claiming to be a local business as defined, shall so certify in writing to the Purchasing Division. The certification shall provide all necessary information to meet the requirements of above. The Local Vendor Certification Form is enclosed. The purchasing agent shall not be required to verify the accuracy of any such certifications, and shall have the sole discretion to determine if a vendor meets the definition of a "local business."

PAYMENTS TO THE GENERAL CONTRACTOR

Payments to the Contractor shall be made according to the requirements of the Local Government Prompt Pay Act, sections 218.70 - 218.79, Florida Statutes.

STATUS

The Contractor shall at all times, relevant to this contract, be an independent contractor and in no event shall the Contractor, nor any employees or sub-contractors under it, be considered to be employees of Leon County.

INSURANCE:

Bidders' attention is directed to the insurance requirements below. Bidders should confer with their respective insurance carriers or brokers to determine in advance of bid submission the availability of insurance certificates and endorsements as prescribed and provided herein. The Insurance Certification Form attached hereto is to be completed and submitted as part of your bid response. If an apparent low bidder fails to comply strictly with the insurance requirements, that bidder may be disqualified from award of the contract.

Contractor shall procure and maintain for the duration of the contract insurance against claims for injuries to persons or damages to property which may arise from or in connection with the performance of the work hereunder by the Contractor, his agents, representatives, employees or subcontractors. The cost of such insurance shall be included in the Contractor's bid.

1. Minimum Limits of Insurance. Contractor shall maintain limits no less than:

    a. General Liability: $1,000,000 combined single limit per occurrence for bodily injury, personal injury and property damage. If Commercial General Liability Insurance or other form with a general aggregate limit is used, either the general aggregate limit shall apply separately to this project/location or the general aggregate limit shall be twice the required occurrence limit.

    b. Automobile Liability: $1,000,000 combined single limit per accident for bodily injury and property damage. (Non-owned, Hired Car).

    c. Workers' Compensation and Employers Liability: Workers' Compensation insurance covering all employees and meeting statutory requirements in compliance with the applicable state and federal laws and Employer's Liability with a limit of $500,000 per accident, $500,000 disease policy limit, $500,000 disease each employee. Waiver of Subrogation in lieu of Additional Insured is required.

2. Deductibles and Self-Insured Retentions

    Any deductibles or self-insured retentions must be declared to and approved by the County. At the option of the County, either: the insurer shall reduce or eliminate such deductibles or self-insured retentions as respects the County, its officers, officials, employees and volunteers; or the Contractor shall procure a bond guaranteeing payment of losses and related investigations, claim administration and defense expenses.

3. Other Insurance Provisions The policies are to contain, or be endorsed to contain, the following provisions:

    a. General Liability and Automobile Liability Coverages (County is to be named as Additional Insured).

        1. The County, its officers, officials, employees and volunteers are to be covered as insureds as respects; liability arising out of activities performed by or on behalf of the Contractor, including the insured's general supervision of the Contractor; products and completed operations of the Contractor; premises owned, occupied or used by the Contractor; or automobiles owned, leased, hired or borrowed by the Contractor. The coverage shall contain no special limitations on the scope of protections afforded the

County, its officers, officials, employees or volunteers.

2. The Contractor's insurance coverage shall be primary insurance as respects the County, it officers, officials, employees and volunteers. Any insurance of self-insurance maintained by the County, its officers, officials, employees or volunteers shall be excess of the Contractor's insurance and shall not contribute with it.

3. Any failure to comply with reporting provisions of the policies shall not affect coverage provided to the county, its officers, officials, employees or volunteers.

4. The Contractor's insurance shall apply separately to each insured against whom claims is made or suit is brought, except with respect to the limits of the insurer's liability.

b. All Coverages

Each insurance policy required by this clause shall be endorsed to state that coverage shall not be suspended, voided, canceled by either party, reduced in coverage or in limits except after thirty (30) days' prior written notice by certified mail, return receipt requested, has been given to the County.

4. Acceptability of Insurers. Insurance is to be placed with insurers with a Best's rating of no less than A:VII.

5. Verification of Coverage. Contractor shall furnish the County with certificates of insurance and with original endorsements effecting coverage required by this clause. The certificates and endorsements for each insurance policy are to be signed by a person authorized by that insurer to bind coverage on its behalf. All certificates and endorsements are to be received and approved by the County before work commences. The County reserves the right to require complete, certified copies of all required insurance policies at any time. Certificates of Insurance acceptable to the County shall be filed with the County prior to the commencement of the work. These policies described above, and any certificates shall specifically name the County as an additional Insured and shall contain a provision that coverage afforded under the policies will not be canceled until at least thirty (30) days prior to written notice has been given to the County.

Cancellation clauses for each policy should read as follows: *Should any of the above described policies be canceled before the expiration date thereof, the issuing company will mail thirty (30) days written notice to the Certificate Holder named herein.*

6. Subcontractors. Contractors shall include all subcontractors as insureds under its policies or shall furnish separate certificates and endorsements for each subcontractor. All coverages for subcontractors shall be subject to all of the requirements stated herein.

AGREEMENT:

After the bid award, the County will, at its option, prepare a purchase order or an agreement specifying the terms and conditions resulting from the award of this bid. Every procurement of contractual services shall be evidenced by a written agreement. The vendor will have five calendar days after receipt to acknowledge the purchase order or execute the agreement.

The performance of Leon County of any of its obligations under the purchase order or agreement shall be subject to and contingent upon the availability of funds lawfully expendable for the purposes of the purchase order or agreement for the current and any future periods provided for within the bid specifications.

AUDITS, RECORDS, AND RECORDS RETENTION

The Contractor agrees:

1. To establish and maintain books, records, and documents (including electronic storage media) in accordance with generally accepted accounting procedures and practices, which sufficiently and properly reflect all revenues and expenditures of funds provided by the County under this contract.

2. To retain all client records, financial records, supporting documents, statistical records, and any other documents (including electronic storage media) pertinent to this contract for a period of five (5) years after termination of the contract, or if an audit has been initiated and audit findings have not been resolved at the end of five (5) years, the records shall be retained until resolution of the audit findings or any litigation which may be based on the terms of this contract.

3. Upon completion or termination of the contract and at the request of the County, the Contractor will cooperate with the County to facilitate the duplication and transfer of any said records or documents during the required retention period as specified in paragraph 1& 2 above.

4. To assure that these records shall be subject at all reasonable times to inspection, review, or audit by Federal, state, or other personnel duly authorized by the County.

5. Persons duly authorized by the County and Federal auditors, pursuant to 45 CFR, Part 92.36(I)(10), shall have full access to and the right to examine any of provider's contract and related records and documents, regardless of the form in which kept, at all reasonable times for as long as records are retained.

6. To include these aforementioned audit and record keeping requirements in all approved subcontracts and assignments.

MONITORING

To permit persons duly authorized by the County to inspect any records, papers, documents, facilities, goods, and services of the provider which are relevant to this contract, and interview any clients and employees of the provider to assure the County of satisfactory performance of the terms and conditions of this contract.

Following such evaluation, the County will deliver to the provider a written report of its findings and will include written recommendations with regard to the provider's performance of the terms and conditions of this contract. The provider will correct all noted deficiencies identified by the County within the specified period of time set forth in the recommendations. The provider's failure to correct noted deficiencies may, at the sole and exclusive discretion of the County, result in any one or any combination of the following: (1) the provider being deemed in breach or default of this contract; (2) the withholding of payments to the provider by the County; and (3) the termination of this contract for cause.

RIGHT TO INSPECT PLANT

The County may, at its discretion, inspect the part of the plant or place of business of a contractor or any subcontractor which is related to the performance of any contract awarded, or to be awarded, by Leon County. The right expressed herein shall be included in all contracts or subcontracts that involve the performance of any work or service involving Leon County.

TERMINATION

Leon County may terminate this Contract without cause, by giving the Contractor thirty (30) days written notice of termination. Either party may terminate this Contract for cause by giving the other party hereto thirty (30) days written notice of termination. The County shall not be required to give Contractor such

thirty (30) day written notice if, in the opinion of the County, the Contractor is unable to perform its obligations hereunder, or if in the County's opinion, the services being provided are not satisfactory. In such case, the County may immediately terminate the Contract by mailing a notice of termination to the seller.

PENALTIES:

BIDS MAY BE REJECTED AND/OR VENDOR(S) DISQUALIFIED FOR THE FOLLOWING REASONS:

1. Consistent failure to respond to bid invitation for three (3) consecutive instances.

2. Failure to update the information on file including address, product, service or business descriptions.

3. Failure to perform according to contract provisions.

4. Conviction in a court of law of any criminal offense in connection with the conduct of business.

5. Clear and convincing evidence of a violation of any federal or state anti-trust law based on the submission of bids or proposals, or the awarding of contracts.

6. Clear and convincing evidence that the vendor has attempted to give a Board employee a gratuity of any kind for the purpose of influencing a recommendation or decision in connection with any part of the Board's purchasing activity.

7. Other reasons deemed appropriate by the Board of County Commissioners.

PUBLIC ENTITY CRIMES STATEMENT:

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

MANUFACTURERS' NAME AND APPROVED EQUIVALENTS:

Manufacturers' names, trade names, brand names, information and/or catalog numbers listed in a specification are for information and not intended to limit competition. The bidder may offer any brand for which he is an authorized representative, which meets or exceeds the specifications for any item(s). If bids are based on equivalent products, indicate on the bid form the manufacturer's name and catalog number. Bidder shall submit with his bid, cuts, sketches, and descriptive literature and/or specifications. The bidder should also explain in detail the reason(s) why and submit proof that the proposed equivalent will meet the specifications and not be considered an exception thereto. The Leon County Board of County Commissioners reserves the right to be the sole judge of what is equal and acceptable. Bids which do not comply with these requirements are subject to rejection. If Bidder fails to name a substitute it will be assumed that he is bidding on, and he will be required to furnish goods identical to bid standard.

IDENTICAL TIE BIDS:

Preference shall be given to businesses with drug-free workplace programs. Whenever two or more bids which are equal with respect to price, quality, and service are received by the State or by any political subdivision for the procurement of commodities or contractual services, a bid received from a business that certifies that it has implemented a drug-free workplace program shall be given preference in the

award process. Established procedures for processing tie bids will be followed if none of the tied vendors have a drug-free workplace program. Bidder must complete and submit as part of the bid response the attached "IDENTICAL TIE BID" form. Failure to submit a completed form may result in the bid being determined as non-responsive.

WARRANTIES:

Bidder will warrant title to all goods sold and such warranty may not:

1. Be for a period less than five (5) years.

2. Limit the County's remedies under Chapter 672, Florida Statutes;

3. Exclude or modify a warranty of merchantability as provided for in Section 672.314, Florida Statutes; or

4. Exclude or modify a warranty of fitness as provided for in Section 672.315, Florida Statutes.

WORK

Contractor understands that no amount of work is guaranteed to it nor is the County under an obligation to utilize the services of the Contractor in those instances where the work to be performed can be done by County personnel or under separate contract. Any work to be performed shall be upon the written request of the County Administrator or his representative, which request shall set forth the commencing date of such work and the time within which such work shall be completed.

PERMITS

A National Pollutant Discharge Elimination System (NPDES) General Permit for Storm Water Discharges from Construction Activities may apply to this Contract. It is the Contractor's responsibility to secure the NPDES permit prior to commencement of construction. A copy of the NPDES permit application form can be obtained through the Florida Department of Environmental Protection's web site at:
http://www.dep.state.fl.us/water/stormwater/npdes/permits_forms.htm

If a NPDES permit is obtained, a copy of the permit shall be provided to Leon County Public Works Department.

The Contractor shall pay for and obtain all necessary permits as required by law.

ASSIGNMENT

This contract shall not be assigned or sublet as a whole or in part without the written consent of the County, nor shall the Contractor assign any monies due or to become due to him hereunder without the previous written consent of the County.

INDEMNIFICATION

The Contractor agrees to indemnify and hold harmless the County, its officials, officers and employees, from and against any and all liabilities, damages, losses and costs, including, but not limited to reasonable attorney's fees, to the extent caused by the negligence, recklessness, or intentional wrongful misconduct of the Contractor and persons employed or utilized by the Contractor in the performance of this agreement.

The County may, at its sole option, defend itself or required the Contractor to provide the defense. The Contractor acknowledges that the sum of ten dollars ($10.00) of the amount paid to the Contractor

constitutes sufficient consideration for the Contractor's indemnification of the County, its officials, officers and employees.

It is understood that the Contractors responsibility to indemnify and defend the County, it officials, officers and employees is limited to the Contractors proportionate share of liability caused by the negligent acts or omissions of the Contractor, its delegates, agents or employees.

ETHICAL BUSINESS PRACTICES

A. Gratuities. It shall be unethical for any person to offer, give, or agree to give any County employee, or for any County employee to solicit, demand, accept, or agree to accept from another person, a gratuity or an offer of employment in connection with any decision, approval, disapproval, recommendation, or preparation of any part of a program requirement or a purchase request, influencing the content of any specification or procurement standard, rendering of advice, investigation, auditing, or performing in any other advisory capacity in any proceeding or application, request for ruling, determination, claim or controversy, or other particular matter, subcontract, or to any solicitation or proposal therefor.

B. Kickbacks. It shall be unethical for any payment, gratuity, or offer of employment to be made by or on behalf of a subcontractor under a contract to the prime contractor or higher tier subcontractor or any person associated therewith, as an inducement for the award of a subcontract or order.

C. The Board reserves the right to deny award or immediately suspend any contract resulting from this proposal pending final determination of charges of unethical business practices. At its sole discretion, the Board may deny award or cancel the contract if it determines that unethical business practices were involved.

BID CHECKLIST:

Please submit the items on the following list and any other items required by any section of this invitation for bids. The checklist is provided as a courtesy and may not be inclusive of all items required within this invitation for bids.

_____ Completed Bid Response Sheet with Manual Signature
_____ Affidavit Immigration Laws
_____ Minority/Women Business Enterprise Participation Plan/Good Faith Statement
_____ Identical Tie Bid Statement
_____ Insurance Certification Form
_____ Contractor’s Business Information Form
_____ Non Collusion Affidavit
_____ Compliance With Trench Safety
_____ Certification/Debarment Form
_____ Applicable Licenses/Registrations

BID RESPONSE SHEET

The Board of County Commissioners, Leon County, reserves the right to accept or reject any and/or all bids in the best interest of Leon County.

Keith M. Roberts
Purchasing Director

John Dailey
Chairman

This proposal is submitted by the below named firm/individual by the undersigned authorized representative.

_____
(Firm Name)

BY _____
(Authorized Representative)

_____
(Printed or Typed Name)

ADDRESS _____

_____

TELEPHONE _____

FAX _____

ADDENDA ACKNOWLEDGMENTS: (IF APPLICABLE)

Addendum #1 dated _____ Initials _____

Addendum #2 dated _____ Initials _____

Addendum #3 dated _____ Initials _____

BASE BID: _____

AFFIDAVIT CERTIFICATION
IMMIGRATION LAWS

Leon County will not intentionally award County contracts to any contractor who knowingly employs unauthorized alien workers, constituting a violation of the employment provisions contained in 8 U.S.C. Section 1324 A(e) {Section 274a(e) of the Immigration and Nationality Act ("INA").

Leon County may consider the employment by any Contractor of Unauthorized Aliens a violation of Section 274A(e) of the INA. **Such violation by the Recipient of the employment provision contained in Section 274A(e) of the INA shall be ground for unilateral cancellation of the contract by Leon County.**

BIDDER ATTESTS THAT THEY ARE FULLY COMPLIANT WITH ALL APPLICABLE IMMIGRATION LAWS (SPECIFICALLY TO THE 1986 IMMIGRATION ACT AND SUBSEQUENT AMENDMENTS).

Company Name: _____

Signature: _____ Title: _____

STATE OF _____
COUNTY OF _____

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

Personally known _____ _____
NOTARY PUBLIC

OR Produced identification_____ Notary Public - State of _____

_____ My commission expires:_____
(Type of identification)

_____
Printed, typed, or stamped
commissioned name of notary public

The signee of this Affidavit guarantees, as evidenced by the sworn affidavit required herein, the truth and accuracy of this affidavit to interrogatories hereinafter made.

LEON COUNTY RESERVES THE RIGHT TO REQUEST SUPPORTING DOCUMENTATION, AS EVIDENCE OF SERVICES PROVIDED, AT ANY TIME.

MINORITY AND WOMEN BUSINESS ENTERPRISE (MWBE) PARTICIPATION PLAN FORM

Respondent: _____

All respondents, including Minority Business Enterprises (MBEs) and Women Business Enterprises (WBEs), shall complete and submit this M/WBE Participation Plan with their proposal. Through submission of its bid/proposal, Respondent certifies, acknowledges and agrees that the Participation Level and the Good Faith Efforts herein designated are accurate and true; and, that the individual whose manual signature is on this submission is duly authorized on behalf of the respondent to make such certification.

For the purposes of MWBE participation on Leon County projects, the following definition applies:

> "Certified Minority Business Enterprise (MBE) and Women Business Enterprise (WBE)" are firms certified by Leon County or the City of Tallahassee. Some firms with MBE or WBE certification by the State of Florida may be accepted under a reciprocal agreement but, those from other governmental organizations are not accepted by Leon County"

DIRECTIONS: Each respondent must designate in Section 1 its level of MWBE participation. If the aspirational targets are not met or exceeded, Section 2 must be completed if the respondent does not meet the aspirational targets. All Respondents are to list subcontractors as appropriate in Sections 3 and 4.

SECTION 1 - ASPIRATIONAL TARGET FOR M/WBE PARTICIPATION

The aspirational target for this project is:

Aspirational Target for Construction

M/WBE Classification	Aspirational Target(s)
Certified Minority Business Enterprises (MBE)	17% of the total anticipated contract value
Certified Women Business Enterprises (WBE)	9% of the total anticipated contract value

SECTION 2 - GOOD FAITH EFFORT

The following list of the good faith efforts criteria complies with Leon County's Purchasing and Minority, Women, and Small Business Enterprise Policy. This criteria is used in the determination of whether a contractor has performed and documented good faith efforts. Also, the basis for rejecting a MWBE deemed unqualified or unacceptable by the Prime Contractor shall be documented and included in the respondent's Good Faith Effort documentation.

1. Please identify **all** of the following activities that your firm has done as Good Faith Effort in order to secure MWBE participation and submit documentation of such. Failure to designate those actions you have done as "Good Faith" and provide documentation of **all** Good Faith Efforts completed by your firm will deem your proposal as non-responsive. Please check the appropriate boxes that apply to your good faith activities:

   □ a. Advertised for participation by M/WBEs in non-minority and minority publications within the Market area, including a copy of the advertisement and proof of the date(s) it appeared – or by sending correspondence, no less than ten (10) days prior to the submission deadline, to all M/WBEs referred to the respondent by the MWSBE Division for the goods and services to be subcontracted and/or supplied

□ b. Documented that the bidding Prime Contractor provided ample time for potential MBE and/or WBE subcontractors to respond to bid opportunities, including a chart outlining the schedule/time frame used to obtain bids from MBE and WBE Vendors as applicable to the aspirational Target.

□ c. Contacted the MWSBE Division for a listing of available M/WBEs who provide the services needed for the bid or proposal.

□ d. Contacted MBEs and/or WBEs who provide the services needed for the bid or proposal.

□ e. Documented follow-up telephone calls with potential M/WBE subcontractors seeking participation.

□ f. Allowed potential M/WBE Subcontractors to review bid specifications, blueprints and all other Bid/RFP related items at no charge to the M/WBEs.

□ g. Contacted the MWSBE Division, no less than five (5) business days prior to the Bid/RFP deadline, regarding problems the with respondent is having in achieving and/or reaching the aspirational targets.

□ h. Other documentation indicating their Good Faith Efforts to meet the aspirational targets. Please provide details below.

_____

_____

_____

2. Prime contractors will negotiate in good faith with interested MWSBE's, not rejecting a MWSBE as unqualified or unacceptable without sound business reasons based on a through investigation of their capabilities. **The basis for rejecting any MWBE deemed unqualified or unacceptable by the Prime Contractor shall be included in the Good Faith Effort documentation**. The Prime Contractor shall not impose unrealistic conditions of performance on MWSBE's seeking subcontracting opportunities.

3. Leon County reserves the right to request supporting documentation as evidence of good faith efforts indicated above at any time. Failure to provide supporting documentation when requested shall deem your bid/proposal as non-responsive.

PARTICIPATION PLAN FORM continued on following pages.

SECTION 3 - RESPONDENT'S PROPOSED MBE PARTICIPATION

Respondent shall complete the following Table identifying each certified MBE firm they intend to use on this project. Attach additional sheets as necessary.

MBE and WBE Intended Utilization

Firm's Name (Requires Leon County or City of Tallahassee MWBE certification)[1]	**Firm's Location Address** (Must be in Leon, Gadsden, Jefferson or Wakulla Counties, FL to be certified)	**Firm's Telephone Number**	**Ethnic Group[2] (B, A, H, N, F)**	**Total Dollar Amount of MWBE Participation**	**Type of Service to Provide**
Minority and Women Business Enterprise(s)					
a.					
b.					
c.					
d.					
e.					
f.					

[1] Certification – Attach and submit a copy of each MBE and WBE certification with the proposal.
[2] Ethnic Group – Use of the following abbreviations: (a) MBE's include: African American (B), Asian American (A), Hispanic American (H) and Native American (N) owned firms; (b) WBEs include Non-Minority Female (F) owned firms.

Bid Title: Stormwater Management Facility No. 6 Modifications
Bid No: BC-02-18-11-18
Opening Date: Friday, February 18, 2011 at 2:00 PM

SECTION 4 - NON-MWBE SUBCONTRACTORS

Respondent shall complete the following Table identifying non-MBE's or WBE's subcontractors it anticipates utilizing on the project.

Non-MBE and WBE Intended Utilization				
Firm's Name	**Firm's Address**	**Firm's Phone #**	**Total Dollar Amount**	**Type of Service to Provide**
a.				
b.				
c.				
d.				
e.				
f.				
g.				
h.				
i.				

EQUAL OPPORTUNITY/AFFIRMATIVE ACTION STATEMENT

1. The contractors and all subcontractors hereby agree to a commitment to the principles and practices of equal opportunity in employment and to comply with the letter and spirit of federal, state, and local laws and regulations prohibiting discrimination based on race, color, religion, national region, sex, age, handicap, marital status, and political affiliation or belief.

2. The contractor agrees to comply with Executive Order 11246, as amended, and to comply with specific affirmative action obligations contained therein.

Signed: _____

Title: _____

Firm: _____

Address: _____

IDENTICAL TIE BIDS

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

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

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

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

4) In the statement specified in subsection (1), notify the employees that, as a condition of working on the commodities or contractual services that are under bid, the employees 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) Impose a sanction on, or require the satisfactory participation in a drug assistance or rehabilitation program if such is available in the employee's community, by any employee who is so convicted.

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

As the person authorized to sign the statement, I certify the following:

(Check one and sign in the space provided.)

_____This firm complies fully with the above requirements.

_____This firm does not have a drug free work place program at this time.

_____ _____

VENDOR'S SIGNATURE TITLE

CONTRACTOR'S BUSINESS INFORMATION

COMPANY INFORMATION

Name:	
Street Address:	
City, State, Zip:	
Taxpayer ID Number:	
Telephone:	Fax:
Trade Style Name:	

TYPE OF BUSINESS ORGANIZATION (*check one*)

	Sole Proprietorship		Limited Liability Company
	General Partnership		Joint Venture
	Limited Partnership		Trust
	Corporation		Other *(specify)*
	Sub-chapter S Corporation		

State of Incorporation:_____ Date Established:_____

AUTHORIZED SIGNATORIES/NEGOTIATORS

The Bidder represents that the following persons are authorized to sign and/or negotiate contracts and related documents to which the bidder will be duly bound:

Name	Title	Telephone	E-Mail

FLORIDA CONSTRUCTION INDUSTRIES LICENSING BOARD

Please provide the following information for all licenses required by Florida statutes of the Prime Contractor for the performance of the work in this project.

Primary Licensee:	
License Type:	
License Number:	Expiration Date:
Qualified Business License (certificate of authority) number:	

Alternate Licensee:	
License Type:	
License Number:	Expiration Date:

Bidder may use additional sheets to provide information for all applicable licenses and shall provide copies of each license as a part of the bid submittal.

LIST COMPANIES FROM WHOM YOU OBTAIN SURETY BONDS

Surety Company 1

Company Name	
Contact's Name	
Telephone	
Fax	
Address	

Surety Company 2

Company Name	
Contact's Name	
Telephone	
Fax	
Address	

Present Amount of Bonding Coverage ($):	Has your application for surety bond ever been declined? (*If yes, please provided detailed information on reverse*) ☐ Yes ☐ No	During the past 2 years, have you been charged with a failure to meet the claims of your subcontractors or suppliers? (*If yes, please provided detailed information on reverse*) ☐ Yes ☐ No

THE UNDERSIGNED, A DULY AUTHORIZED OFFICER OR EMPLOYEE, HEREBY CERTIFIES THAT THE ABOVE INFORMATION IS TRUE AND CORRECT AND HAS HEREUNTO SET HIS SIGNATURE

THIS _____ DAY OF _____, 20___.

By:_____ Title:_____

Printed Name and Title:_____

NON-COLLUSION AFFIDAVIT

The undersigned being first duly sworn as provided by law, deposes and says:

1. This Affidavit is made with the knowledge and intent that it is to be filed with the Board of County Commissioners, Leon County, Florida and that it will be relied upon by said County, in any consideration which may give to and any action it may take with respect to this Proposal.

2. The undersigned is authorized to make this Affidavit on behalf of,

   _____
   (Name of Corporation, Partnership, Individual, etc.)

   a _____ , formed under the laws of _____
   (Type of Business) (State or Province)

   of which he is _____.
   (Sole Owner, partner, president, etc.)

3. Neither the undersigned nor any other person, firm or corporation named in above Paragraph 2, nor anyone else to the knowledge of the undersigned, have themselves solicited or employed anyone else to solicit favorable action for this Proposal by the County, also that no head of any department or employee therein, or any officer of Leon County, Florida is directly interested therein.

4. This Proposal is genuine and not collusive or a sham; the person, firm or corporation named above in Paragraph 2 has not colluded, conspired, connived or agreed directly or indirectly with any bidder or person, firm or corporation, to put in a sham Proposal, or that such other person, firm or corporation, shall refrain from bidding, and has not in any manner, directly or indirectly, sought by agreement or collusion, or communication or conference with any person, firm or corporation, to fix the prices of said proposal or proposals of any other bidder; and all statements contained in the proposal or proposals described above are true; and further, neither the undersigned, nor the person, firm or corporation named above in Paragraph 3, has directly or indirectly submitted said proposal or the contents thereof, or divulged information or data relative thereto, to any association or to any member or agent thereof.

_____ _____
AFFIANT'S NAME AFFIANT'S TITLE

TAKEN, SWORN AND SUBSCRIBED TO BEFORE ME this _____ Day of _____,20___.

Personally Known _____ Or Produced Identification _____

Type of Identification _____

_____
Notary Public

_____
(Print, Type or Stamp Commissioned Name of Notary Public)

INSURANCE CERTIFICATION FORM

To indicate that Bidder/Respondent understands and is able to comply with the required insurance, as stated in the bid/RFP document, Bidder/Respondent shall submit this insurances sign-off form, signed by the company Risk Manager or authorized manager with risk authority.

A. Is/are the insurer(s) to be used for all required insurance (except Workers' Compensation) listed by Best with a rating of no less than A:VII?

☐ YES ☐ NO

Commercial General Liability:	Indicate Best Rating: Indicate Best Financial Classification:	_____ _____
Business Auto:	Indicate Best Rating: Indicate Best Financial Classification:	_____ _____

1. Is the insurer to be used for Workers' Compensation insurance listed by Best with a rating of no less than A:VII?

☐ YES ☐ NO

Indicate Best Rating: _____
Indicate Best Financial Classification: _____

If answer is NO, provide name and address of insurer:

_____

_____

_____

2. Is the Respondent able to obtain insurance in the following limits (next page) as required for the services agreement?

☐ YES ☐ NO

Insurance will be placed with Florida admitted insurers unless otherwise accepted by Leon County. Insurers will have A.M. Best ratings of no less than A:VII unless otherwise accepted by Leon County.

Required Coverage and Limits

The required types and limits of coverage for this bid/request for proposals are contained within the solicitation package. Be sure to carefully review and ascertain that bidder/proposer either has coverage or will place coverage at these or higher levels.

Required Policy Endorsements and Documentation

Certificate of Insurance will be provided evidencing placement of each insurance policy responding to requirements of the contract.

Deductibles and Self-Insured Retentions

Any deductibles or self-insured retentions must be declared to and approved by the County. At the option of the County, either: the insurer shall reduce or eliminate such deductibles or self-insured retentions as respects the County, its officers, officials, employees and volunteers; or the Contractor shall procure a bond guaranteeing payment of losses and related investigations, claim administration and defense expenses.

Endorsements to insurance policies will be provided as follows:

Additional insured (Leon County, Florida, its Officers, employees and volunteers) - General Liability & Automobile Liability

Primary and not contributing coverage- General Liability & Automobile Liability

Waiver of Subrogation (Leon County, Florida, its officers, employees and volunteers)- General Liability, Automobile Liability, Workers' Compensation and Employer's Liability

Thirty days advance written notice of cancellation to County - General Liability, Automobile Liability, Worker's Compensation & Employer's Liability.

Please mark the appropriate box:

Coverage is in place ☐ Coverage will be placed, without exception ☐

The undersigned declares under penalty of perjury that all of the above insurer information is true and correct.

Name _____ Signature _____
Typed or Printed

Date _____ Title _____
(Company Risk Manager or Manager with Risk Authority)

COMPLIANCE WITH THE TRENCH SAFETY ACT (90-96, LAWS OF FLORIDA)

Trench Safety Act. The Contractor shall comply with all of the requirements of the Florida Trench Safety Act (Chapter 90-96, CS/CB 2626, laws of Florida). The Contractor shall acknowledge that included in various items of his bid proposal and in the total bid price are costs for complying with the provisions of the Act. Additionally, the Contractor is required to break out the costs for complying with the Florida Trench Safety Act. **FAILURE TO COMPLY WITH THE REQUEST IN THIS SECTION SHALL RESULT IN THE BID BEING DECLARED NON-RESPONSIVE.**

Bidder acknowledges that included in the various items of the proposal and in the Total Bid Price are costs for complying with the Florida Trench Safety Act (90-96, Laws of Florida) effective October 01, 1990. The bidder further identifies the costs to be summarized below:

	Trench Safety Measure (Description)	Units of Measure (LF, SY)	Unit (Quantity)	Unit Cost	Extended Cost
A.	_____	_____	_____	_____	_____
B.	_____	_____	_____	_____	_____
C.	_____	_____	_____	_____	_____
D.	_____	_____	_____	_____	_____
				TOTAL	$_____

DATE _____, 20___

Official Address
(including Zip Code)

By: _____

_____
(TITLE)

_____

_____

ATTACH AND INCLUDE THIS PAGE AS PART OF PROPOSAL FORM; FAILURE TO DO SO MAY BE CAUSE FOR DISQUALIFICATION OF YOUR BID.

CERTIFICATION REGARDING DEBARMENT, SUSPENSION, And OTHER RESPONSIBILITY MATTERS PRIMARY COVERED TRANSACTIONS

1) The prospective primary participant certifies to the best of its knowledge and belief, that it and its principals:

   a) Are not presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from covered transactions by any Federal department or agency;

   b) Have not within a three-year period preceding this been convicted of or had a civil judgement rendered against them for commission of fraud or a criminal offense in connection with obtaining, attempting to obtain, or performing a public (Federal, State or local) transaction or contract under a public transaction; violation of Federal or State antitrust statues or commission of embezzlement, theft, forgery, bribery, falsification or destruction of records, making false statements, or receiving stolen property;

   c) Are not presently indicted for or otherwise criminally or civilly charged by a governmental entity (Federal, State or local) with commission of any of these offenses enumerated in paragraph (1)(b) of this certification; and

   d) Have not within a three-year period preceding this application/proposal had one or more public transactions (Federal, State or local) terminated for cause or default.

2) Where the prospective primary participant is unable to certify to any of the statements in this certification, such prospective participant shall attach an explanation to this proposal.

3) No subcontract will be issued for this project to any party which is debarred or suspended from eligibility to receive federally funded contracts.

_____
Signature

_____
Title

_____
Contractor/Firm

_____
Address

CERTIFICATION OF TRADES WORK

This bid has an aspirational trade contractor work target of 85 percent of the dollar value of trade contractor work with local businesses unless the bidder provides proof to the County's satisfaction, that the trade contractor work is not available locally with the Leon, Gadsden, Wakulla or Jefferson County area.

The following definitions shall apply for purposes of this section:

a. "Local business" shall mean a business which has had a fixed office or distribution point located in and having a street address within Leon, Gadsden, Wakulla, or Jefferson County for at least six (6) months immediately prior to the issuance of the request for competitive bids or request for proposals by the County.

b. The term "trade contractor" shall mean a subcontractor who contracts with the prime contractor and whose primary activity is performing specific activities (e.g., pouring concrete, masonry, site preparation, framing, carpentry, dry wall installation, electrical, plumbing, painting) in a construction project but is not responsible for the entire project.

The successful contractor, at the time of development of the project schedule of values, shall provide a listing of the trade contractor work to be performed. As the project progresses, the names of the trade contractors performing the work and the dollar value and percentage participation of each shall be provided in a manner to be prescribed by the County.

The Bidder shall complete the following section designating the commitment to trade contractor participation for this project. If the aspirational target of 85 percent of the dollar value of trade contractor work cannot be met, the Bidder shall provide such information necessary to establish that the work is not available from local trade contractors.

- □ Bidder agrees to engage not less than 85 percent of the dollar value of trade contractor work with local businesses.

- □ Bidder agrees to engage not less than _____ percent of the dollar value of trade contractor work with local businesses and has explained why the aspirational target cannot be met.

The undersigned is an authorized signatory for the bidder and understands that the commitment made herein shall be a contractual provision of the project for the successful contractor and, further, that if bidder is the successful contractor all prescribed reporting will be done in an accurate and timely manner.

_____
(Firm Name)

BY _____
(Authorized Representative)

_____
(Printed or Typed Name)

DATE _____

LOCAL VENDOR CERTIFICATION

The undersigned, as a duly authorized representative of the vendor listed herein, certifies to the best of his/her knowledge and belief, that the vendor meets the definition of a “Local Business.” For purposes of this section, "local business" shall mean a business which:

a) Has had a fixed office or distribution point located in and having a street address within Leon, Gadsden, Wakulla, or Jefferson County for at least six (6) months immediately prior to the issuance of the request for competitive bids or request for proposals by the County; and
b) Holds any business license required by Leon County (or one of the other local counties), and, if applicable, the City of Tallahassee; and
c) Is the principal offeror who is a single offeror; a business which is the prime contractor and not a subcontractor; or a partner or joint venturer submitting an offer in conjunction with other businesses.

Please complete the following in support of the self-certification and submit copies of your County and City business licenses. Failure to provide the information requested will result in denial of certification as a local business.

Business Name:	
Current Local Address:	Phone: Fax:
If the above address has been for less than six months, please provide the prior address. Length of time at this address:	
Home Office Address:	Phone: Fax:

_____ _____
Signature of Authorized Representative Date

STATE OF _____
COUNTY OF _____

The foregoing instrument was acknowledged before me this _____day of_____, 20___.
By _____, of _____,
(Name of officer or agent, title of officer or agent) (Name of corporation acknowledging)
a _____ corporation, on behalf of the corporation. He/she is personally known to me
(State or place of incorporation)
or has produced _____as identification.
(type of identification)

_____
Signature of Notary

_____
Print, Type or Stamp Name of Notary

_____
Title or Rank

_____
Serial Number, If Any

Return Completed form with supporting documents to:

Leon County Purchasing Division
1800-3 Blair Stone Road
Tallahassee, Florida 32308

Bid Title: Stormwater Management Facility No. 6 Modifications
Bid No: BC-03-03-11-18
Opening Date: Thursday, March 3, 2011 at 2:00 PM

DRAFT AGREEMENT

THIS AGREEMENT dated this day of , 2011, by and between LEON COUNTY, a charter county and a political subdivision of the State of Florida, hereinafter referred to as the "County" and , hereinafter referred to as the "Contractor."

WHEREAS, the County has determined that it would be in the best interest of the citizens of Leon County, Florida, that the County be able to utilize the services of private persons when such services cannot be reasonably provided by the County; and

WHEREAS, the County has determined that it would be better to contract for these services than to hire the necessary personnel to satisfy the needs of the County: and

WHEREAS, in order to secure the lowest cost for these services, the County has sought and received competitive bids from contractor for such services.

NOW, THEREFORE, the parties hereto agree as follows:

1. SERVICES TO BE PROVIDED

The Contractor hereby agrees to provide the following services to the County..... said bid being incorporated into this agreement as if fully set out herein, to the extent it is not inconsistent with this Agreement.

2. WORK

Any work to be performed shall be upon the written request of the County Administrator or his representative, which request shall set forth the commencing date of such work and the time within which such work shall be completed.

The performance of Leon County of any of its obligations under this Agreement shall be subject to and contingent upon the availability of funds lawfully expendable for the purposes of this Agreement for the current and any future periods provided for within the bid specifications.

3. TIME AND LIQUIDATED DAMAGES

The work to be performed under this contract shall be commenced within fifteen (15) days of the Notice to Proceed. All work to be performed under this Contract shall be completed within ninety (90) consecutive calendar days of the Notice to Proceed. If the work to be performed under this Contract is not completed within the time set forth above, or within such extra time as may be granted by the County, the Contractor shall be deemed to be in default. For each day the Contractor is in default, the Contractor or its Surety shall pay to the County, not as a penalty, but as liquidated damages, the sum of $580.00.

Permitting the Contractor to continue and finish the work or any part of it after the expiration of the contract time allowed, including extensions, if any, shall in no way act as a waiver on the part of County of the liquidated damages due under the contract.

4. CONTRACT SUM

The Contractor agrees that for the performance of the Services as outlined in Section 1 above, it shall be remunerated by the County for a total sum of $_____on completion of the work and acceptance as satisfactory.

5. PAYMENTS TO THE GENERAL CONTRACTOR

a. The General Contractor shall submit to the Owner a schedule of values for the project. Pay requests shall be sworn statements based upon the progress made and submitted to the Owner on a monthly basis. Payment by the Owner to the General Contractor of the statement amount shall be made within twenty (20) days after approval of the Architect-Engineer and submitted to the Owner. Ten percent (10%) retainage shall be held at the discretion of the Owner and Architect, the 10% retainage shall be reduced to 5% at 50% completion of the work.

b. Final Payment - Final payment constituting the unpaid balance of the cost of the Project and the General Contractor's fee, shall be due and payable within 45 days after the Project is delivered to the Owner, finished and ready for beneficial occupancy, or when the Owner occupies the Project, whichever event first occurs provided that the Project be then substantially completed and this agreement substantially performed. However, if there should remain work to be completed, the General Contractor and the Architect-Engineer shall list those items prior to receiving final payment and the Owner may retain a sum equal to 200% of the estimated cost of completing any unfinished work and the applicable portion of the General Contractor's retain age, provided that said unfinished items are listed separately and estimated cost of completing any unfinished items are likewise listed separately. Thereafter, Owner shall pay to General Contractor, monthly, the amount retained from each incomplete item after each of said items is completed.

c. Payments to Subcontractors - The General Contractor shall promptly, but not later than 10 days after receipt of payment from the Owner, pay all the amount due subcontractors less a retain age of ten percent (10%). If there should remain items to be completed, the General Contractor and Architect-Engineer shall list those items required for completion and the General Contractor shall require the retain age of a sum equal to 200% of the estimated cost of completing any unfinished items, provided that said unfinished items are listed separately and the estimated cost of completing any unfinished items likewise listed separately. Thereafter, The General Contractor shall pay to the subcontractors, monthly, the amount retained for each incomplete item after each of said items is completed. Before issuance of final payment without any retain age, the subcontractor shall submit satisfactory evidence that all payrolls, material bills and other indebtedness connected with the Project have been paid or otherwise satisfied, warranty information is complete, as-built markups have been submitted and instruction for the Owner's operating and maintenance personnel is complete. Final payment may be made to certain select subcontractors who work is satisfactorily completed prior to the total completion of the Project but only upon approval of the Owner.

d. Delayed Payments by Owner - If the Owner shall fail to pay the General Contractor within 20 days after the receipt of an approved payment request from the General Contractor, then the General Contractor may, upon fourteen (14) additional days advance written notice to the Owner and the Architect-Engineer stop the Project until payment of the Amount owing has been received, provided that the payment request has been submitted in sufficient detail to comply with the guidelines of the Office of the Clerk of the Circuit Court for Leon County. In the event that there is a dispute in the amount of the pay request, then only the disputed amount shall be held until resolved and the undisputed amount shall be paid within the time limits as stated within this paragraph. If undisputed amounts are timely paid, then the General Contractor shall not stop the Project in any fashion and the progress of the project shall not be interrupted. Both parties agree that best efforts be made to resolve the disputed amount.

e. Payment for Materials and Equipment - Payments will be made for material and equipment not incorporated in the work but delivered and suitably stored at the site (or another location, subject to prior approval and acceptance by the Owner on each occasion).

6. STATUS

The contractor at all times relevant to this Agreement shall be an independent contractor and in no event shall the Contractor nor any employees or sub-contractors under it be considered to be employees of Leon County.

7. INSURANCE

Contractor shall procure and maintain for the duration of the contract insurance against claims for injuries to persons or damages to property which may arise from or in connection with the performance of the work hereunder by the Contractor, his agents, representatives, employees or subcontractors. The cost of such insurance shall be included in the Contractor's bid.

A. Minimum Limits of Insurance. Contractor shall maintain limits no less than:

1. General Liability: $1,000,000 combined single limit per occurrence for bodily injury, personal injury and property damage. If Commercial General Liability Insurance or other form with a general aggregate limit is used, either the general aggregate limit shall apply separately to this project/location or the general aggregate limit shall be twice the required occurrence limit.

2. Automobile Liability: $1,000,000 combined single limit per accident for bodily injury and property damage. (Non-owned, Hired Car).

3. Workers' Compensation and Employers Liability: Insurance covering all employees meeting Statutory Limits in compliance with the applicable state and federal laws and Employer's Liability with a limit of $500,000 per accident, $500,000 disease policy limit, $500,000 disease each employee. Waiver of Subrogation in lieu of Additional Insured is required.

B. Deductibles and Self-Insured Retentions

Any deductibles or self-insured retentions must be declared to and approved by the County. At the option of the County, either: the insurer shall reduce or eliminate such deductibles or self-insured retentions as respects the County, its officers, officials, employees and volunteers; or the Contractor shall procure a bond guaranteeing payment of losses and related investigations, claim administration and defense expenses.

C. Other Insurance Provisions The policies are to contain, or be endorsed to contain, the following provisions:

1. General Liability and Automobile Liability Coverages (County is to be named as Additional Insured).

a. The County, its officers, officials, employees and volunteers are to be covered as insureds as respects; liability arising out of activities performed by or on behalf of the Contractor, including the insured's general supervision of the Contractor; products and completed operations of the Contractor; premises owned, occupied or used by the Contractor; or automobiles owned, leased, hired or borrowed by the Contractor. The coverage shall contain no special limitations on the scope of protections afforded the County, its officers, officials, employees or volunteers.

b. The Contractor's insurance coverage shall be primary insurance as respects the County, it officers, officials, employees and volunteers. Any insurance of self-insurance maintained by the County, its officers, officials, employees or

volunteers shall be excess of the Contractor's insurance and shall not contribute with it.

c. Any failure to comply with reporting provisions of the policies shall not affect coverage provided to the county, its officers, officials, employees or volunteers.

d. The Contractor's insurance shall apply separately to each insured against whom claims is made or suit is brought, except with respect to the limits of the insurer's liability.

2. All Coverages

Each insurance policy required by this clause shall be endorsed to state that coverage shall not be suspended, voided, canceled by either party, reduced in coverage or in limits except after thirty (30) days' prior written notice by certified mail, return receipt requested, has been given to the County.

D. Acceptability of Insurers. Insurance is to be placed with insurers with a Best's rating of no less than A:VII.

E. Verification of Coverage. Contractor shall furnish the County with certificates of insurance and with original endorsements effecting coverage required by this clause. The certificates and endorsements for each insurance policy are to be signed by a person authorized by that insurer to bind coverage on its behalf. All certificates and endorsements are to be received and approved by the County before work commences. The County reserves the right to require complete, certified copies of all required insurance policies at any time.

F. Subcontractors. Contractors shall include all subcontractors as insureds under its policies or shall furnish separate certificates and endorsements for each subcontractor. All coverages for subcontractors shall be subject to all of the requirements stated herein.

8. PERMITS

The Contractor shall pay for all necessary permits as required by law.

9. LICENSES

The Contractor shall be responsible for obtaining and maintaining his city or county occupational license and any licenses required pursuant to the laws of Leon County, the City of Tallahassee, or the State of Florida. Should the Contractor, by reason of revocation, failure to renew, or any other reason, fail to maintain his license to operate, the contractor shall be in default as of the date such license is lost.

10. ASSIGNMENTS

This Agreement shall not be assigned or sublet as a whole or in part without the written consent of the County nor shall the contractor assign any monies due or to become due to him hereunder without the previous written consent of the County.

11. PAYMENT AND PERFORMANCE BOND

A Payment and Performance Bond in the amount of 100% of the estimated project cost shall be supplied by the Contractor at the time of Agreement execution. Also, a Payment and Material Bond for the Agreement amount shall be supplied by the Contractor at the same time.

Payment and Performance and Material Bonds shall provide that, in the event of non-performance on the part of the Contractor the bond can be presented for honor and acceptance at an authorized representative or institution located in Tallahassee, Florida. The Payment and Performance Bond shall be in the following form:

PUBLIC CONSTRUCTION BOND
Bond No.(enter bond number)

BY THIS BOND, We _____, as Principal and _____ a corporation, as Surety, are bound to , herein called Owner, in the sum of $, for payment of which we bind ourselves, our heirs, personal representatives, successors, and assigns, jointly and severally.

THE CONDITION OF THIS BOND is that if Principal:

1. Performs the contract dated , between Principal and Owner for construction of , the contract being made a party of this bond by reference, at the time and in the manner prescribed in the contract; and

2. Promptly makes payments to all claimants, as defined in Section 255.05(1), Florida Statutes, supplying Principal with labor, materials, or supplies, used directly or indirectly by Principal in the prosecution of the work provided for in the contract; and

3. Pays Owner all losses, damages, expenses, costs, and attorney's fees, including appellate proceedings, that Owner sustains because of a default by Principal under the contract; and

4. Performs the guarantee of all work and materials furnished under the contract for the time specified in the contract, then this bond is void; otherwise it remains in full force.

Any action instituted by a claimant under this bond for payment must be in accordance with the notice and time limitation provisions in Section 255.05(2), Florida Statutes.

Any changes in or under the contract documents and compliance or noncompliance with any formalities connected with the contract or the changes does not affect Surety's obligation under this bond.

DATED on this the day of , 2011.

(Name of Principal)

By:
(As Attorney-In-Fact)

(Name of Surety)

Payment bonds executed as a result of the requirements herein by a surety shall make reference to Section 255.05, Florida Statutes, by number and shall contain reference to the notice and time limitation provisions in Section 255.05, Florida Statutes.

12. INDEMNIFICATION

The Contractor agrees to indemnify, defend and hold harmless the County, its officials, officers, employees and agents, from and against any and all claims, damages, liabilities, losses, costs, or suits of any nature whatsoever arising out of, because of, or due to any acts or omissions of the Contractor, its delegates, employees and agents, arising out of or under this Agreement, including reasonable attorney's fees. The County may, at its sole option, defend itself or require the Contractor to provide the defense. The Contractor acknowledges that ten dollars ($10.00) of the amount paid to the Contractor is sufficient consideration for the Contractor's indemnification of the County.

13. MINORITY BUSINESS ENTERPRISE (M/WBE) PARTICIPATION

The Contractor shall meet or exceed the M/WBE participation levels stated in the Contractor's M/WBE Participation Statement included as part of the Contractor's response for this project, see Exhibit ___ attached hereto and made a part hereof except when the County Good Faith Committee approves an exception.

The Contractor shall provide a monthly report to the Leon County Minority, Women and Small Business Enterprise Division in a format and manner prescribed by the Division. The report shall, at a minimum, indicate the business name of each certified Minority Business Enterprise or Women Business Enterprise sub-contractor utilized, the amount paid, the type of work performed, the appropriate invoice date, and the payment date to the Division.

Should Contractor's sub-contractor utilization fall below the level required in this Agreement or should Contractor substitute MWBE sub-contractors without prior written approval of the Division, the Contractor may be in breach of the Agreement. Contractors found in breach of their Agreement with the County may be suspended from bidding on and/or participation in any future County projects for up to three (3) years as provided in Section 15 of the Purchasing and Minority, Women, and Small Business Enterprise Policy 96-1.

Any change in the subcontractor utilization as listed on the participation plan (Exhibit___), must be approved by the MWSBE Division. Should the Contractor determine that the MWBE named in their participation plan submittal is unavailable or cannot perform the work, the Contractor shall request a change order. Such change order must be submitted to the MWSBE Division in writing at 2284 Miccosukee Road, Tallahassee, Florida or by facsimile to (850) 606-1651.

14. AUDITS, RECORDS, AND RECORDS RETENTION

The Contractor agrees:

a. To establish and maintain books, records, and documents (including electronic storage media) in accordance with generally accepted accounting procedures and practices, which sufficiently and properly reflect all revenues and expenditures of funds provided by the County under this Agreement.

b. To retain all client records, financial records, supporting documents, statistical records, and any other documents (including electronic storage media) pertinent to this Agreement for a period of five (5) years after termination of the Agreement, or if an audit has been initiated and audit findings have not been resolved at the end of five (5) years, the records shall be retained until resolution of the audit findings or any litigation which may be based on the terms of this Agreement.

c. Upon completion or termination of the Agreement and at the request of the County, the Contractor will cooperate with the County to facilitate the duplication and transfer of any said records or documents during the required retention period as specified in paragraph 1 above.

d. To assure that these records shall be subject at all reasonable times to inspection, review, or audit by Federal, state, or other personnel duly authorized by the County.

e. Persons duly authorized by the County and Federal auditors, pursuant to 45 CFR, Part 92.36(I)(10), shall have full access to and the right to examine any of provider's Agreement and related records and documents, regardless of the form in which kept, at all reasonable times for as long as records are retained.

f. To include these aforementioned audit and record keeping requirements in all approved subcontracts and assignments.

15. MONITORING

To permit persons duly authorized by the County to inspect any records, papers, documents, facilities, goods, and services of the provider which are relevant to this Agreement, and interview any clients and employees of the provider to assure the County of satisfactory performance of the terms and conditions of this Agreement.

Following such evaluation, the County will deliver to the provider a written report of its findings and will include written recommendations with regard to the provider's performance of the terms and conditions of this Agreement. The provider will correct all noted deficiencies identified by the County within the specified period of time set forth in the recommendations. The provider's failure to correct noted deficiencies may, at the sole and exclusive discretion of the County, result in any one or any combination of the following: (1) the provider being deemed in breach or default of this Agreement; (2) the withholding of payments to the provider by the County; and (3) the termination of this Agreement for cause.

16. TERMINATION

Leon County may terminate this Agreement without cause, by giving the Contractor thirty (30) days written notice of termination. Either party may terminate this Agreement for cause by giving the other party hereto thirty (30) days written notice of termination. The County shall not be required to give Contractor such thirty (30) day written notice if, in the opinion of the County, the Contractor is unable to perform its obligations hereunder, or if in the County's opinion, the services being provided are not satisfactory. In such case, the County may immediately terminate the Agreement by mailing a notice of termination to the Contractor.

17. PUBLIC ENTITY CRIMES STATEMENT

In accordance with Section 287.133, Florida Statutes, Contractor hereby certifies that to the best of his knowledge and belief neither Contractor nor his affiliates has been convicted of a public entity crime. Contractor and his affiliates shall provide the County with a completed public entity crime statement form no later than January 15 of each year this Agreement is in effect. Violation of this section by the Contractor shall be grounds for cancellation of this Agreement by Leon County.

18. UNAUTHORIZED ALIEN(S)

The Contractor agrees that unauthorized aliens shall not be employed nor utilized in the performance of the requirements of this solicitation. The County shall consider the employment or utilization of unauthorized aliens a violation of Section 274A(e) of the Immigration and Naturalization Act (8 U.S.C. 1324a). Such violation shall be cause for unilateral termination of this Agreement by the County.

19. NON-WAIVER

Failure by the County to enforce or insist upon compliance with any of the terms or conditions of this Agreement or failure to give notice or declare this Agreement terminated shall not constitute a general waiver or relinquishment of the same, or of any other terms, conditions or acts; but the same shall be and remain at all times in full force and effect.

20. DELAY

No claim for damages or any claim other than for an extension of time shall be made or asserted against the County by reason of any delays. The Contractor shall not be entitled to an increase in the contract sum or payment or compensation of any kind from the County for direct, indirect, consequential, impact or other costs, expenses or damages, including but limited to costs of acceleration or inefficiency, arising because of delay, disruption, interference or hindrance from any cause whatsoever, whether such delay, disruption, interference or hindrance be reasonable or unreasonable, foreseeable or unforeseeable, or avoidable or unavoidable; provided, however, that this provision shall not preclude recovery of damages by the Contractor for hindrances or delays due solely to fraud, bad faith, or active interference on the part of the County or its agents. Otherwise, the Contractor shall be entitled only to extensions of the contract time as the sole and exclusive remedy for such resulting delay, in accordance with and to the extent specifically provided above.

21. REVISIONS

In any case where, in fulfilling the requirements of this Agreement or of any guarantee, embraced in or required thereby it is necessary for the Contractor to deviate from the requirements of the bid, Contractor shall obtain the prior written consent of the County.

22. VENUE

Venue for all actions arising under this Agreement shall lie in Leon County, Florida.

23. CONSTRUCTION

The validity, construction, and effect of this Agreement shall be governed by the laws of the State of Florida.

The remainder of this page intentionally left blank.

WHERETO, the parties have set their hands and seals effective the date whereon the last party executes this Agreement.

CONTRACTOR

WITNESS:_____ BY:_____
President

WITNESS:_____ DATE_____

(CORPORATE SEAL)

STATE OF _____
COUNTY OF _____

The foregoing instrument was acknowledged before me this _____day of_____, 20___.

By _____, of _____,
(Name of officer or agent, title of officer or agent) (Name of corporation acknowledging)

a _____ corporation, on behalf of the corporation. He/she is personally
(State or place of incorporation)

known to me or has produced _____as identification.
(type of identification)

_____
Signature of Notary

_____
Print, Type or Stamp Name of Notary

_____
Title or Rank

_____
Serial Number, If Any

LEON COUNTY, FLORIDA

BY:_____
John Dailey, Chairman
Board of County Commissioners

DATE:_____

ATTEST:
BOB INZER, CLERK OF THE COURT
LEON COUNTY, FLORIDA

By:_____

APPROVED AS TO FORM:
LEON COUNTY ATTORNEY'S OFFICE

By:_____
Herbert W.A. Thiele, Esq.
County Attorney

DRAFT AGREEMENT - EXHIBIT A
CONSTRUCTION PROMPT PAYMENT INFORMATION REQUIREMENTS
(TO BE COMPLETED AFTER CONTRACT AWARD)

1. The County Project Manager is:

   Name:
   Street Address:
   City, State, Zip Code
   Telephone: Office_____ Cellular_____
   E-mail:_____

2. The Contractor's Project Manager is:

   Name:
   Street Address:
   City, State, Zip Code
   Telephone: Office_____ Cellular_____
   E-mail:_____

3. Notices to the Contractor are to be submitted to:

   Name:
   Company:
   Street Address:
   City, State, Zip Code
   Telephone: Office_____ Cellular_____
   E-mail:_____

4. Payment requests ___ will ___ will not be subject to review by an agent. If yes, the agent is:

   Name:
   Company:
   Street Address:
   City, State, Zip Code
   Telephone: Office_____ Cellular_____
   E-mail:_____

5. Payment requests are to be submitted to:

   Name:
   Street Address:
   City, State, Zip Code
   Telephone: Office_____ Cellular_____
   E-mail:

6. Proper form for a payment request for this contract is:

   The Contractor's Application for Payment , EJCDC document No. C-620 (2007 Edition)

7. Payment Dispute Resolution: Section 14.1 of the Leon County Purchasing and Minority, Women and Small Business Enterprise Policy details the policy and procedures for payment disputes under the contract.

8. Development of a List of Items to Be Completed or Corrected Upon Substantial Completion:

For the purposes of this section, the term “Agent” shall refer to the Engineer when the County (Owner) has engaged their professional services an to serve as an Agent for a project. In those instances when no Agent has been retained for the project, the County shall provide services as Agent with its own staff.

When the Contractor considers that the Work, or a portion thereof which the Owner agrees to accept separately, is substantially complete, the Contractor shall prepare and submit to the Agent/Owner a comprehensive list of items to be completed or corrected prior to final payment. For contracts less than $10 million in value, the list must be developed within 30 calendar days of substantial completion. For contracts more than $10 million in value, the list must be developed within 30 calendar days of substantial completion unless the parties agree in writing to extend it up to 60 days. Failure to include an item on such list does not alter the responsibility of the contractor to complete all Work in accordance with the Contract Documents.

Upon receipt of the Contractor’s list, the Agent/Owner will make an inspection to determine whether the Work or designated portion is substantially complete. If the Agent/Owner’s inspection discloses any item, whether or not included on the Contractor’s list, which is not sufficiently complete in accordance with the Contract Documents so that the Owner can occupy or utilize the Work or designated portion thereof for its intended use, it shall be added to the list and the Contractor shall, before the issuance of the Certificate of Substantial Completion, complete or correct such item upon notification by the Agent/Owner. In such case, the Contractor shall then submit a request for another inspection by the Agent/Owner to determine Substantial Completion.

Upon completion or correction of all the items on the list, the Contractor may submit a payment request for all remaining retainage. The County may withhold up to 150% of the cost of any incomplete items.

TECHNICAL SPECIFICATIONS

I. SUMMARY OF WORK

The purpose of this project is the repair and modification of an existing pump and sprinkler system used in the treatment of stormwater. Work items include the construction of a pile stabilized floating platform and associated gangway, installation of new pumps and associated electronic control systems, and construction of new sprinkler distribution system. The proposed project is located in Section 22 of Township 2 North and Range 1 East in Leon County, Florida.

II. GENERAL REQUIREMENTS

The construction sequence and design notes are shown on the construction plans. The construction procedure, materials, equipments, and the technical specifications listed herein, shall be in accordance with the following specifications and contract documents:

A. Stormwater Management Facility No. 6 Modifications Project Manual, dated January 2011.

The term "Owner" in this document shall represent "Leon County". The term "Engineer" in this document shall represent the "Leon County Engineer" or his designee

III. SPECIAL PROVISIONS

1. An allowance of 90 calendar days has been set for the completion of this Contract. Contractor shall invite all involved utilities to attend the pre-construction conference to confirm the work schedules.
2. This is a lump sum contract

3. It is the Contractor's responsibility to verify the survey control points for construction stakeouts. The costs for construction stakeouts are considered to be incidentals and included in the total bid dollar amount.

4. It is Contractor's responsibility to verify and locate all the utilities to avoid damages.

5. It is the Contractor's responsibility to establish a staging area with Engineer's review and approval prior to commencement of construction. Contractor is also responsible to obtain necessary permits if required by any other agencies. If the staging area is to be in waters of the State, a FDEP permit will be required. If the staging area is outside County's right-of-way or properties, Contractor is required to obtain a temporary staging area permit from Leon County Growth and Environmental Management Department.

6. Construction cannot start until all the required permits are secured. Contractor is also responsible to ensure all construction activities comply with the permit requirements.
7. No off-site/downstream dewatering will be allowed

8. If the construction causes any damage to adjacent properties, the Contractor shall be responsible for compensation unless it is proved otherwise.

9. The Contractor shall provide a minimum of one year warranty after final acceptance of all the Materials and Workmanship associated with this project have been completed.

PROJECT MANUAL
ISSUED FOR BID

Stormwater Management Facility No. 6 Modifications

Leon County

January 2011

CDM

CERTIFICATION PAGE

LEON COUNTY, FLORIDA
SWMF No. 6 Modifications

PROJECT MANUAL
January 2011

Carl S. Frizzell Date
Florida-Registered
Professional Engineer No. 67560

Joseph A. Lane Date
Florida-Registered
Professional Engineer No. 42632

Timothy A. Verwey Date
Florida-Registered
Professional Engineer No. 50947

Camp Dresser & McKee Inc.
3522 Thomasville Road, Suite 300
Tallahassee, FL 32309
Tel: (850) 386-9500
FL COA No. EB-0000020

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LEON COUNTY

STORMWATER MANAGEMENT FACILITY
NO. 6 MODIFICATIONS

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02368 Round Timber Piling
02932 Sodding
02933 Seeding
02999 Miscellaneous Work and Cleanup

DIVISION 03

03301 Concrete and Reinforcing Steel
03600 Grout

DIVISION 04
(NOT USED)

DIVISION 05

05540 Aluminum Gangway

DIVISON 06
(NOT USED)

DIVISION 07
(NOT USED)

DIVISION 08
(NOT USED)

DIVISON 09
(NOT USED)

DIVISON 10
(NOT USED)

DIVISION 11
(NOT USED)

DIVISION 12
(NOT USED)

DIVISION 13
(NOT USED)

SECTION 00200

INFORMATION AVAILABLE FOR BIDDERS

1. INFORMATION USED DURING DESIGN

   A. In the preparation of Drawings and Specifications for the Work, the ENGINEER has relied upon the following technical data:

      1. Boring Logs

   B. CONTRACTOR may rely upon the general accuracy of the “technical data”, except for the completeness thereof for the purposes of bidding or construction. Interested Bidders may obtain copies of such technical data at the office of the ENGINEER at reproduction costs.

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SECTION 01005

GENERAL REQUIREMENTS

PART 1 - GENERAL

1.01 SCOPE AND INTENT

A. Description:

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

B. Work Included:

1. The CONTRACTOR shall furnish all labor, superintendence, quality control, quantity control materials, power, light, heat, fuel, water, tools, appliances, equipment, supplies, and other means of construction necessary or proper for performing and completing the Work. He shall obtain and pay for all required permits as described in Section 01065. He shall perform and complete the Work in the manner best calculated to promote rapid construction consistent with safety of life and property and to the satisfaction of the OWNER, and in strict accordance with the Contract Documents. The CONTRACTOR shall clean up the Work and maintain it during and after construction, until accepted, and shall do all Work and pay all costs incidental thereto. He shall repair or restore all structures and property that may be damaged or disturbed during performance of the Work.

2. The cost of incidental Work described in these General Requirements, for which there are no specific Contract Items, shall be considered as part of the general cost of doing the Work and shall be included in the prices for the various Contract Items. No additional payment will be made therefore.

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

4. The CONTRACTOR shall remove, demolish and dispose of all equipment, piping, asphalt, rock, other materials, and appurtenances as shown on the Drawings and required to complete the Work. No additional payment will be made for additional demolition or disposal Work, not specifically specified on the Plans as required, to complete the Work.

5. The CONTRACTOR shall perform all Work in accordance with applicable local, state, and federal codes and regulations.

C. Public Utility Installations and Structures:

1. Public utility installations and structures shall be understood to include all poles, tracks, pipes, wires, conduits, vaults, manholes, and all other appurtenances and facilities pertaining thereto whether owned or controlled by the OWNER, other governmental bodies or privately owned, used to provide gas, electricity, telephone, sewerage, drainage, water or other public or private property which may be affected by the Work shall be deemed included hereunder.

2. The Contract Documents contain data relative to existing public or private utility installations and structures above and below the ground surface. These data are not guaranteed as to their completeness or accuracy and it is the responsibility of the CONTRACTOR to make his own investigations to inform himself fully of the character, condition and extent of all such installations and structures as may be encountered and as may affect the construction operations.

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

4. Public utility installations or structures owned or controlled by the OWNER or other governmental body which are shown on the Plans to be removed, relocated, replaced or rebuilt by the CONTRACTOR shall be considered as a part of the general cost of doing the Work and shall be included in the prices Bid for the various Contract items. No separate payment shall be made therefore.

5. All OWNER and other governmental utility departments and other owners of public utilities which may be affected by the Work will be informed in writing by the CONTRACTOR within two weeks after the execution of the Contract or Contracts covering the Work. Such notice will set out, in general, and direct attention to the responsibilities of the OWNER and other governmental utility departments and other owners of public utilities for such installations and structures as may be affected by the Work and will be accompanied by one set of Plans and Specifications covering the Work under such Contract or Contracts.

6. In addition to the general notice given, the CONTRACTOR shall give written notice to OWNER and other governmental utility departments and other owners of public utilities of the location of his proposed construction operations, at least one (1) week in advance of breaking ground in any area or on any unit of the Work. This can be accomplished by making the appropriate contact with the "Underground Utility Notification Center for Excavators (as applicable, for the area of construction)."

7. The maintenance, repair, removal, relocation or rebuilding of public utility installations and structures, when accomplished by the CONTRACTOR as herein provided, shall be done by methods approved by the Utility Owner at no additional cost.

1.02 PLANS AND SPECIFICATIONS

A. Plans:

1. The Plans referred to in the Contract Documents bear the general project name and number as shown in the Notice to BIDDERS (Advertisement).

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

B. Copies Furnished to CONTRACTOR:

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

2. The CONTRACTOR shall furnish each of the Subcontractors, manufacturers, and material suppliers such copies of the Contract Documents as may be required for their Work.

C. Supplementary Drawings:

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

D. CONTRACTOR To Check Plans and Data:

CONTRACTOR shall verify all dimensions, quantities and details shown on the Plans, Supplementary Drawings, Schedules, Specifications or other data received from the ENGINEER, and shall notify him of all errors, omissions, conflicts, and discrepancies found therein. Failure to discover or correct errors, conflicts or discrepancies shall not relieve the CONTRACTOR of full responsibility for unsatisfactory Work, faulty construction or improper operation resulting there from nor from rectifying such conditions at his own expense.

He will not be allowed to take advantage of any errors or omissions, as full instructions will be furnished by the ENGINEER, should such errors or omissions be discovered. All schedules are given for the convenience of the ENGINEER and the CONTRACTOR and are not guaranteed to be complete. The CONTRACTOR shall assume all responsibility for the making of estimates of the size, kind, and quality of materials and equipment included in Work to be done under the Contract.

1.03 MATERIALS AND EQUIPMENT

A. MANUFACTURER:

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

2. All transactions with the manufacturers or Subcontractors shall be through the CONTRACTOR, unless the CONTRACTOR shall request, in writing to the ENGINEER, that the MANUFACTURER or Subcontractor deal directly with the ENGINEER. Any such transactions shall not in any way release the CONTRACTOR from his full responsibility under this Contract.

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

B. Delivery, Storage and Handling:

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

2. The CONTRACTOR shall deliver materials and equipment in MANUFACTURER'S original unopened and undamaged containers with legible labeling. Materials and equipment shall be stored in a manner to prevent damage from environment and construction operations. Handling shall be in accordance with MANUFACTURER'S requirements.

C. Tools and Accessories:

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

2. Spare parts shall be furnished by the CONTRACTOR as specified.

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

D. Installation of Equipment:

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

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

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

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

E. Service of MANUFACTURER'S ENGINEER

The Contract Prices for materials and equipment furnished under this Contract shall include the cost of furnishing a competent and experienced ENGINEER or Superintendent (as required by equipment Specifications sections) who shall represent the MANUFACTURER and shall assist the CONTRACTOR, when required, to install, adjust, test and place in operation the equipment in conformity with the Contract Documents.

Prior to placing the equipment in operation, such Engineer or Superintendent shall make all adjustments and tests required and specified by the ENGINEER to prove that such equipment is properly installed and in satisfactory operating condition, and shall instruct such personnel as may be designated by the Utility Owner in the proper operation and maintenance of such equipment.

The Contract Price for installation of procured equipment shall include the cost of coordinating with the manufacturer and/or supplier and their Engineer or Superintendent to install, adjust, test and place in operation the equipment in conformity with the Contract Documents. After the equipment is placed in permanent operation, the CONTRACTOR shall make all adjustments and tests required by the ENGINEER to prove that such equipment is in proper and satisfactory operating condition, and shall instruct such personnel as may be designated by the Utility Owner in the proper operation and maintenance of such equipment.

1.04 INSPECTION AND TESTING

A. General:

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

2. For tests specified to be made by the CONTRACTOR, the testing personnel shall make the necessary inspections and tests and the reports thereof shall be in such form as will facilitate checking to determine compliance with the Contract Documents. Six (6) copies of the reports shall be submitted and authoritative certification thereof must be furnished to the ENGINEER as a prerequisite for the acceptance of any material or equipment.

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

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

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

B. Costs:

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

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

3. Materials and equipment submitted by the CONTRACTOR as the equivalent to those specifically named in the Contract may be tested by the OWNER for compliance. The CONTRACTOR shall reimburse the OWNER for the expenditures incurred in making such tests on materials and equipment, which are rejected, for non-compliance.

C. Inspection of Materials:

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

D. Certificate of Manufacture:

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

E. Shop Tests of Operating Equipment:

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

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

3. The cost of shop tests and of furnishing MANUFACTURER'S preliminary and shop test data of operating equipment shall be borne by the CONTRACTOR.

F. Preliminary Field Tests:

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

G. Final Field Tests:

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

2. The CONTRACTOR shall furnish labor, fuel, energy, water and all other materials, equipment and instruments necessary for all acceptance tests, at no additional cost to the OWNER. The Furnishing Supplier shall assist in the final field tests as applicable.

H. Failure of Tests:

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

2. In case the OWNER rejects any materials and equipment, then the CONTRACTOR shall replace the rejected materials and equipment within 30 calendar days. If he fails to do so, the OWNER may, after the expiration of a period of 30 calendar days after giving him notice in writing, proceed to replace such rejected materials and equipment, and the cost thereof shall be deducted from any compensation due or which may become due the CONTRACTOR under his Contract.

I. Final Inspection:

During such final inspections, the Work shall be clean and free from water. In no case will the final estimate be prepared until the CONTRACTOR has complied with all requirements set forth and the ENGINEER has made his final inspection of the entire Work and is satisfied that the entire Work is properly and satisfactorily constructed in accordance with the requirements of the Contract Documents.

1.05 TEMPORARY STRUCTURES

A. Responsibility for Temporary Structures

In accepting the Contract, the CONTRACTOR assumes full responsibility for the sufficiency and safety of all temporary structures or Work and for any damage which may result from their failure or their improper construction, maintenance or operation and will indemnify and save harmless the OWNER and ENGINEER, ENGINEER'S Consultants from all claims, suits or actions and damages or costs of every description arising by reason of failure to comply with the above provisions.

B. Temporary Fences:

If, during the course of the Work, it is necessary to remove or disturb any fence or part thereof, the CONTRACTOR shall, at his own expense, if so approved by the ENGINEER, provide a suitable temporary fence which shall be maintained until the permanent fence is replaced.

1.06 SAFETY

A. Accident Prevention:

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

B. First Aid:

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

1.07 LINES AND GRADES

A. Grade:

All Work under this Contract shall be constructed in accordance with the lines and grades shown on the Plans, or as approved by the ENGINEER. The full responsibility for keeping alignment and grade shall rest upon the CONTRACTOR.

B. Safeguarding Marks:

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

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

C. Datum Plane:

All elevations indicated or specified refer to the NAVD 1988.

1.08 ADJACENT STRUCTURES AND LANDSCAPING

A. Responsibility:

1. The CONTRACTOR shall also be entirely responsible and liable for all damage or injury as a result of his operations to all other adjacent public and private property, structures of any kind and appurtenances thereto met with during the progress of the Work. The cost of protection, replacement in their original locations and conditions or payment of damages for injuries to such adjacent public and private property and structures affected by the Work, whether or not shown on the Plans, and the removal, relocation and reconstruction of such items called for on the Plans or specified shall be included in the various Contract Items and no separate payments will be made therefore.

2. CONTRACTOR is expressly advised that the protection of buildings, structures, tunnels, tanks, pipelines, etc. and related Work adjacent and in the vicinity of his operations, wherever they may be, is solely his responsibility. Conditional inspection of buildings or structures in the immediate vicinity of the project which may reasonably be expected to be affected by the Work shall be performed by and be the responsibility of the CONTRACTOR.

3. CONTRACTOR shall, before starting operations, make an examination of the interior and exterior of the adjacent structures, buildings, facilities, etc., and record by notes, measurements, photographs, etc., conditions which might be aggravated by open excavation and construction. Repairs or replacement of all conditions disturbed by the construction shall be made to the satisfaction of the OWNER and ENGINEER. This does not preclude conforming to the requirements of the insurance underwriters. Copies of surveys, photographs, reports, etc., shall be submitted to the ENGINEER.

4. Prior to the beginning of any excavations the CONTRACTOR shall advise the ENGINEER of all buildings or structures on which he intends to perform Work or which performance of the project Work will affect.

B. Protection of Trees:

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

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

C. Restoration of Fences:

Any fence, or part thereof, that is damaged or removed during the course of the Work shall be replaced or repaired by the CONTRACTOR and shall be left in as good a condition as before the starting of the Work. The manner in which the fence is repaired or replaced and the materials used in such Work shall be subject to the approval of the ENGINEER. The cost of all labor, materials, equipment, and Work for the replacement or repair of any fence shall be deemed included in the appropriate Contract Item or items, or if no specific Item is provided therefore, as part of the overhead cost of the Work, and no additional payment will be made therefore. Private fences removed from within the Right-of-Way shall be replaced as described above at the Right-of-Way line.

1.09 PROTECTION OF WORK AND PUBLIC

A. Barriers and Lights:

During the prosecution of the Work, the CONTRACTOR shall put up and maintain at all times such barriers and lights as will effectually prevent accidents. The CONTRACTOR shall shield all nighttime lighting to prevent the lights from pointing upward. The CONTRACTOR shall provide suitable barricades, lights, “danger” or “caution” signs at all places where the Work causes obstructions or constitutes in any way a hazard in accordance with state and local requirements.

B. Smoke Prevention:

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

C. Noise:

1. The CONTRACTOR shall eliminate noise to as great as extent as practicable at all times. Air compressing plants shall be equipped with silencers and the exhaust of all gasoline motors or other power equipment shall be provided with mufflers. The CONTRACTOR shall strictly observe all local regulations and ordinances covering noise control.

2. Except in the event of an emergency, Work shall be done within the regular working hours specified in the General and Supplementary Conditions. If the proper and efficient prosecution of the Work requires operations during the night, the written permission of the OWNER shall be obtained before starting such items of the Work.

D. Access to Public Services:

Neither the materials excavated nor the materials or equipment used in the construction of the Work shall be so placed as to prevent free access to all fire hydrants, valves or manholes, or access required by emergency vehicles and/or personnel.

E. Dust Prevention:

The CONTRACTOR shall prevent dust nuisance from his operations or from traffic by keeping the roads and/or construction areas sprinkled with water at all times.

1.10 CUTTING AND PATCHING

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

1.11 CLEANING

A. During Construction:

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

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

3. The CONTRACTOR shall be responsible and liable for all spillage and incur all associated costs including, but not limited to, costs related to repair and maintenance resulting from damages thereof.

B. Final Cleaning:

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

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

1.12 MISCELLANEOUS

A. Protection Against Siltation and Bank Erosion

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

2. The CONTRACTOR, at his own expense, shall remove any siltation deposits and correct any erosion problems as determined by the ENGINEER that results from his construction operations.

3. The CONTRACTOR shall vacuum clean all new and existing drainage facilities and discharge points affected by construction prior to final acceptance or OWNER occupancy.

B. Protection of Wetland Areas:

The CONTRACTOR shall properly dispose of all surplus material, including soil, in accordance with Local, State and Federal regulations. Under no circumstances shall surplus material be disposed of in wetland areas as defined by the Florida Department of Environmental Protection or the Corps of Engineers.

C. Existing Facilities:

The Work shall be so conducted to maintain existing facilities in operation insofar as is possible. Requirements and schedules of operations for maintaining existing facilities in service during construction shall be as described in these Specifications.

D. Use of Chemicals:

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

E. Cooperation with Other Contractors and Forces:

During progress of Work under this Contract, it may be necessary for other Contractors and persons employed by the OWNER to Work in or about the site. The OWNER reserves the right to put such other Contractors to Work and to afford such access to the site of the Work to be performed hereunder at such times as the OWNER deems proper. The CONTRACTOR shall not impede or interfere with the Work of such other Contractors engaged in or about the Work and shall so arrange and conduct his Work that such other Contractors may complete their Work at the earliest date possible.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION

SECTION 01040

PROJECT COORDINATION

PART 1 - GENERAL

1.01 WORK PROGRESS

The CONTRACTOR shall furnish personnel and equipment which will be efficient, appropriate and large enough to secure a satisfactory quality of Work and a rate of progress which will insure the completion of the Work within the time stipulated in the Bid of these Specifications. If at any time such personnel appears to the ENGINEER to be inefficient, inappropriate or insufficient for securing the quality of Work required or for producing the rate of progress aforesaid, he may request the CONTRACTOR to increase the efficiency, change the character or increase the personnel and equipment, and the CONTRACTOR shall conform to such request. Failure of the ENGINEER to give such request shall in no way relieve the CONTRACTOR of his obligations to secure the quality of the Work and rate of progress.

1.02 PRIVATE LAND

The CONTRACTOR shall not enter or occupy private land except by notarized permission of the landowner.

1.03 WORK LOCATIONS

Structures and pipelines shall be located substantially as indicated on the Drawings, but the ENGINEER reserves the right to make such modifications in locations as may be found desirable to avoid interference with existing structures or for other reasons. Where fittings are noted on the Drawings, such notation is for the CONTRACTOR's convenience and does not relieve him from laying and jointing different or additional items where required.

1.04 OPEN EXCAVATIONS

All open excavations shall be adequately safeguarded by providing temporary barricades, caution signs, lights and other means to prevent accidents to persons, and damage to property. The CONTRACTOR shall, at his own expense, provide suitable and safe bridges and other crossings for accommodating travel by the public and workmen.

1.05 TEST PITS

Test pits for the purpose of locating all known and unknown underground pipeline or structures in advance of the construction shall be excavated and backfilled by the CONTRACTOR so as not to create a hazardous area. Test pits shall be backfilled immediately after their purpose has been satisfied and maintained in a manner satisfactory to the ENGINEER. The costs for such test pits shall be borne by the CONTRACTOR.

1.06 MAINTENANCE OF TRAFFIC

A. Open pits, trenches, unpaved streets, debris, or other obstructions due to construction that will prevent the normal flow of traffic during an extended construction stoppage, for any reason, shall be minimized. In the event an extended construction stoppage is found to be necessary, CONTRACTOR shall, at his own expense, provide normal traffic flow during extended construction stoppage.

B. All excavated material shall be placed so that vehicular and pedestrian traffic may be maintained at all times. If the CONTRACTOR's operations cause traffic hazards, he shall repair the road surface, provide temporary roadways, erect wheel guards or fences, or take other measures for safety satisfactory to the ENGINEER.

C. Detours around construction areas will be subject to the approval of the OWNER. Where detours are permitted the CONTRACTOR shall provide all necessary barricades and signs as required to divert the flow of traffic. While traffic is detoured the CONTRACTOR shall expedite construction operations and periods when traffic is being detoured will be strictly controlled by the OWNER.

PART 2 - PRODUCTS

2.01 PROTECTION OF CONSTRUCTION AND EQUIPMENT

A. All newly constructed Work shall be carefully protected from injury in any way. No wheeling or walking or placing of heavy loads on it shall be allowed and all portions injured shall be reconstructed by the CONTRACTOR at his own expense.

B. All structures shall be protected in a manner approved by the ENGINEER. Should any of the floors or other parts of the structures become heaved, cracked or otherwise damaged, all such damaged portions of the Work shall be completely repaired and made good by the CONTRACTOR at his own expense and to the satisfaction of the ENGINEER. Special attention is directed to substructure bracing requirements, described in Section 02221. If, in the final inspection of the Work, any defects, faults or omissions are found, the CONTRACTOR shall cause the same to be repaired or removed and replaced by proper materials and workmanship without extra compensation for the materials and labor required. Further, the CONTRACTOR shall be fully responsible for the satisfactory maintenance and repair of the construction and other Work undertaken herein, for at least the guarantee period described in the Contract.

C. The CONTRACTOR shall take all necessary precautions to prevent damage to any structure due to water pressure during and after construction and until such structure is accepted and taken over by the OWNER.

D. The CONTRACTOR shall maintain the Work during construction and until the project is accepted. This maintenance shall constitute continuous and effective Work prosecuted day by day, with adequate equipment and forces to the end that the road or structures are kept in satisfactory condition at all times.

In the case of a Contract for the placing of a course or sub-grade previously constructed, the CONTRACTOR shall maintain the previous course or sub-grade during all construction operations.

All cost of maintenance Work during construction and before the project is accepted shall be included in the unit prices bid on the various pay items and the CONTRACTOR will not be paid an additional amount for such Work.

PART 3 - EXECUTION (NOT USED)

END OF SECTION

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SECTION 01045

CUTTING AND PATCHING

PART 1 - GENERAL

1.01 REQUIREMENTS INCLUDED

A. CONTRACTOR shall be responsible for all cutting, fitting and patching, including attendant excavation and backfill, required to complete the Work or to:

1. Make its several parts fit together properly.

2. Remove and replace defective Work.

3. Remove and replace Work not conforming to requirements of Contract Documents.

4. Remove samples of installed Work as specified for testing.

5. Provide routine penetrations of non-structural surfaces for installation of piping and electrical conduit.

1.02 RELATED REQUIREMENTS

The Contract Documents include, but are not limited to, the following related requirements: Division 2: Site-work.

1.03 SUBMITTALS

A. Submit a written request to the ENGINEER well in advance of executing any cutting or alteration that affects:

1. Work of the OWNER or any separate CONTRACTOR.

2. Structural value or integrity of any element of the Project.

3. Integrity or effectiveness of weather-exposed or moisture-resistant elements or systems.

4. Efficiency, operational life, maintenance or safety of operational elements.

5. Visual qualities of sight-exposed elements.

B. Request shall include:

1. Identification of the Project.

2. Description of affected Work.

3. The necessity for cutting, alteration or excavation.

4. Effect on Work of OWNER or any separate CONTRACTOR, or on structural or weatherproof integrity of Project.

5. Description of proposed Work:

a. Scope of cutting, patching, alteration, or excavation.

b. Trades who will execute the Work.

c. Products proposed to be used.

d. Extent of refinishing to be done.

6. Alternatives to cutting and patching.

7. Cost proposal, when applicable.

8. Written permission of any separate CONTRACTOR whose Work will be affected.

C. Submit written notice to the ENGINEER designating the date and the time the Work will be uncovered.

PART 2 - PRODUCTS

2.01 MATERIALS

Comply with Specifications and standards for each specific product involved.

PART 3 - EXECUTION

3.01 INSPECTION

A. Inspect existing conditions of Project, including elements subject to damage or to movement during cutting and patching.

B. After uncovering Work, inspect conditions affecting installation of Products, or performance of Work.

C. Report unsatisfactory or questionable conditions to the ENGINEER in writing; do not proceed with Work until the ENGINEER has provided further instructions.

3.02 PREPARATION

A. Provide adequate temporary support as necessary to assure structural value or integrity of affected portion of Work.

B. Provide devices and methods to protect other portions of Project from damage.

C. Provide protection from elements for that portion of the Project, which may be exposed by cutting and patching, Work, and maintain excavations free from water.

3.03 PERFORMANCE

A. Execute Tie-ins and new construction by methods which will prevent damage to other Work, and will provide proper surfaces to receive installation of repairs.

B. Execute excavating and backfilling by methods which will prevent settlement or damage to other Work.

C. Execute fitting and adjustment of products to provide a finished installation to comply with specified products, functions, tolerances and finishes.

END OF SECTION

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SECTION 01050

FIELD ENGINEERING

PART 1 - GENERAL

1.01 REQUIREMENTS INCLUDED

A. The CONTRACTOR shall provide and pay for field engineering services required for Project.

1. Survey Work required in execution of Project.

2. Civil, structural or other professional engineering services specified, or required to execute CONTRACTOR's construction methods.

3. Before any Work begins, the CONTRACTOR shall field verify all existing utilities. This information, and any variations noted during construction, shall be included on the Record Drawings submitted by the CONTRACTOR.

B. The CONTRACTOR shall retain the services of a registered land surveyor licensed in the State of Florida to identify existing control points and property line corners and maintain survey during construction.

C. The method of field staking for the construction of the Work shall be at the option of the CONTRACTOR. The OWNER shall provide the engineering surveys to establish reference points which in his judgment are necessary to enable the CONTRACTOR to proceed with his Work.

D. The accuracy of any method of staking shall be the responsibility of the CONTRACTOR. All engineering for vertical and horizontal control shall be the responsibility of the CONTRACTOR.

E. The CONTRACTOR shall be held responsible for the preservation of all stakes and marks. If any stakes or marks are carelessly or willfully disturbed by the CONTRACTOR, the CONTRACTOR shall not proceed with any Work until he has established such points, marks, lines and elevations as may be necessary for the prosecution of the Work.

1.02 RELATED REQUIREMENTS

The Contract Documents include, but are not limited to, the following related requirement:

A. Section 01152: Applications for Payment.

B. Section 01700: Contract Closeout.

C. Section 01720: Project Record Documents.

1.03 QUALIFICATIONS OF SURVEYOR OR ENGINEER

Registered professional engineer or land surveyor of the discipline required for the specific service on the Project, currently licensed in the State.

1.04 SURVEY REFERENCE POINTS

A. Existing basic horizontal and vertical control points for the Project are those designated on Drawings.

B. Locate and protect control points prior to starting site Work, and preserve all permanent reference monuments during construction.

1. Make no changes or relocations without prior written notice to the ENGINEER.

2. Report to the ENGINEER when any reference point is lost or destroyed, or requires relocation because of necessary changes in grades or locations.

3. Require surveyor to correctly replace project control points that may be lost or destroyed. Establish replacements based on original survey control.

1.05 PROJECT SURVEY REQUIREMENTS

A. Establish lines and levels, locate and lay out, by instrumentation and similar appropriate means:

1. Site improvements:

a. Stakes for grading, fill and topsoil placement.

b. Utility slopes and invert elevations.

2. Batter boards for structures.

3. Structure foundation.

4. Controlling lines and levels required for mechanical and electrical trades.

5. Survey and stake jurisdictional wetland lines as shown on the drawings. Maintain these lines for the duration of the CONTRACT.

B. From time to time, verify layouts by same methods.

C. Establish all lines and grades prior to construction of line Work for all potable water mains at defined breaks in grade.

D. The CONTRACTOR shall also show all appropriate right-of-way and easements lines, and property corners.

E. All Work will be performed in accordance with Minimum Technical Standards set forth by the Florida Board of Professional Land Surveyors in Chapter 21 HH-6, Florida Administrative Code pursuant to Section 472.027 Florida Statutes. Horizontal control shall be recorded in Florida State Plan coordinates in Northing and Eastings; vertical control shall be recorded in NAVD.

1.06 RECORDS

A. Maintain a complete, accurate log of all control and survey Work as it progresses.

B. Update the Project Record Drawings on a monthly basis based on the Work performed during the month ending at the pay request as a condition for approval of monthly progress payment requests.

C. Maintain an accurate record of all changes, revisions, and modifications.

1.07 SUBMITTALS

A. Submit name, address, and photocopy of Florida Professional Registration of registered land surveyor or professional engineer to the ENGINEER.

B. On request of the ENGINEER, submit documentation to verify accuracy of field engineering Work.

C. Submit certificate signed by registered Engineer or land surveyor certifying that elevations and locations of improvements are in conformance, or non-conformance, with Contract Documents.

D. At the end of the project, and prior to Final Completion or OWNER occupancy, submit certified drawings (signed and sealed by the registered land surveyor) of the items listed below. These drawings shall be included with, and made a part of, the project record documents. These survey sheets shall be accompanied with AutoCAD (latest revision) disks of the survey. Certified survey at the same scale as the ENGINEER's drawings indicating pipe and grade elevations and stationing at 100-foot intervals and at all valve and fitting locations.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

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SECTION 01065

PERMITS AND FEES

PART 1 - GENERAL

1.01 GENERAL REQUIREMENTS

A. The CONTRACTOR shall: Obtain and pay for any and all permits and licenses as provided for 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 of the permits and licenses.

1.02 PERMITS BY OWNER

There are no owner acquired permits for this project:

1.03 CONSTRUCTION PERMIT

A. The CONTRACTOR shall be responsible for acquiring all construction permits including local building permits, dewatering plan, NPDES General Permit for Stormwater Discharge from Construction Site, and well drilling permits.

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

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION

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SECTION 01110

ENVIRONMENTAL PROTECTION PROCEDURES

PART 1 - GENERAL

1.01 SCOPE OF WORK

A. The Work covered by this Section consists of furnishing all labor materials and equipment and performing all Work required for the prevention of environmental pollution in conformance with applicable laws and regulations, during and as the result of construction operations under this Contract. For the purpose of this Specification, environmental pollution is defined as the presence of chemical, physical, or biological elements or agents which adversely affect human health or welfare; unfavorably alter ecological balances; adversely affect plants or animals; or degrade the utility of the environment for aesthetic and/or recreational purposes.

B. The control of environmental pollution requires consideration of air, water and land, and involves management of noise, odor, and solid waste, as well as other pollutants.

C. Schedule and conduct all Work in a manner that will minimize the erosion of soils in the area of the Work. Provide erosion control measures such as diversion channels, sedimentation or filtration systems, berms, staked hay bales, seeding, mulching or other special surface treatments as are required by regulatory authorities to prevent silting and muddying of streams, rivers, canals, impoundments, lakes, etc. All erosion control measures shall be in place in an area prior to any construction activity in that area and shall be maintained throughout construction. Specific requirements for erosion and sedimentation controls are specified in Section 02270. The CONTRACTOR will be required to meet all the conditions specified in the permits and in the Specifications.

D. All specific conditions attached to existing permits for this site shall be included in the sedimentation and erosion control measures.

1.02 APPLICABLE REGULATIONS

Comply with all applicable Federal, State and local laws and regulations and applicable permits and their specific conditions concerning environmental pollution control and abatement.

1.03 NOTIFICATIONS

The ENGINEER will notify the CONTRACTOR in writing of any non-compliance with the foregoing provisions or of any environmentally objectionable acts and corrective action to be taken. State or local agencies responsible for verification of certain aspects of the environmental protection requirements shall notify the CONTRACTOR in writing, through the ENGINEER, of any non-compliance with State or local requirements. The CONTRACTOR shall, after receipt of such notice from the ENGINEER or from the regulatory agency through the ENGINEER, immediately take corrective action. Such notice, when delivered to the CONTRACTOR or his authorized representative at the site of the Work, shall be deemed sufficient for the purpose. If the CONTRACTOR fails or refuses to comply promptly, the OWNER may issue an order stopping all or part of the Work until satisfactory corrective action has been taken.

No part of the time lost due to any such stop orders shall be made the subject of a claim for extension of time or for excess costs or damages by the CONTRACTOR unless it is later determined that the CONTRACTOR was in compliance.

1.04 IMPLEMENTATION

A. Prior to commencement of the Work, meet with the ENGINEER and OWNER to develop mutual understandings relative to compliance with this provision and administration of the environmental pollution control program.

B. Remove temporary environmental control features, when approved by the OWNER, and incorporate permanent control features into the project at the earliest practicable time.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION

3.01 EROSION CONTROL

Provide positive means of erosion control such as shallow ditches around construction to carry off surface water. Erosion control measures, such as siltation basins, hay check dams, mulching, jute netting and other equivalent techniques, shall be used as appropriate. Flow of surface water into excavated areas shall be prevented. Ditches around construction area shall also be used to carry away water resulting from dewatering of excavated areas. If dewatering is necessary and exceeds FDEP thresholds, a dewatering plan must be prepared by a certified Registered Professional Engineer in the State of Florida and submitted to the ENGINEER and the OWNER; then submitted and approved by FDEP prior to the commencement of Work requiring dewatering. CONTRACTOR must comply with permits. However, no water from dewatering activities may be discharged offsite. At the completion of the Work, ditches shall be backfilled and the ground surface restored to original condition.

3.02 PROTECTION OF STREAMS AND CANALS

A. Care shall be taken to prevent, or reduce to a minimum, any damage to any ditch or the stormwater outfall canal, from pollution by debris, sediment or other material, or from the manipulation of equipment and/or materials in or near such ditches. Water that has been used for washing or processing or, that contains oils or sediments that will reduce the quality of the water in the ditch, shall not be directly returned to the ditch. Such waters will be diverted through a settling basin or filter approved by the ENGINEER and meet required standards before being directed into the ditches and other water bodies.

B. The CONTRACTOR shall not discharge water from dewatering operations directly into any live or intermittent stream, channel, wetlands, surface water or any storm sewer. Water from dewatering operations shall be treated by filtration, settling basins, or other approved method to reduce the amount of sediment contained in the water to allowable levels.

C. All preventative measures shall be taken to avoid spillage of petroleum products, drilling fluids, and other pollutants. In the event of any spillage, prompt remedial action shall be taken in accordance with a contingency action plan approved by the Florida Department of

Environmental Protection. CONTRACTOR shall submit two copies of approved contingency plans to the ENGINEER and the OWNER.

3.03 PROTECTION OF LAND RESOURCES

A. Land resources within the project boundaries and outside the limits of permanent Work shall be restored to a condition, after completion of construction that will appear to be natural and not detract from the appearance of the project. Confine all construction activities to areas shown on the Drawings.

B. Outside of areas requiring earthwork for the construction of the new facilities, the CONTRACTOR shall not deface, injure, or destroy trees or shrubs, nor remove or cut them without prior approval. No ropes, cables, or guys shall be fastened to or attached to any existing nearby trees for anchorage unless specifically authorized by the ENGINEER. Where such special emergency use is permitted, first wrap the trunk with a sufficient thickness of burlap or rags over which softwood cleats shall be tied before any rope, cable, or wire is placed. The CONTRACTOR shall in any event be responsible for any damage resulting from such use.

C. Where trees may possibly be defaced, bruised, injured, or otherwise damaged by the CONTRACTOR'S equipment, dumping or other operations, protect such trees by placing boards, planks, or poles around them. Monuments and markers shall be protected similarly before beginning operations near them.

D. Any trees or other landscape feature scarred or damaged by the CONTRACTOR'S equipment or operations shall be restored as nearly as possible to its original condition. The OWNER and ENGINEER will decide what method of restoration shall be used and whether damaged trees shall be treated and healed or removed and disposed of.

All trimming or pruning shall be performed in an approved manner by experienced workmen with saws or pruning shears. Tree trimming with axes will not be permitted.

Climbing ropes shall be used where necessary for safety. Trees that are to remain, either within or outside established clearing limits, that are subsequently damaged by the CONTRACTOR, and are beyond saving in the opinion of the ENGINEER, shall be immediately removed and replaced.

E. The locations of the CONTRACTOR's storage, and other construction buildings, required temporarily in the performance of the Work, shall be cleared as shown on the Drawings. Drawings showing storage facilities shall be submitted for approval of the ENGINEER.

F. If the CONTRACTOR proposes to construct temporary roads or embankments and excavations for Work areas, they shall submit the following for approval at least 30 days prior to scheduled start of such temporary Work.

1. A layout of all temporary roads, excavations and embankments to be constructed within the Work area.

2. Details of temporary road construction.

3. Drawings and cross sections of proposed embankments and their foundations, including a description of proposed materials.

G. Remove all signs of temporary construction facilities such as haul roads, Work areas, structures, foundations of temporary structures, stockpiles of excess of waste materials, or any other vestiges of construction as directed by the ENGINEER. The disturbed areas shall be prepared and seeded as described in Section 02933, or as approved by the ENGINEER.

H. All debris and excess material will be disposed of in an approved area in accordance with local regulations.

3.04 PROTECTION OF AIR QUALITY

A. Burning. No open fires or burning will be permitted. If need dictates burning of any kind, the CONTRACTOR must obtain prior approval from the OWNER and obtain appropriate permits from the Florida Department of Forestry.

B. Dust Control. The CONTRACTOR will be required to maintain all excavations, embankment, stockpiles, access roads, waste areas, borrow areas, and all other Work areas within or without the project boundaries free from dust which could cause the standards for air pollution to be exceeded, and which would cause a hazard or nuisance to others.

C. An approved method of stabilization consisting of sprinkling or other similar methods will be required to control dust. The use of petroleum products is prohibited.

D. Sprinkling, to be approved, must be repeated at such intervals as to keep all parts of the disturbed area at least damp at all times, and the CONTRACTOR must have sufficient competent equipment on the job to accomplish this if sprinkling is used. Dust control shall be performed as the Work proceeds and whenever a dust nuisance or hazard occurs, as determined by the ENGINEER.

3.05 MAINTENANCE OF POLLUTION CONTROL FACILITIES DURING CONSTRUCTION

During the life of this Contract, maintain all facilities constructed for pollution control as long as the operations creating the particular pollutant are being carried out or until the material concerned has become stabilized to the extent that pollution is no longer being created.

3.06 NOISE CONTROL

The CONTRACTOR shall make every effort to minimize noises caused by his operations. Equipment shall be equipped with silencers or mufflers designed to operate with the least possible noise in compliance with State and Federal regulations.

END OF SECTION

SECTION 01152

APPLICATION FOR PAYMENT

PART 1 - GENERAL

1.01 REQUIREMENTS INCLUDED

A. The CONTRACTOR shall submit Applications for Payment once a month to the ENGINEER in accordance with the schedule established by Conditions of the Contract and Agreement Between OWNER and CONTRACTOR.

B. The accepted Schedule of Values, Section 01370, shall be used as the basis for the CONTRACTOR'S Application for Payment.

1.02 RELATED REQUIREMENTS

The Contract Documents include, but are not limited to, the following related requirements:

A. Section 01050: Field Engineering.

B. Section 01153: Change Order Procedure.

C. Section 01300: Submittals.

D. Section 01370: Schedule of Values.

E. Section 01390: Construction Photographs.

F. Section 01700: Contract Closeout.

G. Section 02999: Miscellaneous Work and Cleanup.

1.03 FORMAT AND DATA REQUIRED

A. Submit applications: Applications shall be made on approved application forms.

B. Provide itemized data on continuation sheet: Format, schedules, line items and values: Those of the Schedule of Values accepted by the ENGINEER.

C. Provide construction photographs in accordance with Section 01390.

1.04 PREPARATION OF APPLICATION FOR EACH PROGRESS PAYMENT

A. Application Form:

1. Fill in required information, including that for Change Orders executed prior to date of submittal of application.

2. Fill in summary of dollar values to agree with respective totals indicated on continuation sheets.

3. Execute certification with signature of a responsible officer of Contract firm.

B. Continuation Sheets:

1. Fill in total list of all scheduled component items of Work, with item number and scheduled dollar value for each item.

2. Fill in dollar value in each column for each scheduled line item when work has been performed or products stored. Round off values to nearest dollar, or as specified for Schedule of Values.

3. List each Change Order executed prior to date of submission, at the end of the continuation sheets. List by Change Order Number, and description, as for an original component item of work.

4. To receive approval for payment on component material stored on site, submit copies of the original paid invoices with the application for payment.

1.05 SUBSTANTIATING DATA FOR PROGRESS PAYMENTS

A. When the OWNER or the ENGINEER requires substantiating data, CONTRACTOR shall submit suitable information, with a cover letter identifying:

1. Project.

2. Application number and date.

3. Detailed list of enclosures.

4. For stored products:

a. Item number and identification as shown on application.

b. Description of specific material.

B. Submit one copy of data and cover letter for each copy of application.

C. The CONTRACTOR is to maintain an updated set of drawings to be used as record drawings in accordance with Section 01720. As a prerequisite for monthly progress payments, the CONTRACTOR is to exhibit the updated record drawings for review by the OWNER and the ENGINEER.

D. CONTRACTOR shall maintain an updated construction schedule in accordance with Section 01310. As a prerequisite for monthly progress payments, CONTRACTOR shall submit the updated construction schedule with the applications for progress payments. If the CONTRACTOR fails to submit the required updated schedule within the time prescribed, the ENGINEER may withhold approval of progress payment estimates until such a time as the CONTRACTOR submits the required updated schedule.

1.06 PREPARATION OF APPLICATION FOR FINAL PAYMENT

A. Fill in Application form as specified for progress payments.

B. Use continuation sheet for presenting the final statement of accounting as specified in Section 01700 - Contract Closeout.

C. Submit all Project Record Documents in accordance with Section 01050 and 01720.

1.07 SUBMITTAL PROCEDURE

A. Submit Applications for Payment to the ENGINEER at the times stipulated in the Agreement.

B. Number: Six copies with original signatures of each Application.

C. When the ENGINEER finds Application properly completed and correct, he will transmit certificate for payment to OWNER, with copy to CONTRACTOR.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION

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SECTION 01153

CHANGE ORDER PROCEDURES

PART 1 - GENERAL

1.01 REQUIREMENTS INCLUDED

A. The CONTRACTOR shall promptly implement change order procedures.

1. Provide full written data required to evaluate changes.

2. Maintain detailed records of work done on a time-and-material/force account basis.

3. Provide full documentation of ENGINEER on request.

B. Designate in writing the member of CONTRACTOR'S organization:

1. Who is authorized to accept changes in the Work.

2. Who is responsible for informing others in the CONTRACTOR'S employ of the authorization of changes in the Work.

C. OWNER will designate in writing the person who is authorized to execute Change Orders.

1.02 RELATED REQUIREMENTS

The Contract Documents include, but are not limited to, the following related requirements:

A. Section 01152: Applications for Payment.

B. Section 01310: Construction Schedules.

C. Section 01370: Schedule of Values

D. Section 01720: Project Record Documents.

1.03 DEFINITIONS

A. Change Order: See General Conditions.

B. Field Order: A written order to the CONTRACTOR, signed by the ENGINEER and the CONTRACTOR, which is issued to interpret/clarify the Contract Documents, order minor changes in the work and/or memorialize trade-off agreements. The work described by a Field Order is to be accomplished without change to the Contract Sum, Contract Time, and/or claims for other costs.

1.04 PRELIMINARY PROCEDURES

A. OWNER or ENGINEER may initiate changes by submitting a Request for Proposal (RFP) to Contractor. Request will include:

1. Detailed description of the Change, Products, and location of the change in the Project.

2. Supplementary or revised Drawings and Specifications

3. The projected time span for making the change and a specific statement as to whether overtime work is, or is not, authorized.

4. A specific period of time during which the requested price will be considered valid.

5. Such request is for information only, and is not an instruction of execute the changes, nor to stop Work in progress.

B. CONTRACTOR may initiate changes by submitting a written notice to ENGINEER containing:

1. Description of the proposed changes.

2. Statement of the reason for making the changes.

3. Statement of the effect on the Contract Sum and the Contract Time.

4. Statement of the effect on the work of separate contractors.

5. Documentation supporting any change in Contract Sum or Contract Time, as appropriate.

1.05 WORK CHANGE DIRECTIVE AUTHORIZATION

A. In lieu of a Request for Proposal (RFP), ENGINEER may issue a Work Change Directive Authorization of CONTRACTOR to proceed with a change for subsequent inclusion in a Change Order.

B. Authorization will describe changes in the Work, both additions and deletions, with attachments of revised Contract Documents to define details of the change, and will designate the method of determining any change in the Contract Sum and any change in Contract Time.

C. OWNER and ENGINEER will sign and date the Work Change Directive Authorization as authorization for the CONTRACTOR to proceed with the changes.

D. CONTRACTOR may sign and date the Work Change Directive Authorization to indicate agreement with the terms therein.

1.06 DOCUMENTATION OF PROPOSALS AND CLAIMS

A. Support each quotation for a lump-sum proposal, and for each unit price which has not previously been established, with sufficient substantiating data to allow ENGINEER to evaluate the quotation.

B. On request, provide additional data to support time and cost computations

1. Labor required.

2. Equipment required.

3. Products required:

a. Recommended source of purchase and unit cost.

b. Quantities required.

4. Taxes, insurance and bonds.

5. Credit for work deleted from Contract, similarly documented.

6. Overhead and profit.

7. Justification for any change in Contract Time.

C. Support each claim for additional costs, and for work done on a time-and-material/force account basis, with documentation as required for a lump-sum proposal, plus additional information.

1. Name of the OWNER'S authorized agent who ordered the work, and date of the order.

2. Dates and times Work was performed, and by whom.

3. Time record, summary of hours worked, and hourly rates paid.

4. Receipts and invoices for:

a. Equipment used, listing dates and times of use.

b. Products used, listing of quantities.

c. Subcontracts.

1.07 PREPARATION OF CHANGE ORDERS AND FIELD ORDERS

A. ENGINEER will prepare each Change Order and Field Order.

B. Forms: Provided by ENGINEER or OWNER.

C. Change Order will describe changes in the Work, both additions and deletions, with attachments of revised Contract Documents to define details of the change.

D. Change Order will provide an accounting of the adjustment in the Contract Sum and in the Contract Time.

E. Field Order will describe interpretations or clarifications of Contract Documents, approve minor changes in the Work, and/or memorialize trade-off agreements.

F. Field Order work will be accomplished without change in the Contract sum, Contract Time, and/or claims for other costs.

1.08 LUMP-SUM/FIXED PRICE CHANGE ORDER

A. Content of Change Orders will be based on, either:

1. ENGINEER'S Proposal Request and CONTRACTOR's responsive Proposal as mutually agreed between OWNER and CONTRACTOR.

2. CONTRACTOR's Proposal for a change, as recommended by ENGINEER.

B. CONTRACTOR will sign and date the Change Order to indicate agreement with the terms therein.

C. OWNER and ENGINEER will sign and approve Change Order submitted by CONTRACTOR and date the Change Order as authorization for the CONTRACTOR to proceed with the changes.

1.09 UNIT PRICE CHANGE ORDER

A. Content of Change Orders will be based on, either:

1. ENGINEER'S definition of the scope of the required changes.

2. CONTRACTOR'S Proposal for a change, as recommended by ENGINEER.

3. Survey of complete work.

B. The amounts of the unit prices to be:

1. Those stated in the Agreement.

2. Those mutually agreed upon between OWNER and CONTRACTOR.

C. When quantities of the items cannot be determined prior to start of the work:

1. The OWNER through the ENGINEER will issue a work change directive directing CONTRACTOR to proceed with the change on the basis of unit prices, and will cite the applicable unit prices.

2. At completion of the change, ENGINEER will determine the cost of such work based on the unit prices and quantities used. CONTRACTOR shall submit documentation to establish the number of units of each item and any claims for a change in Contract Time.

3. ENGINEER will sign and date the Change Order to establish the change in Contact Sum and in Contract Time.

4. OWNER and CONTRACTOR will sign and date the Change Order to indicate their agreement with the terms therein.

1.10 TIME AND MATERIAL/FORCE ACCOUNT CHANGE ORDER/WORK CHANGE DIRECTIVE AUTHORIZATION

A. The OWNER through the ENGINEER will issue a Work Change Directive Authorization directing CONTRACTOR to proceed with the changes.

B. At completion of the change, CONTRACTOR shall submit itemized accounting and supporting data as provided in the Article "Documentation of Proposals and Claims" of this Section.

C. ENGINEER will determine the allowable cost of such Work, as provided in General Conditions and Supplementary Conditions.

D. ENGINEER will sign and data the Change Order to establish the change in Contract sum and in Contract Time.

E. OWNER and CONTRACTOR will sign and date the Change Order to indicate their agreement therewith.

1.11 CORRELATION WITH CONTRACTOR'S SUBMITTALS

A. Periodically revise Schedule of Values and Application Payment forms to record each change as a separate item of Work, and to record the adjusted Contract Sum.

B. Periodically revise the Construction Schedule to reflect each change in Contract Time. Revise sub-schedules to show changes for other items of Work affected by the changes.

C. Upon completion of work under a Change Order, enter pertinent changes in Project Record Documents.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION

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SECTION 01170

SPECIAL PROVISIONS

PART 1 - GENERAL

1.01 PIPE MARKING (ABOVE GROUND)

Pipe marking is included in Sections 02221, but it shall be the CONTRACTOR'S responsibility to assist, as required by the ENGINEER, in identifying pipe contents, direction of flow, and all else required for proper marking of pipe.

1.02 OBSTRUCTIONS

A. The attention of the CONTRACTOR is drawn to the fact that during excavation at the Project site, the possibility exists of the CONTRACTOR encountering water, chemical, electrical, or other lines not shown on the Drawings. The CONTRACTOR shall exercise extreme care before and during excavation to locate and flag these lines so as to avoid damage to the existing lines. Should damage occur to an existing line, the CONTRACTOR shall repair the line at no cost to the OWNER.

B. It is the responsibility of the CONTRACTOR to ensure that all utility or other poles, the stability of which may be endangered by the close proximity of excavation, are temporarily stayed in position while work proceeds in the vicinity of the pole and that the utility or other companies concerned be given reasonable advance notice of any such excavation by the CONTRACTOR. This cost shall be borne by the CONTRACTOR and shall be included in the cost for the water treatment plant in the Proposal Form.

1.03 PROTECTION AGAINST ELECTROLYSIS

Where dissimilar metals are used in conjunction with each other, suitable insulation shall be provided between adjoining surfaces so as to eliminate direct contact and any resulting electrolysis. The insulating material shall be bituminous impregnated felt, heavy bituminous coatings, nonmetallic separators or washers, or other approved materials.

1.04 DAMAGE ON ACCOUNT OF HIGH WATER

CONTRACTOR will hold himself responsible for all damage done to his work by heavy rains or floods and he shall take all reasonable precautions to provide against damages by building such temporary dikes, channels, or shoring to carry off stormwater as the nature of the work may require, without causing floating or damage to other property.

1.05 EMERGENCY PHONE NUMBERS AND ACCIDENT REPORTS

A. Emergency phone numbers (fire, medical, police) shall be posted at the CONTRACTOR'S phone and its locations be made to known to all.

B. Accidents shall be reported immediately to 911, then to the ENGINEER by messenger or phone.

C. All accidents shall be documented by the CONTRACTOR and a fully detailed written report submitted by the CONTRACTOR to the ENGINEER after each accident.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION

SECTION 01200

PROJECT MEETINGS

PART 1 - GENERAL

1.01 REQUIREMENTS INCLUDED

A. The ENGINEER shall schedule and administer the pre-construction meeting, periodic progress meetings, and specially called meetings throughout progress of the Work. The ENGINEER shall:

1. Prepare agenda for meetings.

2. Make physical arrangements for meetings.

3. Preside at meetings.

4. Record the minutes; include significant proceedings and decisions.

5. Reproduce and distribute copies of minutes within 5 working days after each meeting.

a. To participants in the meeting.

b. To parties affected by decisions made at the meeting.

B. Representatives of CONTRACTOR, subcontractors and suppliers attending meetings shall be qualified and authorized to act on behalf of the entity each represents.

C. The CONTRACTOR shall attend meetings to ascertain that work is expedited consistent with Contract Documents and construction schedules.

1.02 RELATED REQUIREMENTS

The Contract Documents include, but are not limited to, the following related requirements:

A. Information to Bidders.

B. Section 01300: Submittals.

C. Section 01700: Contract Closeout.

D. Section 01730: Operating and Maintenance Data.

1.03 PRE-CONSTRUCTION MEETING

A. Schedule a preconstruction meeting prior to the date of Notice to Proceed.

B. Location: A central site, convenient for all parties, designated by the OWNER.

C. Attendance:

1. OWNER'S Representative.
2. ENGINEER and his professional consultants.
3. Resident Project Representative.
4. CONTRACTOR's Superintendent.
5. Major Subcontractors.
6. Major suppliers.
7. Utilities
8. Others as appropriate.

D. Suggested Agenda:

1. Distribution and discussion of:
    a. List of major subcontractors and suppliers.
    b. Projected Construction Schedules.
2. Critical work sequencing.
3. Major equipment deliveries and priorities.
4. Project Coordination: Designation of responsible personnel.
5. Procedures and processing of:
    a. Field decisions.
    b. Proposal requests.
    c. Submittals.
    d. Change Orders.
    e. Applications for Payment.
6. Adequacy of distribution of Contract Documents.
7. Procedures for maintaining Record Documents.
8. Use of premises:
    a. Office, work and storage areas.

b. OWNER'S requirements.

9. Construction facilities, controls and construction aids.

10. Temporary utilities.

11. Housekeeping procedures.

1.04 PROGRESS MEETINGS

A. Schedule regular periodic meetings. The progress meetings will be held at least bi-monthly with the first meeting 30 days after the pre-construction meeting or 30 days after the date of Notice to Proceed.

B. Hold called meetings as required by progress of the Work.

C. Location of the meetings: Project field office of CONTRACTOR or other location designated by the OWNER.

D. Attendance:

1. OWNER or his representative.

2. ENGINEER, and his professional consultants, as needed.

3. CONTRACTOR's Superintendent.

4. Subcontractors as appropriate to the agenda.

5. Suppliers as appropriate to the agenda.

6. Others as appropriate.

E. Suggested Agenda:

1. Review, approval of minutes of previous meeting.

2. Review of work progress since previous meeting.

3. Progress, schedule, during succeeding work period.

4. Field observations, problems, conflicts.

5. Problems which impede Construction Schedule.

6. Review of off-site fabrication, delivery schedules.

7. Corrective measures and procedures to regain projected schedule.

8. Revisions to Construction Schedule.

9. Coordination of schedules.

10. Review submittal schedules; expedite as required.

11. Maintenance of quality standards.

12. Pending changes and substitutions.

13. Review proposed changes for:

    a. Effect on Construction Schedule and on completion date.

    b. Effect on other Contracts of the Project.

14. Other business.

15. Construction schedule.

16. Critical/long lead items.

F. The CONTRACTOR is to attend progress meetings and is to study previous meeting minutes and current agenda items, in order to be prepared to discuss pertinent topics such as deliveries of materials and equipment, progress of the Work, etc.

G. The CONTRACTOR is to provide a current submittal log at each progress meeting in accordance with Section 01300.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION

SECTION 01300

SUBMITTALS

PART 1 — GENERAL

1.01 SCOPE OF WORK

A. This Section includes the requirements for compiling, processing and transmitting submittals required for execution of the project.

B. Submittals are categorized into two types: Action Submittals and Informational Submittals, as follows:

1. Action Submittal: Written and graphic information submitted by the CONTRACTOR that requires the ENGINEER'S approval. The following are examples of action submittals:

a. Shop Drawings (including working drawings and product data).

b. Samples.

c. Operation & Maintenance manuals.

d. Site Usage Plan (CONTRACTOR'S staging - including trailer siting and material laydown area).

e. Schedule of values.

f. Payment application format.

2. Informational Submittal: Information submitted by the CONTRACTOR that does not require the ENGINEER'S approval. The following are examples of informational submittals:

a. Shop Drawing schedule.

b. Construction Schedule.

c. Statements of qualifications.

d. Health and Safety Plans.

e. Construction photography and videography.

f. Work Plans.

g. Maintenance of traffic plans.

h. Outage requests.

i. Proposed testing procedures.

j. Test records and reports.

k. Vendor training outlines/plans.

l. Test and start-up reports.

m. Certifications.

n. Record Drawings.

o. Record Shop Drawings.

p. Submittals required by laws, regulations and governing agencies.

q. Submittals required by funding agencies.

r. Other requirements found within the technical Specifications.

s. Warranties and bonds.

t. As-Built surveys.

u. Contract close-out documents.

1.02 RELATED WORK

A. Additional requirements may be specified in the General Conditions for the Contract.

B. Additional submittal requirements may be specified in the respective technical Specification Sections.

C. Operation and Maintenance manuals are included in Section 01730.

D. Contract closeout submittals are included in Section 01700.

E. Warranties and Bonds are included in Section 01740.

F. Construction Photos are included in Section 01390.

G. Applications for Payment are included in Section 01152.

H. Construction Schedules are included in Section 01310.

I. Field Engineering 01050.

J. Project Record Documents are included in Section 01720.

1.03 CONTRACTOR'S RESPONSIBILITIES

A. All submittals shall be clearly identified as follows:

1. Date of submission.

2. Project number.

3. Project name.

4. CONTRACTOR identification:

a. CONTRACTOR

b. Supplier

c. Manufacturer

d. Manufacturer or supplier representative

5. Identification of the product.

6. Reference to Contract Drawing(s).

7. Reference to Specification section number, page and paragraph(s).

8. Reference to applicable standards, such as ASTM or Federal Standards numbers.

9. Indication of CONTRACTOR'S approval.

10. CONTRACTOR'S Certification statement.

11. Identification of deviations from the Contract Documents, if any.

12. Reference to previous submittal (for resubmittals).

B. Submittals shall be clear and legible, and of sufficient size for legibility and clarity of the presented data.

C. SUBMITTAL LOG

Maintain a log of all submittals. The submittal log shall be kept accurate and up to date. This log should include the following items (as applicable):

1. Description.

2. Submittal number.

3. Date transmitted to the ENGINEER.

4. Date returned to CONTRACTOR (from ENGINEER).

5. Status of Submittal (Approved/Not Approved/etc.).

6. Date of Resubmittal to ENGINEER and Return from ENGINEER (if applicable and repeat as necessary).

7. Date material released for fabrication.

8. Projected (or actual) delivery date.

D. NUMBERING SYSTEM

Utilize a 9-character submittal identification numbering system in the following manner:

1. The first character shall be a D, S, M or I which represents Shop Drawing (including working drawings and product data), Sample, Manual (Operating & Maintenance) or Informational, respectively.

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

3. The next two digits shall be the numbers 01 to 99 to sequentially number each separate item or drawing submitted under each specific Specification Section, in the order submitted.

4. The last character shall be a letter, A to Z, indicating the submission (or resubmission) of the same submittal, i.e., "A" = 1st submission, "B" = 2nd submission, "C" = 3rd submission, etc. A typical submittal number would be as follows:

D-03300-08-B	
D	= Shop Drawing
03300	= Section for Concrete
08	= the eighth different submittal under this section
B	= the second submission (first resubmission) of that particular Shop Drawing.

E. VARIANCES

Notify the ENGINEER in writing, at the time of submittal, of any deviations in the submittals from the requirements of the Contract Documents.

F. ACTION SUBMITTALS

1. SHOP DRAWINGS, WORKING DRAWINGS, PRODUCT DATA AND SAMPLES

a. SHOP DRAWINGS

1) Shop Drawings as defined in the General Conditions, and as specified in individual Sections include, but are not necessarily limited to, custom prepared data such as fabrication and erection/installation (working) drawings, scheduled information,

setting diagrams, actual shop work manufacturing instructions, custom templates, wiring diagrams, coordination drawings, equipment inspection and test reports, including performance curves and certifications, as applicable to the Work.

2) CONTRACTOR shall verify all field measurements, field construction criteria, materials, dimensions, catalog numbers and similar data, and coordinate each item with other related Shop Drawings and the Contract requirements.

3) All details on Shop Drawings shall show clearly the relation of the various parts to the main members and lines of the structure and where correct fabrication of the Work depends upon field measurements, such measurements shall be made and noted on the drawings before being submitted.

4) All Shop Drawings submitted by subcontractors and vendors shall be reviewed by the CONTRACTOR for field measurements, field construction criteria, materials, dimensions, catalog numbers and similar data, and that it has been coordinated with other related Shop Drawings and the Contract requirements. Submittals directly from subcontractors or vendors will not be accepted by the ENGINEER.

5) The CONTRACTOR shall be responsible the accuracy of the subcontractor's or vendor's submittal; and, for their submission in a timely manner to support the requirements of the CONTRACTOR's Construction Schedule. Shop Drawings found to be inaccurate or otherwise in error shall be returned to the subcontractor or vendor to correct before submission to the ENGINEER. All Shop Drawings shall be approved by the CONTRACTOR.

6) Delays to construction due to the untimely submission of submittals will constitute inexcusable delays, for which CONTRACTOR shall not be eligible for additional cost nor additional Contract time. Inexcusable delays consist of any delay within the CONTRACTOR'S control.

7) Submittals for equipment specified under Divisions 11, 13, 14, 15 and 16 shall include a listing of installations where identical or similar equipment manufactured by that manufacturer has been installed and in operation for a period of at least five years.

b. WORKING DRAWINGS

1) Detailed installation drawings (sewers, equipment, piping, electrical conduits and controls, HVAC Work, and plumbing, etc.) shall be prepared and submitted for review and approval by the ENGINEER prior to installing such Work. Installation drawings shall be to-scale and shall be fully dimensioned.

2) Piping working drawings shall show the laying dimensions of all pipes, fittings, valves, as well as the equipment to which it is being connected. In addition, all pipe supports shall be shown.

3) Equipment working drawings shall show all equipment dimensions, anchor bolts, support pads, piping connections and electrical connections. In addition, show clearances required around such equipment for maintenance of the equipment.

4) Electrical working drawings shall show conduits, junction boxes, disconnects, control devices, lighting fixtures, support details, control panels, lighting and power panels, and Motor Control Centers. Coordinate all locations with the Contract Documents and the CONTRACTOR's other working drawings.

c. PRODUCT DATA

Product data, as specified in individual Specification Sections, include, but are not limited to, the manufacturer's standard prepared data for manufactured products (catalog data), such as the product Specifications, installation instructions, availability of colors and patterns, rough-in diagrams and templates, product photographs (or diagrams), wiring diagrams, performance curves, quality control inspection and reports, certifications of compliance (as specified or otherwise required), mill reports, product operating and maintenance instructions, recommended spare parts and product warranties, as applicable.

d. SAMPLES

1) Furnish samples required by the Contract Documents for the ENGINEER'S approval. Samples shall be delivered to the ENGINEER as specified or directed. Unless specified otherwise, provide at least two samples of each required item. Materials or equipment for which samples are required shall not be used in the Work unless and until approved by the ENGINEER.

2) Samples specified in individual Specification Sections, include, but are not 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 other specified units of Work.

3) 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.

4) Approved samples not destroyed in testing shall be sent to the ENGINEER or stored at the site of the Work. Approved samples of the hardware in good condition will be marked for identification and

may be used in the Work. Materials and equipment incorporated in Work shall match the approved samples. Samples which fail testing or are not approved will be returned to the CONTRACTOR at his expense, if so requested at time of submission.

e. PROFESSIONAL ENGINEER (P.E.) CERTIFICATION FORM

If specifically required in any of the technical Specification Sections, submit a Professional ENGINEER (P.E.) Certification for each item required, using the form appended to this Section, signed and sealed by the P.E. licensed or registered in the state wherein the Work is located.

2. CONTRACTOR'S CERTIFICATION

a. Each Shop Drawing, working drawings, product data, and sample shall have affixed to it the following Certification Statement:

"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 Contract requirements."

b. Shop Drawings, working drawings, and product data sheets 11-in x 17-in and smaller shall be bound together in an orderly fashion and bear the above Certification Statement on the cover sheet. The transmittal cover sheet for each identified Shop Drawing SHALL fully describe the packaged data and include a listing of all items within the package.

3. The review and approval of Shop Drawings, working drawings, product data, or samples by the ENGINEER shall not relieve the CONTRACTOR from the responsibility for the fulfillment of the terms of the CONTRACT. All risks of error and omission are assumed by the CONTRACTOR and the ENGINEER will have no responsibility therefore.

4. Project Work, materials, fabrication, and installation shall conform to approved Shop Drawings (including working drawings and product data) and applicable samples.

5. No portion of the Work requiring a Shop Drawing (including working drawings and product data) or sample shall be started, nor shall any materials be fabricated or installed before approval of such item. Procurement, fabrication, delivery or installation or products or materials that do not conform to approved Shop Drawings shall be at the CONTRACTOR's risk. Furthermore, such products or materials delivered or installed without approved Shop Drawings, or in non-conformance with the approved Shop Drawings will not be eligible for progress payment until such time as the product or material is approved or brought into compliance with approved Shop Drawings. Neither the OWNER nor ENGINEER will be liable for any expense or delay due to corrections or remedies required to accomplish conformity.

6. OPERATION AND MAINTENANCE DATA

Operation and maintenance data shall be submitted in assembled manuals as specified. Such manuals shall include detailed instructions for OWNER personnel on safe operation procedures, controls, start-up, shut-down, emergency procedures, storage, protection, lubrication, testing, trouble-shooting, adjustments, repair procedures, and other maintenance requirements.

7. SCHEDULE OF VALUES

On projects consisting of lump sums (in whole or in part) submit a proposed schedule of values AS SPECIFED IN Section 01370 providing a breakdown of lump sum items in to reasonably small components – generally disaggregated by building, area, and/or discipline. The purpose of the schedule of values is for processing partial payment applications. If requested by the ENGINEER, provide sufficient substantiation for all or some items as necessary to determine the proposed schedule of values is a reasonable representation of the true cost breakdown of the Work. The schedule of values shall not be unbalanced to achieve early payment or over-payment in excess of the value of Work or any other mis-distribution of the costs. If, in the opinion of the ENGINEER, the schedule of values is unbalanced, CONTRACTOR shall reallocate components to achieve a balanced schedule acceptable to ENGINEER.

8. PAYMENT APPLICATION FORMAT

If an application form is included in the Contract Documents, use that form unless otherwise approved by the ENGINEER and OWNER. If an application form is not included in the Contract Documents, CONTRACTOR may propose a form for approval.

9. SITE USAGE

Submit a proposed site staging plan, including but not limited to the location of office trailers, storage trailers and material laydown. Such plan shall be a graphic presentation (drawing) of the proposed locations; and, shall include on-site traffic modifications, and temporary utilities, as may be applicable.

G. INFORMATIONAL SUBMITTALS

1. SHOP DRAWING SCHEDULE

Prepare and submit a schedule indicating when Shop Drawings are required to be submitted to support the as-planned Construction Schedule. The submittal schedule shall allow sufficient time for preparation and submittal, review and approval, and fabrication and delivery to support the Construction Schedule.

2. CONSTRUCTION SCHEDULE

Prepare and submit Construction Schedules and monthly status reports as specified.

3. STATEMENTS OF QUALIFICATIONS

Provide evidence of qualification, certification, or registration, as required in the Contract Documents, to verify qualifications of licensed land surveyor, professional engineer, materials testing laboratory, specialty subcontractor, technical specialist, consultant, specialty installer, and other professionals.

4. HEALTH AND SAFETY PLANS

When specified, prepare and submit a general company Health and Safety Plan (HSP), modified or supplemented to include job-specific considerations.

5. CONSTRUCTION PHOTOGRAPHY AND VIDEOGRAPHY

Provide periodic construction photographs and videography as specified – including but not limited to preconstruction photographs and/or video, monthly progress photos and/or video and post-construction photographs and/or video.

6. WORK PLANS

Prepare and submit copies of all Work Plans needed to demonstrate to the OWNER that CONTRACTOR has adequately thought-out the means and methods of construction and their interface with existing facilities.

7. MAINTENANCE OF TRAFFIC PLANS

Prepare maintenance of traffic plans where and when required by the Contract Documents and by local ordinances or regulations. If CONTRACTOR is not already knowledgeable about local ordinances and regulations regarding maintenance of traffic requirements, become familiar with such requirements and include all costs for preparation and submittal of traffic management plans and all associated costs for permits and fees to implement the traffic management plan, in the bid amount. In addition, unless a supplemental payment provision is provided in the bid form, include the cost of police attendance, when required.

8. OUTAGE REQUESTS

Provide sufficient notification of any outages required (electrical, flow processes, etc) as may be required to tie-in new Work into existing facilities. Unless specified otherwise elsewhere, a minimum of seven calendar days notice shall be provided.

9. PROPOSED TESTING PROCEDURES

Prepare and submit testing procedures it proposes to use to perform testing required by the various technical Specifications.

10. TEST RECORDS AND REPORTS

Provide copies of all test records and reports as specified in the various technical Specifications.

11. VENDOR TRAINING OUTLINES/PLANS

At least two weeks before scheduled training of OWNER's personnel, provide lesson plans for vendor training in accordance with the Specification for O&M manuals.

12. TEST AND START-UP REPORTS

Manufacture shall perform all pre-start-up installation inspection, calibrations, alignments, and performance testing as specified in the respective Specification Section. Provide copies of all such test and start-up reports.

13. CERTIFICATIONS

a. Provide various certifications as required by the technical Specifications. Such certifications shall be signed by an officer (of the firm) or other individual authorized to sign documents on behalf of that entity.

b. CERTIFICATIONS may include, but are not limited to:

1) Welding certifications and welders qualifications

2) Certifications of Installation, Testing and Training for all equipment

3) Material Testing reports furnished by an independent testing firm

4) Certifications from manufacturer(s) for specified factory testing

5) Certifications required to indicate compliance with any sustainability or LEEDS accreditation requirements indicated in the Contract Documents

14. RECORD DRAWINGS

No later than Substantial Completion, submit a record of all changes during construction not already incorporated into drawings – in accordance with Specification on Project Record Documents.

15. RECORD SHOP DRAWINGS

Before final payment is made, furnish one set of record Shop Drawings to the ENGINEER. These record Shop Drawings shall be in conformance with the approved documents and should show any field conditions which may affect their accuracy.

16. SUBMITTALS REQUIRED BY LAWS, REGULATIONS AND GOVERNING AGENCIES

Prepare and submit all documentation required by state or local law, regulation or government agency directly to the applicable agency. This includes, but is not limited to, notifications, reports, certifications, certified payroll (for projects subject to wage requirements) and other documentation required to satisfy all requirements. Provide to ENGINEER one copy of each submittal made in accordance with this paragraph.

17. SUBMITTALS REQUIRED BY FUNDING AGENCIES

Prepare and submit all documentation required by funding agencies. This includes, but is not limited to segregated pay applications and change orders when required to properly allocate funds to different funding sources; and certified payrolls for projects subject to wage requirements. Provide one copy of each submittal made in accordance with this paragraph to the ENGINEER.

18. OTHER REQUIREMENTS OF THE TECHNICAL SPECIFICATION SECTIONS

Comply with all other requirements of the technical Specifications.

19. WARRANTIES AND BONDS

Assemble a book(let) of all warranties and bonds as specified in the various technical Specifications and in accordance with the Specification on Warranties and Bonds and provide to the ENGINEER.

20. AS-BUILT SURVEYS

Engage the services of a licensed land surveyor in accordance with the Field Engineering Specification. Prior to Final Completion, provide an As-Built survey of the constructed facility, as specified.

21. CONTRACT CLOSE-OUT DOCUMENTS

Submit Contract documentation as indicated in the Specification for Contract Closeout.

PART 2 — PRODUCTS (NOT USED)

PART 3 — EXECUTION

3.01 SUBMITTAL SCHEDULE

A. Provide an initial submittal schedule at the pre-construction meeting for review by OWNER and ENGINEER. Incorporate comments from OWNER or ENGINEER into a revised submittal schedule.

B. Maintain the submittal schedule and provide sufficient copies for review by OWNER and ENGINEER. An up-to-date submittal schedule shall be provided at each project progress meeting.

3.02 TRANSMITTALS

A. Prepare separate transmittal sheets for each submittal. Each transmittal sheet shall include at least the following: the CONTRACTOR's name and address, OWNER's name, project name, project number, submittal number, description of submittal and number of copies submitted.

B. Submittals shall be transmitted or delivered directly to the office of the ENGINEER, as indicated in the Contact Documents or as otherwise directed by the ENGINEER.

C. Provide copies of transmittals (only, i.e., without copies of the respective submittal) directly to the Resident Project Representative.

3.03 PROCEDURES

A. ACTION SUBMITTALS

1. CONTRACTOR'S RESPONSIBILITIES

a. Coordination of Submittal Times: 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 of other related Sections, so that the installation will not be delayed by processing times including disapproval and resubmittal (if required). Coordinate with other submittals, testing, purchasing, fabrication, delivery and similar sequenced activities. Extensions to the Contract Time will not be approved for the CONTRACTOR'S failure to transmit submittals sufficiently in advance of the Work.

The submittals of all Shop Drawings (including working drawings and product data) shall be sufficiently in advance of construction requirements to allow for possible need of re-submittals, including the specified review time for the ENGINEER.

b. No less than 21 calendar days will be required for ENGINEER'S review time for Shop Drawings and O&M manuals involving only one engineering discipline. No less than 30 calendar days will be required for ENGINEER'S review time for Shop Drawings and O&M manuals that

require review by more than one engineering discipline. Resubmittals will be subject to the same review time.

c. Submittals of operation and maintenance data shall be provided within 30 days of approval of the related Shop Drawing(s).

d. Before submission to the ENGINEER, review Shop Drawings as follows:

1) make corrections and add field measurements, as required

2) use any color for its notations except red (reserved for the ENGINEER'S notations) and black (to be able to distinguish notations on black and white documents)

3) identify and describe each deviation or variation from Contract documents

4) include the required CONTRACTOR'S Certification statement

5) provide field measurements (as needed)

6) coordinate with other submittals

7) indicate relationships to other features of the Work

8) highlight information applicable to the Work and/or delete information not applicable to the Work

e. Submit the following number of copies:

1) Shop Drawings (including working drawings and product data) – Submit no fewer than six, and no more than nine; five of which will be retained by the ENGINEER.

2) Samples – three

3) Site Usage Plan – three copies

4) Schedule of values – four copies

5) Payment application format – four copies

f. If CONTRACTOR considers any correction indicated on the Shop Drawings to constitute a change to the Contract Documents, provide written notice thereof to the ENGINEER immediately; and do not release for manufacture before such notice has been received by the ENGINEER.

g. When the Shop Drawings have been completed to the satisfaction of the ENGINEER, carry out the construction in accordance therewith; and

make no further changes therein except upon written instructions from the ENGINEER.

2. ENGINEER'S RESPONSIBILITIES

a. ENGINEER will not review Shop Drawings (including working drawings and product data) that do not include the CONTRACTOR'S approval stamp. Such submittals will be returned to the CONTRACTOR, without action, for correction.

b. Partial Shop Drawings (including working drawings and product data) will not be reviewed. If, in the opinion of the ENGINEER, a submittal is incomplete, that submittal will be returned to the CONTRACTOR for completion. Such submittals may be returned with comments from ENGINEER indicating the deficiencies requiring correction.

c. If Shop Drawings (including working drawings and product data) meet the submittal requirements, ENGINEER will forward copies to appropriate reviewer(s). Otherwise, noncompliant submittals will be returned to the CONTRACTOR without action - with the ENGINEER retaining one copy.

d. Submittals which are transmitted in accordance with the specified requirements will be reviewed by the ENGINEER within the time specified herein. The time for review will commence upon receipt of submittal by ENGINEER.

B. REVIEW OF SHOP DRAWINGS (INCLUDING WORKING DRAWINGS AND PRODUCT DATA) AND SAMPLES

1. The review of Shop Drawings, working drawings, data and samples will be for general conformance with the design concept and Contract Documents. They shall not be construed:

a. as permitting any departure from the Contract requirements

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

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

2. 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.

3. If the Shop Drawings (including working drawings and product data) or samples as submitted describe variations and indicate a deviation from the Contract requirements that, in the opinion of the ENGINEER are in the interest of the OWNER and are so minor as not to involve a change in Contract Price or

Contract Time, the ENGINEER may return the reviewed drawings without noting an exception.

4. Only the ENGINEER will utilize the color "RED" in marking submittals.

5. Shop Drawings will be returned to the CONTRACTOR with one of the following codes.

Code 1 – "APPROVED" – This code 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" - This code is assigned when a confirmation of the notations and comments IS NOT 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.

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 shall specifically address each omission and nonconforming item that was noted. Confirmation is to be received by the ENGINEER within 15 calendar days of the date of the ENGINEER'S transmittal requiring the confirmation.

Code 4 - "APPROVED AS NOTED/RESUBMIT" - This combination of codes is assigned when notations and comments are extensive enough to require a resubmittal of the entire package. This resubmittal is to address all comments, omissions and non-conforming items that were noted. Resubmittal is to be received by the ENGINEER within 30 calendar days of the date of the ENGINEER's transmittal requiring the resubmittal.

Code 5 – "NOT APPROVED" – This code 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 requirements of the Contract documents.

Code 6 – "COMMENTS ATTACHED" – This code is assigned where there are comments attached to the returned submittal, which provide additional data to aid the CONTRACTOR.

Code 7 – "RECEIPT ACKNOWLEDGED (Not subject to ENGINEER'S Review or Approval)" – This code is assigned to acknowledge receipt of a submittal that is not subject to the ENGINEER'S review and approval, and is being filed for informational purposes only. This code is generally used in acknowledging receipt of means and methods of construction Work Plans, field conformance test reports, and health and safety plans.

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

C. REPETITIVE REVIEWS

Shop Drawings, O&M manuals and other submittals will be reviewed no more than twice at the OWNER's expense. All subsequent reviews will be performed at the CONTRACTOR's expense. Reimburse the OWNER for all costs invoiced by ENGINEER for the third and subsequent reviews.

D. ELECTRONIC TRANSMISSION

ACTION SUBMITTALS may be transmitted by electronic means provided the following conditions are met:

1. The above-specified transmittal form is included.

2. All other requirements specified above have been met including, but not limited to, coordination by the CONTRACTOR, review and approval by the Contactor, and the CONTRACTOR'S Certification.

3. The submittal contains no pages or sheets large than 11 x 17 inches.

4. With the exception of the transmittal sheet, the entire submittal is included in a single file.

5. The electronic files are PDF format (with printing enabled).

6. In addition, transmit three hard-copy (paper) originals to the ENGINEER.

7. The ENGINEER'S review time will commence upon receipt of the hard copies of the submittal.

8. For Submittals that require certification, corporate seal, or professional embossment (i.e. P.E.s, Surveyors, etc) transmit at least two hard-copy originals to the ENGINEER. In addition, provide additional photocopied or scanned copies, as specified above, showing the required certification, corporate seal, or professional seal.

E. INFORMATIONAL SUBMITTALS

1. CONTRACTOR'S RESPONSIBILITIES

   a. Number of copies: Submit three copies, unless otherwise indicated in individual Specification sections

   b. Refer to individual technical Specification Sections for specific submittal requirements.

2. ENGINEER'S RESPONSIBILITIES

   a. The ENGINEER will review each informational submittal within 15 days. If the informational submittal complies with the Contract requirements, ENGINEER will file for the project record and transmit a copy to the OWNER. ENGINEER may elect not to respond to CONTRACTOR regarding informational submittals meeting the Contract requirements.

   b. If an informational submittal does not comply with the Contract requirements, ENGINEER will respond accordingly to the CONTRACTOR within 15 days. Thereafter, the CONTRACTOR shall perform the required corrective action, including retesting, if needed, until the submittal, in the opinion of the ENGINEER, is in conformance with the Contract Documents.

3. ELECTRONIC TRANSMISSION

   a. INFORMATIONAL SUBMITTALS may be transmitted by electronic means providing all of the following conditions are met:

      1) The above-specified transmittal form is included.

      2) The submittal contains no pages or sheets large than 11 x 17 inches.

      3) With the exception of the transmittal sheet, the entire submittal is included in a single file.

      4) The electronic files are PDF format (printing enabled).

      5) For Submittals that require certification, corporate seal, or professional embossment (i.e. P.E.s, Surveyors, etc)) transmit two hard-copy originals to the ENGINEER.

END OF SECTION

P.E. CERTIFICATION FORM

The undersigned hereby certifies that he/she is a professional engineer registered in the State of _____ and that he/she has been employed by

_____ to design
(Name of CONTRACTOR)

_____
(Insert P.E. Responsibilities)

In accordance with Specification Section _____ for the

_____.
(Name of Project)

The undersigned further certifies that he/she has performed the said design in conformance with all applicable local, state and federal codes, rules and regulations; and, that his/her signature and P.E. stamp have been affixed to all calculations and drawings used in, and resulting from, the design.

The undersigned hereby agrees to make all original design drawings and calculations available to the

_____
(Insert Name of OWNER)

or OWNER's representative within seven days following written request therefore by the OWNER.

_____	_____
P.E. Name	CONTRACTOR'S Name
_____	_____
Signature	Signature
_____	_____
Address	Title
	_____
	Address

SECTION 01310

CONSTRUCTION SCHEDULES (BAR CHART)

PART 1 - GENERAL

1.01 WORK INCLUDED

A. Promptly after the award of the Contract and within five days after the effective date of the Agreement, prepare and submit to the ENGINEER estimated construction progress schedules for the Work, with sub-schedules of related activities which are essential to its progress.

B. Submit revised progress schedules on a monthly basis.

C. No partial payments shall be approved by the ENGINEER until there is an approved construction progress schedule on hand.

D. The CONTRACTOR shall designate an authorized representative of his firm who shall be responsible for development and maintenance of the schedule and of progress and payment reports. This representative of the CONTRACTOR shall have direct project control and complete authority to act on behalf of the CONTRACTOR in fulfilling the commitments of the CONTRACTOR'S schedule.

1.02 RELATED REQUIREMENTS

A. Standard General Conditions of the Construction Contract.

B. Section 01200: Project Meetings.

C. Section 01300: Submittals.

1.03 FORM OF SCHEDULES

A. Prepare schedules in the form of a horizontal bar chart.

1. Provide a separate horizontal bar for each trade or operation within each structure or item.

2. Horizontal time scale: In weeks from the start of construction and identify the first work day of each month.

3. Scale and spacing: To allow space for notations and future revisions.

4. Minimum sheet size: 24 inches x 36 inches.

B. Format of listings: The chronological order of the start of each item of Work for each structure.

C. Identification of listings: By major Specification section numbers as applicable and structure.

1.04 CONTENT OF SCHEDULES

A. Construction Progress Schedule:

1. Show the complete sequence of construction by activity.

2. Show the dates for the beginning of, and completion of, each major element of construction in no more than a two-week increment scale.

3. Show projected percentage of completion for each item, as of the first day of each month.

4. Show projected dollar cash flow requirements for each month of construction.

B. Submittals Schedule for Shop Drawings, and Samples in accordance with Section 01300. Show:

1. The dates for CONTRACTOR'S submittals.

2. The date's submittals will be required for OWNER-furnished products, if applicable.

3. The dates approved submittals will be required from the ENGINEER.

C. A typewritten list of all long lead items (equipment, materials, etc.)

1.05 PROGRESS REVISIONS

A. Indicate progress of each activity to date of submission.

B. Show changes occurring since previous submission of a schedule:

1. Major changes in scope.

2. Activities modified since previous submission.

3. Revised projections of progress and completion.

4. Other identifiable changes.

C. Provide a narrative report as needed to define:

1. Problem areas, anticipated delays, and the impact on the schedule.

2. Corrective action recommended, and its effect.

1.06 SUBMISSIONS

A. Submit initial schedules to the ENGINEER within five days after the effective date of the Agreement.

1. The ENGINEER will review schedules and return review copy within 14 days after receipt.

2. If required, resubmit within seven days after return of review copy.

B. Submit revised monthly progress schedules with that month's application for payment.

1.07 DISTRIBUTION

A. Distribute copies of the reviewed schedules to:

1. ENGINEER. (Two copies.)

2. Job's site file.

3. Subcontractors.

4. Other concerned parties.

5. OWNER (two copies).

B. Instruct recipients to report promptly to the CONTRACTOR, in writing, any problems anticipated by the projections shown in the schedules.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION

3.01 RESPONSIBILITY FOR SCHEDULE COMPLIANCE

The CONTRACTOR agrees that whenever it becomes apparent from the current monthly schedule that delays to the critical path have resulted, and hence, that the Contract completion date will not be met or when so directed by the ENGINEER, he/she will take some or all of the following actions at no additional cost to the OWNER, submitting to the ENGINEER for approval, a written statement of the steps he intends to take to remove or arrest the delay to the critical path in the approved schedule.

A. Increased construction manpower in such quantities and crafts as will substantially eliminate, in the judgment of the ENGINEER, the backlog of Work.

B. Increase the number of working hours per shift, shifts per working days per week, the amount of construction equipment, or any combination of the foregoing, sufficiently to substantially eliminate, in the judgment of the ENGINEER, the backlog of Work.

C. Reschedule activities to achieve maximum practical concurrency of accomplishment of activities, and comply with the revised schedule.

D. Costs incurred by the OWNER arising from such lengthening of hours, including furnishing of Inspectors, shall be the CONTRACTOR'S responsibility and shall be deducted from monies due him. Failure of the CONTRACTOR to comply with the requirements of the ENGINEER may be grounds for determining by the OWNER that the CONTRACTOR is not proceeding at such rates as will ensure completion within the specified time and may result in the termination of the right of the CONTRACTOR to continue the Work.

3.02 ADJUSTMENT OF CONTRACT SCHEDULE AND COMPLETION TIME

A. If the CONTRACTOR desires to make changes in his method of operating which effect the approved schedule, he shall notify the ENGINEER in writing, stating what changes are proposed and the reason for the change. If the ENGINEER approves these changes, the CONTRACTOR shall revise and submit for approval, without additional cost to the OWNER, all affected portions of the schedule. The schedule shall be adjusted by the CONTRACTOR only after prior approval of his proposed changes by the ENGINEER.

B. Adjustments may consist of changing portions of the activity sequence and/or activity durations, division of approved activities, or other adjustments as may be approved by the ENGINEER. The addition of extraneous, non-working activities and/or activities which add unapproved restraints to the schedule shall not be approved.

C. If the completion of any activity, whether or not critical, falls more than 100 percent behind its approved duration, the CONTRACTOR shall submit for approval a schedule adjustment showing each such activity divided into two activities reflecting completed versus uncompleted Work.

D. Shop Drawings which are not approved on the first submittal or within the scheduled time shall be immediately rescheduled.

E. The Contract completion time will be adjusted only for causes specified in this Contract. In the event the CONTRACTOR requests an extension of any Contract completion date, he/she shall furnish such justification and supporting evidence as the ENGINEER may deem necessary for a determination as to whether the CONTRACTOR is entitled to an extension of time under the provisions of this Contract. The ENGINEER will, after receipt of such justification and supporting evidence make findings of fact and will advise the CONTRACTOR in writing thereof. If the ENGINEER finds that the CONTRACTOR is entitled to any extension of any Contract completion date under the provisions of this Contract, the ENGINEER'S determination as to the total number of days extension shall be based upon the currently approved schedule and on all data relevant to the extension. Such data shall be included in the next monthly updating of the schedule. Any extension of Contract time must be approved by the OWNER and a Change Order must be processed. The CONTRACTOR acknowledges and agrees that actual delays in activities which, according to the schedule, do not affect any Contract completion date shown by the critical path in the schedule do not have any effect on the Contract completion date or dates, and therefore, will not be the basis for a change.

F. From time to time it may be necessary for the Contract schedule and/or completion time to be adjusted by the ENGINEER to reflect the effects of job conditions, weather, technical difficulties, strikes, unavoidable delays on the part of the OWNER or his representatives, and other unforeseeable conditions which may indicate schedule

adjustments and/or completion time extension. Under such conditions, the CONTRACTOR shall reschedule the Work and/or Contract completion time to reflect the changed conditions, and the CONTRACTOR shall revise his schedule accordingly. No additional compensation shall be made to the CONTRACTOR for such schedule changes except for unavoidable overall Contract time extensions beyond the actual completion of all unaffected Work in the Contract, in which case the CONTRACTOR shall take all possible action to minimize any time extension and any additional cost to the OWNER. It is specifically pointed out that the use of available float time in the schedule may be used by the OWNER as defined by the ENGINEER, as well as by the CONTRACTOR. Float time is defined as the amount of time between the early start date, and the late start date, or the early finish date and the late finish date, of any of the activities in the schedule.

G. The OWNER controls the float time in the approved schedule and, therefore, without obligation to extend either the overall completion date or any intermediate completion dates set out in the schedule, the OWNER may initiate changes to the Contract Work that absorb float time only. OWNER-initiated changes that affect the critical path on the approved schedule shall be the sole grounds for extending (or contracting) said completion dates. CONTRACTOR-initiated changes that encroach on the float time identified in the approved schedule may be accomplished with the OWNER'S concurrence. Such changes, however, shall give way to OWNER-initiated changes competing for the same float time.

END OF SECTION

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SECTION 01370

SCHEDULE OF VALUES

PART 1 - GENERAL

1.01 REQUIREMENTS INCLUDED

A. The CONTRACTOR shall submit to the ENGINEER a Schedule of Values allocated to the various portions of the Work, within seven (7) calendar days after the effective date of the Agreement.

B. Upon request of the ENGINEER, support the values with data which will substantiate their correctness.

C. The accepted Schedule of Values shall be used only as the basis for the CONTRACTOR'S Applications for Payment.

1.02 RELATED REQUIREMENTS

The Contract Documents include, but are not limited to, the following related requirements:

A. Standard General Conditions.

B. Section 01152: Applications for Payment.

1.03 FORM AND CONTENT OF SCHEDULE OF VALUES

A. Format schedule on an 8-1/2 inch x 14-inch white paper. Identify schedule with:

1. Title of Project and location.

2. ENGINEER and Project number.

3. Name and Address of CONTRACTOR.

4. Contract designation.

5. Date of submission.

B. Schedule shall list the installed value of the component parts of the Work in sufficient detail to serve as a basis for computing values for progress payments during construction

C. Identify each line item with the number and title of the respective major section of the specifications.

D. For each major line item list sub-values of major products or operations under the item.

E. For the various portions of the Work:

1. Each item shall include a directly proportional amount of the CONTRACTOR'S overhead and profit.

2. For items on which progress payments will be requested for stored materials, break down the value into:

a. The cost of the materials, delivered and unloaded, with taxes paid. Paid invoices are required for materials upon request by the ENGINEER.

b. The total installed value.

F. The sum of all values listed in the schedule shall equal the total Contract Sum.

1.04 SUBSCHEDULE OF UNIT MATERIAL VALUES

A. Submit a sub-schedule of unit costs and quantities for:

1. Products on which progress payments will be requested for stored products.

B. The form of submittal shall parallel that of the Schedule of Values, with each item identified the same as the line item in the Schedule of Values.

C. The unit quantity for bulk materials shall include an allowance for normal waste.

D. The unit values for the materials shall be broken down into:

1. Cost of the material, delivered and unloaded at the site, with taxes paid.

2. Copies of invoices for component material shall be included with the payment request in which the material first appears.

3. Paid invoices shall be provided with the second payment request in which the material appears or no payment shall be allowed and/or may be deleted from the request.

E. The installed unit value multiplied by the quantity listed shall equal the cost of that item in the Schedule of Values.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION

SECTION 01390

CONSTRUCTION PHOTOGRAPHS

PART 1 - GENERAL

1.01 REQUIREMENTS INCLUDED

The CONTRACTOR shall employ competent photographer to take construction record photographs periodically during course of the Work.

1.02 VIDEO TAPING REQUIRED

A. The piping route shall be video taped by the CONTRACTOR prior to start of construction to thoroughly document pre-project conditions and video taped near the time of project closeout to thoroughly document final conditions. Two copies of the pre-construction video shall be submitted to the ENGINEER prior to commencement of construction, and one copy of post construction video shall be submitted to the ENGINEER prior to project closeout.

B. Tape shall, when viewed, show in the image, ¼ of the trench fronting all properties and ¾ on the image shall be of the property.

C. The taping shall be done so as to show the trench and property in an oblique view (30°).

D. Coverage shall include, but not be limited to, all existing driveways, sidewalks, curbs, ditches, streets, landscaping, trees, culverts, catch basins, headwalls, retaining walls, fences, visible utilities, and all buildings located within the zone of influence. Of particular concern, are any existing faults, fractures, defects or other imperfection exhibited by the above-mentioned surface features. Audio description shall be made simultaneously with the support video coverage.

E. Engineering plans shall be referenced, by stationing, in the audio on the tapes. If visible, house numbers shall also be mentioned in the audio.

F. A record of the contents of each tape shall be supplied on a run sheet identifying each segment in the tape by location, i.e. street or easement, viewing side, traveling direction, engineering stationing, house or lot number, and all referenced by tape counter numbers.

1.03 PHOTOGRAPHY REQUIRED

A. Provide a minimum of two (2) photographs taken for each day of any field work. Photographs should be properly labeled with the date and locations (station #).

B. Provide photographs taken prior to the cutoff date for each scheduled application for payment.

1.04 COSTS OF PHOTOGRAPHY

The CONTRACTOR shall pay costs for specified photography and prints. Parties requiring additional photography or prints will pay photographer directly.

PART 2 - PRODUCTS

2.01 PRINTS

A. Color:

1. Paper: Single weight, color print paper.

2. Finish: Smooth surface matte finish.

3. Size: 8-inch x 10-inch.

B. Identify each print on back, listing:

1. Name of Project and County Project Number

2. Orientation of View

3. Date and time of exposure

4. Name and address of photographer

5. Photographer's numbered identification of exposure

2.02 DIGITAL FILES

A. Digital Photograph Files:

1. Digital photograph files in JPG format with a minimum resolution of 5.0 MegaPixels shall be provided for each image. Metadata shall include the date taken.

B. Digital Photograph File Delivery:

1. All Digital Photograph Files shall be delivered with record drawing on CD. Photos provided per 1.03 may be delivered digitally via email or other convenient method approved by the ENGINEER.

PART 3 - EXECUTION

3.01 TECHNIQUE

A. Factual presentation.

B. Correct exposure and focus:

1. High resolution and sharpness

2. Maximum depth-of-field

3. Minimum distortion

3.02 VIEWS REQUIRED

Photograph from location to adequately illustrate condition of construction and state of progress:

A. At successive periods of photography, take at least one photograph from the same overall view as previously.

B. Consult with the ENGINEER at each period of photography for instructions concerning views required.

3.03 ASSEMBLY OF PRINTS

A. Each print shall be inserted in a separate, archival type, non-glare, three (3)-hole punched photo protector.

B. Provide one suitable size 3-ring binder for each set of prints. Binders shall be provided in sufficient quantity to hold all photographs taken for the duration of the contract. Each binder shall be labeled by engraving on the front and spine with the project name.

3.04 DELIVERY OF PRINTS

A. Deliver prints to the ENGINEER to accompany each Application for Payment.

B. Distribution of prints as soon as processed is anticipated to be as follows:

1. ENGINEER (two sets).

2. OWNER (one set).

3. Project Record File (one set to be stored by CONTRACTOR).

4. CONTRACTOR (one set).

C. No construction shall start until preconstruction photography is completed and submitted to ENGINEER.

END OF SECTION

SECTION 01410

TESTING AND TESTING LABORATORY SERVICES

PART 1 - GENERAL

1.01 REQUIREMENTS INCLUDED

The CONTRACTOR shall employ and pay for the services of an Independent Testing Laboratory to perform testing specifically indicated in the Contract Documents and may at any other time elect to have materials and equipment tested for conformity with the Contract Documents.

A. CONTRACTOR shall cooperate with the laboratory to facilitate the execution of its required services.

B. Employment of the laboratory shall in no way relieve CONTRACTOR'S obligations for quality control to perform the Work of the Contract.

1.02 RELATED REQUIREMENTS

The Contract Documents include, but are not limited to, the following related requirements:

A. Conditions of the Contract: Inspections and testing required by laws, ordinances, rules, regulations, orders or approvals of public authorities.

B. Respective sections of specifications: Certification of products.

C. Each specification section listed: Laboratory tests required, and standards for testing.

D. Testing Laboratory inspection, sampling and testing is required for, but not limited to, the following:

1. Section 02100: Site Preparation.

2. Section 02221: Trenching, Bedding and Backfill for Pipe.

1.03 LIMITATIONS OF AUTHORITY OF TESTING LABORATORY

Laboratory is not authorized to:

A. Release, revoke, alter or enlarge on requirements of Contract Documents.

B. Approve or accept any portion of the Work.

C. Perform any duties of the CONTRACTOR.

1.04 CONTRACTOR'S RESPONSIBILITIES

A. Cooperate with laboratory personnel; provide access to Work, to MANUFACTURER'S operations.

B. Secure and deliver to the laboratory adequate quantities of representational samples of materials proposed to be used and which require testing.

C. Provide to the laboratory the preliminary design mix proposed to be used for concrete, asphaltic concrete, soil cement, and other materials mixes which require control by the testing laboratory.

D. Materials and equipment used in the performance of work under this Contract are subject to inspection and testing at the point of manufacture or fabrication. Standard specifications for quality and workmanship are indicated in the Contract Documents. The ENGINEER may require the CONTRACTOR to provide statements or certificates from the MANUFACTURERS and fabricators that the materials and equipment provided by them are manufactured or fabricated in full accordance with the standard specifications for quality and workmanship indicated in the Contract Documents. All costs of this testing and providing statements and certificates shall be a subsidiary obligation of the CONTRACTOR, and no extra charge to the OWNER shall be allowed on account of such testing and certification.

E. Furnish incidental labor and facilities:

1. To provide access to Work to be tested.

2. To obtain and handle samples at the Project site or at the source of the product to be tested.

3. To facilitate inspections and tests.

4. For storage and curing of test samples.

F. Notify laboratory sufficiently in advance (minimum 48 hours) of operations to allow for laboratory assignment of personnel and scheduling of tests.

G. Employ and pay for the services of the same or a separate, equally qualified, independent testing laboratory to perform additional inspections, sampling and testing required for the CONTRACTOR'S convenience.

H. If the test and any subsequent retest indicate the materials and equipment fail to meet the requirements of the Contract documents, the Contractor will continue to pay for the laboratory services directly to the testing firm with no additional cost to the Owner.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION

SECTION 01500

TEMPORARY UTILITIES

PART 1 - GENERAL

1.01 REQUIREMENTS INCLUDED

The CONTRACTOR shall furnish, install and maintain temporary utilities required for construction, remove on completion of Work.

1.02 REQUIREMENTS OF REGULATORY AGENCIES

A. Comply with National Electric Code.

B. Comply with Federal, State and local codes and regulations and with utility company requirements.

C. Comply with County Health Department Regulations.

PART 2 - PRODUCTS

2.01 MATERIALS

Materials may be new or used, but must be adequate in capacity for the required usage, must not create unsafe conditions, and must not violate requirements of applicable codes and standards.

2.02 TEMPORARY ELECTRICITY AND LIGHTING

A. Arrange with utility company and OWNER to provide service required for power and lighting, and pay all costs for service and for power used in the construction, testing and trial operation prior to final acceptance of the work by the OWNER as stipulated by the ENGINEER.

B. Provide adequate artificial lighting for all areas of work when natural light is not adequate for Work, and for areas accessible to the public.

2.03 TEMPORARY HEAT AND VENTILATION

A. Provide temporary heat and ventilation as required to maintain adequate environmental conditions to facilitate progress of the Work.

B. Portable heaters shall be standard approved units complete with controls.

C. Pay all costs of installation, maintenance, operation and removal, and for fuel consumed.

D. Provide connections to existing facilities, extend and supplement with temporary units as required to comply with requirements. Pay all costs of installation, maintenance, operation and removal.

2.04 TEMPORARY WATER

A. The CONTRACTOR shall provide and pay for all required water for construction and consumptive purposes.

B. The CONTRACTOR shall install at each and every connection to the OWNER water supply a reduced-pressure backflow preventer meeting the requirements of ANSI A40.6, latest revision. CONTRACTOR shall be required to meter all water used.

C. The CONTRACTOR shall provide water for construction purposes if not available on site.

2.05 TEMPORARY SANITARY FACILITIES

A. Provide sanitary facilities in compliance with laws and regulations.

B. Service, clean and maintain facilities and enclosures.

PART 3 - EXECUTION

3.01 GENERAL

A. Maintain and operate systems to assure continuous service.

B. Modify and extend systems as work progress requires.

3.02 REMOVAL

A. Completely remove temporary materials and equipment when their use is no longer required as determined by the ENGINEER.

B. Clean and repair damage caused by temporary installations or use of temporary facilities.

END OF SECTION

SECTION 01600

DELIVERY, STORAGE AND HANDLING

PART 1 - GENERAL

1.01 SCOPE OF WORK

This Section specifies the general requirements for the delivery handling, storage and protection for all items required in the construction of the Work. Specific requirements, if any, are specified with the related item.

1.02 TRANSPORTATION AND DELIVERY

A. Transport and handle items in accordance with MANUFACTURER'S instructions.

B. Schedule delivery to reduce long term on-site storage prior to installation and/or operation. Under no circumstances shall equipment be delivered to the site more than one month prior to installation without written authorization from the ENGINEER.

C. Coordinate delivery with installation to ensure minimum holding time for items that are hazardous, flammable, easily damaged or sensitive to deterioration.

D. Deliver products to the site in MANUFACTURER'S original sealed containers or other packing systems, complete with instructions for handling, storing, unpacking, protecting and installing.

E. All items delivered to the site shall be unloaded and placed in a manner which will not hamper the CONTRACTOR'S normal construction operation or those of subcontractors and other contractors and will not interfere with the flow of necessary traffic.

F. Provide necessary equipment and personnel to unload all items delivered to the site.

G. Promptly inspect shipment to assure that products comply with requirements, quantities are correct, and items are undamaged. For items furnished by the OWNER, perform inspection in the presence of the ENGINEER/OWNER. Notify ENGINEER verbally, and in writing, of any problems.

1.03 STORAGE AND PROTECTION

A. Store and protect products in accordance with the MANUFACTURER'S instructions, with seals and labels intact and legible. Storage instruction shall be studied by the CONTRACTOR and reviewed with the ENGINEER by him. Instruction shall be carefully followed and a written record of this kept by the CONTRACTOR. Arrange storage to permit access for inspection.

B. Store loose granular materials on solid flat surfaces in a well-drained area. Prevent mixing with foreign matter.

C. Cement and lime shall be stored under a roof and off the ground and shall be kept completely dry at all times. All structural, miscellaneous and reinforcing steel shall be stored off the ground or otherwise to prevent accumulations of dirt or grease, and in a position to prevent accumulations of standing water and to minimize rusting. Beams shall be stored with the webs vertical. Precast concrete shall be handled and stored in a manner to prevent accumulations of dirt, standing water, staining, chipping or cracking. Brick, block and similar masonry products shall be handled and stored in a manner to reduce breakage, cracking and spalling to a minimum.

D. All mechanical and electrical equipment and instruments subject to corrosive damage by the atmosphere if stored outdoors (even though covered by canvas) shall be stored in a weather-tight building to prevent damage. The building may be a temporary structure on the site or elsewhere, but it must be satisfactory to the ENGINEER. Building shall be provided with adequate ventilation to prevent condensation. Maintain temperature and humidity within range required by the MANUFACTURER.

1. All equipment shall be stored fully lubricated with oil, grease and other lubricants unless otherwise instructed by the MANUFACTURER.

2. Moving parts shall be rotated a minimum of once weekly to ensure proper lubrication and to avoid metal-to-metal "welding". Upon installation of the equipment, the CONTRACTOR shall start the equipment, at least half load, once weekly for an adequate period of time to ensure that the equipment does not deteriorate from lack of use.

3. Lubricants shall be changed upon completion of installation and as frequently as required thereafter during the period between installation and acceptance. New lubricants shall be put into the equipment at the time of acceptance.

4. Prior to acceptance of the equipment, the CONTRACTOR shall have the MANUFACTURER inspect the equipment and certify that its condition has not been detrimentally affected by the long storage period. Such certifications by the MANUFACTURER shall be deemed to mean that the equipment is judged by the manufacturer to be in a condition equal to that of equipment that has been shipped, installed, tested and accepted in a minimum time period. As such, the MANUFACTURER will guaranty the equipment equally in both instances. If such a certification is not given, the equipment shall be judged to be defective. It shall be removed and replaced at the CONTRACTOR'S expense.

1.04 PROTECTION AFTER INSTALLATION

A. Provide protection of installed products to prevent damage from subsequent operations. Remove when no longer needed, prior to completion of Work.

B. Control traffic to prevent damage to equipment and surfaces.

C. Provide coverings to protect finished surfaces from damage.

D. Lawns and Landscaping. Prohibit traffic of any kind across planted lawn and landscaped areas.

1.05 SPECIAL TOOLS

If required, MANUFACTURERS of equipment and machinery shall furnish any special tools (including grease guns or other lubricating devices) required for normal adjustment, operations and maintenance, together with instructions for their use. The CONTRACTOR shall preserve and deliver to the OWNER at the County offices with receipt, these tools and instructions in good order 10 days prior to facility startup.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION

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SECTION 01610

MATERIAL AND EQUIPMENT

PART 1 - GENERAL

1.01 REQUIREMENTS INCLUDED

Material and equipment incorporated into the Work:

A. Conform to applicable specifications and standards.

B. Comply with size, make, type and quality specified, or as specifically approved in writing by the ENGINEER.

C. Manufactured and Fabricated Products:

1. Design, fabricate and assemble in accord with the best engineering and shop practices.

2. Manufacture like parts of duplicate units to standard sizes and gages, to be interchangeable.

3. Two or more items of the same kind shall be identical, by the same MANUFACTURER.

4. Products shall be suitable for service conditions.

5. Equipment capacities, sizes and dimensions shown or specified shall be adhered to unless variations are specifically approved in writing.

D. Do not use material or equipment for any purpose other than that for which it is designed or is specified.

1.02 RELATED REQUIREMENTS

The Contract Documents include, but are not limited to, the following related requirements:

A. Conditions of the Contract

B. Submittals are included in Section 01300.

C. Cleaning is included in Section 01710.

D. Operating and Maintenance Data is included in Section 01730.

E. Warranties and Bonds are included in Section 01740.

1.03 APPROVAL OF MATERIALS

A. Only new materials and equipment shall be incorporated in the Work. All materials and equipment furnished by the CONTRACTOR shall be subject to the inspection and approval of the ENGINEER. No material shall be delivered to the Work without prior approval of the ENGINEER.

B. Within 30 days after the effective date of the Agreement, the CONTRACTOR shall submit to the ENGINEER, data relating to materials and equipment he/she proposes to furnish for the Work. Such data shall be in sufficient detail to enable the ENGINEER to identify the particular product and to form an opinion as to its conformity to the specifications. The data shall comply with Section 01300.

C. Facilities and labor for handling and inspection of all materials and equipment shall be furnished by the CONTRACTOR. If the ENGINEER requires, either prior to beginning or during the progress of the Work, the CONTRACTOR shall submit samples of materials for such special tests as may be necessary to demonstrate that they conform to the specifications. Such samples shall be furnished, stored, packed, and shipped as directed at the CONTRACTOR'S expense. Except as otherwise noted, the CONTRACTOR will make arrangements for and pay for the tests.

D. The CONTRACTOR shall submit data and samples sufficiently early to permit consideration and approval before materials are necessary for incorporation in the Work. Any delay of approval resulting from the CONTRACTOR'S failure to submit samples or data promptly shall not be used as a basis of claim against the OWNER or the ENGINEER.

E. In order to demonstrate the proficiency of workmen or to facilitate the choice among several textures, types, finishes and surfaces, the CONTRACTOR shall provide such samples of workmanship or finish as may be required.

F. The materials and equipment used on the Work shall correspond to the approved samples or other data.

1.04 MANUFACTURER'S INSTRUCTIONS FOR INSTALLATION

A. When Contract Documents require that installation of Work shall comply with MANUFACTURER'S printed instructions, obtain and distribute copies of such instructions to parties involved in the installation, including 6 copies to the ENGINEER. Maintain one set of complete instructions at the job site during installation and until completion.

B. Handle, install, connect, clean, condition and adjust products in strict accord with such instructions and in conformity with specified requirements.

1. Should job conditions or specified requirements conflict with MANUFACTURER'S instructions, consult with ENGINEER for further instructions.

2. Do not proceed with Work without clear instructions.

C. Perform Work in accordance with MANUFACTURER'S instructions. Do not omit any preparatory step or installation procedure unless specifically modified or exempted by Contract Documents.

1.05 TRANSPORTATION AND HANDLING

A. Arrange deliveries of Products in accord with construction schedules, coordinate to avoid conflict with Work and conditions at the site.

1. Deliver Products in undamaged condition, in MANUFACTURER'S original containers or packaging, with identifying labels intact and legible.

2. Immediately on delivery, inspect shipments to assure compliance with requirements of Contract Documents and approved submittals, and that Products are properly protected and undamaged.

B. Provide equipment and personnel to handle Products by methods to prevent soiling or damage to Products or packaging.

1.06 STORAGE AND PROTECTION

A. The CONTRACTOR shall furnish a covered, weather-protected storage structure providing a clean, dry, non-corrosive environment for all mechanical equipment, valves, architectural items, electrical and instrumentation equipment and special equipment to be incorporated into this project. Storage of equipment shall be in strict accordance with the "instructions for storage" of each equipment supplier and MANUFACTURER including connection of heaters, placing of storage lubricants in equipment, etc. The CONTRACTOR shall furnish a copy of the MANUFACTURER'S instructions for storage to the ENGINEER prior to storage of all equipment and materials. Corroded, damaged or deteriorated equipment and parts shall be replaced before acceptance of the project. Equipment and materials not properly stored will not be included in a payment estimate.

B. Store Products in accordance with MANUFACTURER'S instructions, with seals and labels intact and legible.

1. Store products subject to damage by the elements in weather tight enclosures.

2. Maintain temperature and humidity within the ranges required by MANUFACTURER'S instructions.

3. Store fabricated products above the ground, on blocking or skids, prevent soiling or staining. Cover products which are subject to deterioration with impervious sheet coverings, provide adequate ventilation to avoid condensation.

4. Store loose granular materials in a well-drained area on solid surfaces to prevent mixing with foreign matter.

C. All materials and equipment to be incorporated in the Work shall be handled and stored by the CONTRACTOR before, during and after shipment in a manner to prevent warping, twisting, bending, breaking, chipping, rusting and any injury, theft or damage of any kind whatsoever to the material or equipment.

D. Cement, sand and lime shall be stored under a roof and off the ground and shall be kept completely dry at all times. All structural and miscellaneous steel and reinforcing steel shall be stored off the ground or otherwise to prevent accumulations of dirt or grease and in a position to prevent accumulations of standing water and to minimize rusting. Beams shall be stored with the webs vertical. Pre-cast concrete beams shall be handled and stored in a manner to prevent accumulations of dirt, standing water, staining, chipping or cracking. Brick, block and similar masonry products shall be handled and stored in a manner to reduce breakage, chipping, cracking and spalling to a minimum.

E. All materials which, in the opinion of the ENGINEER, have become so damaged as to be unfit for the use intended or specified shall be promptly removed from the site of the Work and the CONTRACTOR shall receive no compensation for the damaged material or its removal.

F. Arrange storage in a manner to provide easy access for inspection. Make periodic inspections of stored Products to assure that Products are maintained under specified conditions and free from damage or deterioration.

G. Protection After Installation: Provide substantial coverings as necessary to protect installed products from damage from traffic and subsequent construction operations. Remove covering when no longer needed.

H. The CONTRACTOR shall be responsible for all material, equipment and supplies sold and delivered to the OWNER under this Contract until final inspection of the Work and acceptance thereof by the OWNER. In the event any such material, equipment, and supplies are lost, stolen, damaged, or destroyed prior to final inspection and acceptance, the CONTRACTOR shall replace same without additional cost to the OWNER.

I. Should the CONTRACTOR fail to take proper action on storage and handling of equipment supplied under this Contract within seven days after written notice to do so has been given, the OWNER retains the right to correct all deficiencies noted in previously transmitted written notice and deduct the cost associated with these corrections from the CONTRACTOR'S. These costs may be comprised of expenditures for labor, equipment usage, administrative, clerical, engineering and any other costs associated with making the necessary corrections.

1.07 WARRANTY

For all major pieces of equipment, submit a warranty from the equipment MANUFACTURER as specified in Section 01740.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION

SECTION 01700

CONTRACT CLOSEOUT

PART 1 - GENERAL

1.01 REQUIREMENTS INCLUDED

The CONTRACTOR shall comply with requirements stated in General Conditions and in Specifications for administrative procedures in closing out the Work.

1.02 SUBSTANTIAL COMPLETION

A. When CONTRACTOR considers the Work is substantially complete, he shall submit to the ENGINEER:

1. A written notice that the Work, or designated portion thereof, is substantially complete.

2. A list of items to be completed or corrected.

B. Within ten calendar days after receipt of such notice, the ENGINEER/OWNER will make an inspection to determine the status of completion.

C. Should the ENGINEER determine that the Work is not substantially complete:

1. The ENGINEER will promptly notify the CONTRACTOR in writing, giving the reasons therefore.

2. CONTRACTOR shall remedy the deficiencies in the Work, and send a second written notice of substantial completion to the ENGINEER.

3. The ENGINEER will reinspect the Work.

D. When the ENGINEER finds that the Work is substantially complete, he will:

1. Prepare and deliver to OWNER a tentative Certificate of Substantial Completion on NSPE Form 1910-8-D, with a tentative list of items to be completed or corrected before final payment.

2. After consideration of any objections made by the OWNER as provided in Conditions of the Contract, and when the ENGINEER considers the Work substantially complete, he will execute and deliver to the OWNER and the CONTRACTOR a definite Certificate of Substantial Completion with a revised tentative list of items to be completed or corrected.

1.03 FINAL INSPECTION

A. When CONTRACTOR considers the Work is complete, he shall submit written certification that:

1. Contract Documents have been reviewed.

2. Work has been inspected for compliance with Contract Documents.

3. Work has been completed in accordance with Contract Documents.

4. Equipment and systems have been tested in the presence of the OWNER'S representative and are operational.

5. Work is completed and ready for final inspection.

B. The ENGINEER will make an inspection to verify the status of completion with reasonable promptness after receipt of such certification.

C. Should the ENGINEER consider that the Work is incomplete or defective:

1. The ENGINEER will promptly notify the CONTRACTOR in writing, listing the incomplete or defective Work.

2. CONTRACTOR shall take immediate steps to remedy the stated deficiencies, and send a second written certification to the ENGINEER that the Work is complete.

3. The ENGINEER will reinspect the Work.

D. When the ENGINEER finds that the Work is acceptable under the Contract Documents, he shall request the CONTRACTOR to make closeout submittals.

1.04 REINSPECTION FEES

A. Should the ENGINEER or OWNER perform re-inspections due to failure of the Work to comply with the claims of status of completion made by the CONTRACTOR. OWNER will deduct the amount of such compensation from the final payment to the CONTRACTOR.

1.05 CONTRACTOR'S CLOSEOUT SUBMITTALS TO ENGINEER

A. Evidence of compliance with requirements of governing authorities.

B. Project Record Documents: Requirements of Section 01720.

C. Operating and Maintenance Data, Instructions to OWNER'S Personnel: Requirements of Section 01730.

D. Warranties: General Conditions and Section 01740.

E. Keys and Keying Schedule.

F. Spare Parts and Maintenance Materials.

G. Evidence of Payment and Release of Liens: Requirements of General and Supplementary Conditions, on form entitled Contractor's Final Affidavit provided in these documents.

H. Certificate of Insurance for Products and Completed Operations: Requirements of General Conditions.

I. Executed warranty included in these documents.

1.06 FINAL ADJUSTMENT OF ACCOUNTS

A. Submit a final statement of accounting to the ENGINEER.

B. Statement shall reflect all adjustments to the Contractor Sum:

1. The original Contract Sum.

2. Additions and deductions resulting from:

a. Previous Change Orders.

b. Unit Prices.

c. Deductions for uncorrected Work.

d. Deductions for liquidated damages.

e. Deductions for re-inspection payments.

f. Other adjustments.

g. Inspection overtime.

h. Excessive shop drawing review cost by the ENGINEER.

3. Total Contract Sum, as adjusted.

4. Previous payments.

5. Sum remaining due.

C. The ENGINEER will prepare a final Change Order, reflecting approved adjustments to the Contract Sum which were not previously made by Change Orders.

1.07 FINAL APPLICATION FOR PAYMENT

The CONTRACTOR shall submit the final Application for Payment in accordance with procedures and requirements stated in the General Conditions.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION

3.01 GENERAL

The CONTRACTOR shall furnish all necessary tools and labor required to allow ENGINEER and OWNER to verify the status of completion. The tools shall include, but not be limited to the following:

A. Fire Hydrant Wrench and Fire Hose

B. Shovel

C. Lamps & Mirror(s)

D. Probe Rod

E. Valve Key

END OF SECTION

SECTION 01710

CLEANING

PART 1 - GENERAL

1.01 SCOPE OF WORK

Execute cleaning, during progress of the Work, and at completion of the Work, as required by General Conditions.

1.02 RELATED WORK

A. Standard General Conditions of the Construction Contract are included in Section 00700.

B. Each Section: Cleaning for specific products or Work.

1.03 DISPOSAL AND CLEANING

Conduct cleaning and disposal operations to comply with codes, ordinances, regulations and anti-pollution laws.

PART 2 - PRODUCTS

2.01 MATERIALS

A. Use only those cleaning materials which will not create hazards to health or property and which will not damage surfaces.

B. Use only those cleaning materials and methods recommended by manufacturer of the surface material to be cleaned.

C. Use cleaning materials only on surfaces recommended by cleaning material manufacturer.

PART 3 - EXECUTION

3.01 DURING CONSTRUCTION

A. Execute periodic cleaning to keep the Work, the site and adjacent properties free from accumulations of waste materials, rubbish and windblown debris, resulting from construction operations.

B. Provide on-site containers for the collection of waste materials, debris and rubbish.

C. Remove waste materials, debris and rubbish from the site periodically and dispose of at legal disposal areas away from the site.

3.02 DUST CONTROL

Schedule operations so that dust and other contaminants resulting from cleaning process will not fall on wet or newly-coated surfaces.

3.03 FINAL CLEANING

A. Employ skilled workmen for final cleaning.

B. Remove grease, mastic, adhesives, dust, dirt, stains, fingerprints, labels and other foreign materials from sight-exposed interior and exterior surfaces.

C. Broom clean exterior paved surfaces; rake clean other surfaces of the grounds.

D. Prior to final completion, conduct an inspection of sight-exposed interior and exterior surfaces and all Work areas, to verify that the entire Work is clean.

END OF SECTION

SECTION 01720

PROJECT RECORD DOCUMENTS

PART 1 - GENERAL

1.01 REQUIREMENTS INCLUDED

The CONTRACTOR shall maintain at the site for the OWNER one record copy of:

A. Drawings.

B. Specifications.

C. Addenda.

D. Change Orders and other Modifications to the Contract.

E. ENGINEER'S Field Orders or written instructions.

F. Approved Shop Drawings, Working Drawings and Samples.

G. Field Test records.

H. Construction photographs.

I. Detailed Progress Schedule.

1.02 MAINTENANCE OF DOCUMENTS AND SAMPLES

A. Store documents and samples in CONTRACTOR'S field office apart from documents used for construction.

1. Provide files and racks for storage of documents.

2. Provide locked cabinet or secure storage space for storage of samples.

B. File documents and samples in accordance with CSI format.

C. Maintain documents in a clean, dry, legible, condition and in good order. Do not use record documents for construction purposes.

D. Make documents and samples available at all times for inspection by the ENGINEER/OWNER.

E. As a prerequisite for monthly progress payments, the CONTRACTOR is to provide the currently updated "record documents" (Blue Lines) for review by the ENGINEER and OWNER.

1.03 MARKING DEVICES

Provide felt-tip marking pens for recording information in the color code designated by the ENGINEER.

1.04 RECORDING

A. Label each document "PROJECT RECORD" with month and year in neat large printed letters.

B. Record information concurrently with construction progress. Do not conceal any work until required information is recorded.

C. Drawings; Legibly mark to record actual construction:

1. Elevations of various structure elements in relation to grade (including tank slab elevation, top of tank, etc.).

2. All underground piping with elevations and dimensions. Changes to piping location. Horizontal and vertical locations of underground utilities and appurtenances, referenced to permanent surface improvements. Actual installed pipe material, class, etc.

3. Location of internal utilities and appurtenances concealed in the construction, referenced to visible and accessible features of the structure.

4. Field changes of dimension and detail.

5. Changes made by Field Order or by Change Order.

6. Details not on original contract drawings.

7. Equipment and piping relocations.

D. Specifications and Addenda; provide one complete set and legibly mark each Section to record:

1. Manufacturer, trade name, catalog number, and Supplier of each Product and item of equipment actually installed.

2. Changes made by Field Order or by Change Order.

E. Shop Drawings (after final review): One set of record drawings for each process equipment and piping system in conformance with Section 01300.

F. Certified survey in conformance with Section 01050.

1.05 SUBMITTAL

A. Prior to final completion or partial OWNER occupancy, deliver five sets of as-built drawings (and AutoCAD files, as required) of the Record Documents to the ENGINEER for the OWNER.

B. Accompany submittal with transmittal letter in duplicate, containing:
Submit one set of specifications and Addenda, and Shop Drawings in accordance with Paragraph 1.04 D and E of this Section, prior to final completion.

C. Accompany submittal with transmittal letter in duplicate, containing:

1. Date.

2. Project title and number.

3. CONTRACTOR'S name and address.

4. Title and number of each Record Document.

5. Signature of CONTRACTOR or his authorized representative.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION

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SECTION 01730

OPERATING AND MAINTENANCE DATA

PART 1 - GENERAL

1.01 REQUIREMENTS INCLUDED

A. The CONTRACTOR shall compile product data and related information appropriate for OWNER'S maintenance and operation of products furnished under Contract. Prepare operating and maintenance data as specified in this Section and as referenced in other pertinent sections of Specifications.

B. Instruct OWNER'S personnel in maintenance of products and in operation of equipment and systems.

C. The CONTRACTOR shall submit the final documents after review and approval of the ENGINEER in electronic format as specified in Section 01300.

1.02 QUALITY ASSURANCE

Preparation of data shall be done by personnel:

A. Trained and experienced in maintenance and operation of described products.

B. Familiar with requirements of this Section.

C. Skilled and technical writer to the extent required to communicate essential data.

D. Skilled as draftsman competent to prepare required drawings.

1.03 FORM OF SUBMITTALS

A. Prepare data in form of an instructional manual for use by OWNER'S personnel.

B. Format:

1. Size: 8-1/2 inches x 11-inches.

2. Paper: 20 pound minimum white, for typed pages.

3. Text: MANUFACTURER'S printed data, or neatly typewritten.

4. Drawings:

a. Provide reinforced punched binder tabs, bind in with text.

b. Reduce larger drawings and fold to size of text pages but not larger than 14-inches x 17-inches.

5. Provide fly-leaf for each separate product, or each piece of operating equipment.

a. Provide typed description of product, and major component parts of equipment.

b. Provide indexed tabs.

6. Cover: identify each volume with typed or printed title "OPERATING AND MAINTENANCE INSTRUCTIONS." List:

a. Title of Project

b. Identity of separate structure as applicable.

c. Identity of general subject matter covered in the manual.

C. Binders:

1. Commercial quality three-post binders with durable and cleanable plastic covers.

2. Maximum post width: expendability 3 to 5 inches.

3. When multiple binders are used, correlate the data into related consistent groupings.

1.04 CONTENT OF MANUAL

A. Neatly typewritten table of contents for each volume, arranged in systematic order.

1. CONTRACTOR, name of responsible principal, address and telephone number.

2. A list of each product required to be included, indexed to content of the volume.

3. List, with each product, name, address and telephone number of:

a. Subcontractor or installer.

b. Maintenance contractor, as appropriate.

c. Identify area of responsibility of each.

d. Local source of supply for parts and replacement.

4. Identify each product by product name and other identifying symbols as set forth in Contract Documents.

B. Product Data:

1. Include only those sheets which are pertinent to the specific product.

2. Annotate each sheet to:

a. Clearly identify specific product or part installed.

b. Clearly identify data applicable to installation.

c. Delete references to inapplicable information.

C. Drawings:

1. Supplement product data with drawings as necessary to clearly illustrate:

a. Relations of component parts of equipment and systems.

b. Control and flow diagrams.

2. Coordinate drawings with information in Project Record Documents to assure correct illustration of completed installation.

3. Do not use Project Record Documents as maintenance drawings.

D. Written text, as required to supplement product data for the particular installation:

1. Organize in consistent format under separate headings for different procedures.

2. Provide logical sequence of instructions of each procedure.

E. Copy of each warranty, bond and service contract issued. Provide information sheet for OWNER'S personnel, give:

1. Proper procedures in event of failure.

2. Instances that might affect validity of warranties or bonds.

1.05 MANUAL FOR EQUIPMENT AND SYSTEMS

A. Submit four copies of complete manual in final form.

B. Content, for each unit of equipment and system, as appropriate:

1. Description of unit and component parts:

a. Function, normal operating characteristics, and limiting conditions.

b. Performance curves, engineering data and tests.

c. Complete nomenclature and commercial number of replaceable parts.

2. Operating procedures:

a. Start-up, break-in, routine and normal operating instructions.

b. Regulation, control, stopping, shutdown and emergency instructions.

c. Summer and winter operating instructions.

d. Special operating instructions.

3. Maintenance Procedures:

a. Routine operations.

b. Guide to "troubleshooting."

c. Disassembly, repair and reassembly.

d. Alignment, adjusting and checking.

4. Servicing and lubrication schedule. List of lubricants required.

5. MANUFACTURER'S printed operating and maintenance instructions.

6. Description of sequence of operation by control MANUFACTURER.

7. Original MANUFACTURER'S parts list, illustrations, assembly drawings and diagrams required for maintenance.

a. Predicted life of parts subject to wear.

b. Items recommended to be stocked as spare parts.

8. As-installed control diagrams by controls MANUFACTURER.

9. Each contractor's coordination drawings. As-installed color-coded piping diagrams.

10. Charts of valve tag numbers, with location and function of each valve.

11. List of original MANUFACTURER'S spare parts, MANUFACTURER'S current prices, and recommended quantities to be maintained in storage.

12. Other data as required under pertinent sections of Specifications.

C. Prepare and include additional data when the need for such data becomes apparent during instruction of OWNER'S personnel.

D. Additional requirements for operating and maintenance data: Respective sections of Specifications.

E. The acceptance of the Operation and Maintenance (O&M) Manual will also require successful completion of the attached O&M review checklist.

1.06 SUBMITTAL SCHEDULE

A. Submit three (3) copies of preliminary draft of proposed formats and outlines of contents of Operation and Maintenance Manuals within 120 days after Notice to Proceed. The ENGINEER will review the preliminary draft and return one copy with comments.

B. The CONTRACTOR shall submit operating and maintenance data within 60 days of shop drawing approval for each piece of equipment. No later than 60 days following the ENGINEER'S approval of the last shop drawing for material to be included in the Operation and Maintenance Data Manuals, submit three (3) bound volumes of all completed data for review. One (1) copy will be returned with comments to be incorporated into final copies.

C. Submit specified number of copies of approved data in final form directly to the offices of the ENGINEER, within 30 calendar days of product shipment to the project site and preferably within 30 days after the reviewed copy is received. Final approved copies shall be delivered to the ENGINEER prior to OWNER'S personnel instruction, start-up and acceptance by the OWNER.

D. Submit five (5) copies of addendum to the Operating and Maintenance Manual as applicable and certificates as specified within 30 days after plant start-up test and acceptance test.

1.07 INSTRUCTION OF OWNER'S PERSONNEL

A. Prior to final inspection or acceptance, fully instruct OWNER'S designated operating and maintenance personnel in operation, adjustment and maintenance of products, equipment and systems, at agreed upon times.

B. Operating and maintenance manual shall constitute the basis of instruction. Review contents of manual with personnel in full detail to explain all aspects of operation and maintenance.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

O&M REVIEW CHECKLIST

GENERAL DATA

1. _____ Is the area representative's name, address, and phone number included?
2. _____ Is the nameplate data for each component included?
3. _____ Are all associated components related to the specific equipment included?
4. _____ Is non-pertinent data crossed out or deleted?
5. _____ Are drawings neatly folded and/or inserted into packets?

OPERATIONS AND MAINTENANCE DATA

6. _____ Is an overview description of the equipment and/or process included?
7. _____ Does the description include the practical theory of operation?
8. _____ Does each equipment component include specific details (design characteristics, operating parameters, control descriptions, and selector switch positions and functions)?
9. _____ Are alarm and shutdown conditions clearly identified?
10. _____ Are step procedures for starting, stopping, and troubleshooting the equipment included?
11. _____ Is a list of operational parameters to monitor and record for specific equipment included?
12. _____ Is a proposed operating log sheet included?
13. _____ Is a spare parts inventory list included for each component?
14. _____ Is a lubrication schedule for each component included - or does it clearly state "NO Lubrication Required"?
15. _____ Is a maintenance schedule for each component included?

O&M REVIEW CHECKLIST
(continued)

COMMENTS

Fully Approved: _____

The following points of rejection require resubmission by the CONTRACTOR:

_____

_____

_____

_____

_____

_____

_____

_____

Reviewed By: _____

LEGEND

1 = OK
2 = Not Adequate
3 = Not Included

Note: This submittal has been reviewed for compliance with the Contract Specifications and Addendum.

MANUFACTURER'S TRAINING SUMMARY REPORT

Date: _____

Vendor: _____

Equipment: _____

Name of Representative: _____

1. Was representative prepared? _____

2. Was an overview description presented? _____

3. Were specific details presented for the system components?

   _____

4. Were alarm and shutdown conditions clearly presented?

   _____

5. Were step procedures for starting, stopping, and trouble shooting the respective system presented?

   _____

6. Were routine and preventive maintenance items clearly identified? This should include a lubrication schedule.

   _____

7. Did the representative present the information in a logical fashion?

   _____

8. Was the representative able to answer all questions?

   _____

9. Did the representative agree to research and answer unanswered questions?

   _____

10. Was the client (and CDM) satisfied with the training session?

    _____

Comments:

END OF SECTION

SECTION 01740

WARRANTIES AND BONDS

PART 1 - GENERAL

1.01 SCOPE OF WORK

This Section specifies general administrative and procedural requirements for warranties and bonds required by the Contract Documents, including MANUFACTURER'S standard warranties on products and special warranties.

1.02 RELATED REQUIREMENTS

The Contract Documents include, but are not limited to, the following related requirements:

A. Refer to Conditions of the Contract for the general requirements relating to warranties and bonds.

B. General closeout requirements are included in Section 01700 Contract Closeout.

C. Specific requirements for warranties for the Work and products and installations that are specified to be warranted are included in the individual Sections of Divisions 02 through 16.

1.03 SUBMITTALS

A. Submit written warranties to the ENGINEER for review and transmittal to OWNER prior to the date fixed for Substantial Completion. If the Certificate of Substantial Completion designates a commencement date for warranties other than the date of Substantial Completion for the Work, or a designated portion of the Work, submit written warranties upon request of the OWNER.

B. When a designated portion of the Work is completed and occupied or used by the OWNER, by separate agreement with the CONTRACTOR during the construction period, submit properly executed warranties to the OWNER within fifteen days of completion of that designated portion of the Work.

C. When a special warranty is required to be executed by the CONTRACTOR, or the CONTRACTOR and a subcontractor, supplier or MANUFACTURER, prepare a written document that contains appropriate terms and identification, ready for execution by the required parties. Submit a draft to the OWNER for approval prior to final execution.

D. Refer to individual Sections of Divisions 2 through 16 for specific content requirements, and particular requirements for submittal of special warranties.

1.04 WARRANTY REQUIREMENT

A. Related Damages and Losses: When correcting warranted Work that has failed, CONTRACTOR shall remove and replace other Work that has been damaged as a result of such failure or that must be removed and replaced to provide access for correction of warranted Work, at no additional compensation.

B. Reinstatement of Warranty: When Work covered by a warranty has failed and been corrected by replacement or rebuilding, reinstate the warranty by written endorsement. The reinstated warranty shall be equal to the original warranty with an equitable adjustment for depreciation.

C. Replacement Cost: Upon determination that Work covered by a warranty has failed, replace or rebuild the Work to an acceptable condition complying with requirements of Contract Documents. The CONTRACTOR is responsible for the cost of replacing or rebuilding defective Work regardless of whether the OWNER has benefited from use of the Work through a portion of its anticipated useful service life.

D. OWNER'S Recourse: Written warranties made to the OWNER are in addition to implied warranties, and shall not limit the duties, obligations, rights and remedies otherwise available under the law, nor shall warranty periods be interpreted as limitations on time in which the OWNER can enforce such other duties, obligations, rights, or remedies.

E. Rejection of Warranties: The OWNER reserves the right to reject warranties and to limit selections to products with warranties not in conflict with requirements of the Contract Documents.

F. The OWNER reserves the right to refuse to accept Work for the Project where a special warranty, certification, or similar commitment is required on such Work or part of the Work, until evidence is presented that entities required to countersign such commitments are willing to do so.

G. Disclaimers and Limitations: MANUFACTURER'S disclaimers and limitations on product warranties do not relieve the CONTRACTOR of the warranty on the Work that incorporates the products, nor does it relieve suppliers, MANUFACTURERS, and subcontractors required to countersign special warranties with the CONTRACTOR.

H. If the Owner reasonably determines that the Contractor has breached any of the warranties provided herein, then the Contractor shall perform the necessary work to comply with its warranties and shall pay to the Owner its reasonable cost to investigate and then identify the breach of warranty claim.

1.05 FORM OF SUBMITTALS

A. Prepare in duplicate packets.

B. Format:

1. Size 8 ½ -inches x 11-inches, punch sheets for standard three post binder.

a. Sample form of warranty is included in these Contract Documents.

b. Fold larger sheets to fit into binders.

2. Cover: Identify each packet with typed or printed title "WARRANTIES AND BONDS." List:

a. Title of Project.

b. Name of Contractor.

3. Electronic format as defined in Section 01300.

C. Binders: Commercial quality, three-post binder, with durable and cleanable plastic covers and maximum post width of 2-inches.

1.06 DEFINITIONS

A. Standard Product Warranties are preprinted written warranties published by individual MANUFACTURERS for particular products and are specifically endorsed by the MANUFACTURER to the OWNER.

B. Special Warranties are written warranties required by or incorporated in the Contract Documents, either to extend time limits provided by standard warranties or to provide greater rights for the OWNER.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION

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SECTION 02100

SITE PREPARATION

PART 1 - GENERAL

1.01 SCOPE OF WORK

A. Furnish all labor, materials and equipment required and perform all site preparation, complete as shown on the Drawings and as specified herein.

B. Obtain all permits required for site preparation work prior to proceeding with the Work, including clearing, tree removal, and burning.

C. Unless otherwise shown on the Drawings or directed by the ENGINEER, the areas to be cleared, grubbed and stripped shall generally consist of the entire project site, with the exception of those areas specifically designated to remain in an undisturbed, natural condition.

D. The areas to be cleared, grubbed and stripped within public rights-of-way and utility easements shall be minimized to the extent possible for the scope of pipeline work and in consideration of the actual means and methods of construction used. No unnecessary site preparation within these areas shall be performed.

1.02 RELATED WORK

A. Environmental Protection is included in Section 01110.

B. Seeding is included in Section 02933.

C. Sodding is included in Section 02932.

1.03 SUBMITTALS

Submit to the ENGINEER, in accordance with Section 01300, copies of all permits required prior to clearing, grubbing, and stripping work.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION

3.01 CLEARING

A. Cut and remove all timber, trees, stumps, brush, shrubs, roots, grass, weeds, rubbish and any other objectionable material resting on or protruding through the surface of the ground.

B. Preserve and protect trees and other vegetation designated on the Drawings or directed by the ENGINEER to remain as specified below.

3.02 GRUBBING

A. Grub and remove all stumps, roots in excess of 1-1/2-in in diameter, matted roots, brush, timber, logs, concrete rubble and other debris encountered to a depth of 18-in below original grade or 18-in beneath the bottom of foundations, whichever is deeper.

B. Refill all grubbing holes and depressions excavated below the original ground surface with suitable materials and compact to a density conforming to the surrounding ground surface in accordance with Division 2.

3.03 DISPOSAL

A. Dispose of material and debris from site preparation operations by hauling such materials and debris to an approved offsite disposal area. No rubbish or debris of any kind shall be buried on the site.

B. On-site disposal of cleared and grubbed materials by open-air burning may be permitted only with the expressed written consent of the OWNER. Burning operations and ash disposal shall be conducted in strict accordance with local and state requirements, subject to applicable permit requirements.

3.04 PROTECTION

A. Trees and other vegetation designated on the Drawings or directed by the ENGINEER to remain shall be protected from damage by all construction operations by erecting suitable barriers, guards and enclosures, or by other approved means. Conduct clearing operations in a manner to prevent falling trees from damaging trees and vegetation designated to remain and to the Work being constructed and so as to provide for the safety of employees and others.

B. Maintain protection until all Work in the vicinity of the Work being protected has been completed.

C. Do not operate heavy equipment or stockpile materials within the branch spread of existing trees.

D. Immediately repair any damage to existing tree crowns, trunks, or root systems. Roots exposed and/or damaged during the Work shall immediately be cut off cleanly inside the exposed or damaged area. Treat cut surfaces with an acceptable tree wound paint and topsoil spread over the exposed root area.

E. When Work is completed, remove all dead and downed trees. Live trees shall be trimmed of all dead and diseased limbs and branches. All cuts shall be cleanly made at their juncture with the trunk or preceding branch without injury to the trunk or remaining branches. Cuts over 1-in in diameter shall be treated with acceptable tree wound paint.

F. Restrict construction activities to those areas within the limits of construction designated on the Drawings, within public rights-of-way, and within easements provided by the OWNER. Adjacent properties and improvements thereon, public or private, which become damaged by construction operations, shall be promptly restored to their original condition, to the full satisfaction of the property owner.

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SECTION 02140

DEWATERING AND DRAINAGE

PART 1 - GENERAL

1.01 STATUTORY REQUIREMENTS

A. Obtain and pay for all permits required for temporary dewatering and drainage systems.

B. Original permits shall be prominently displayed on the site prior to constructing dewatering and drainage systems.

1.02 SCOPE OF WORK

A. Furnish, install, operate, monitor, maintain and remove temporary dewatering and drainage systems as required and lower and maintain groundwater levels below subgrades of excavations. Prevent surface water runoff from entering or accumulating in excavations.

B. Furnish the services of a licensed professional engineer registered in the State in which the Work is located, to prepare dewatering and drainage system designs and submittals.

C. Collect and properly dispose of all discharge water from dewatering and drainage systems in accordance with State and local requirements and permits.

D. Repair damage caused by dewatering and drainage system operations.

E. Remove temporary dewatering and drainage systems when no longer needed. Restore all disturbed areas.

1.03 RELATED WORK

A. Earth excavation and backfill are included in Section 02221.

B. Sedimentation and erosion control is included in Section 02270.

1.04 SUBMITTALS

Submit, in accordance with Section 01300, the temporary dewatering and drainage system designs. Dewatering and drainage system designs shall be prepared by a licensed professional engineer, registered in the State of Florida, having a minimum of 5 years of professional experience in the design and construction of dewatering and drainage systems. The submittal will be for information only. The CONTRACTOR shall be responsible for adequacy and safety of construction means, methods and techniques.

1.05 DEFINITIONS

Where the phrase “in-the-dry” is used in this Section, it shall be defined as in situ soil moisture content of no more than two percentage points above the optimum moisture content for that soil.

PART 2 - PRODUCTS

2.01 MATERIALS

Each groundwater observation well shall consist of a screen, casing, and cap. Casing shall be minimum 1-in Schedule 80 PVC pipe, with machine slotted PVC well points. Maximum well point slot size shall be 0.020-in.

PART 3 - EXECUTION

3.01 GENERAL

A. Control surface water and groundwater such that excavation to final grade is made in-the-dry, and bearing soils are maintained undisturbed. Prevent softening, or instability of, or disturbance to, the subgrade due to water seepage.

B. Provide protection against flotation for all Work.

C. The impact of anticipated subsurface soil/water conditions shall be considered when selecting methods of excavation and temporary dewatering and drainage systems. Where groundwater levels are above the proposed bottoms of excavations, a pumped dewatering system is expected for pre-drainage of the soils prior to excavation to final grade and for maintenance of the lowered groundwater level until construction has been completed to such an extent that the foundation, structure, pipe, conduit, or fill will not be floated or otherwise damaged. Type of dewatering system, spacing of dewatering units and other details of the Work are expected to vary with soil/water conditions at a particular location.

3.02 SURFACE WATER CONTROL

Control surface water runoff to prevent flow into excavations. Provide temporary measures such as dikes, ditches and sumps.

3.03 EXCAVATION DEWATERING

A. Provide and maintain adequate equipment and facilities to remove promptly and dispose of properly all water entering excavations. Excavations shall be kept in-the-dry, so as to maintain an undisturbed subgrade condition throughout construction below grade, including backfill and fill placement.

B. Collect precipitation or surface runoff in shallow ditches around the perimeter of the excavation, drain to sump and pump from the excavation to maintain in-the-dry conditions.

C. Pipe and conduit shall not be installed in water or allowed to be submerged prior to backfilling. Pipe and conduit which becomes submerged shall be removed and the excavation dewatered and restored to proper conditions prior to reinstalling the pipe and conduit.

D. Excavations for foundations and structures shall be maintained in-the-dry for a minimum of 4 days after concrete placement. In no event shall water be allowed to enter an excavation and rise to cause unbalanced pressure on foundations and structures until the concrete or mortar has set at least 24 hours.

E. Dewatering and drainage operations shall at all times be conducted in such a manner as to preserve the natural undisturbed bearing capacity of the subgrade at the bottom of the excavation. If the sub-grade becomes disturbed for any reason, the unsuitable subgrade material shall be removed and replaced with concrete, compacted granular fill, or other approved material to restore the bearing capacity of the subgrade to its original undisturbed condition.

F. Dewatering and drainage operations shall be conducted in a manner that does not cause loss of ground or disturbance to the pipe bedding or soil that supports overlying or adjacent structures.

3.04 DISPOSAL OF DRAINAGE

All water discharged from temporary dewatering and drainage systems shall be disposed of in accordance with the sedimentation and control plans as specified in Section 02270. Existing or new sanitary sewer systems shall not be used to dispose of drainage unless the written permission of the utility or owner is obtained.

END OF SECTION

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SECTION 02220

STRUCTURAL EXCAVATION, BACKFILL AND COMPACTION

PART 1 - GENERAL

1.01 SCOPE OF WORK

This Section includes, except as elsewhere provided, excavation (unclassified), filling and grading under and around cast in place structures to the subgrades and grades indicated on the Drawings.

1.02 QUALITY ASSURANCE

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

B. Testing and Inspection Service:

1. The CONTRACTOR will engage soil testing and inspection services for quality assurance testing during earthwork operations.

2. The CONTRACTOR is responsible for quality control.

C. All excavation, trenching, and related sheeting, bracing etc. will conform to the requirements of the Florida Trench Safety Act (C5/5B 2626) which incorporates by reference, OSHA's excavation safety standards, (29 CFR 1926.650 Subpart P).

1.03 JOB CONDITIONS

A. The CONTRACTOR will examine the site and review the available test borings or undertake his own soil borings prior to submitting his Bid, taking into consideration all conditions that may affect his Work. The OWNER and ENGINEER will not assume responsibility for variations of sub-soil quality or conditions at locations other than places shown and at the time the investigation was made. Boring log data is not part of the Contract Documents, but is provided to the CONTRACTOR as a reference in the Appendices.

B. Existing Utilities: Locate existing underground utilities in the areas of Work. If utilities are to remain in place, provide adequate means of protection during earthwork operations.

1. Should uncharted, or incorrectly charted, piping or other utilities be encountered during excavation, consult the ENGINEER and the OWNER of such piping or utility immediately for directions.

2. Cooperate with OWNER and utility companies in keeping respective services and facilities in operation. Repair damaged utilities to satisfaction of utility OWNER.

3. Demolish and completely remove from site existing underground utilities indicated on the Drawings to be removed.

C. Protection of Persons and Property: Barricade open excavations occurring as part of this Work and post with warning lights. Operate warning lights as recommended by authorities having jurisdiction. Protect structures, utilities, sidewalks, pavements, and other facilities from damage caused by settlement, lateral movement, undermining, washout and other hazards created by earthwork operations.

1.04 PROTECTION

A. Sheeting and Bracing in Excavations:

1. In connection with the construction of below grade structures, the CONTRACTOR will construct, brace, and maintain cofferdams consisting of sheeting and bracing as required to support the sides of excavations, to prevent any movement which could in any way diminish the width of the excavation below that necessary for proper construction, and to protect adjacent structures, existing yard piping and/or foundation material from disturbance, undermining, or other damage. Care will be taken to prevent voids outside of the sheeting, but if voids are formed they will be immediately filled and rammed.

2. All sheeting and bracing not left in place will be carefully removed in such a manner as not to endanger the construction or other structures, utilities, existing piping, or property. Unless otherwise approved or indicated on the Drawings or in the Specifications, all sheeting and bracing will be removed after completion of the substructure, care being taken not to disturb or otherwise injure the finished masonry. All voids left or caused by withdrawal of sheeting will be immediately refilled with sand by ramming with tools especially adapted to that purpose, by watering or otherwise as may be directed by the ENGINEER.

3. The right of the ENGINEER to approve sheeting and bracing left in place will not be construed as creating any obligation on his part to issue such orders, and his failure to exercise his right to do so will not relieve the CONTRACTOR from liability for damages to persons or property occurring from or upon the Work occasioned by negligence or otherwise, growing out of a failure on the part of the CONTRACTOR to leave in place sufficient sheeting and bracing to prevent any caving or moving of the ground. Sheeting left in place will be shown on the CONTRACTOR'S As-Built (Record) Drawings.

B. Dewatering, Drainage and Flotation:

1. Construct and place all concrete work, structural fill, bedding rock, and sand/clay base course, in-the-dry. In addition, make the final 24 inches of excavation for this work in-the-dry, and not until the water level is a minimum of twelve inches below proposed bottom of excavation.

2. At all times during construction, provide and maintain proper equipment and facilities to remove promptly, and dispose of properly, all water entering excavations and keep such excavations dry so as to obtain a satisfactory undisturbed subgrade foundation condition until the fill and

structure to be built thereon have been completed to such extent that they will not be floated or otherwise damaged by allowing water levels to return to natural elevations.

3. Dewatering will at all times be conducted in such a manner as to preserve the natural undisturbed bearing capacity of the subgrade soils at proposed bottom of excavation.

4. The CONTRACTOR will furnish all materials and equipment and perform all Work required to install and maintain the drainage systems he proposes for handling groundwater and surface water encountered during construction of structures and compacted fills.

5. Continuous pumping will be required as long as water levels are required to be below natural levels.

6. Fill well point holes from bottom to top immediately upon abandonment with FDOT No. 89 gradation stone or flowable fill meeting requirements of FDOT Specification Section 145.

7. CONTRACTOR will secure and pay for all permits required for site dewatering.

1.05 SUBMITTALS

A. Furnish the ENGINEER, for approval, a representative sample of fill material obtained from onsite sources weighing approximately 100 pounds, at least (7) calendar days prior to the date of anticipated use of such material.

B. For each material obtained from other than onsite sources, notify the ENGINEER of the source of the material and will furnish the ENGINEER, for approval, a representative sample weighing approximately 100 pounds, at least (7) calendar days prior to the date of anticipated use of such material.

PART 2 - PRODUCTS

2.01 MATERIALS

A. General:

1. Materials for use as base, fill and backfill will be as described below.

a. Satisfactory soil materials are defined as those complying with American Association of State Highway and Transportation Officials (AASHTO) M-145, soil classification Groups A-1, A-2-4, A-2-5 and A-3.

b. Unsatisfactory soil materials are those defined in AASHTO M-145 soil classification Groups A-2-6, A-2-7, A-4, A-5, A-6, and A-7 along with peat and other highly organic soils.

2. Materials will be furnished by the CONTRACTOR, as required, from offsite sources and hauled to the site.

B. Structural Fill:

Structural fill material will be satisfactory soil material consisting of medium to fine grain sized sand, free of organic, deleterious and/or compressible material. Rock in excess of 3-1/2 inches in diameter will not be used in the fill material. Amount of material passing No. 200 sieve will not exceed 15 percent.

C. Limerock Base Course:

1. Limerock will not contain cherty or other extremely hard pieces, or lumps, or balls or pockets of sand material in sufficient quantity as to be detrimental to the proper bonding, finishing or strength of the limerock base.

2. Gradation and Size Limits:

At least 97 percent (by weight) of the material will pass a 3-1/2 inch sieve and the material will be graded uniformly down to dust. The fine material will consist of dust of fracture. All crushing or breaking up which might be necessary in order to meet such size requirements will be done before the material is in place.

D. Select Common Fill:

1. Select common fill material will be satisfactory soil material containing no more than 15 percent by weight finer than No. 200 mesh sieve. It will be free from organic matter, muck, marl, and rock exceeding 3-1/2 inches in diameter. Select common fill will not contain broken concrete, masonry, rubble or other similar materials.

2. Material falling within the above Specification, encountered during the excavation, may be stored in segregated stockpiles for reuse. All material which, in the opinion of the ENGINEER, is not suitable for reuse will be spoiled as specified herein for disposal of unsuitable materials.

B. Bedding Rock:

Bedding rock will be washed and graded limerock or shell. This material will be graded to meet FDOT No. 89 stone gradation requirements.

PART 3 - EXECUTION

3.01 INSPECTION

Examine the areas and conditions under which excavating, filling, and grading are to be performed. Do not proceed with the Work until unsatisfactory conditions have been corrected.

3.02 EXCAVATION

Excavation consists of removal and disposal of material encountered when establishing required grade elevations and in the required excavation.

A. Excavation Classifications: The following classifications of excavation will be made when unsatisfactory material is encountered in the Work. Do not perform such Work until material to be excavated has been cross-sectioned and classified by ENGINEER or specialized geotechnical consultant.

1. Authorized earth excavation includes removal and disposal of pavements and other obstructions visible on ground surface, underground structures and utilities indicated to be demolished and removed, material of any classification indicated in soil boring data on subsurface conditions.

2. Unauthorized excavation consists of removal of material beyond the limits needed to establish required grade and subgrade elevations without specific approval of ENGINEER. Unauthorized excavation, as well as remedial Work approved by the ENGINEER will be at the CONTRACTOR'S expense.

a. Under footings, foundation bases, or retaining walls, fill unauthorized excavation by extending the indicated bottom elevation of the footing or base to the excavation bottom, without altering required top elevation. Lean (unreinforced) concrete fill may be used to bring bottom elevations to proper position, when acceptable to ENGINEER. Reinforcement will be placed as needed or approved by the ENGINEER.

b. Elsewhere, backfill and compact unauthorized excavations as specified for authorized excavations of same classification, unless otherwise approved by ENGINEER.

B. Additional Excavation:

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

2. Removal of unsuitable material and its replacement as approved beyond the authorized limits will be paid on the basis of Contract conditions relative to changes in Work.

C. Stability of Excavations:

1. Slope sides of excavations to comply with local codes and ordinances having jurisdiction or as shown on the Drawings. Shore and brace where sloping is not possible because of space restrictions or stability of material excavated.

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

D. Shoring and Bracing:

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

2. Establish requirements for trench shoring and bracing to comply with local codes and authorities having jurisdiction.

3. Maintain shoring and bracing in excavations regardless of time period excavations will be open. Carry down shoring and bracing as excavation progresses.

E. Dewatering:

1. Prevent surface water and subsurface or ground water from flowing into excavations and from flooding project site and surrounding areas. Maintain groundwater level a minimum of 6-inches below excavation level.

2. 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.

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

4. The CONTRACTOR will construct and place all pipelines, concrete work, structural fill, screened gravel and gravel base course, in-the-dry. For purposes of this Contract, "in-the-dry" is defined as minus 4 to plus 2 percent of the optimum moisture content of the soil.

F. Material Storage:

1. Stockpile satisfactory excavated materials where approved, until required for backfill or fill. Place, grade, and shape stockpiles for proper drainage.

2. Locate and retain soil materials away from edge of excavations.

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

G. Excavation for Structures:

1. Conform to elevations and dimensions shown within a tolerance of plus or minus 0.10 feet, and extending a sufficient distance from footings and foundations to permit placing and removal of concrete formwork, installation of services, other construction, and for inspection, or as shown on the Drawings.

2. 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 placed. Trim bottoms to required lines and grades to leave solid base to receive concrete.

3. Do not excavate to the bearing levels designated on the drawings until surface compaction is completed.

H. Cold Weather Protection:

Protect excavation bottoms against freezing when atmospheric temperature is less than 35 degrees F.

3.03 BACKFILL AND FILL

A. General:

1. Place material in layers to required subgrade elevations, for each area classification listed below.

2. Structural fill will be used below spread footing foundations, slab-on grade floors, and other structures and as backfill within three feet of the below grade portion of structures.

3. FDOT No. 57 stone, as approved by the ENGINEER, will be used under and around drainage sumps.

4. Select common fill will be used at all other locations.

5. Bedding rock will be used for pipe bedding, under and around manhole bases and at other locations indicated on the Drawings or approved by the ENGINEER.

B. Backfill excavations as promptly as Work permits, but not until completion of the following:

1. Acceptance by ENGINEER of construction below finish grade including, where applicable, dampproofing, waterproofing and perimeter insulation.

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

3. Removal of concrete formwork.

4. Removal of shoring and bracing, and backfilling of voids with satisfactory materials.

5. Removal of trash and debris.

6. Permanent or temporary horizontal bracing is in place on horizontally supported walls. Layout and location of bracing will consider loads of the structure as well as the effects of the soil and groundwater.

C. Ground Surface Preparation:

1. 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 materials will bond with existing surface.

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

D. Fill Placement:

1. Material placed in fill areas under and around structures will be deposited within the lines and to the grades shown on the Drawings or as approved by the ENGINEER, making due allowance for settlement of the material. Backfill will be carried up evenly on all walls of an individual structure simultaneously with no more than a two-foot elevation variation allowed. Fill will be placed only on properly prepared surfaces which have been inspected and approved by the ENGINEER.

2. Fill material can be obtained from cut areas within the construction project site. If sufficient satisfactory soil material is not available from excavation on site, the CONTRACTOR will provide fill material as may be required from off-site sources at no additional cost to the OWNER.

3. Fill will be brought up in substantially level lifts throughout the site, starting in the deepest portion of the fill. The entire surface of the Work will be maintained free from ruts, and in such condition that construction equipment can readily travel over any section. Fill will not be placed on surfaces that are muddy, frozen, or against concrete structures until they have attained sufficient strength.

4. Fill will be dumped and spread in layers by a bulldozer or other approved method. During the process of dumping and spreading, all roots, debris and stones greater in size than specified under "Materials", will be removed from the fill areas, and the CONTRACTOR will assign a sufficient number of men to this Work to ensure satisfactory compliance with these requirements.

5. If the compacted surface of any layer of material is determined to be too smooth to bond properly with the succeeding layer, it will be loosened by harrowing or by an other approved method before the succeeding layer is placed.

6. All fill materials will be placed and compacted "in-the-dry." The CONTRACTOR will dewater excavated areas as required to perform the Work and in such a manner as to preserve the undisturbed state of the natural inorganic soils.

3.04 COMPACTION

A. General:

Control soil compaction during construction providing minimum percentage of density specified below for each area classification. It will be the CONTRACTOR'S responsibility to notify the ENGINEER in writing that density tests can be performed. Written notice from the CONTRACTOR will precede completion of compaction operations by at least two working days.

B. Percentage of Maximum Density Requirements:

1. Compact soil to not less than the following percentages of maximum dry density in accordance with AASHTO T-180.

a. Underneath structures and 5 feet-0 inches around perimeter of building foundation, compact top 12 inches of subgrade and each layer of backfill or fill material at 98 percent maximum dry density.

b. In building slabs and footing, compact top 12 inches of subgrade and each layer of backfill or fill material at 95 percent maximum dry density.

c. In lawn and unpaved areas, compact top 6 inches of subgrade and each layer of backfill or fill material to 95 percent maximum density.

d. In walkways, compact top 6 inches of subgrade at 95 percent maximum dry density.

e. In rigid pavement and steps, compact top 6 inches of subgrade at 95 percent maximum dry density.

2. Moisture content of soil will be within minus 4 percentage points to plus 2 percentage points of the optimum.

C. Moisture Control:

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

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

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

D. Structural fill will be placed in layers not more than 9 inches loose depth for material compacted by heavy compaction equipment. Each layer will be compacted by a minimum of six coverages with the equipment described below, to at least 98 percent of maximum dry density as determined by AASHTO-T-180. Incidental compaction due to traffic by construction equipment will not be credited toward the required minimum coverages.

E. Select common fill consisting of other than structural fill will be placed and compacted in a manner similar to that described above for structural fill, with the following exceptions:

1. Layer thickness prior to compaction may be increased to 12 inches in open areas.

2. Select common fill, except dike fill, required below water level in peat excavation areas may be placed as one lift, in-the-wet, to an elevation of one foot above the water level at the time of filling.

F. Large compaction equipment will not be used within 5 feet of walls. Compaction equipment is subject to approval by the ENGINEER.

G. Place fill material in layers not more than 6 inches loose depth for material compacted by hand-operated tampers. Use manually operated sled-type vibratory compactors next to structures and confined areas not accessible to heavy mechanical compaction equipment.

H. If the ENGINEER will determine that added moisture is required, water will be applied by sprinkler tanks or other sprinkler systems, which will ensure uniform distribution of the water over the area to be treated, and give complete and accurate control of the amount of water to be used. If too much water is added, the area will be permitted to dry before compaction is continued.

I. The CONTRACTOR will supply all hose, piping, valves, sprinklers, pumps, sprinkler tanks, hauling equipment and all other materials and equipment necessary to place the water in the fill in the manner specified.

3.05 GRADING

A. General:

Uniformly grade fill areas within limits of project including adjacent transition areas. Smooth finished surface within specified tolerances, compact with uniform levels or slopes between points where elevations are shown, or between such points and existing grades. No soft spots or uncompacted areas will be allowed in the Work.

B. Grading Outside Building Lines:

Grade areas adjacent to building lines, as shown on the Drawings, to drain away from structures and to prevent ponding. Finish surfaces free from irregular surface changes, and as follows:

1. Finish lawn or unpaved areas to within not more than 0.10 feet above or below the required elevation.
2. Shape surface of areas under walks to line, grade and cross-section, with finish surface not more than 0.15 feet above the required subgrade and not below surrounding grade to avoid ponding water from runoff.

C. Grading Surface of Fill Under Building Slabs:

Grade smooth and even, free of voids, compacted as specified, and to required elevation. Provide final grades within a tolerance of 1/2-inch when tested with a 10-foot straightedge.

D. Stones or rock fragments larger than 1-1/2 inches in their greatest dimension will not be permitted in the top 12- inches of subgrade line of all dike, fills or embankments.

E. All cut and fill slopes will be uniformly dressed to the slope, cross-section and alignment shown on the Drawings, or as approved in writing by the ENGINEER to prevent ponding water on driveways, walkways or against structures.

F. During grading, protect all buried valve extensions and covers, sprinklers and any other mechanical or structural object protruding from below grade.

3.06 EARTH EMBANKMENTS

A. All organic materials, including peat and topsoil, will be removed from areas beneath new embankments. If the subgrade slopes are excessive, the subgrade will be stepped to produce a stable surface for the placement of the embankments. The natural subgrade will then be compacted by suitable mechanical compaction equipment. The ENGINEER will waive this requirement, if, in his opinion, the subgrade will be rendered unstable by such compaction. The prepared subgrade will be inspected and approved by the ENGINEER prior to the placement of structural fill.

B. Suitable fill will be placed in layers 8-inches thick measured before compaction. Each layer will be compacted to at least 90 percent of the maximum dry density

as determined by the ASTM compaction test, Designation D1557 if nonstructural and 95 percent of ASTM Designation D1557 if structural.

C. Existing slopes will be reconstructed as shown on the Drawings.

3.07 FIELD QUALITY CONTROL

A. Quality Assurance Testing During Construction:

Allow testing service (provided by CONTRACTOR) to inspect and approve subgrades and fill layers before further construction work is performed.

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

C. Testing Frequency:

1. Testing Laboratory will test compaction of soils in place according to ASTM D 1556, ASTM D 2167, ASTM D 2922, ASTM D 2937, as applicable.Tests will be performed at the following locations and frequencies:

Backfill Compaction: At subgrade and at each compacted fill and backfill layer, at least one test for every 400 sq. ft., but in no case fewer than 5 tests.

2. When testing laboratory reports that subgrades, fills, or backfills have not achieved degree of compaction specified, scarify and moisten or aerate, or remove and replace soil to depth required; recompact and retest until specified compaction is obtained.

3.08 MAINTENANCE

A. Protection of Graded Areas:

1. Protect newly graded areas from traffic and erosion. Keep free of trash and debris.

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

B. Reconditioning Compacted Areas:

Where completed compacted areas are disturbed by subsequent construction operations or adverse weather, scarify surface, reshape and compact to required density prior to further construction.

3.09 DISPOSAL OF SURPLUS AND WASTE MATERIAL

A. All surplus and/or unsuitable excavated material will be disposed of in the following way. Transport from the OWNER'S property and legally dispose of. Any permit required for the hauling and disposing of this material beyond the OWNER'S property will be obtained prior to commencing hauling operations.

B. Suitable excavated material may be used for fill if it meets the Specifications for satisfactory material and is approved by the ENGINEER. Excavated material so approved may be neatly stockpiled at the site where designated by the ENGINEER provided there is an area available where it will not interfere with the operation of the facility and not inconvenience traffic or adjoining property owners.

C. Excavated rock may be used in open fill areas only with the approval of the OWNER/ENGINEER.

END OF SECTION

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SECTION 02221

TRENCHING, BEDDING, AND BACKFILL FOR PIPE

PART 1 - GENERAL

1.01 SCOPE OF WORK

The CONTRACTOR shall furnish all labor, materials, equipment, and incidentals necessary to perform all excavation (unclassified), backfill, fill, grading and slope protection required to complete the piping work shown on the Drawings and specified herein. The Work shall include, but not necessarily be limited to: manholes, vaults, duct conduit, pipe, and roadways and paving; all backfilling, fill and required borrow; grading; disposal of surplus and unsuitable materials; and all related Work such as sheeting, bracing, and water handling.

1.02 RELATED REQUIREMENTS

The Contract Documents include, but are not limited to, the following related requirements:

A. Certificate of Compliance with the Florida Trench Safety Act.

B. Site Preparation is included in Section 02100.

1.03 TRENCH PROTECTION

A. All excavation, trenching and related sheeting, bracing, etc., shall conform to the requirement of the Florida Trench Safety Act (C5/5B2626) which incorporates by references, OSHA'S excavation safety standards (29 CFR 1926.650 subpart P).

B. Construct and maintain sheeting and bracing as required to support the sides of excavations, to prevent any movement which could in any way diminish the width of the excavation below that necessary for proper construction, and to protect adjacent structures,

1. For trench sheeting for pipes, no sheeting is to be withdrawn if driven below mid-diameter of any pipe, and no wood sheeting shall be cut off at a level lower than 1 foot above the top of any pipe unless otherwise instructed by the ENGINEER. If during the progress of the Work the ENGINEER decides that additional wood sheeting should be left in place, he may instruct the CONTRACTOR in writing. If steel sheeting is used for trench sheeting, removal shall be as specified above, unless written approval is given for an alternate method of removal.

2. All sheeting and bracing not left in place shall be carefully removed in such a manner as not to endanger the construction or other structures, utilities, existing piping, or property. Unless otherwise approved or indicated on the Drawings or in the Specifications, all sheeting and bracing shall be removed after completion of the substructure, care being taken not to disturb or otherwise injure the finished masonry.
All voids left or caused by withdrawal of sheeting shall be immediately refilled

with sand by ramming with tools especially adapted to that purpose, by watering or otherwise as may be required.

3. The right of the ENGINEER to instruct sheeting and bracing left in place shall not be construed as creating any obligation on his part to issue such instructions, and his failure to exercise his right to do so shall not relieve the CONTRACTOR from liability for damages to persons or property occurring from or on the Work occasioned by negligence or otherwise, growing out of a failure on the part of the CONTRACTOR to leave in place sufficient sheeting and bracing to prevent any caving or moving of the ground.

4. The CONTRACTOR shall construct the cofferdams and sheeting outside the neat lines of the foundation unless indicated otherwise to the extent he deems it desirable for his method of operation. Sheeting shall be plumb and securely braced and tied in position. Sheeting, bracing, and cofferdams shall be adequate to withstand all pressures to which the structure will be subjected. Pumping, bracing, and other Work within the cofferdam shall be done in a manner to avoid disturbing any construction of the masonry enclosed. Any movement or bulging which may occur shall be corrected by the CONTRACTOR at his own expense so as to provide the necessary clearances and dimensions.

5. Drawings of the cofferdams, sheeting and bracing and design computations shall be submitted to the ENGINEER and construction shall not be started until such drawings are received. The drawings and computations shall be prepared and sealed by a Registered Professional Engineer in the State of Florida and shall be in sufficient detail to disclose the method of operation for each of the various stages of construction, if required, for the completion of the substructures.

C. Dewatering, Drainage and Flotation:

1. The CONTRACTOR shall construct and place all pipelines, concrete work, structural fill, screened gravel and gravel base course in-the-dry. All trenches and excavations are to be kept dry and free from water at all times when Work is in progress and at no time is water to run through the pipeline(s) or structure excavations. The CONTRACTOR shall maintain the water level a minimum of one foot below proposed bottom of excavation. For purposes of this Contract, "in-the-dry" is defined as within minus 4 to plus 2 percentage points of the optimum moisture content of the soil.

2. The CONTRACTOR shall, at all times during construction, provide and maintain proper equipment and facilities to remove promptly and dispose of properly all water entering excavations and keep such excavations dry so as to obtain a satisfactory undisturbed sub-grade foundation condition until the fill, structure, or pipes to be built thereon have been completed to such extent that they will not be floated or otherwise damaged by allowing water levels to return to natural elevations.

3. Pipe and masonry shall not be laid in water or submerged within 24 hours after being placed. Water shall not flow over new masonry within four (4) days after placement.

4. In no event shall water rise to cause unbalanced pressure on structures until the concrete or mortar has set at least 24 hours. The CONTRACTOR shall prevent flotation of the pipe by promptly placing backfill.

5. Dewatering shall at all times be conducted in such a manner as to preserve the natural undisturbed bearing capacity of the sub-grade soils at proposed bottom of excavation.

6. Well-points may be required for pre-drainage of the soils prior to final excavation for some of the deeper in-ground structures, or piping, and for maintaining the lowered groundwater level until construction has been completed to such an extent that the structure, pipeline, or fill will not be floated or otherwise damaged. Well-points shall be surrounded by suitable filter sand and no fines shall be removed by pumping. Pumping from well-points shall be continuous and standby pumps shall be provided. Once abandoned, well-point holes shall immediately be backfilled with FDOT No. 89 stone from bottom to top or flowable fill meeting the requirements of FDOT Section 145, or as approved by the ENGINEER.

7. The CONTRACTOR shall furnish all materials and equipment and perform all Work required to install and maintain the drainage systems he proposes for handling groundwater and surface water encountered during construction of structures, pipelines, and compacted fills.

8. The CONTRACTOR shall provide for the disposal of the water removed from the excavation in such manner as shall not cause injury to public health or private or public property or to any portion of the Work completed or in progress, to the surface of the streets, or cause any impediment to the reasonable use of the site by other contractors.

9. The CONTRACTOR shall engage a Geotechnical Engineer registered in the State of Florida, to design the dewatering systems for all structures and pipelines. The CONTRACTOR shall submit to the ENGINEER for review and comment a conceptual plan for dewatering systems prior to commencing Work. The dewatering system installed shall be in conformity with the conceptual plan, and certification of this shall be provided by the Professional Engineer. The Professional Engineer shall be required to monitor the performance of the dewatering systems during the progress of the Work and require such modifications as may be required to assure that the systems are performing satisfactorily.

10. As part of his request for review of a dewatering system, the CONTRACTOR shall demonstrate the adequacy of the proposed system and well-point filter sand by means of a test installation. Discharge water shall be clear, with no visible soil particles in a one quart sample.

11. During backfilling and construction, water levels shall be measured in observation wells located as approved by the ENGINEER.

12. Continuous pumping will be required as long as water levels are required to be below natural levels.

13. In the event that it is found that the water in a trench cannot be lowered by industry standards, i.e., well points and pumps; and if it is recognized by the CONTRACTOR that it is not feasible to dewater the trench, an alternate construction method may be proposed. The CONTRACTOR shall dewater the trench for a minimum of ten (10) calendar days prior to submitting any alternate method of dewatering which shall exhaust all standard means of dewatering. Complete details, Specifications, MANUFACTURER'S descriptive literature, installation lists and any other pertinent data regarding the alternate method(s) shall be submitted as an alternate by the CONTRACTOR to the ENGINEER for review within ten (10) days of the time that the CONTRACTOR anticipates using such alternate method.

14. The alternate method may be used, so long as the Work is performed in a manner which, in the opinion of the ENGINEER and OWNER, conforms to the method and procedure as set forth in the information supplied by the CONTRACTOR in his original application for use of an alternate method. The ENGINEER may revoke the alternate method if at any time, in his opinion, the Work is not conforming to any applicable portion of these Specifications. All alternate methods proposed for dewatering shall be at the CONTRACTOR'S expense.

1.04 JOB CONDITIONS

A. The CONTRACTOR shall examine the site and review any available test borings or undertake his own soil borings prior to submitting his bid, taking into consideration all conditions that may affect his Work. The OWNER and ENGINEER will not assume responsibility for variations of sub-soil quality or conditions at locations other than places shown and at the time the investigation was made. Boring log data and soil samples are available for examination after signing a release at the office of the ENGINEER.

B. Existing Utilities: Locate existing underground utilities in the areas of Work. If utilities are to remain in place, provide adequate means of protection during earthwork operations.

1. Should uncharted, or incorrectly charted, piping or other utilities be encountered during excavation, consult the ENGINEER and the OWNER of such piping or utility immediately for directions.

2. Cooperate with OWNER and utility companies in keeping respective services and facilities in operation. Repair damaged utilities to satisfaction of utility OWNER.

3. Demolish and completely remove from site existing underground utilities indicated on the Drawings to be removed.

C. Protection of Persons and Property: Barricade open excavations occurring as part of this Work and post with warning lights. Operate warning lights as recommended by authorities having jurisdiction. Protect structures, utilities, sidewalks, pavements, and other facilities from damage caused by settlement, lateral movement, undermining, washout and other hazards created by earthwork operations.

PART 2 - PRODUCTS

2.01 MATERIALS

A. General:

Materials for use as base, fill and backfill shall be as described below.

1. Satisfactory soil materials are defined as those complying with American Association of State Highway and Transportation Officials (AASHTO) M-145, soil classification Groups A-1, A-2-4, A-2-5 and A-3.

2. Unsatisfactory soil materials are those defined in AASHTO M-145 soil classification Groups A-2-6, A-2-7, A-4, A-5, A-6, and A-7 along with peat and other highly organic soils.

B. Structural Fill:

Structural fill material shall be satisfactory soil material consisting of medium to fine grain sized sand, free of organic, deleterious and/or compressible material. Rock in excess of 3-1/2 inches in diameter shall not be used in the fill material. Structural fill shall not contain hardpan, stones, rocks, cobbles or other similar materials.

C. Select Common Fill:

1. Select common fill material shall be satisfactory soil material containing no more than 15 percent by weight finer than No. 200 mesh sieve. It shall be free from organic matter, muck, marl, and rock exceeding 3-1/2 inches in diameter. Select common fill shall not contain broken concrete, masonry, rubble or other similar materials.
2. Material falling within the above Specification, encountered during the excavation, may be stored in segregated stockpiles for reuse. All material which, in the opinion of the ENGINEER, is not suitable for reuse shall be spoiled as specified herein for disposal of unsuitable materials.

C. Bedding Rock:

Bedding rock shall be FDOT No. 89, gradation washed and graded lime-rock or shell.

PART 3 - EXECUTION

3.01 GENERAL

A. All excavation, backfill and grading necessary to complete the Work shall be made by the CONTRACTOR and the cost thereof shall be included in the contract price.

B. Material shall be furnished as required from offsite sources and hauled to the site.

C. The CONTRACTOR shall take all the necessary precautions to maintain the Work area in a safe and workable condition.

D. The CONTRACTOR shall protect his Work at all times by flagging, marking, lighting and barricading. It shall also be the CONTRACTOR'S responsibility to preserve and protect all above and underground structures, pipe lines, conduits, cables, drains or utilities which are existing at the time he encounters them. Failure of the Drawings to show the existence of these obstructions shall not relieve the CONTRACTOR from this responsibility. The cost of repair of any damage which occurs to these obstructions during or as a result of construction shall be borne by the CONTRACTOR without additional cost to the OWNER.

3.02 TRENCH EXCAVATION

A. Excavation for all trenches required for the installation of pipes and electrical ducts shall be made to the depths indicated on the Drawings. Excavate trench to provide a minimum of 36-inch clear cover over the pipe bell unless otherwise noted on the Drawings. Excavate in such manner and to such widths as will give suitable room for laying the pipe or installing the ducts within the trenches, for bracing and supporting and for pumping and drainage facilities. The trench width at the top of the pipe shall not exceed the allowable as determined by the depth of cut and indicated on the Drawings.

B. Rock shall be removed to a minimum 4 or 6 inches clearance around the bottom and sides of all the pipe or ducts being laid as shown on the Drawings.

C. The bottom of the excavations shall be firm and dry and in all respects acceptable to the ENGINEER. Excavate unsatisfactory soil material from the bottom of the trench to a depth determined by the ENGINEER and replace with rock bedding.

D. Where pipe or ducts are to be laid in bedding or encased in concrete the trench may be excavated by machinery to, or just below, the designated sub-grade provided that the material remaining in the bottom of the trench is no more than slightly disturbed.

E. Where the pipes or ducts are to be laid directly on the trench bottom the lower part of the trenches shall not be excavated to the trench bottom by machinery. The last of the material being excavated shall be done manually in such a manner that will give a flat bottom true to grade so that pipe or duct can be evenly and uniformly supported along its entire length on undisturbed material or bedding rock. Bell holes shall be made as required manually so that there is no bearing surface on the bells and pipes are supported along the barrel only.

3.03 PIPE INTERFERENCES AND ENCASEMENT

The CONTRACTOR shall abide by the following schedule of criteria concerning interferences with other utilities. In no case shall there be less than 0.3 feet between any two pipe lines or between pipe lines and structures. Concrete encasement shall be provided in accordance with the typical detail as shown on the Drawings.

3.04 BEDDING

A. Pressure pipe shall have suitable fill (as determined by the ENGINEER), rock, or shell bedding to spring-line of pipe, and 4 to 6 inches below the invert depending on diameter as shown on the Drawings.

B. Rock or shell bedding shall be placed in maximum lift thicknesses of 4 to 6 inches with each lift compacted using mechanical equipment to a minimum of 95 percent of the maximum dry density as determined by AASHTO T-180.

C. Rock or shell bedding may be used under certain circumstances as a drain for groundwater control, subject to the approval of the ENGINEER. The CONTRACTOR shall take all precautions necessary to maintain the shell or rock bedding in a compacted state and to prevent washing, erosion or loosening of this bed.

D. Where rock or shell bedding is not required for pipe support as shown on the Drawings, the trench bottom or bedding should be prepared in accordance with Section 02221-3.02E and the top 6 inches shall be compacted using mechanical equipment to a minimum of 95 percent of the maximum dry density as determined by AASHTO T-180.

3.05 BACKFILLING

A. Backfilling over pipes shall begin as soon as practicable after the pipe has been laid, jointed, and inspected and the trench filled with suitable bedding material.

B. Backfilling over ducts shall begin not less than three days after placing concrete encasement.

C. All backfilling shall be prosecuted expeditiously and as detailed on the Drawings.

D. Any space remaining between the pipe and sides of the trench shall be packed full by hand shovel with selected earth, free from stones having a diameter greater than 1-1/2 inches and thoroughly compacted with a tamper as fast as placed, up to a level of one foot above the top of the pipe. Compact to 95 percent maximum density per AASHTO T-180 in layers not to exceed 4 inches up to the centerline of the pipe from the trench bottom.

E. The filling shall be carried up evenly on both sides with at least one man tamping for each man shoveling material into the trench.

F. The remainder of the trench above the compacted backfill, as just described above, shall be filled and thoroughly compacted with select common fill with mechanical equipment. Compact select common fill in 6-inch layers to 95 percent maximum density per AASHTO T-180.

3.06 GRADING

A. Grading shall be performed at such places as are indicated on the Drawings, to the lines, grades, and elevations shown or as approved by the ENGINEER and shall be made in such a manner that the requirements for formation of embankments can be followed. All unacceptable material encountered, of whatever nature within the limits indicated, shall be removed and disposed of as required. During the process of excavation, the grade shall be maintained in such condition that it will be well drained at all times.
Temporary drains and drainage ditches shall be installed to intercept or divert surface water which may affect the prosecution or condition of the Work.

B. If at the time of excavation it is not possible to place any material in its proper section of the permanent structure, it shall be stockpiled in approved areas for later use. No extras will be considered for the stockpiling or double handling of excavated material.

C. The right is reserved to make minute adjustments or revisions in lines or grades if found necessary as the Work progresses, due to discrepancies on the Drawings or in order to obtain satisfactory construction.

D. Stones or rock fragments larger than 1-1/2 inches in their greatest dimensions will not be permitted in the top 12-inches of the sub-grade line of all dikes, fills or embankments.

E. All fill slopes shall be uniformly dressed to the slope, cross-section and alignment shown on the Drawings, or as approved in writing by the ENGINEER.

F. In cuts, all loose or protruding rocks on the back slopes shall be barred loose or otherwise removed to line or finished grade of slope. All cut and fill slopes shall be uniformly dressed to the slope, cross-section and alignment shown on the Drawings or as approved in writing by the ENGINEER.

G. No grading is to be done in areas where there are existing pipe lines that may be uncovered or damaged until such lines which must be maintained are relocated, or where lines are to be abandoned, all required valves are closed and drains plugged at manholes.

H. The CONTRACTOR shall replace all pavement cut or otherwise damaged during the progress of the Work as specified elsewhere herein.

3.07 BACKFILL TESTING

A. The CONTRACTOR shall demonstrate the adequacy of backfill compaction by performing density testing of the completed trench. Density testing shall be performed at three depths for each test location: surface, mid-depth, and near maximum trench depth. The character of the backfill material will be observed during the excavation for density testing to determine conformance with the Specifications. Testing shall be performed by an independent testing laboratory qualified to perform such tests and approved by the ENGINEER. All testing shall be witnessed by the ENGINEER. The test shall be repeated until satisfactory results are obtained. The CONTRACTOR shall be charged for all retests.

B. Normal Testing Frequency: One test shall be performed within the first 500 feet of pipe installed. This test will be used as an initial evaluation of the compaction methods being used. Beyond the initial 500 feet, one test shall be performed in each 1,000 foot section of pipe installed or fraction thereof. Testing shall progress as each 1,000 foot section is completed. The location of the test within each section shall be selected by the ENGINEER. Testing which indicated that unacceptable material has been incorporated into the backfill, or that insufficient compaction is being obtained shall be followed by expanded testing to determine the limits of the unacceptable backfill.

C. Expanded Testing Requirements: If normal testing within a test section indicated unacceptable backfill, the ENGINEER may require additional testing within the same test section to determine the limits of unacceptable backfill/compaction. The costs associated with this expanded testing shall be borne by the CONTRACTOR. Unacceptable backfill/compaction within the limits established by the testing shall be removed and

replaced by the CONTRACTOR at no additional cost to the OWNER.

D. Additional Testing: Testing beyond the normal frequency or expanded testing required which is requested by the ENGINEER or OWNER, and approved by the OWNER, shall be at the OWNER'S expense.

3.08 DISPOSAL OF UNSUITABLE AND SURPLUS MATERIAL

A. All surplus and/or unsuitable excavated material shall be disposed of in the following manner:

Transport from OWNER'S property and legally dispose of. Any permit required for the hauling and disposing of this material beyond OWNER'S property shall be obtained prior to commencing hauling operations.

B. Suitable excavated material may be used for fill if it meets the Specifications for select common fill and is approved by the ENGINEER. Excavated material so approved may be neatly stockpiled at the site where designated by the OWNER/ENGINEER provided there is an area available where it will not interfere with the operation of the facility nor inconvenience traffic or adjoining property owners.

3.09 PIPE MARKING TAPE

A. All pipelines 4-inches and greater shall have identification marking tape. A polyethylene double-safe detectable marking tape shall be installed continuously in the backfill along the entire length of all potable water mains or any other yard piping for identification and detection purposes. All ductile iron pipelines marking tape shall be non-detectable type, but shall have all of the design features as specified herein.

B. The tape shall be as manufactured by Thor Enterprises or equal. The polyethylene tape shall meet the requirements of ASTM D 1248, Type I Class A, Grade E-1 for polyethylene plastics molding and extrusion materials. The tape shall have a minimum tensile strength of 1750 psi, a minimum elongation of 250 percent, not less than 50 gauge solid aluminum core and a nominal thickness of 5 mils. The tape shall be composed of 2 mil clear film reverse - printed laminated to aluminum, foil-laminated to 2 mil clear film and reverse-printed. Minimum total thickness 4 mils.

Minimum marking tape widths shall be as follows:

Pipe Inside Diameter, Inches	Minimum Tape Width, Inches	No. of Tape strips
4 through 12	4	1
14-20	4	2

C. The CONTRACTOR shall submit typical samples of the printed marking tape to the ENGINEER for approval prior to installation (minimum length to show repeat of message).

D. The marking tape shall be placed in the trench backfill directly above and centered over the pipeline. The marking tape shall be installed between 12 and 18 inches above the top of the pipe. The CONTRACTOR shall exercise care to prevent damage to the polyethylene tape when placing the remaining backfill.

E. Where the pipeline passes through in a manhole, vault or other underground structure, the polyethylene marking tape shall be placed on top of that portion of the pipeline, located inside the structure and shall be secured to the pipeline with adhesive tape.

F. Openings for air valves and similar appurtenances shall be provided by making an X-shaped cut in the polyethylene and temporarily folding back the film. After the polyethylene is installed over the appurtenance, the slack shall be taped securely to appurtenance and the cut in the polyethylene shall be repaired with adhesive tape.

G. The CONTRACTOR shall deliver to the OWNER 100 feet of the polyethylene marking tape of each color and each color and each width size after construction is completed.

END OF SECTION

SECTION 02270

SEDIMENTATION AND EROSION CONTROL

PART 1 – GENERAL

1.01 SCOPE OF WORK

A. The CONTRACTOR shall furnish all labor, materials, equipment, and incidentals necessary to perform all installation, maintenance, removal, and area cleanup related to sedimentation control work as shown on the Drawings and as specified herein or as required to prevent the transport of silt or sediment outside the limits of construction. The Work shall include, but not necessarily be limited to, installation of temporary access ways and staging areas, silt fences, temporary seeding, turbidity barriers, sediment removal and disposal, device maintenance, removal of temporary devices, temporary mulching, and final cleanup.

B. The CONTRACTOR shall prepare a Sedimentation and Erosion Control Plan. This Plan shall be used as a minimum in developing the Pollution Prevention Plan for the NPDES permit application (notification) to be filed by the CONTRACTOR.

1.02 RELATED REQUIREMENTS

The Contract Documents include, but are not limited to, the following related sections:

A. Environmental Protection is included in Section 01110.

B. Permits are included in Section 01065.

C. Site preparation is included in Section 02100.

D. Sodding is included in Section 02932.

E. Seeding is included in Section 02933.

1.03 SUBMITTALS

Within 10 days after award of Contract, the CONTRACTOR shall submit to the ENGINEER for approval, technical product literature for all commercial products to be used for sedimentation and erosion control.

1.04 QUALITY ASSURANCE

A. The CONTRACTOR shall be responsible for the timely installation and maintenance of all sedimentation control devices necessary to prevent the movement of sediment from the construction site to off-site areas, via surface runoff or underground drainage systems. Measures in addition to those shown on the Drawings necessary to prevent the movement of sediment outside the limits of construction shall be installed, maintained, removed, and cleaned up at the expense of the CONTRACTOR. No additional charges to the OWNER will be considered.

B. Sedimentation and erosion control measures shall conform to the Best Management Practices outlined in the Drawings and in the Florida Development Manual.

PART 2 - PRODUCTS

2.01 MATERIALS

A. Silt Fence:

1. Steel posts shall be a minimum of 5 feet in length, 2-1/2-in by 2-1/2-in by 1/4-in angle post with self-fastening tabs and a 5-in by 4-in (nominal) steel anchor plate at bottom.

2. Welded wire fabric shall be 4-in by 4-in mesh of 12 gauge by 12 gauge steel wire.

3. Silt fence fabric shall be a woven, polypropylene, ultraviolet resistant material such as Mirafi 100X as manufactured by Mirafi, Inc., Charlotte, NC or equal.

4. Tie wires for securing silt fence fabric to wire mesh shall be light gauge metal clips (hog rings), or 1/32-in diameter soft aluminum wire.

5. Prefabricated commercial silt fence may be substituted for built-in-field fence. Pre-fabricated silt fence shall be "Envirofence" as manufactured by Mirafi Inc., Charlotte, NC or equal.

B. Turbidity Barriers:

Turbidity barriers meeting FDOT Type I and Type II requirements shall be provided. Turbidity barrier may be floating or staked, based on the conditions at the location for installation. Turbidity barrier shall be capable of functioning properly for flow conditions up to a 5 year/24 hour storm event. Turbidity barriers shall be constructed of PVC or polypropylene material, all portions which will be exposed to direct sunlight shall be ultraviolet resistant. All metal components shall be corrosion resistant. Woven materials may be acceptable for installations where high flow conditions may exist during storm events. Turbidity barriers shall be "Mark I", "Mark II", or "PC-2" as manufactured by American Boom & Barrier Corporation, Cape Canaveral, FL or equal.

C. Straw mulch shall be utilized on all newly graded areas to protect areas against washouts and erosion. Straw mulch shall be comprised of threshed straw of oats, wheat, barley, rye, or hay that is free from noxious weeds, mold or other objectionable material. The straw mulch shall contain at least 50 percent by weight of material to be 10-in or longer. Straw shall be in an air-dry condition and suitable for placement with blower equipment.

D. Latex acrylic copolymer, such as Soil Sealant with coalescing agent as manufactured by Soil Stabilization Co., Merced, CA or approved equivalent shall be used as straw mulch tackifier.

E. An asphalt tackifier may be used in place of a latex acrylic copolymer with prior written approval from the ENGINEER.

F. Temporary Sod: This Work shall consist of furnishing and placing sod in accordance with Section 02932 within areas designated by the ENGINEER, in order to temporarily

control erosion. If the sod is determined to be of a temporary nature, at the discretion of the ENGINEER the requirements for fertilizer and lime may be eliminated. The sod shall be kept in a moist condition in order to insure growth.

G. Temporary Grassing: Certain areas of Grassing constructed in accordance with Section 02933 may be designated by the ENGINEER as temporary erosion control features. The ENGINEER may determine that permanent type grass seed be omitted from Grassing and the specified rate of spread for fertilizer used in conjunction with grassing operations be reduced when such Work is designated as a temporary erosion control feature.

H. Baled Hay or Straw: This Work shall consist of construction of baled hay or straw dams to protect against downstream accumulations of silt. The baled hay or straw dams shall be constructed in accordance with the details in the FDOT Roadway and Traffic Design Standards. All baled hay or straw utilized shall comply with the provisions of FDOT Specification Section 9811-3.1 for dry mulch.

PART 3 - EXECUTION

3.01 LOCATION OF SEDIMENT/EROSION CONTROL AND TURBIDITY BARRIERS

A. CONTRACTOR shall submit a pollution prevention plan for the project. At a minimum, sediment/erosion control devices shall be installed at all locations shown on the Plans and specified herein.

B. Sediment/erosion control devices shall be installed at 500 feet intervals along all swales and ditches constructed and around all installed drainage structures prior to placement of sod.

C. Sediment/erosion control shall be installed along all limits of construction.

D. Sediment control or turbidity barriers shall be installed along the upstream side of all littoral zones within stormwater ponds. Sediment control or turbidity barriers shall be installed along the open water side of all littoral zones in borrow areas in which excavation is being conducted.

E. Turbidity barriers shall be installed in all waters of the U.S. and the stormwater drainage ditch. Clearing of vegetation 20 feet upstream and downstream of the turbidity barriers is required.

F. CONTRACTOR shall provide additional sediment/erosion control and turbidity barriers as needed to control the transport of silt and sediments outside of the limits of construction.

G. Sediment/erosion control shall be installed around the base of all soil stockpile areas. All non-working faces of soil stockpiles, which will be in place longer than three months shall be seeded in accordance with the temporary seed requirements in Section 02933 - Seeding.

H. Sediment/erosion control devices shall be installed along the perimeter of all staging areas.

I. All disturbed areas, greater than one (1) acre, in which construction activities have stopped and are not anticipated to resume for a period of three months or longer shall be

temporarily seeded, within five days of stoppage of construction, in accordance with the temporary seeding requirements in Section 02933.

J. All disturbed areas, greater than one (1) acre, in which construction activities have been stopped and are not anticipated to resume for a period of 21 days, but not longer than three months shall be temporarily mulched, within five days of stoppage of construction in accordance with Paragraph 3.04.

3.02 INSTALLATION

A. Silt Fence Installation:

1. Silt fences shall be positioned as specified indicated on the Drawings and as necessary to prevent movement of sediment produced by construction activities outside of the limits of construction or as approved.

2. Dig trench approximately 6-in wide and 6-in deep along proposed fence lines.

3. Drive metal-stakes, 8 feet on center (maximum) at back edge of trenches. Stakes shall be driven 2 feet (minimum) into ground.

4. Hang 4 by 4 woven wire mesh on posts, setting bottom of wire in bottom of trench. Secure wire to posts with self-fastening tabs.

5. Hang filter fabric on wire carrying to bottom of trench with about 4-in of fabric laid across bottom of trench. Stretch fabric fairly taut along fence length and secure with tie wires 12-in O.C. both ways.

6. Backfill trench with excavated material and tamp.

7. Install pre-fabricated silt fence according to MANUFACTURER'S instructions.

B. Hay bale Barrier:

1. Bales shall be either wire-bound or string-tied with the bindings oriented around the sides rather than over and under the bales.

2. Bales shall be placed lengthwise in a single row with the ends of adjacent bales tightly abutting one another.

3. The barrier shall be entrenched and backfilled. A trench shall be excavated the width of a bale and the length of the proposed barrier to a minimum depth of 4 inches. After bales are staked and chinked, the excavated soil shall be backfilled against the barrier. Backfilled material shall conform to the ground level on the downhill side and shall be built up to 2 inches against the uphill side.

4. Each bale shall be securely anchored by at least two stakes or rebar driven through the bale. The first stake shall be driven toward the previously laid bale to force the bales together. Stakes shall be driven deep enough into the ground to securely anchor the bales.

5. The gaps between each bale shall be chinked (filled by wedging) with straw to prevent water from escaping between the bales.

C. Turbidity Barriers:

1. Turbidity barriers should extend the entire depth of the water.

2. Turbidity barriers should not be placed perpendicular to flow. Barriers should be installed at an angle to the flow. Angle should be determined on the amount of flow in the waterway and the MANUFACTURER'S recommendation.

3. Turbidity barrier should be 10 to 20 percent longer than the straight-line measurement.

4. Joints between panels should be kept to a minimum.

5. Barrier should extend to the top of bank. All ends should be secured firmly to the shoreline.

6. Where significant flow is anticipated, a heavy woven pervious filter fabric may be substituted.

D. Inlet Protection:

1. Inlet protection shall be installed for all catch basins, drop inlets, drop structures, inlets to drainage pipes, or other structures as indicated on Plans.

2. A 5-foot strip of sod shall be laid surrounding the perimeter each structure.

3. A silt fence or hay bale barrier shall be installed around the perimeter of the sodded area.

E. Fabric Formed Concrete Erosion Protection

1. Fabric formed concrete erosion protection shall be installed as shown on the drawings and in accordance with MANUFACTURER'S recommendations.

3.03 MAINTENANCE AND INSPECTIONS

A. Inspections:

1. CONTRACTOR shall make a visual inspection of all sedimentation and erosion control devices (including turbidity barriers) once per week and promptly after every rainstorm. If such inspection reveals that additional measures are needed to prevent movement of sediment to areas outside the limits of construction, CONTRACTOR shall promptly install additional devices as needed. Sediment controls in need of maintenance shall be repaired promptly.

2. CONTRACTOR shall keep a log of all inspections indicating the following:

a. Date and time of inspection

b. Inspector

c. Amount of rainfall

d. Erosion and sediment control devices inspected

e. Condition of sediment and erosion control devices

f. Repairs needed

g. Date repair is completed

B. Device Maintenance:

1. Silt Fences:

a. Remove accumulated sediment once it builds up to one-third of the height of the fabric.

b. Replace damaged fabric, or patch with a 2-ft minimum overlap.

c. Make other repairs as necessary to ensure that the fence is filtering all runoff directed to the fence.

2. Hay bale Barriers:

a. Remove accumulated sediment once it builds up to one-third of the height of the hay bales.

b. Replace damaged hay bales.

c. Make other repairs as necessary to ensure that the hay bales are filtering all runoff directed to the barrier.

3. Inlet Protection:

a. Remove accumulated sediment once it builds up to one-third of the height of the barrier.

b. Remove all sediment accumulated within the barrier and replaced damaged sod.

c. Make other repair as necessary to ensure that the inlet protection device is operating properly.

4. Turbidity Barriers:

a. Turbidity barriers shall be inspected on a daily basis.

b. Replace damaged fabric, or patch with a 2 foot minimum overlap.

c. Make other repairs as necessary to ensure barriers are effectively maintaining turbidity levels outside of the barrier within limits specified in Section 01110 and 01065.

3.04 TEMPORARY MULCHING

A. Apply temporary mulch to areas where rough grading has been completed but final grading is not anticipated to begin within 21 days of the completion of rough grading. If construction activities are not planned to resume for three months or longer, the temporary seeding requirements shall be followed.

B. Straw mulch shall be applied at rate of 2,000 lbs/acre and tackified with latex acrylic copolymer at a rate of 1 gal/1000 ft^2 diluted in a ratio of 30 parts water to 1 part latex acrylic copolymer mix.

C. After temporary mulching, traffic should be kept to a minimum, except for designated temporary access roads.

3.05 REMOVAL AND FINAL CLEANUP

Once the site has been fully stabilized against erosion, remove sediment control devices and all accumulated silt. Dispose of silt and waste materials in proper manner. Re-grade all areas disturbed during this process and stabilize against erosion with surfacing materials as indicated on the Drawings or specified herein.

END OF SECTION

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SECTION 02350

PILES - GENERAL

PART 1 GENERAL

1.01 SCOPE OF WORK

A. Furnish all labor, materials, equipment and incidentals required and install piles, by driving, complete as shown on the Drawings and as specified herein.

1.02 RELATED WORK

A. Concrete Filled Pipe Piles are included in Section 02363.

1.03 SUBMITTALS

A. Submit, in accordance with Section 01300, shop drawings and product data showing materials of construction, details of installation and installation equipment as follows:

1. Description of pile driving hammer with the rated energy.

2. Method and equipment for pile removal.

3. Plan showing the location and batter of each pile to be driven identified with mark numbers. The estimated length of each pile shall be shown on the plan or on a separate schedule, cross-referenced to the pile mark numbers on the plan. Proposed pile splices, when allowed, shall be shown on the plan or in the schedule. When test piles are specified, the estimated lengths of production piles shall reflect the test pile results.

4. Within 3 working days after any driven pile has been deemed to be permanently obstructed or when an installed pile has been observed to exceed the specified tolerances, provide a sketch showing the as-driven location of all driven piles in the same pile group or supporting the same structural element and all driven piles immediately adjacent to the pile group.

B. Certificates

1. Certification from the manufacturer attesting to the rated energy of each hammer.

C. Project Record Documents

1. Within 2 weeks after the completion of driving of all piles, provide the Engineer with a drawing, sealed by the surveyor, showing the mark number of all piles and their as-driven location with respect to the specified tolerances.

2. Provide a signed, typewritten record copy of each pile driven. The records shall include the pile mark number, driving resistance record, pile length as driven, date and time of driving, time delays during driving, splice locations, tip and cut-off elevations, deviations from drawing location and from plumb or batter, hammer data and any other applicable data. The record shall show any unusual events during installation including interruptions during driving, obstructions, redriving, etc. The driving resistance record shall show the

number of blows for the final 1-in, for the final 6-in and for each foot of the driven length.

1.04 QUALITY ASSURANCE

A. Comply with all applicable State and local requirements and codes.

B. Full-time inspection of all pile driving operations will be provided by the Engineer. No piles shall be driven except in the presence of the Inspector assigned by the Engineer.

C. Approval given by the inspection agencies shall not relieve the Contractor of his/her responsibilities for performing the work in accordance with this Section and the Drawings.

1.05 DELIVERY, STORAGE AND HANDLING

A. Piles shall be stored in orderly groups above ground and shall be blocked to minimize distortion and bending. Handling shall minimize bending stresses in the piles.

1.06 LINES AND GRADES

A. Employ a registered land surveyor or a registered professional engineer licensed in the State where the project is located, experienced in this type of work. The surveyor shall establish lines and levels, and be responsible for the correct location of piles. The surveyor shall keep a record of piles driven as well as a record of the amount of uplift of individual piles. Records of uplift measurements shall be provided to the Engineer's pile driving inspector.

B. Establish a base line and datum elevation as approved by the Engineer. Locate and stake out piles. Maintain all location stakes and establish all elevations required, including the elevation of the top of the pile immediately after driving and prior to cutting off any length of pile.

C. Within 1 working day after all piles in a cluster have been driven, provide the pile driving Inspector with a written tabulation indicating the following information for piles driven in that cluster:

1. Pile location and mark number.

2. Elevation of top of pile prior to driving each pile in the group and prior to cutting (measured to nearest 0.10-ft).

3. Elevation of top of pile after cutting (measured to nearest 0.10-ft).

4. Deviation from plan location at cut off grade (measured to nearest 0.01-ft).

PART 2 PRODUCTS

2.01 EQUIPMENT

A. Piles shall be driven with modern equipment. Hammer carriages shall allow freedom of movement of the hammer while maintaining the hammer in axial alignment and prevent whipping of the pile during driving. Unless otherwise specified, the leads of the pile driving rig shall be fixed at two points, the points shall be at least half the length of the leads apart in order to maintain the pile and hammer in correct axial alignment and at the design location during the entire operation. The leads shall extend down to the lowest point at which the

hammer must operate. The use of followers will not be permitted except as noted in the detail pile section.

B. Piles may be driven with a single-acting, double-acting or differential-acting steam or air hammer. Maintain the boiler or air pressure recommended by the manufacturer and employ the proper size hose and connections.

C. When allowed under the detail pile section, piles may be driven with a hydraulic hammer. The equipment shall include an automatic printout of the energy per blow when driving piles. When used, a manufacturer's representative shall instruct the pile driving crew and the Engineer on the operation of the equipment and provide advice until completion of the second successful pile installation by the crew.

D. An aluminum micarta cushion block, or other cushion material if approved by the Engineer, shall be used in the hammer for driving piles.

PART 3 EXECUTION

3.01 PILE DRIVING

A. As part of the preparation for pile driving, mark each pile at 1-ft intervals, with the total pile length numbered every 5-ft. At final take-up, mark each pile in 1-in increments.

B. All piles shall be driven at the proper locations and orientations as indicated on the Drawings. Pile locations shall be checked several times during driving and appropriate corrective actions taken, as necessary.

C. The piles shall be driven continuously, without interruption, from ground surface to final tip elevation. If pile driving is interrupted, the pile shall be driven a minimum of 1-ft prior to resumption of counting blows for end bearing piles.

D. All piles in any one group shall be driven before moving to other locations. They shall be driven starting with piles in the center of the group and proceeding radially to the outside.

E. Immediately after each pile is driven, establish a reference point and its elevation on the pile. After all piles in any one group have been driven, determine the elevation of the reference points on each of the piles in the group. If uplift of 1/2-in or more has occurred for any pile, then that pile shall be redriven to its original elevation, and deeper if necessary, to the required final driving resistance. After redriving each such pile, re-check the elevation of the reference points on all piles in the group and redrive any other uplifted piles.

3.02 REQUIRED PILE PENETRATION

A. The pile penetration shall be as required in the detail specification for each type and size of driven pile.

B. The bearing value shall be determined from the applicable formula in the following schedule:

1. For piles driven with a drop hammer

$$P = \frac{2WL}{s + 1}$$

2. For piles driven with a single acting steam or air hammer

$$P = \frac{2WL}{s + 0.1} \quad \text{or} \quad P = \frac{2E}{s + 0.1}$$

3. For piles driven with a double acting steam or air hammer

$$P = \frac{2L(W + ap)}{s + 0.1} \quad \text{or} \quad P = \frac{2E}{s + 0.1}$$

4. For piles driven with a hydraulic hammer

$$P = \frac{2E}{s + 0.1}$$

P = Safe bearing load developed by the pile in pounds.

W= Weight of the hammer in pounds.

L = Length of stroke or height of fall of the hammer in feet.

s = Penetration of the pile into the ground per blow in inches taken as the average over the last ten blows. Penetration shall be measured at a time when there is no appreciable rebound of the hammer and the preceding blow was struck upon a sound pile head or driving block.

a = Effective area of the piston in square inches.

p = Mean effective steam pressure in the case of steam hammers or mean effective air pressure in the case of air hammers, in psi.

E = Manufacturer's rating of energy developed by the hammer in foot-pounds.

C. When the determination of the final penetration resistance is being made, hammers shall be operated at the rated speed for steam or air hammers. Maintain the boiler or air pressure recommended by the manufacturer and shall employ proper size hose and connections. Other hammers shall be operated to transmit the specified energy to the pile.

D. Practical refusal shall be defined as a penetration of 1-in or less for the final ten blows for hammers rated less than 19,000 ft-lbs and a penetration of 2-in or less for the final ten blows for hammers rated 19,000 ft-lbs or more.

3.03 OBSTRUCTIONS

A. Where obstructions make it impossible to drive certain piles at the locations shown to the required tip elevation or where an obstruction which may cause damage the pile tip or cause the pile to drift off location, the following procedure will be used:

1. Obstructions encountered within 10-ft of the ground surface will be removed, at no additional cost to the Owner. Clear the obstruction by spudding, auguring, or drilling and the redriving the pile at no additional cost.

2. Obstructions encountered below 10-ft from the ground surface, will be handled in one of the following ways and additional payment will be made based on time and materials required.

    a. Spud the pile locations using an approved steel spud larger than the obstructed pile.

    b. Excavate the obstruction.

    c. The pile cluster shall be redesigned to avoid the obstruction.

3. The determination of the method best suited to a particular obstruction will be determined by the Engineer.

B. Care shall be taken when obstructions are removed by excavation so as not to eliminate lateral support of adjacent individual piles or structures. Excavated areas shall be backfilled prior to redriving the pile.

C. If in the opinion of the Engineer, a pile has been damaged by an obstruction during driving, it shall be abandoned and a replacement pile driven.

D. Piles abandoned because of the obstructions encountered before reaching the required bearing or elevation shall be cut off and abandoned or pulled out at the discretion of the Engineer. Payment for piles cut off and abandoned and for pile removal will be made as delineated in the project specifications.

E. Jetting will not be permitted unless otherwise allowed in the detail pile specification.

3.04 ACCEPTANCE CRITERIA

A. Piles that are damaged below cut-off elevation during driving will be rejected. The Contractor will be compensated for rejected piles that are not a result of Contractor's error.

B. Piles that are rejected because of damage, mislocation or misalignment, or failure to meet the driving criteria, shall be cut off below the limits of the structure and abandoned and additional piles shall be driven as directed by the Engineer.

C. Piles indicating sudden or peculiar decrease in penetration resistance during driving will be assumed to be broken and will be rejected unless Engineer's review of available data indicates that sudden decrease in driving resistance is due to natural, subsurface conditions and continued acceptable driving behavior is observed.

D. Upon comparing a pile's performance with that of other driven piles and based on his/her knowledge of subsurface conditions, the Engineer shall determine if the pile has been damaged sufficiently to make it unacceptable, if this is the case he/she will reject the pile. If the Contractor does not agree that a pile is incapable of performing satisfactorily, a load test may be required.

E. The Contractor shall be compensated only for rejected piles that are driven within the specified tolerances and whose damage is not attributable to the Contractor's error in the opinion of the Engineer.

F. Where piles, as installed, exceed the specified lateral deviation tolerances, the Engineer shall then determine analytically the total loads on individual piles, based on the survey

information. If the load on any pile exceeds 110 percent of the specified load capacity, corrections shall be made in accordance with a design provided by the Engineer at no additional cost to the Owner.

G. The installation of replacement piles and other corrective measures shall in all cases be in accordance with designs provided by the Engineer and at no additional cost to the Owner.

3.05 CLEAN UP

A. Remove from the site all waste and surplus materials and all debris from the operation. The debris and waste materials shall be legally disposed of off-site.

END OF SECTION

SECTION 02363

DRIVEN PIPE PILES

PART 1 GENERAL

1.01 SCOPE OF WORK

A. Furnish all labor, materials, equipment and incidentals required and install steel pipe piles, by driving, complete as shown on the Drawings and as specified herein.

B. The provisions of Section 02350, Piles - General, are included as part of the work of this Section.

1.02 RELATED WORK

A. Earthwork is included in Section 02200.

1.03 SUBMITTALS

A. Submit, in accordance with Section 01300, shop drawings and product data showing materials of construction, installation equipment and details of installation as follows:

1. Concrete design mix and method of placement in the piles.

2. Pile details including details of the pile splices and pile tip reinforcement.

B. Certificates

1. Mill certificates showing the chemical composition and the physical properties of the steel to be furnished.

2. Welders qualification certificates, dated within 1 year of the time of submittal, attesting welders have qualified for the welding they will be performing.

1.04 REFERENCE STANDARDS

A. American Society for Testing and Materials (ASTM).

1. ASTM A36 - Standard Specification for Carbon Structural Steel.

2. ASTM A252 - Standard Specification for Welded and Seamless Steel Pipe Piles.

3. ASTM C31 - Standard Practice for Making and Curing Concrete Test Specimens in the Field.

B. American Welding Society (AWS).

1. AWS D1.1 - Structural Welding Code - Steel.

C. American Concrete Institute (ACI).

1. ACI 318 - Building Code Requirements for Structural Concrete.

D. Where reference is made to one of the above standards, the revision in effect at the time of bid opening shall apply.

1.05 QUALITY ASSURANCE

A. Work shall be performed by a firm thoroughly experienced in the type of piling work specified. Furnish evidence to the Engineer, on demand, that the firm has at least ten successful installations of the same general type and class of piles and that the superintendent proposed for the work is thoroughly experienced in piling operations of this class and nature. Provide workmanship that is first-class in every respect.

1.06 PROJECT/SITE REQUIREMENTS

A. Boring logs are included in Appendix A. The boring logs indicate the soils and conditions at the boring location only and soils and conditions can change away from the actual boring location. The boring logs and geotechnical report are made available to the Contractor for his/her information to be used at his/her own risk. The Contractor is responsible for any conclusions to be drawn from the borings including the character of the materials to be encountered and the degree of difficulty to be expected in the performance of the work. The Contractor is encouraged to perform his/her own subsurface investigation.

B. It should not be assumed that materials other than those disclosed by the borings will not be encountered or that the proportions and character of the various materials will not vary from those indicated in the boring logs.

C. No claim for extra compensation or extension of time will be considered because of any variation in site conditions, soil or water conditions from those indicated to those actually encountered.

PART 2 PRODUCTS

2.01 MATERIAL

A. Pile shell: ASTM A252 Grade 2 single length welded and seamless steel pipe 1/4-in minimum wall thickness and 8-in minimum outside diameter.

B. Pile tips shall conform to ASTM A36 and the dimensions specified.

C. Welding shall conform to the requirements of AWS D1.1.

D. Concrete fill in pipe piles shall have a slump in accordance with Section 03301 and shall attain a minimum compressive strength of 4000 psi at 28 days.

2.02 EQUIPMENT

A. Piles may be driven with a single-acting, double-acting or differential-acting steam or air hammer, or hydraulic hammer. A maximum driving capacity of 60 tons shall not be exceeded.

PART 3 EXECUTION

3.01 PILE DRIVING

A. Each pile shall be driven to a depth of 14-ft below the pond bottom, but not greater than practical refusal.

B. Immediately after driving each pile, suitable temporary capping devices shall be provided to prevent soil, water and debris from entering the pipe prior to concreting. Such temporary capping devices shall not interfere with the accessibility to the reference point established on each pile.

3.02 CONCRETING

A. No concrete shall be placed in any pipe pile until the shell has been inspected and found free of water, debris or other foreign materials, and confirmed to be undamaged. Concrete may not be placed through water or into more than 2-in of water at the base of the pipe pile.

B. All piles for each pile group shall be driven prior to placement of concrete within any pile in the group.

C. Concrete Placement: Do not place concrete in the shell of any pile until driving within a radius of 15-ft has been completed and the interior of shells has been inspected and approved.

1. Provide a suitable light for inspection of the interior of the shell for its entire length by the Engineer. The light shall be visible from the pile top at any depth within the pile for the pile to be acceptable. Acceptance of any piles not meeting this criterion will be based on the Contractor demonstrating that the pile has not experienced excessive sweep or sharp angle change.

2. After inspection and acceptance by the Engineer, place 1/2 cu ft of neat cement grout (1/2 bag) dropped directly into pile casing followed immediately by concrete placement.

3. Place concrete continuously without interruption and in a smooth flow without segregating the mixed materials.

4. Stop the concrete placement above the final cut-off elevation shown.

3.03 CUT-OFFS

A. Piles shall be cut-off at the required elevation on a horizontal plane unless otherwise shown on the plans. Pile cut-offs less than 4-ft in length shall become the property of the Contractor and legally disposed of off site unless used to extend another pile. Cut-offs longer than 4-ft shall be used, where practical, to extend the length of another pile.

3.04 TOLERANCES

A. Piles shall be driven as close as practicable to the design location. The maximum lateral deviation permitted from the design location at cut-off elevation will be 0.25-ft for single piles. The maximum deviation permitted from design cut-off elevation will be 0.10-ft.

B. No vertical pile shall be out of plumb by more than 1 percent.

C. The pile diameter at any depth shall not vary more than 20 percent from its original dimension.

3.05 PILE ACCEPTANCE

A. Only piles meeting the requirements of this Section shall be accepted for payment.

B. Except as provided for under obstructed piles, piles that are damaged, mislocated, or driven out of alignment which cannot be removed, shall be cut off, filled with sand and abandoned. Additional piles to replace abandoned piles shall be driven as directed by the Engineer, all at no additional cost to the Owner. Piles that can be removed shall be pulled out and the hole filled solidly with sand.

C. In addition, the Contractor shall pay for all additional costs including engineering, concrete work, steel and forms required for pile caps and other foundations as a result of having to drive additional piles to replace those rejected piles attributable to Contractor's error.

D. Should concrete fail to meet the requirements of Section 03300, the Engineer will make a determination regarding the proper corrective measures to be taken. Corrective measures could include the removal and replacement of the defective piles, the installation of additional piles at nearby locations, or other measures the Engineer deems appropriate. All corrective measures ordered by the Engineer shall be done at no additional cost to the Owner.

END OF SECTION

SECTION 02368

ROUND TIMBER PILING

PART 1 GENERAL

1.01 SCOPE

A. Summary of Work: The CONTRACTOR shall furnish all labor, materials, equipment, and incidentals necessary to perform all operations in connection with locating and installing treated, round timber piles in accordance with this section of the specifications and the applicable drawings, and subject to the terms and conditions of the contract.

B. Comply with applicable State and local requirements and codes

1.02 APPLICABLE PUBLICATIONS

A. Federal Specifications (FS):

1. FF-B-575 - Bolts, Hexagonal and Square

2. FF-B-836 - Nut: Square, Hexagonal, Cap, Slotted, Castle, Knurled, Welded, and Single

3. RR-W-410 - Wire Rope and Strand

4. TT-W-572B - Wood Preservative, Water Repellent

B. American Society for Testing Materials (ASTM):

1. D25 - Standard Specification for Round Timber Piles

2. F593 – Standard Specification for Stainless Steel Bolts, Hex Cap Screws, and Studs

3. F594 - Standard Specification for Stainless Steel Nuts

C. American Wood Preservative Association (AWPA):

1. Standard C-3 - Piles-Preservative Treatment by Pressure Processes

2. Standard P-5 - Water-Borne Preservatives

1.03 DEFINITIONS

A. Test Pile: A pile driven at the location of a permanent production pile, as shown on the Drawings, using the same methods, materials, and equipment proposed to be used to install the production piles. The test pile shall be the same cross section and type as the production piles and, where applicable, shall be instrumented to allow for load testing.

B. Production Pile: A pile driven at a permanent pile location, as shown on the Drawings, using the same methods, materials, and equipment as submitted and approved and as used to install the test pile.

C. Monitored Production Pile: A pile driven at the location of a permanent production pile, as shown on the Drawings, using the same methods, materials, and equipment, as submitted and approved, used to install the test piles and production piles. The monitored production pile shall be instrumented to allow for load testing.

D. Re-driving: Re-driving occurs when a pile which has been previously driven to the required design elevation, required driving criteria or to practical refusal is redriven with the same methods, materials, and driving equipment used to install the test piles and production piles. Re-driving may be required to reset piles that have heaved, to advance piles that encountered high driving resistance due to excess pore water pressures, to advance piles that encountered low driving resistance and require pile set up, or for other reasons as determined by the Engineer.

E. Practical Refusal: Practical refusal is defined as hammer blow counts that exceed 20 blows per inch with the hammer operating at a setting determined as acceptable by the Engineer and results in no more than ¼ inch of pile rebound per blow.

F. Pile Heave: Pile heave is defined as the upward movement of a pile from its originally driven elevation.

1.04 SUBMITTALS

A. The Contractor shall submit shop drawings and product data showing materials of construction, installation equipment and details of installation as follows:

1. Submit pile details including details of the top connection to the structure.

2. Submit description of proposed pile driving equipment, including crane, leads, hammer, cap block, cushion and anvil. Data provided shall include hammer make and model, ram mass, anvil mass, rated stroke, rated energy range, rated speed, steam or air pressure, pile driving cap, make and mass, cushion block dimensions and material type, and all other applicable data. All equipment is subject to satisfactory field performance.

3. Submit details and drawings of proposed templates.

4. Subsequent to driving test piles, but prior to installing any production piles, submit to the Engineer for review and comment, a proposed schedule of pile installation indicating the pile location, proposed pile length, and pile driving sequence.

5. Where applicable, submit a description of the proposed pre-augering equipment including auger size.

6. Submit pile driving Contractor’s qualifications.

7. Submit Surveyor’s qualifications.

1.05 QUALIFICATIONS:

A. All piling should be furnished and installed by a Contractor experienced in the type of piling work specified. The Contractor shall have at least five (5) years experience and at least 10 successful installations of the same general type and class of piles. The superintendent proposed for the work shall have at least five (5) years experience in pile driving and shall be experienced in piling operations of this class and nature.

B. Contractor shall be responsible for using all available data to plan and execute the work, including but not limited to the project geotechnical report; the plans and specifications; or other pile driving records or summaries of piles driven on nearby projects; and pile driving behavior.

C. Surveying shall be performed by a Professional Land Surveyor hired by the Contractor and licensed in the state in which the work is performed and shall have not less than five (5) years experience performing surveys on similar projects.

1.06 RESPONSIBILITIES:

A. Employ a Professional Land Surveyor licensed in the state in which the work is performed and experienced in this type of work who shall establish lines and levels. Contractor shall be responsible for the correct location and orientation of piles, keeping a record of piles driven as well as a record of the amount of uplift or settlement of individual piles. Records of uplift or settlement measurements shall be provided to the Engineer or his designated representative on a daily basis.

B. A baseline and datum elevation shall be established by the Contractor, as approved by the Engineer. Piles locations shall be staked by the Contractor. Maintain all location stakes and establish all elevations required, including the elevation of the top of the pile prior to cutting off any length of pile.

C. Within one working day after all piles in a cluster have been driven, provide the Engineer or his designated representative with a written tabulation indicating the following information for each pile:

1. Pile number.

2. Elevation of pile tip.

3. Elevation of top of pile prior to cutting or build up (measured to nearest 0.10 ft).

4. Elevation of top of pile after cutting or build up (measured to nearest 0.10 ft).

5. Deviation from plan location at cut off grade (measured to nearest 0.01 ft).

1.07 CERTIFICATIONS AND TESTING: (Not Used)

1.08 INSPECTION COORDINATION:

A. The CONTRACTOR shall provide access to the WORK for the ENGINEER as requested for inspection. The CONTRACTOR shall provide 48-hour notice of its intention to begin new

WORK activities.

B. Pile driving shall be performed under the full-time observation of a Professional Engineer registered in the State in which the work is performed (or his designated representative), who shall be present during all pile driving operations to observe the work. Contractor shall not proceed with the pile driving unless the Engineer or his designated representative is present. All piles shall be installed in the presence of the Engineer or his designated representative. Piles not installed in the presence of the Engineer will not be accepted.

C. The Engineer or his designated representative shall have safe access to the work at all times and the Contractor shall furnish the Engineer or his designated representative with every reasonable facility for checking conformance with the plans and specifications.

D. Contractor shall provide legible markings on each pile in 1-foot increments, starting at the tip, and should use enlarged numerals to indicate the length of the pile at 5-foot intervals. The markings shall not be obliterated or made unreadable during slinging, handling, and driving. Piles shall be oriented in the leads so that the markings are visible.

E. Approval given by the Engineer shall not relieve the Contractor of his/her responsibilities for performing the work in accordance with the Contract Documents.

1.09 WARRANTY:

A. The MANUFACTURER shall warrant the EQUIPMENT, MATERIALS and PRODUCTS specified in this section against defective materials and workmanship with the MANUFACTURER'S standard warranty, but for no less than one year from the date of Substantial Completion.

PART 2 PRODUCTS

2.01 TREATED TIMBER PILES:

A. The CONTRACTOR shall provide piles conforming to the requirements of ASTM D25. Piles shall have a minimum tip diameter of 8 inches and a minimum butt diameter of 12 inches. Piles shall be treated Southern Pine. Treated piles shall be clean, peeled and pressure treated.

B. Preservative Requirements:

1. Preservative: The following pressure treated wood formulations are acceptable:

   a. DOT Sodium Borate (SBX)

   b. Alkaline Copper Quaternary (ACQ-C and ACQ-D with carbonate)

   c. Copper Azole (CBA-A and CA-B)

2. The method of treatment for all timber materials shall be in accordance with Fed. Spec. TT-W-572B. Use of Chromated Copper Arsenate (CCA) treated timber is not permitted.

3. Pressure Treatment: Pressure treatment shall be in accordance with the requirements of American Wood Preserves Association (AWPA) Standard C2 . Each piece of pressure preservative treated lumber shall bear the AWPA stamp, indicating point of treatment,

preservative symbol, symbol of standard, date of treatment, and moisture content after treatment.

C. Treated piles shall be carefully handled with no sudden dropping, breaking of outer fibers, bruising, or penetrating the surface with tools. Peaveys, cant hooks, hooks, and other pointed tools shall not be used in handling treated piles. Cut or damaged surfaces of piles, including the tops of all piles after heading, and bolt holes shall be given after-treatment care as required by FS TT-W-572B, using one (1) application of a concentrated solution of the preservative used in the treatment. In addition to heading treatment, the tops of all piles shall be capped with galvanized sheet steel metal as shown on the Drawings.

2.02 HARDWARE:

A. The CONTRACTOR shall provide and install stainless steel bolts conforming to the following requirements:

B. Bolts and Nuts: Bolts shall conform to ASTM F593. Nuts shall conform to ASTM F594. Bolts and nuts shall be stainless steel and of the type, size, and dimensions shown on the drawings.

C. Washers: Plain or cut washers shall conform to the requirements of ANSI B27.2 heavy series, and lock washers shall conform to the requirements of ANSI B18 21.1 heavy series. Washers shall be provided for applications specified on the drawings. Washers shall be of the same material as the nut and bolt with which they are used.

PART 3 **EXECUTION**

3.01 INSPECTION:

A. The ENGINEER will inspect the piles at the site of the work. Facilities shall be made available to the ENGINEER for proper inspection of each pile throughout its length. Piles damaged after inspection may be subsequently rejected if damage is deemed sufficient for rejection by the ENGINEER. All rejected piles shall be removed as directed. Treatment of piles will be inspected in accordance FS TT-W-572B.

3.02 LENGTH OF PILES:

A. Piles shall be driven a minimum of 30 feet below pond bottom elevation. The CONTRACTOR shall provide piles of sufficient length to allow for "heading" and cutting off square after driving. The CONTRACTOR shall furnish piles in lengths at least 2 feet greater than the lengths specified to be below the cut-off elevations.

3.03 FRAMING TREATED PILES:

A. The CONTRACTOR shall bore bolt holes the same diameter as the bolt. Holes bored into piles shall be treated as specified in paragraph 2.01 and, when not used for bolts, shall be tightly closed by a treated plug. As soon as practicable after "Heading," the CONTRACTOR shall treat the tops of all piles as specified in paragraph 2.01. In addition to such "after heading" treatment, the CONTRACTOR shall cap the tops of all piles with galvanized steel sheet metal as shown on the drawings.

3.04 DRIVING PILES:

A. The CONTRACTOR shall adhere to the following regarding driving of piles.

B. General: No piles shall be driven until the excavation or fill in the area, which they are to occupy, has been completed to elevation of grade indicated on the drawings, nor within 100 feet of concrete less than seven days old, unless authorized by the Engineer. The CONTRACTOR shall carefully locate all piles to the lines and spacing shown on the drawings and shall drive piles either to the vertical or batter lines indicated on the drawings. The maximum permissible deviation for piles out of plumb or off batter shall be two percent of the pile length. The maximum permissible deviation from indicated locations shall be three inches for each pile. The CONTRACTOR, when working in difficult alignment areas such as sloped surfaces, shall use appropriate means than may consist of templates or pilot holes to properly align piles. Piles shall have metal shoes if lenses or strata of dense sands or hard rock occur in the overburden.

C. Piles shall not be driven beyond practical refusal.

D. Driving Equipment: Free-swinging leads will not be permitted. Pile drivers shall have fixed leads at the top and bottom, extending to the lowest point the hammer must reach. Pile-driving hammers shall be of a size and type able to deliver consistently effective dynamic energy suitable for the type and capacity of the piles to be driven and the material into which they are to be driven. Equipment for driving shall be in good condition and shall be at all times maintained and operated at the efficiency and capacity required herein and as directed by the Engineer.

E. Driving: Punching or drilling holes will be allowed where necessary to permit piles to pass through those strata and reach required penetration. The CONTRACTOR shall drive all piles continuously and without voluntary interruption. After driving, the CONTRACTOR shall cut piles at the cutoff grade line, and the surplus material shall be removed from the site of the work. Any piles, requiring excessive bending in order to frame properly, shall be withdrawn and re-driven to the proper batter. Driving batter piles vertically and then pulling them into position will not be permitted.

F. Special Precautions:

1. Long Piles: When handling and driving long piles of a high slenderness ratio, the CONTRACTOR shall take special precautions to ensure against overstress or leading away from a plumb or true position when driving.

2. Water Jets: Water jets shall not be used.

G. Record of Driving: During pile driving, the CONTRACTOR shall submit daily records to the ENGINEER that are to include the following for each pile:

1. Name of structure and pile number
2. Driven pile length
3. Pile length after cutoff
4. Pile cutoff and tip elevations
5. Ground surface elevation during driving
6. Continuous driving resistances, including final driving resistances, and pressure gauge readings or hammer ram stroke
7. Hammer speed in blows per minute or blows per foot during driving
8. Date and time of day pile driven
9. Make and model of pile driving hammer, along with associated capblock cushion material type(s) and dimensions
10. Time required to drive pile
11. Predrilling diameter and depth
12. Heaving or re-driving data
13. Remarks concerning pile-driving operations
14. Capacity achieved

END OF SECTION

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SECTION 02932

SODDING

PART 1 - GENERAL

If the project extends into the first week of October, then the CONTRACTOR shall seed the sodded areas in accordance with Section 02933 at no cost to the OWNER.

1.01 SCOPE OF WORK

A. The CONTRACTOR shall furnish all labor, materials, equipment and incidentals required to prepare lawn bed and install sodding as shown on Drawings and as specified herein.

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

1.02 RELATED REQUIREMENTS

The Contract Documents include, but are not limited to, the following related sections:

A. Sediment and Erosion Control is included in Section 02270.

B. Seeding is included in Section 02933.

1.03 SUBMITTALS

A. Provide technical data as provided in Section 01300 for Shop Drawings on all materials or installation procedures required under this Section.

PART 2 - PRODUCTS

2.01 SOD

A. Sod shall be Pensacola Bahia of firm texture having a compacted growth and good root development as approved.

B. Sod shall be certified to meet Florida State Plant Board specifications, absolutely true to varietal type and free from weeds or other objectionable vegetation, fungus, insects and disease of any kind.

C. Before being cut and lifted the sod shall have been mowed three times with the final mowing not more than a week before cutting into uniform dimensions.

D. Sod shall be harvested, delivered, and installed within a period of 72 hours.

2.02 SOIL CONDITIONERS

Soil shall be tested and the testing laboratory shall recommend amendments, if needed, before sodding.

A. Fertilizer:

1. Fertilizer shall be a complete fertilizer, the elements of which are derived from organic sources. Fertilizer shall be a standard product complying with state and federal fertilizer laws.

2. Percentages of nitrogen, phosphorus and potash shall be based on laboratory tests on soils outlined in Paragraph 1.03A and approved by the ENGINEER. For purpose of bidding, assume 6 percent nitrogen, 6 percent phosphorus and 6 percent potash by weight. At least 50 percent of the total nitrogen shall contain no less than 3 percent water-insoluble nitrogen.

3. Fertilizer shall be delivered to the site, mixed as specified, in the original unopened standard size bags showing weight, analysis and name of Manufacturer. Containers shall bear the Manufacturer's guaranteed statement of analysis, or a Manufacturer's certificate of compliance covering analysis shall be furnished to the ENGINEER. Store fertilizer in a weatherproof place and in such a manner that it will be kept dry and its effectiveness will not be impaired.

B. Super phosphate shall be composed of finely ground phosphate rock as commonly used for agricultural purposes containing not less than 20 percent available phosphoric acid.

PART 3 - EXECUTION

3.01 LAWN BED PREPARATION

A. Areas to be sodded shall be cleared of all rough grass, weeds and debris and the ground brought to an even grade as approved.

B. The soil shall then be thoroughly tilled to a minimum 8-in depth.

C. Super phosphate at a rate for bidding purposes of 5 pounds per 1000 square foot, if needed, and complete fertilizer at a rate for bidding purposes of 16 pounds per 1000 square foot shall be evenly distributed over entire area and cross-disced in to a depth of 4 to 6-in.

D. The areas shall then be brought to proper grade, free of sticks, stones, or other foreign matter over 1-in in diameter or dimension. The surface shall conform to finish grade, less the thickness of sod, free of water-retaining depressions, the soil friable and of uniformly firm texture.

3.02 SOD HANDLING AND INSTALLATION

A. During delivery, prior to planting and during the planting of the lawn areas, the sod panels shall at all times be protected from excessive drying and unnecessary exposure of the roots to the sun. All sod shall be stacked during construction and planting so as not to be damaged by sweating or excessive heat and moisture.

B. After completion of soil conditioning as specified above, sod panels shall be laid tightly together so as to make a solid sodded lawn area. On mounds and other slopes, the long dimension of the sod shall be laid perpendicular to the slope. Immediately following sod laying, the lawn areas shall be rolled with a lawn roller customarily used for such purposes and then thoroughly watered.

C. Bring the sod edge in a neat, clean manner to the edge of all paving and shrub areas. Top dressing with approved, clean, weed free, sand may be required at no additional cost to the OWNER if deemed necessary by the ENGINEER.

D. On slopes greater than 3:1, sod shall be laid using staggered joints and secured using staking, pegging or other approved methods. Sod shall be installed with the length perpendicular to the slopes.

3.03 MAINTENANCE

A. The CONTRACTOR shall produce a dense, well established lawn. The CONTRACTOR shall be responsible for the repair and resodding of all eroded or bare spots until project acceptance. Repair sodding shall be accomplished as in the original work except fertilizing may be omitted.

B. Sufficient watering shall be done by the CONTRACTOR to maintain adequate moisture for optimum development of the lawn areas. Sodded areas shall receive no less than 1.5-in of water per week.

3.04 REPAIRS TO LAWN AREAS DISTURBED BY CONTRACTOR'S OPERATIONS

Lawn areas planted under this Contract and lawn areas outside the designated areas damaged by CONTRACTOR'S operations shall be repaired at once by proper sod bed preparation, fertilizing and resodding, in accordance with these specifications.

END OF SECTION

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SECTION 02933

SEEDING

PART 1 - GENERAL

1.01 SCOPE OF WORK

A. The CONTRACTOR shall furnish all labor, materials, equipment and incidentals required to prepare lawn bed and seed those areas shown on Drawings and as specified herein.

B. Areas to be seeded shall be all areas disturbed during construction that do not require sodding as specified in Section 02932.

1.02 RELATED REQUIREMENTS

The Contract Documents include, but are not limited to, the following related sections:

A. Environmental Protection is included in Section 01110.

B. Sedimentation and Erosion Control is included in Section 02270.

C. Sodding is included in Section 02932.

1.03 SUBMITTALS

Submit to the ENGINEER as provided in Section 01300, identification labels and certification that all seed meets the specifications herein.

PART 2 - PRODUCT

2.01 SEED

A. Grass seed shall be Scarified Pensacola Bahia applied at a rate of 305-435 lbs per acre and Annual Ryegrass applied at a rate of 217-435 lbs per acre (when seeding during the months of December through February).

B. Temporary Grass Seed shall be Scarified Pensacola Bahia applied at a rate of 305-435 lbs per acre and Annual Ryegrass applied at a rate of 20 lbs per acre (when seeding during the months of December through February).

C. Seed shall be from same or previous year’s crop; each variety of seed shall have a percentage of germination of not less than 90, a percentage of purity no less than 85, and shall have not more than one percent weed content.

D. Seed shall be delivered in sealed containers bearing the dealer’s guaranteed analysis.

2.02 MULCH

A. Straw mulch shall be comprised of threshed straw of oats, wheat, barley, rye, or hay that is free from noxious weeds, mold, or other objectionable material. The straw mulch shall contain at least 50 percent by weight of material 10 inches or longer. Straw shall be in an air-dry condition suitable for placement with blower equipment.

B. Wood fiber mulch for use with Hydro-seeding, shall be a specially processed cellulose fiber containing no growth or germination inhibiting factors. It shall be manufactured in such a manner such that after addition and agitation in slurry tanks with water, the fibers in the material become uniformly suspended to form a homogeneous slurry. When sprayed on the ground, the material shall allow absorption and percolation of moisture. Each package of the cellulose fiber shall be marked by the Manufacturer to show the air dry weight content and not contain in excess of 10 percent moisture. Wood-fiber mulch shall be applied at a rate of 2,000 lbs per acre.

C. Seed and mulch tackifier shall be provided. Tackifier shall be specifically manufactured for use as a seed and mulch tackifier and shall contain no growth or germination inhibiting factors. Tackifier shall be delivered to the site in the Manufacturer's containers. Tackifier shall be applied in accordance with Manufacturer's instructions.

PART 3 - EXECUTION

3.01 PREPARATION

See section on Lawn Bed Preparation for Sodding, Section 02932, Paragraph 3.01.

3.02 INSTALLATION

A. Apply seed uniformly with a cyclone seeder, cultipacker seeder, or hydro-seeder. Apply half the seed in one direction and the remainder at right angles to the first seeding.

B. After seeding, the seeded area shall be protected from erosion using mulch and a tackifier. If hydro-seeding is used, mulch and tackifier may be included in the seed slurry.

3.03 TEMPORARY SEEDING

A. The surface of areas to be temporarily seeded shall be roughened. The application of fertilizers is not required for temporary seeding.

B. Apply seed in accordance with Paragraph 3.04. Application and seed variations shall be as follows: Pensacola Bahia at 50 lbs per acre and Annual Ryegrass at 20 lbs per acre, or Brown Top Millet at 20 lbs per acre, depending on time of year.

C. After seeding, the seeded area shall be protected from erosion using mulch and tackifier. If hydro-seeding is used, mulch and tackifier may be included in the seed slurry.

3.04 MAINTENANCE AND PROVISIONAL ACCEPTANCE

A. The CONTRACTOR shall keep all seeded areas watered and in good condition, reseeding all seeded areas if and when necessary until a good, healthy, uniform growth is established over the entire area seeded and shall maintain all seeded areas in an approved condition until provisional acceptance.

B. A satisfactory stand will be defined as a section of 10,000 square feet or larger that has:

1. No bare spots larger than three square feet.

2. No more than 10 percent of total area with bare spots larger than one square foot.

3. Not more than 15 percent of total area with bare spots larger than 6-in square.

4. The inspection by the ENGINEER will determine whether maintenance shall continue in any area of manner.

3.05 GUARANTEE PERIOD AND FINAL ACCEPTANCE

A. All seeded areas shall be guaranteed by the CONTRACTOR for not less than one full year from the time of provisional acceptance.

B. At the end of the guarantee period, inspection will be made by the ENGINEER upon written request submitted by the CONTRACTOR at least ten days before the anticipated date. Seeded areas not demonstrating satisfactory stands as outlined above, as determined by the ENGINEER, shall be renovated, reseeded and maintained meeting all requirements as specified herein.

C. After all necessary corrective work has been completed, the ENGINEER shall certify in writing the final acceptance of the seeded areas.

END OF SECTION

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SECTION 02999

MISCELLANEOUS WORK AND CLEANUP

PART 1 - GENERAL

1.01 SCOPE OF WORK

A. This Section includes miscellaneous operations that are not specified in detail as separate items but can be sufficiently described as to the kind and extent of Work involved. The CONTRACTOR shall furnish all labor, materials, equipment and incidentals to complete the Work under this Section.

B. The Work of this Section includes, but is not limited to, the following related requirements:

1. Cooperation with other CONTRACTORS.

2. Crossing utilities.

3. Relocation of existing water lines, low pressure gas lines, telephone lines, electric lines, cable TV lines, conduits, manholes, inlets and storm drains as necessary, all as shown on the Drawings.

4. Cleaning up.

5. Incidental Work.

1.02 SUBMITTAL OF LUMP SUM BREAKDOWN

The CONTRACTOR shall submit to the ENGINEER a breakdown of the Lump Sum Bid for Miscellaneous Work and Cleanup Item in the Schedule of Values, as required in Section 01370.

1.03 WORK SPECIFIED UNDER OTHER SECTIONS

All Work shall be completed in a workmanlike manner by competent workmen in full compliance with all applicable sections of these Specifications.

PART 2 - PRODUCTS

2.01 MATERIALS

Materials required for this Section shall be of at least the same type and quality as materials that are to be restored. Where possible, the CONTRACTOR shall reuse existing materials that are removed and then replaced, with the exception of paving.

PART 3 - EXECUTION

3.01 COOPERATION WITH OTHER CONTRACTORS

It will be necessary for the CONTRACTOR to plan his Work and cooperate with other CONTRACTORS in so far as possible to prevent any interference and delay.

3.02 CROSSING UTILITIES

This item shall include any extra Work required in crossing culverts, water courses, drains, water mains, and other utilities, including all sheeting and bracing, extra excavation and backfill, or any other Work required for the crossing, whether or not shown on the Drawings.

3.03 CLEANING UP

The CONTRACTOR shall remove all construction material, excess excavation, buildings, equipment and other debris remaining on the job as a result of construction operations and shall render the site of the Work in a neat and orderly condition.

3.04 INCIDENTAL WORK

Do all incidental Work not otherwise specified, but obviously necessary for the proper completion of the Contract as specified and as shown on the Drawings.

END OF SECTION

SECTION 03301

CONCRETE AND REINFORCING STEEL

PART 1 GENERAL

1.01 SCOPE OF WORK

A. Furnish all labor, materials, equipment and incidentals required and install all concrete work complete as shown on the Drawings and as specified herein.

1.02 RELATED WORK

A. Grout is included in Section 03600.

1.03 SUBMITTALS

A. Submit, in accordance with Section 01300, shop drawings and product data for:

1. Placing drawings and bar bending details in conformity with the recommendations of ACI 315.

2. Technical data on all materials and components.

3. Material Safety Data Sheets (MSDS) for all concrete admixtures and curing agents.

B. Test Reports

1. Sieve analysis, mechanical properties and deleterious substance content for fine and coarse aggregates.

2. Concrete mixes: For each formulation of concrete proposed for use, submit constituent quantities per cubic yard, water cementitious ratio, concrete slump, type and manufacturer of cement. Provide either a. or b., below, for each mix proposed.

a. Standard deviation data for concrete mixes based on statistical records.

b. Water cementitious ratio curve for concrete mixes based on laboratory tests. Provide average cylinder strength test results at 7 and 28 days for laboratory concrete mix designs. Provide results of 14 day tests if available.

C. Certifications

1. Certify that admixtures used in the same concrete mix are compatible with each other and the aggregates.

1.04 REFERENCE STANDARDS

A. American Society for Testing and Materials (ASTM)

1. ASTM A82 - Standard Specification for Steel Wire, Plain, for Concrete Reinforcement.

2. ASTM A185 - Standard Specification for Steel Welded Wire Fabric, Plain, for Concrete Reinforcement.
3. ASTM A615 - Standard Specification for Deformed and Plain Carbon-Steel Bars for Concrete Reinforcement.

4. ASTM C31 - Standard Practice for Making and Curing Concrete Test Specimens in the Field.

5. ASTM C33 - Standard Specification for Concrete Aggregates.

6. ASTM C39 - Standard Test Method for Compressive Strength of Cylindrical Concrete Specimens.

7. ASTM C94 - Standard Specification for Ready-Mixed Concrete.

8. ASTM C143 - Standard Test Method for Slump of Hydraulic-Cement Concrete

9. ASTM C150 - Standard Specification for Portland Cement

10. ASTM C173 - Standard Test Method for Air Content of Freshly Mixed Concrete by the Volumetric Method.

11. ASTM C231 - Standard Test Method for Air Content of Freshly Mixed Concrete by the Pressure Method.

12. ASTM C260 - Standard Specification for Air-Entraining Admixtures for Concrete.

13. ASTM C494 - Standard Specification for Chemical Admixtures for Concrete.

14. ASTM C618 - Standard Specification for Coal Fly Ash and Raw or Calcined Natural Pozzolan for Use in Portland Cement Concrete.

B. American Concrete Institute (ACI).

1. ACI 211.1 - Standard Practice for Selecting Proportions for Normal, Heavyweight and Mass Concrete.

2. ACI 232.2R - Use of Fly Ash in Concrete

3. ACI 301 - Specification for Structural Concrete.

4. ACI 304R - Guide for Measuring, Mixing, Transporting, and Placing Concrete.

5. ACI 305R - Hot Weather Concreting.

6. ACI 306R - Cold Weather Concreting.

7. ACI 315 - Details and Detailing of Concrete Reinforcement.

8. ACI 318 - Building Code Requirements for Structural Concrete.

C. Concrete Reinforcing Steel Institute (CRSI)

1. MSP - Manual of Standard Practice

D. Where reference is made to one of the above standards, the revision in effect at the time of bid opening shall apply.

1.05 QUALITY ASSURANCE

A. Comply with ACI 318, and other stated specifications, codes and standards. Apply the most stringent requirements of stated specifications, codes, standards, and this Section when conflicts exist.

B. If, during the progress of the work, it is impossible to secure concrete of the specified workability and strength with the materials being furnished, the Engineer may order such changes in proportions or materials, or both, as may be necessary to secure the specified properties. Make all changes so ordered at the no additional cost to the Owner.

C. All field testing and inspection services and related laboratory tests required will be provided by the Owner. The cost of such work will be paid for by the Owner. Methods of testing will comply with the latest applicable ASTM methods.

D. Develop concrete mixes and their testing by an independent testing laboratory engaged by and at the expense of the Contractor. Methods of testing shall comply with the latest applicable ASTM methods.

1.06 DELIVERY, STORAGE AND HANDLING

A. Ship and store reinforcing steel with bars of the same size and shape fastened in bundles with durable tags, marked in a legible manner with waterproof markings showing the same designations as those shown on the submitted placement drawings. Provide reinforcing steel free from mill scale, loose rust, mud, dirt, grease, oil, ice or other foreign matter. Store off the ground, protect from moisture and keep free from rust, mud, dirt, grease, oil, ice or other injurious contaminants.

B. Store products in conformity with the manufacturer's recommendations.

C. Store or stockpile sand, aggregates, cement [and fly ash] in conformity with ACI 301.

PART 2 PRODUCTS

2.01 GENERAL

A. The use of manufacturer's name and model or catalog number is for the purpose of establishing the standard of quality and general configuration desired.

B. Like items of materials shall be the end products of one manufacturer in order to provide standardization for appearance, maintenance and manufacturer's service.

C. Materials shall comply with this Section and any applicable State or local requirements.

2.02 MATERIALS

A. Cement: Domestic portland cement conforming to ASTM C150. Do not use air entraining cements. The allowable types of cement for each class of concrete are shown in Table 1.

B. Fine Aggregate: Washed inert natural sand conforming to ASTM C33.

C. Coarse Aggregate: Well-graded crushed stone or washed gravel conforming to ASTM C33, size 57. Limits of deleterious substances and physical property requirements as listed in ASTM C33, Table 3 for severe weathering regions.

D. Water: Potable water free of oil, acid, alkali, salts, chlorides, (except those attributable to drinking water) organic matter, or other deleterious substances.

E. Admixtures: Use admixtures free of chlorides and alkalis (except for those attributable to drinking water). The admixtures shall be from the same manufacturer when it is required to use more than one admixture in the same concrete mix. Use admixtures compatible with the concrete mix including other admixtures [and made for use in contact with potable water after 30 days of concrete curing].

1. Air Entraining Admixture: Conforming to ASTM C260. Proportion and mix in accordance with manufacturer's recommendations.

2. Water Reducing Admixture: Conforming to ASTM C494, Type A. Proportion and mix in accordance with manufacturer's recommendations.

3. Do not use admixtures causing retarded or accelerated setting of concrete without written approval from the Engineer. Use retarding or accelerating water reducing admixtures when so approved.

F. Fly Ash: Class F fly ash complying with ASTM C618, including the requirements of Table 1 but with the Loss of Ignition (LOI) limited to 3 percent maximum and the optional physical requirements of Table 3.

G. Deformed Concrete Reinforcing Bars: ASTM A615, Grade 60 deformed bars.

H. Welded Steel Wire Fabric: Conforming to ASTM A185.

I. Reinforcing Steel Accessories

1. Plastic Protected Wire Bar Supports: CRSI Bar Supports, Class 1 - Maximum Protection.

2. Stainless Steel Protected Wire Bar Supports: CRSI Bar Supports, Class 2 - Moderate Protection with legs made wholly from stainless steel wire.

3. Precast Concrete Bar Supports: CRSI Bar Supports, Precast Concrete Bar Supports. Precast concrete blocks that have equal or greater strength than the surrounding concrete.

J. Tie Wires for reinforcement: 16 gauge or heavier black annealed wire.

2.03 MIXES

A. Select proportions of ingredients to meet the design strength and materials limits specified in Table 1 and to produce placeable, durable concrete conforming to these Specifications. Proportion ingredients to produce a homogenous mixture which will readily work into corners

and angles of forms and around reinforcement without permitting materials to segregate or allowing free water to collect on the surface.

B. Base concrete mixes on standard deviation data of prior mixes with essentially the same proportions of the same constituents or, if not available, develop concrete mixes by laboratory tests using the materials proposed for the work.

C. Compression Tests: Provide testing of the proposed concrete mix or mixes to demonstrate compliance with the compression strength requirements in conformity with the provisions of ACI 318.

D. Entrained air, as measured by ASTM C231, shall be as shown in Table 1.

E. Slump of the concrete as measured by ASTM C143, shall be as shown in Table 1.

F. Proportion admixtures according to the manufacturer's recommendations. Two or more admixtures specified may be used in the same mix provided that the admixtures in combination retain full efficiency and have no deleterious effect on the concrete or on the properties of the other admixture(s).

TABLE 1

Class	Design Strength (1)	Cement ASTM C150	Cementitious Content (2)	W/C (3)	WR (4)	Slump Range Inches
A	4000	Type II	560	0.44 max.	Yes	3-5

All concrete shall have 3.5 to 5 percent air entrainment.

NOTES:

1. Minimum compressive strength in psi at 28 days
2. Minimum cementitious content in lbs per cubic yard (where fly ash is used, cementitious content is defined as cement content plus fly ash content)
3. W/C is Maximum Water Cementitious ratio by weight
4. WR is water reducing admixture
5. Fly ash content in the range of 20-25 percent of the total cement content plus fly ash content, by weight

2.04 MEASURING, BATCHING, MIXING AND TRANSPORTING CONCRETE

A. Measure, batch, mix and transport concrete in conformance with ASTM C94 and the requirements herein or as otherwise approved in writing by the Engineer.

B. Ready-mixed concrete, whether produced by a concrete supplier or the Contractor shall conform to the requirements above. Do not hand mix.

C. Dispense admixtures into the batch in conformity with the recommendations of the admixture manufacturer.

D. Mix concrete until there is uniform distribution of the materials and discharge completely before the mixer is recharged. The mixer shall be rotated at a speed recommended by the mixer manufacturer and mixing shall be continued for at least 1-1/2 minutes after all the materials are in the mixer. Place concrete within 1-1/2 hours of the time at which water was first added, otherwise it will be rejected. Concrete which has been remixed or retempered, or to which an excess amount of water has been added, will also be rejected.

2.05 FORMS

A. Provide forms free from roughness and imperfections, watertight and braced and tied to prevent motion when concrete is placed. Wooden spreaders will not be allowed in the concrete.

B. Wire ties will not be allowed. Metal ties or anchorages which are necessary within the forms shall be so constructed that the metal work can be removed for a depth of at least 1-1/2-in from the concrete surface without damage by spalling. Clean forms before using and treat with form release agent, or other approved material.

C. All exposed edges of the finished concrete shall be chamfered 3/4-in.

PART 3 EXECUTION

3.01 CONSTRUCTION JOINTS

A. Locate construction joints where indicated or where approved by the Engineer.

B. Continue all reinforcing steel through the joint.

C. At construction joints and at concrete joints indicated to be "roughened", uniformly roughen the surface of the concrete to a full amplitude (distance between high and low points and side to side) of 1/4-in with chipping tools to expose a fresh face. Thoroughly clean joint surfaces of loose or weakened materials by waterblasting or sandblasting and prepare for bonding. At least two hours before and again shortly before the new concrete is deposited, saturate the joints with water. After glistening water disappears, coat joints with neat cement slurry mixed to the consistency of very heavy paste. The surfaces shall receive a coating at least 1/8-in thick, scrubbed-in by means of stiff bristle brushes. Deposit new concrete before the neat cement dries.

3.02 REINFORCING STEEL

A. Fabricate reinforcing steel accurately to the dimensions shown. Bend bars around a revolving collar having a diameter of not less than that recommended in ACI 318. All bars shall be bent cold.

B. Provide tension lap splices in compliance with ACI 318. Stagger splices in adjacent bars where possible. Provide Class B tension lap splices at all locations unless otherwise indicated.

C. Lap splices in welded wire fabric in accordance with the requirements of ACI 318 but not less than 12-in. Tie the spliced fabrics together with wire ties spaced not more than 24-in on center and lace with wire of the same diameter as the welded wire fabric. Offset splices in adjacent widths to prevent continuous splices.

D. Use precast concrete blocks where the reinforcing steel is to be supported over soil. Use plastic protected bar supports or steel supports with plastic tips where the reinforcing steel is to be supported on forms for a concrete surface that will be exposed to weather, high humidity, or liquid. Use stainless steel supports or plastic tipped metal supports in all other locations unless otherwise noted on the Drawings or specified herein.

E. Before placing in position, clean reinforcement of loose mill scale and rust, mud, dirt, grease, oil and other coatings, including ice that reduce or destroy bond. When there is a delay in depositing concrete after the reinforcement is in place, bars shall be reinspected and cleaned again when necessary.

F. Coat reinforcement which is to be exposed for a considerable length of time after being placed with a heavy coat of cement grout.

G. Do not cover any reinforcing steel with concrete until the amount and position of the reinforcement has been checked and the Engineer has given permission given to proceed.

3.03 INSPECTION AND COORDINATION

A. Batching, mixing, transporting, placing and curing of concrete shall be subject to the inspection of the Engineer at all times. Advise the Engineer of readiness to proceed at least six working hours prior to each concrete placement. The Engineer will inspect the preparations for concreting including the preparation of previously placed concrete, the reinforcing and the alignment, cleanliness and tightness of formwork. Do not place concrete without the inspection and acceptance of the Engineer.

3.04 CONCRETE APPEARANCE

A. Remix concrete showing either poor cohesion or poor coating of the coarse aggregate with paste. If this does not correct the condition, the concrete shall be rejected.

B. Provide concrete having a homogeneous structure which, when hardened, will have the specified strength, durability and appearance. Provide mixtures and workmanship such that concrete surfaces, when exposed, will require no finishing except as specified herein.

3.05 PLACING AND COMPACTING

A. Do not place concrete until forms, condition of subgrade and method of placement have been approved by the Engineer. Remove all debris, foreign matter, dirt, ice and standing water from the forms before depositing concrete. Do not place concrete on frozen subgrade, snow or ice. The contact surface between concrete previously placed and new concrete shall be cleaned and brushed with cement paste. Concrete, except as indicated on the Drawings, shall not be placed in water or submerged within 24 hours after placing, nor shall running water be permitted to flow over the surface of fresh concrete within 4 days after its placing.

B. Deposit concrete as near its final position as possible to prevent segregation due to rehandling or flowing. Pumping of concrete will be permitted when an approved design mix and aggregate sizes suitable for pumping are used. Do not deposit concrete which has partially hardened or which has been contaminated by foreign materials. If the section cannot be placed continuously, place construction joints as specified or as approved. Place concrete for walls using tremie tubes in 12-in to 24-in lifts, keeping the surface horizontal. Do not drop concrete more than 4-ft.

C. Use high frequency mechanical vibrators to obtain proper consolidation of the concrete. Do not use vibrators to move or transport concrete in the forms. Do not over-vibrate so as to segregate. Continue vibration until the frequency returns to normal, trapped air ceases to rise and the surface appears liquefied, flattened and glistening. Use spades, rods or forks so that concrete is completely worked around reinforcement, embedded items, pipe stubs, and openings and into corners of forms.

3.06 CURING AND PROTECTION

A. Protect all concrete work against injury from the elements and defacements of any nature during construction operations.

B. Cure all concrete in conformance with ACI 301. Concrete that is to be used for the containment of water shall be water cured. Water curing shall be by ponding, by continuous sprinkling or by covering with continuously saturated burlap. Other concrete shall be cured by either water curing, sheet material curing or liquid membrane curing compound except that liquid membrane curing compound shall not be used on any concrete surface where additional concrete is to be placed or where the concrete surface is to be coated or painted.

C. Protect finished surfaces and slabs from the direct rays of the sun to prevent checking and crazing.

D. During cold weather concrete shall be batched, delivered, placed, cured and protected in compliance with the recommendations of ACI 306R. Do not use salt, manure or other chemicals for cold weather protection.

E. During hot weather concrete shall be batched, delivered, placed, cured and protected in compliance with the recommendations of ACI 305R. The temperature of the concrete shall be such that it will cause no difficulties from loss of slump, flash set or cold joints. Immediately cover plastic concrete with sheet curing material during hot weather.

3.07 FIELD TESTS

A. Sets of field control cylinder specimens will be taken by the Engineer during the progress of the work, in compliance with ASTM C31. The number of sets of concrete test cylinders taken of each class of concrete placed each day will not be less than one set per day, nor less than one set for each 150 cu yds of concrete nor less than one set for each 5,000 sq ft of surface area for slabs or walls. Specimens will be formed in 6-in diameter by 12-in long non-absorbent cylindrical molds.

1. A "set" of test cylinders shall consist of four cylinders: one to be tested at seven days and two to be tested and their strengths averaged at 28 days. The fourth may be used for a special test at 3 days or to verify strength after 28 days if 28 day test results are low.

2. When the average 28 day compressive strength of the cylinders in any set falls below the required compressive strength or below proportional minimum seven-day strengths (where proper relation between seven and 28 day strengths have been established by tests), change proportions, cementitious content, or temperature conditions to achieve the required strengths at no additional cost to the Owner.

B. Cooperate in the making of tests by allowing free access to the work for the selection of samples. Provide an insulated closed curing box for the specimens and protect the specimens against injury or loss through construction operations. Furnish material and labor required for

the purpose of taking concrete cylinder samples. All shipping of specimens will be paid for by the Owner.

C. Slump tests will be made in the field by the Engineer in conformity with ASTM C143.

D. Tests for air content will be made in the field by the Engineer in compliance with either the pressure method (ASTM C231) or by the volumetric method (ASTM C173).

3.08 STRIPPING AND FINISHING CONCRETE

A. Do not remove forms before the concrete has attained a strength of at least 30 percent of the specified design strength nor before reaching approximately "100 day-degrees" of moist curing (whichever is the longer). Degree-days are defined as the total number of 24 hour periods multiplied by the weighted average daily air temperature at the surface of the concrete (e.g., 7 days at an average 50 degrees F = 350 degree-days).

B. Exercise care to prevent damaging edges or obliterating the lines of chamfers, rustications or corners when removing the forms or doing any other work adjacent thereto.

C. Clean all exposed concrete surfaces and adjoining work stained by leakage of concrete, to the satisfaction of the Engineer.

D. Immediately after removal of forms remove tie cones and metal portions of ties. Fill holes promptly upon stripping as follows: Moisten the hole with water, followed by a 1/16-in brush coat of neat cement slurry mixed to the consistency of a heavy paste. Immediately plug the hole with a 1 to 1.5 mixture of cement and concrete sand mixed slightly damp to the touch (just short of “balling”). Hammer the grout into the hole until dense, and an excess of paste appears on the surface in the form of a spider web. Trowel smooth with heavy pressure. Avoid burnishing.

E. Defective concrete and honeycombed areas: Chip down square and at least 1-in deep to sound concrete with hand chisels or pneumatic chipping hammers. Irregular voids or surface stones need not be removed if they are sound, free of laitance, and firmly embedded in the parent concrete. If honeycomb exists around reinforcement, chip to provide a clear space at least 3/8-in wide all around the steel. For areas less than 1-1/2-in deep, the patch may be made in the same manner as described above for filling form tie holes, care being exercised to use adequately dry (non-trowelable) mixtures and to avoid sagging. Thicker repairs will require build-up in successive 1-1/2-in layers on successive days, each layer being applied (with slurry, etc.) as described above.

F. Concrete to receive dampproofing and concrete not exposed in the finished work shall have off-form finish with fins and other projections removed and tie cones and defects filled as specified above.

G. Screed top surface of slabs to the established grades and to a true plane with a tolerance of 1/8-in when checked with a 10-ft straightedge. Pitch surface to drain unless otherwise noted on the Drawings. Finish the surface to give a smooth, hard, even surface free from high or low spots or other defects. Concrete subject to pedestrian traffic shall be given a broom finish. Failure to meet these conditions shall be cause for removal, grinding, or other correction as directed by the Engineer.

3.09 SCHEDULE

A. The following (Table 2) are the general applications for the various concrete design strengths to be used:

TABLE 2

Class	Design Strength (psi)	Description
A	4,000	All concrete

END OF SECTION

SECTION 03600

GROUT

PART 1 GENERAL

1.01 SCOPE OF WORK

A. Furnish all labor, materials, equipment and incidentals required and install grout complete as shown on the Drawings and as specified herein.

B. Perform all sampling and furnish all testing of materials and products by an independent testing laboratory acceptable to the Engineer but engaged by and at the expense of the Contractor.

1.02 RELATED WORK

A. Concrete reinforcement and Reinforcing Steel is included in Section 03301.

1.03 SUBMITTALS

A. Submit, in accordance with Section 01300, shop drawings and product data showing materials of construction and details of surface preparation, mixing and installation for:

1. Commercially manufactured non-shrink cementitious grout and self-leveling cementitious underlayment grout. Include catalog cuts, technical data, storage requirements, product life, working time after mixing, temperature considerations, conformity to the specified ASTM standards, and Material Safety Data Sheet.

2. Commercially manufactured non-shrink epoxy grout. Include catalog cuts, technical data, storage requirements, product life, working time after mixing, temperature considerations, conformity to the specified ASTM standards, and Material Safety Data Sheet.

3. Cement grout. Include the type and brand of cement, the gradation of fine aggregate, product data on any proposed admixtures and the proposed grout mix.

B. Samples

1. Submit samples of commercially manufactured grout products when requested by the Engineer.

C. Certifications

1. Certify that the Contractor is not associated with the independent testing laboratory, nor does the Contractor or its officers have a beneficial interest in the laboratory.

D. Qualifications

1. Submit documentation that grout manufacturers have a minimum of at least 10 years experience in the production and use of the grouts proposed.

1.04 REFERENCE STANDARDS

A. American Society for Testing and Materials (ASTM)

1. ASTM C33 - Standard Specification for Concrete Aggregates

2. ASTM C150 - Standard Specification for Portland Cement

3. ASTM C531 - Standard Test Method for Linear Shrinkage and Coefficient of Thermal Expansion of Chemical-Resistant Mortars, Grouts and Monolithic Surfacings and Polymer Concretes

4. ASTM C579 - Standard Test Methods for Compressive Strength of Chemical-Resistant Mortars, Grouts, Monolithic Surfacings and Polymer Concretes

5. ASTM C827 - Standard Test Method for Change in Height at Early Ages of Cylindrical Specimens of Cementitious Mixtures

6. ASTM C1077 - Standard Practice for Laboratories Testing Concrete and Concrete Aggregates for Use in Construction and Criteria for Laboratory Evaluation

7. ASTM C1107 - Standard Specification for Packaged Dry, Hydraulic-Cement Grout (Non-shrink)

8. ASTM E329 - Standard specification for agencies engaged in the testing and/or inspection of materials used in construction

B. Where reference is made to one of the above standards, the revision in effect at the time of bid opening shall apply.

1.05 QUALITY ASSURANCE

A. Qualifications

1. Grout manufacturers shall have a minimum of 10 years experience in the production and use of the type of grout proposed.

2. Independent testing laboratory shall meet the requirements of ASTM E329 and ASTM C1077 and be acceptable to the Engineer. Laboratories affiliated with the Contractor or in which the Contractor or officers of the Contractor’s organization have beneficial interest are not acceptable.

1.06 DELIVERY, STORAGE AND HANDLING

A. Deliver materials to the jobsite in original, unopened packages, clearly labeled with the manufacturer's name, product identification, batch numbers and printed instructions.

B. Store materials in full compliance with the manufacturer's recommendations. Limit total storage time from date of manufacture to date of installation to six months or the manufacturer's recommended storage time, whichever is less.

C. Remove immediately from the site material which becomes damp, contains lumps, or is hardened and replace with acceptable material at no additional cost to the Owner.

D. Deliver non-shrink cementitious grout as a pre-portioned blend in prepackaged mixes requiring only the addition of water.

E. Deliver non-shrink epoxy grout as a pre-proportioned, prepackaged, three component system requiring only mixing as directed by the manufacturer.

1.07 DEFINITIONS

A. Non-shrink Grout: A commercially manufactured product that does not shrink in either the plastic or hardened state, is dimensionally stable in the hardened state and bonds to a clean base plate.

PART 2 PRODUCTS

2.01 GENERAL

A. The use of a manufacturer's name and product or catalog number is for the purpose of establishing the standard of quality desired.

B. Like materials shall be the products of one manufacturer or supplier in order to provide standardization of appearance.

2.02 MATERIALS

A. Non-shrink Cementitious Grout

1. Non-shrink cementitious grouts: Conform to ASTM C1107. Grouts shall be portland cement based, contain a pre-proportioned blend of selected aggregates and shrinkage compensating agents and require only the addition of water. Non-shrink cementitious grouts shall not contain expansive cement or metallic particles. The grouts shall exhibit no shrinkage when tested in conformity with ASTM C827.

a. General purpose non-shrink cementitious grout: Conform to the standards stated above. SikaGrout 212 by Sika Corp.; Set Grout by BASF Building Systems; NS Grout by The Euclid Chemical Co.; Five Star Grout by Five Star Products, Inc., or equal.

b. Flowable (Precision) non-shrink cementitious grout: Conform to the standards stated above. Masterflow 928 by BASF Building Systems; Hi-Flow Grout by The Euclid Chemical Co.; SikaGrout 212 by Sika Corp.; Five Star Grout by Five Star Products, Inc., or equal.

B. Non-shrink Epoxy Grout

1. Non-shrink epoxy grout: Grout shall be pre-proportioned, prepackaged, three component, 100 percent solids system consisting of epoxy resin, hardener and blended aggregate. It shall have a compressive strength of 10,000 psi in 7 days when tested in conformity with ASTM C579 and have a maximum coefficient of thermal expansion of 30 x 10^{-6} in/in/degrees F when tested in conformity with ASTM C531. Masterflow 648 CP by BASF Building Systems; Five Star HP Epoxy Grout by Five Stars Products, Inc; Sikadur 42 Grout-Pak by Sika Corp.; E^3-G Epoxy Grout by the Euclid Chemical Co. or equal.

C. Water

1. Potable water free of oil, acid, alkali, salts, chlorides (except those attributable to drinking water), organic matter, or other deleterious substances.

PART 3 EXECUTION

3.01 PREPARATION

A. Place grout where indicated or specified over cured concrete which has attained its specified design strength unless otherwise approved by the Engineer.

B. Concrete surfaces to receive grout shall be clean and sound; free of ice, frost, dirt, dust, grease, oil, form release agent, laitance and paints and free of all loose material or foreign matter which may affect the bond or performance of the grout.

C. Roughen concrete surfaces by chipping, sandblasting, or other dry mechanical means to bond the grout to the concrete. Remove loose or broken concrete. Irregular voids or projecting coarse aggregate need not be removed if they are sound, free of laitance and firmly embedded into the parent concrete.

1. Air compressors used to clean surfaces in contact with grout shall be the oilless type or equipped with an oil trap in the airline to prevent oil from being blown onto the surface.

D. Remove all loose rust, oil or other deleterious substances which may affect the bond or performance of the grout from metal embedments or bottom of baseplates prior to the installation of the grout.

E. Wash concrete surfaces clean and then keep moist for at least 24 hours prior to the placement of non-shrink cementitious grout. Saturation may be achieved by covering the concrete with saturated burlap bags, use of a soaker hose, or flooding the surface or other method acceptable to the Engineer. Upon completion of the 24 hour period, remove visible water from the surface prior to grouting.

F. Non-shrink epoxy grouts do not require saturation of the concrete substrate. Do not wet concrete surfaces to receive non-shrink epoxy grout. Surfaces in contact with epoxy grout shall be completely dry before grouting.

G. Provide forms for grout. Line or coat forms with release agents recommended by the grout manufacturer. Provide forms anchored in place and shored to resist the forces imposed by the grout and its placement.

1. Forms for all grout other than concrete grout shall be designed to allow the formation of a hydraulic head and shall have chamfer strips built into forms.

H. Level and align the structural or equipment bearing plates in accordance with the structural requirements or the recommendations of the equipment manufacturer, as applicable.

1. Support equipment during alignment and installation of grout by shims, wedges, blocks or other approved means. The shims, wedges and blocking devices shall be prevented from bonding to the grout by bond breaking coatings and removed after grouting unless otherwise approved by the Engineer. Grout voids created by the removal of shims, wedges and blocks.

3.02 INSTALLATION - GENERAL

A. Mix, apply and cure products in strict compliance with the manufacturer's recommendations and these specifications.

B. Provide staffing and equipment available for rapid and continuous mixing and placing. Keep all necessary tools and materials ready and close at hand.

C. Maintain temperatures of the base plate, supporting concrete, and grout between 40 and 90 degrees F during grouting and for at least 24 hours after placement, until grout compressive strength reaches 1000 psi or as recommended by the grout manufacturer, whichever is longer. Do not allow differential heating or cooling of baseplates and grout during the curing period.

D. Take special precautions for hot weather or cold weather grouting as recommended by the manufacturer when ambient temperatures and/or the temperature of the materials in contact with the grout are outside of the 40 to 90 degrees F range.

E. Install grout to preserve the isolation between the elements on either side of the joint where grout is placed in the vicinity of an expansion or control joint.

F. Reflect all existing underlying expansion, control and construction joints through the grout.

3.03 INSTALLATION - NON-SHRINK CEMENTITIOUS GROUTS

A. Mix in accordance with manufacturer's recommendations. Do not add cement, sand, pea gravel or admixtures without prior approval by the Engineer.

B. Do not mix by hand. Mix in a mortar mixer with moving blades. Pre-wet the mixer and empty excess water. Add pre-measured amount of water for mixing, followed by the grout. Begin with the minimum amount of water recommended by the manufacturer and then add the minimum additional water required to obtain workability. Do not exceed the manufacturer's maximum recommended water content.

C. Placements greater than 3-in in depth shall include the addition of clean, washed pea gravel to the grout mix when approved by the manufacturer. Comply with the manufacturer's recommendations for the size and amount of aggregate to be added.

D. Provide forms as specified in Paragraph 3.01G. Place grout into the designated areas and prevent segregation and entrapment of air. Do not vibrate grout to release air or to consolidate the material. Fill all spaces and provide full contact between the grout and adjoining surfaces. Provide grout holes and vent holes as necessary.

E. Place grout rapidly and continuously to avoid cold joints. Do not place grout in layers. Do not add additional water to the mix (retemper) after initial stiffening.

F. Just before the grout reaches its final set, cut back the grout to the substrate at a 45 degree angle from the lower edge of bearing plate unless otherwise ordered and approved by the Engineer. Finish this surface with a wood float or brush finish.

G. Begin curing immediately after form removal, cutback, and finishing. Keep grout moist and within its recommended placement temperature range for at least 24 hours after placement, until grout compressive strength reaches 1000 psi or as recommended by the manufacturer,

whichever is longer. Saturate the grout surface by use of saturated burlap bags, soaker hoses or ponding. Provide sunshades. If drying winds inhibit the ability of a given curing method to keep grout moist, erect wind breaks until wind is no longer a problem or curing is finished.

3.04 INSTALLATION – NON-SHRINK EPOXY GROUTS

A. Mix in accordance with manufacturer's recommendations. Mix full batches only, to maintain proper proportions of resin, hardener and aggregate. Do not vary the ratio of components or add solvent to change the consistency of the grout mix. Do not overmix. Do not entrain air bubbles by mixing too quickly.

B. Monitor ambient weather conditions and contact the grout manufacturer for special placement procedures to be used for temperatures below 60 or above 90 degrees F.

C. Place grout rapidly and continuously to avoid cold joints. Place grout in lifts in accordance with manufacturer's recommendations.

D. Provide forms as specified in Paragraph 3.01G. Place grout into the designated areas and prevent entrapment of air. Fill all spaces and provide full contact between the grout and adjoining surfaces. Provide grout holes and vent holes as necessary.

E. Minimize "shoulder" length (extension of grout horizontally beyond base plate). In no case shall the shoulder length of the grout be greater than the grout thickness.

F. Finish grout by puddling to cover all aggregate and provide a smooth finish. Break bubbles and smooth the top surface of the grout in conformity with the manufacturer's recommendations.

G. Epoxy grouts are self curing and do not require the application of water. Maintain the formed grout within its recommended placement temperature range for at least 24 hours after placement, until grout compressive strength reaches 1000 psi or as recommended by the manufacturer, whichever is longer.

H. Provide grout control joints as indicated on the Drawings.

3.05 SCHEDULE

A. The following list indicates where the particular types of grout are to be used:

1. General purpose non-shrink cementitious grout: Use at all locations where non-shrink grout is indicated on the Drawings, except for base plates greater in area than 3-ft wide by 3-ft long.

2. Flowable (precision) non-shrink cementitious grout: Use under all base plates greater in area than 3-ft wide by 3-ft long. Use at all locations indicated on the Drawings to receive flowable non-shrink grout. Flowable (precision), non-shrink, cementitious grout may be substituted for general purpose non-shrink cementitious grout.

3. Non-shrink epoxy grout: Use at all locations specifically indicated on the Drawings to receive non-shrink epoxy grout.

END OF SECTION

SECTION 05540

ALUMINUM GANGWAY

PART 1 GENERAL

1.01 SCOPE OF WORK

A. Furnish all labor, materials, equipment and incidentals required and design, fabricate and install an 80’ long by 3’ wide prefabricated aluminum gangway as shown on the Drawings and as specified herein.

1.02 SUBMITTALS

A. Submit, in accordance with Section 01300, shop drawings showing clearly the location, size and details of all members and connections, including length and size of all shop and field welds.

B. Submit for review, structural calculations for the gangway, signed and sealed by a licensed professional engineer registered in the State of Florida.

1.03 REFERENCE STANDARDS

A. ASTM B209 - Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate.

B. ASTM B221 - Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles and Tubes.

C. ASTM B429 - Standard Specification for Aluminum-Alloy Extruded Structural Pipe and Tube.

1. Aluminum Association

2. Aluminum Design Manual

3. American Welding Society (AWS)

D. AWS D1.2 - Structural Welding Code – Aluminum

E. Federal Specifications

1. QQ-A-200 Aluminum Alloy Structural Shapes

2. Occupational Safety and Health Administration (OSHA)

F. 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. Aluminum welding shall be in accordance with the ANSI/AWS D1.2 and shall be performed by experienced operators.

B. All exposed surfaces and their welded joints shall be smooth and free of sharp or jagged edges.

1.05 DELIVERY, STORAGE AND HANDLING

A. All materials shall be delivered promptly so as to cause no delay with other parts of the work. Stored materials shall be placed on skids and not on the ground and shall be piled and blocked up so that they will not become bent or otherwise damaged. Material shall not be dumped off cars or trucks nor handled in any other way likely to cause damage. Materials with excessive damage, in the opinion of the Engineer, shall not be incorporated in the work and shall be removed and replaced with new undamaged materials by the Contractor at no additional cost to the Owner.

PART 2 PRODUCTS

2.01 DESIGN CRITERIA

A. The gangway railing shall be designed as a free span arched truss. The truss members shall be designed using square or rectangular tube sections.

B. The gangway railing shall conform to the 2007 Florida Building Code w/ 2009 Supplement. They shall also meet OSHA Standards and be designed to withstand 200 lbs load applied anywhere on the system and in any direction or 50 plf, whichever is more stringent.

C. Provide ¾" square aluminum tube vertical pickets spaced at 4" on center.

D. The minimum height of the gangway railing shall be 42" above the walking surface. The gangway top rail shall extend a minimum of 12" past the walking surface of the gangway at each end of the gangway.

E. Design the gangway assembly to support a minimum live load of 30 lbs/sq ft.

F. The decking material shall be designed for a concentrated vertical load of 300 lbs distributed over a one square foot area.

G. The maximum deflection of the structure shall be calculated using L/180 where "L" is the length of the gangaway in inches.

H. The gangway shall be designed with a bulkhead piano hinge connection at the concrete bulkhead on the shore. The piano hinge shall have 4" minimum plate width on both the vertical and horizontal. The piano hinge shall be designed with a HDPE bushing.

I. The gangway shall be designed with a roller connection with an aluminum transition plate at the floating dock connection.

2.02 MATERIALS

A. Aluminum extrusions for gangways structures shall be aluminum alloy 6061-T6, 6063-T5, and 6063-T6 and shall be extruded in accordance applicable ASTM specifications.

B. Rollers used at the end of the gangway shall be MDS Nylon or Ultra high molecular weight polyethylene with black ultra violet light inhibitor added.

C. The piano hinge connection shall have 4” minimum plate width on both the vertical and horizontal surfaces attached to the concrete bulkhead. The piano hinge shall be designed with a HDPE bushing.

D. Stainless steel fasteners shall be grade 304.

E. Deck material shall be 1.1 inch x 12 inches, self-mating, extruded aluminum with a minimum coefficient of friction of 0.93.

F. The aluminum transition plate on roller end of gangway shall be 0.25 inch thick x 3 feet wide x 24 inches long with slip resistant surface.

2.03 FABRICATION

A. Size members as required by design calculations and job conditions.

B. Weld all assemblies in accordance with recommendations of AWS. Grind all exposed welds to match and blend with adjoining surfaces.

PART 3 EXECUTION

3.01 INSTALLATION

A. Gangway shall be installed per manufacturer’s recommendations.

END OF SECTION

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SECTION 16010

GENERAL PROVISIONS

1.0 GENERAL

1.1 Related Documents

1.1.1 Drawings and Division-1 “General Requirements” of contract, including General Conditions and Supplementary Conditions sections, apply to work specified in Division-16.

1.1.2 Division-16 Basic Electrical Materials and Methods sections apply to all sections in this Division.

1.2 General Description of Work

1.2.1 The Contractor shall provide all labor, materials, and equipment as described herein and on the contract document drawings, including all auxiliaries and accessories required for a complete and operable electrical system.

1.2.2 The Contractor shall obtain all necessary permits and inspections required for the work to be performed and shall pay all charges incidental thereto.

1.2.3 Bidders are expected to visit the jobsite and carefully inspect the present conditions before preparing a bid. The failure of a bidder to visit the jobsite shall not relieve a bidder from full responsibility for all factors governing his work.

1.2.4 Equipment furnished as specified in other sections of these specifications or shown on other than the Electrical drawings required any wiring or electrical installation shall be governed by this Division of the Specifications.

1.2.5 The plans and specifications are complementary one to the other and any item called for by one and not the other shall be supplied the same as if it were called for by both.

1.2.6 It is the intent of these specifications and drawings that the electrical system shall be complete, fully operational, and suitable in every way for the service required. Drawings are diagrammatic in nature and do not show in every detail all devices and incidental materials necessary to accomplish their intent. Therefore, it shall be understood that such devices and incidental materials required shall be furnished at no additional cost to the Owner.

1.2.7 Layout of Work and Coordination: The Contractor shall correlate final equipment locations with all other trades to ensure all trades may install equipment in available space, and provide all required coordination and supervision where work connects to or is affected by work of others.

1.2.8 The Contractor shall furnish all temporary power and lighting as required by all other trades.

1.2.9 Demonstration of Completed Electrical and Control Systems: The function of the electrical and control systems shall be demonstrated by the Owner or his representative. The contractor shall be present to verify complete and correct terminations.

1.3 Scope of Work

1.3.1 General

In, general, the scope of work for this project is for the construction / installation of the power distribution equipment (breakers in an existing Service Panel), a Pump Control Panel, a Sprayfield Valve Control Panel, and the conduit and wiring between the equipment to produce a coordinated system for Pumping and Sprayfield system for Leon County Storm Water Management Facility #6.

The existing service shall be utilized to provide the power to the facility at 240/120 VAC 3-phase. The work shall include the supply and installation of breakers to be installed in the existing panelboard. The breakers shall serve the Pump Control Panel, the Sprayfield Valve Control Panel, and the heat trace for the Valve Stand.

The Pump Control panel shall include the motor starters for the pumps/motors and other control devices to be interfaced with the Sprayfield Valve Control Panel such that the pumps are operated in conjunction with two Sprayfield zones. There shall be a float switch associated with the pump controls that interlocks the pumps operation to low water level in the pond. The pump motors shall be installed on a floating dock system, and shall have disconnect switches mounted on the floating dock. The supply and installation of the Pump Station Control Panel, the disconnect switches, and the interconnecting conduit and wire is part of the work.

The Sprayfield Control Panel shall include a timer/clock, rain gauge, and temperature switch to control the pumping of water from the pond and the application of water to the Sprayfield Zones. The panel shall control the time and duration of the operation of the Pumps and Sprayfield and shall control the operation to prevent operation during cold/freezing weather and wet weather. The supply and installation of the Sprayfield Control Panel, and external wiring is part of the work.

Four (4) automated on/off control valves shall be controlled by the Sprayfield Control Panel. The valves shall be installed on a above grade rack adjacent to the Control Panel rack. The valve rack shall also include four (4) flow meters to totalize the flow to each Sprayfield Zone. The valve rack shall have a strainer installed in the incoming water line, and shall be insulated and heat traced. The supply and installation of the Valve Rack (automated valves, flow meters, and isulation/heat trace) and associated conduit and wiring is part of the work.

The supply and installation of the grounding for the equipment support racks is part of the work.

1.3.4 Check-Out and Start-Up

The scope of work includes check-out and start-up work. Timing of this work shall be coordinated with the owner.

1.4 Submittals

1.4.1 Manufacturers' data in the form of "cut sheets" and engineering drawings of the equipment and materials shall be submitted to the Engineer for review before delivery to work site. Review of the submittal by the Engineer is to check for general conformance to the design intent and shall not relieve the Contractor of the responsibility for the correctness of all dimensions and the correct fitting of all parts of the work.

1.4.2 The entire Electrical Submittal shall be complete and delivered in one (1) package. An incomplete submittal will be returned to the Contractor without review.

1.4.3 The submittal shall be thoroughly checked by the Contractor for accuracy and compliance with the contract requirements. The submittal shall be dated and shall be accompanied by a statement from the contractor that they have been checked for conformity to the specifications and drawings. Submittals not so checked and noted will be returned without review.

1.4.4 Substitutions: Requests for substitutions shall be per General Conditions set forth in this specification and must be received in the Owner's office a minimum of ten days prior to bid, including credits and test and performance data to determine if equipment meets all specifications and requirements. Substitutions will not be reviewed if submitted with bid. All substituted equipment that cannot meet space requirements shall be replaced at the Contractor's expense.

1.4.5 Any alternate proposals affecting the design or intent of the plans and specifications shall be submitted with the bid. They shall be complete with plans, specifications and sufficient details for proper evaluation. Incomplete or partial proposals will not be given consideration.

1.5 Record Drawings

1.5.1 At Job Close-Out, submit three (3) copies of Record Drawings which are clean, complete, and accurately and clearly show deviations to the Contract Drawings.

1.6 Guarantees

1.6.1 In addition to the guarantee of equipment by the manufacturer, the Contractor shall also guarantee such equipment and shall be responsible for a period of one year after final acceptance to make good any defects of the materials or workmanship occurring during this period, without

expense to the Owner. Light bulb replacement guarantee shall be limited to thirty days.

1.6.2 Additional guarantee requirements may be in the General and Special Conditions of these Specifications.

SECTION 16100

BASIC MATERIALS AND METHODS

1.0 EXECUTION

1.1 Supervision

1.1.1 The electrical work shall be supervised by a licensed journeyman or master electrician who shall be on the job site at all times while work is in progress.

1.2 Workmen

1.2.1 All electrical work shall be performed by persons skilled in the trade.

1.3 Quality of Work

1.3.1 All electrical work shall be done neatly and in keeping with good practice and conventions of the trade.

1.4 Corrosion Preventative Procedures

1.4.1 All metallic materials shall be protected against corrosion. All hardware made of ferrous metals (including all nuts, bolts, washers, etc.) but not of corrosion resistant steel, shall be hot dip galvanized after fabrication, except where equivalent protective treatment is specifically approved by the Engineer. Aluminum shall not be used in contact with the earth, and where connected to dissimilar metal, shall be protected to dissimilar metal by approved fittings and treatment. Steel conduits or piping installed underground or in concrete shall have two complete coats of an approved quick drying asphalt base paint applied throughout the imbedded length to six inches (6") above the ground line or concrete surface.

1.5 Cleaning

1.5.1 The interior and exterior of all equipment shall be thoroughly cleaned at the completion of installation.

1.6 Painting

1.6.1 All painting shall be done according to the Finishes Section of the Specifications.

1.7 Tests

1.7.1 The Contractor shall test all wiring for shorts and proper grounding before energizing.

1.8 Layout of Work and Coordination

1.8.1 Contractor shall coordinate all work and equipment locations with all other trades to ensure all trades may install equipment in available space and within schedule.

2.0 CODES AND STANDARDS

2.1 The latest editions of the established codes, standards and ordinances of the following organizations shall be followed as if they were fully written herein and constitute a part of the specification requirements, except where otherwise specified:

- Occupational Safety and Health Administration (O.S.H.A.)
- Life Safety Code C NFPA 101
- Underwriters Laboratories, Inc. Publications
- National Fire Protection Associate (NFPA)
- American National Standards Institute (ANSI)
- National Electrical Code, NFPA 70 (NEC)
- Institute of Electrical and Electronic Engineers (IEEE)
- National Electrical Manufacturer's Association (NEMA)
- International Power Cable Engineer's Association (IPCEA)
- National Electrical Safety Code (HESC)
- The Southern Standard Building Code (SBCCI)
- Federal Communications Commission (F.C.C.)
- Municipal, local or other codes having jurisdiction
- Utility Company Rules and Regulations

2.2 The foregoing documents shall be followed by the Contractor as minimum requirements. They shall not relieve the Contractor from furnishing and installing higher grades of materials and workmanship which are specified herein or indicated on the drawings.

3.0 PRODUCTS

3.1 Equipment and Materials

3.1.1 The Contractor shall furnish materials or equipment specified by manufacturers named or approved equal.

3.1.2 The materials furnished shall be new, undamaged and packed in the original manufacturer's packing.

3.1.3 Equipment and materials shall at all times during construction be protected from mechanical and water damage.

3.1.4 Damaged materials and equipment shall be replaced by the Contractor at no cost to the Owner.

3.2 Equipment and Materials Standards

3.2.1 The design and fabrication of electrical equipment and materials furnished under Division-16 shall comply with the latest edition and revisions of the following codes and standards:

- The American National Standards Institute (ANSI)
- The American Society of Mechanical Engineers (ASME)
- The American Society for Testing and Materials (ASTM)
- The Institute of Electrical and Electronic Engineers (IEEE)
- The National Electrical Manufacturers Association (NEMA)
- The Occupational Safety and Health Administration (OSHA)
- The Underwriters Laboratories (UL)
- The National Fire Protection Association (NFPA)
- The National Electrical Code (NEC)

3.3 Equipment Ratings

3.3.1 The horsepower and wattage of equipment shown on the drawings are estimated.

3.3.2 Conduit, wire, disconnects, fuses, and circuit breakers shall be sized to suit the horsepower and wattage of equipment actually furnished.

3.3.3 In no case shall conduit, wire, disconnects, fuses, and circuit breakers be sized smaller than shown on the drawings.

3.4 Nameplates

3.4.1 Provide laminated plastic nameplates for each panelboard, automatic transfer switch, equipment enclosures and any other major pieces of equipment.

3.4.2 Nameplates shall be made of .125 inch thick laminated plastic with a black matte outer finish and white inner core.

3.4.3 Nameplates shall have square corners and be a minimum of 1.0 x 2.5 inches with 0.25 inch high block style engraved letter.

3.4.4 Attach nameplates to equipment, aligned with structural features of equipment, with two #4 stainless steel bolts, nuts and lockwashers.

END OF SECTION

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SECTION 16110

RACEWAYS

1.0 GENERAL

1.1 Scope of Work

1.1.1 Furnish and install complete raceway systems as indicated on the drawings and as specified herein.

1.2 Applications

1.2.1 All above grade wiring shall be installed in rigid galvanized steel (RGS) conduit and all wiring below grade shall be in rigid non-metallic conduit (PVC) or rigid galvanized steel conduit coated with bitumastic coating for corrosion prevention unless indicated otherwise on the drawings.

1.2.2 All conduit of a given type shall be the product of one manufacturer.

1.2.3 Manholes shall be pre-cast concrete with traffic duty rated covers. Dimensions and cover details shall be as indicated on the drawings.

2.0 PRODUCTS

2.1 Conduit and Fittings

2.1.1 Rigid steel conduit shall be hot-dipped galvanized conforming to the requirements of UL 6 and ANSI C80.1 standards.

2.1.2 Fittings for rigid steel conduit shall be the threaded type manufactured by RACO, Steel City, Thomas & Betts (T&B), or approved equal.

2.1.3 Rigid non-metallic conduit (PVC) shall be PVC schedule 40 and meet UL651 and federal specifications WC-1094A.

2.2 Flexible Metal Conduit, Couplings, and Fittings

2.2.1 All flexible metal conduit shall be Liquid Tight, UL listed, spiral wound galvanized steel with a PVC outer jacket.

2.2.2 Fittings for liquid tight conduit shall be designed for use with liquid tight flexible conduit and shall be manufactured by RACO, Steel City, T&B, or approved equal.

2.3 Conduit Mounting Equipment

2.3.1 Hangers, rods, backplates, strut material, etc. shall be hot-dipped galvanized iron or steel. They shall be as manufactured by the Appleton Electric Co., Thomas and Betts Co., Unistrut Corp., or approved equal.

2.4 Cable Tray

2.4.1 N/A.

2.4.2 N/A.

2.5 Precast Concrete Manholes

2.6 2.5.1 Manhole and/or pullboxes shall be precast concrete with a minimum wall and top thickness of six (6) inches. Covers shall be AASHTO rated for “light traffic”, and shall be as indicated in the design/detail drawings. The cover shall be the hinged double-door design (FDOC standard design) with penta head bolts, recessed lock “pocket”, “pick” holes for lifting. The cover shall be hot-dipped galvanized with diamong plate finish and bead-welded lettering (ELECTRICAL or COMMUNICATIONS).

3.0 EXECUTION

3.1 Installation

3.1.1 Conduit smaller than 3/4-in. electrical trade size shall not be used, nor shall any have more than three 90-degree bends in any one run. Pull boxes shall be provided as required or directed.

3.1.2 Wire shall not be pulled until the conduit system is complete in all details.

3.1.3 The ends of all conduits shall be tightly plugged to exclude dust and moisture during construction.

3.1.4 Conduit terminations shall be made with water tight hubs (Myers Hubs) and shall have insulated bushings.

3.1.5 Rigid steel conduits shall be installed using threaded fittings and couplings.

3.1.6 Conduit support shall be spaced at intervals of 8 ft. or less, as required to obtain rigid construction.

3.1.7 Single conduits shall be supported by means of two-hole pipe clamps. Multiple runs of conduits shall be supported on trapeze type hangers with steel horizontal members and threaded hanger rods. The rods shall be not less than 3/8-inch diameter.

3.1.8 Conduit hangers shall be attached to structural steel by means of beam or channel clamps.

3.1.9 All conduits on exposed work shall be run at right angles to and parallel with the surrounding structures. No diagonal runs will be allowed. Bends in parallel conduit runs shall be concentric. All conduit shall be run straight and true.

3.1.10 Flexible, liquid-tight metal conduit shall be used for all motor terminations and other equipment where vibration is present. Flexible conduit length shall not exceed 2'-0" or be less than 1'-0" in length for this application.

3.1.11 All underground raceways shall be installed in accordance with section 300-5 of the NEC. The minimum cover for any conduit shall be eighteen inches (18"). Included under this section shall be the responsibility for verifying finished lines in areas where raceways will be installed underground before the grading is complete. All 90º turn-ups shall be rigid galvanized steel with corrosion protection.

Underground raceways shown in a concrete ductbank shall have a 2-inch cover of concrete minimum.

3.1.12 All raceways shall have an isolated copper system ground conductor throughout the entire length. Grounding conductors shall be included in the total conduit fill, even if not included or shown on the drawings.

END OF SECTION

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SECTION 16120

WIRES AND CABLES

1.0 GENERAL

1.1 Scope of Work

1.1.1 Furnish, install and test all wire, cable, and appurtenances as shown on the drawings and as specified here.

1.2 General Requirements

1.2.1 Wires and cables shall meet all the applicable requirements of the NEC and UL for the type of insulation, jacket, and conductor specified or indicated.

1.2.2 All conductors shall be copper.

1.2.3 Wire and cable manufactured more than 12 months before delivery to the job site shall not be used.

1.3 Applications

1.3.1 Wire in dry locations shall be type THHN and for wet locations shall be THWN unless noted otherwise on the drawings. Cable routed in cable tray shall be type TC

1.3.2 Cable for direct burial applications shall be type UF.

1.3.3 Power wire and/or cable for aerial or exposed installation will be type SO for hard usage.

1.3.4 Instrument wire for DC signals shall have an overall shield and shall be installed separate from 480VAC and 120VAC circuits.

1.4 Identification

Conductor identification shall be by color coded insulation and wire labels.

1.4.1 Power wiring with black insulation shall be color coded with colored plastic adhesive backed tape in each enclosure where taps, splices or terminations are made.

Power Wiring Color Codes:

120/240 Volts AC System C

Phase A	Black
Phase B	Red
Phase C	Blue
Neutral	White
Ground	Green

480 Volts AC System C

Phase A	Brown
Phase B	Orange
Phase C	Yellow
Neutral	White
Ground	Green

Green and White shall be used for no other purpose.

1.4.2 Control wiring shall be identified by color coded insulation and an adhesive wire label corresponding to the wiring diagrams.

Control Wiring Color Codes C

120VAC Discrete Control	Red
24VAC Discrete Control	Gray
DC Discrete Control	Blue

The adhesive wire markers shall be pre-printed cloth wrap-on type, written adhesive type or shrink-on style.

1.5 Minimum Sizes

1.5.1 Except for control and signal leads, no wire smaller than No. 14 AWG shall be used for AC circuits.

1.5.2 DC control circuits shall use No. 18 AWG, unless noted otherwise.

2.0 PRODUCTS

2.1 General

2.1.1 Wires and cables shall be of annealed, 98% conductivity, soft drawn copper unless indicated otherwise on the drawings or in these specifications.

2.1.2 All conductors shall be stranded.

2.2 600 Volt Wire and Cable

2.2.1 Cable shall be type TC with a sunlight resistant PVC jacket overall and type XHHW or THHN conductors shall be manufactured by Anaconda Wire and Cable Co., Rome Cable Corp., Okonite Co., Southwire or equal.

2.3 300 Volt Signal Cable

2.3.1 Signal cable shall have a minimum rating of 300 volts. The cable shall consist of pairs or triads of seven (7) stranded copper conductors each with primary insulation of PVC with nylon. The conductors shall have an overall shield of aluminum-mylar with a drain wire. The overall cable jacket shall be sunlight resistant PVC.

The cable shall be manufactured by Belden (Cooper Ind.), Rome Cable Corp., or approved equal.

3.0 EXECUTION

3.1 Installation

3.1.1 All conductors shall be carefully handled to avoid kinks or damage to insulation.

3.1.2 Lubrications shall be used, if required, to facilitate wire pulling. Lubricants shall be U.L. approved for use with the insulation specified.

3.2 Tests

3.2.1 All 600 Volt wire insulation on motor conductors shall be tested with a "megger" after installation. Tests shall be made at not less than 500 Volts.

END OF SECTION

SECTION 16140

WIRING DEVICES

1.0 GENERAL

1.1 Description of Work

1.1.1 Extent of wiring device work is indicated by drawings and schedules. Wiring devices are defined as single discrete units of electrical distribution systems which are intended to carry but not utilize electric energy.

1.1.2 Types of electrical wiring devices in this section include the following:

Receptacles
Weatherproof Boxes/Covers
Wall plates

1.2 Quality Assurance

1.2.1 Manufacturers: Firms regularly engaged in manufacture of electrical wiring devices, of types, sizes, and ratings required, whose products have been in satisfactory use in similar service for not less than 3 years.

1.2.2 Installer's Qualifications: Firms with at least 2 years of successful installation experience on projects utilizing wiring devices similar to those required for this project.

1.2.3 NEC Compliance: comply with NEC as applicable to installation and wiring of electrical wiring devices.

1.2.4 UL Compliance: Comply with applicable requirements of UL 20, 486A, 498 and 943 pertaining to installation of wiring devices. Provide wiring devices which are UL-listed and labeled.

1.2.5 NEMA Compliance: Comply with applicable portions of NEMA Stds Pub/No. WD 1, "General-Purpose Wiring Devices", WD 2, "Semiconductor Dimmers for Incandescent Lamps", and WD 5, "Specific Purpose Wiring Devices".

1.3 Submittals

1.3.1 Product Data: Submit manufacturer's data on electrical wiring devices.

2.0 GENERAL

2.1 Acceptable Manufacturers

2.1.1 Subject to compliance with requirements, manufacturers offering wiring devices which may be incorporated in the work include, but are not limited to, the following:

Adalet-PLM, Scott and Fetzer Co.
AMP Products Corp.
Arrow-Hart Div, Crouse Hinds Co.
Cutler-Hammer Inc.
Eagle Electric Mfg Co.
GTE Products Corp.
Harvey Hubbell Inc.
Leviton Mfg. Co.
Slater Electric Co.
Square D Co.
Thomas and Betts Corp.

2.2 Fabricated Wiring Devices

2.2.1 General: Provide factory-fabricated wiring devices, in types, colors, and electrical ratings for applications indicated and which comply with NEMA Stds Pub/No. WD 1. Provide ivory color devices and wall plates except as otherwise indicated; color selection to be verified by Contractor with Architect/Engineer.

2.2.2 Receptacles

Heavy-Duty Duplex: Provide heavy-duty duplex receptacles, 2-pole, 3-wire, grounding 20-amperes, 125-volts, with metal plaster ears, design for side and back wiring with spring loaded, screw activated pressure plate, with NEMA configuration 5-15R unless otherwise indicated.

2.3 Weatherproof Boxes/Covers

2.3.1 Boxes: Provide Cast FS Boxes with mounting ears and threaded hubs.

Covers: Provide Gasketed Spring-Closing Covers to match FS Box and Receptacle.

3.0 EXECUTION

3.1 Installation of Wiring Devices

3.1.1 Wiring devices shall be installed as indicated, in accordance with manufacturer's written instructions, applicable requirements of NEC and NECA's "Standard of Installation", and in accordance with recognized industry practices to fulfill project requirements.

3.1.2 Contractor shall coordinate with other work, including painting, electrical boxes, and wiring work, as necessary to interface installation of wiring devices with other work.

3.1.3 Wiring devices shall be installed only in electrical boxes which are clean; free from excess building materials, dirt, and debris.

3.1.4 Wiring devices shall be installed after wiring work is completed and wall plates after painting work is completed.

3.1.5 Connectors and terminals, including screws and bolts, shall be tightened in accordance with equipment manufacturer's published torque tightening valves for wiring devices. Where manufacturer's torquing requirements are not indicated, tighten connectors and terminals to comply with tightening torques specified in UL Stds 486A and B. Use properly scaled torque indicating hand tool.

3.2 Grounding

3.2.1 Equipment grounding connections for wiring devices shall be provided, unless otherwise indicated. Tighten connections to comply with tightening torques specified in UL Std 486A to assure permanent and effective grounds.

3.3 Testing

3.3.1 Prior to energizing circuitry, wiring shall be tested for electrical continuity and for short-circuits. Contractor shall ensure proper polarity of connections is maintained. Subsequent to energization, wiring devices shall be tested to demonstrate compliance with requirements.

END OF SECTION

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SECTION 16160

PANELBOARDS & BREAKERS

1.0 GENERAL

1.1 Description of Work

1.1.1 Extent of panelboard, load center and enclosure work, including cabinets and cutout boxes, is indicated by drawings and schedules, and as specified herein.

1.1.2 Types of panelboards, enclosures, and breakers required for the project include the following:

- Breakers for existing Service Panel

1.1.3 Fuses required in connection with installation of panelboards and enclosures are specified in another Division-16 section.

1.1.4 Refer to other Division-16 sections for wires/cables, electrical boxes and fittings, and raceway work required in conjunction with installation of panelboards and enclosures.

1.1.5 Wires/cables, electrical boxes and fittings, and raceways required in conjunction with the installation of panelboards and enclosures are specified in other Division-16 sections.

1.2 Submittals

1.2.1 Product Data: Submit manufacturer's data on panelboards and enclosures.

1.3 Quality Assurance

1.3.1 Manufacturer's Qualifications: Firms regularly engaged in manufacture of panelboards and enclosures, of types, sizes, and ratings required, whose products have been in satisfactory use in similar service for not less than 5 years.

1.3.2 Installer's Qualifications: A firm with at least 3 years of successful installation experience on projects utilizing panelboards similar to those required for this project.

1.3.3 Codes and Standards:

1.3.3.1 Electrical Code Compliance: Comply with applicable local code requirements of the authority having jurisdiction and NEC Article 384 as applicable to installation, a construction of electrical panelboards and enclosures.

1.3.3.2 UL Compliance: Comply with applicable requirements of UL 67, "Electric Panelboards", and UL's 50, 869, 486A, 486B, and 1053 pertaining to panelboards, accessories and enclosures. Provide panelboard units which are UL-listed and labeled.

1.3.3.3 Special-Use Markings: Provide panelboards, constructed for special-use, with appropriate UL markings which indicate that they are suitable for special type of use/application.

1.3.3.4 NEMA Compliance: Comply with NEMA Stds Pub/No. 250, "Enclosures for Electrical Equipment (1000 Volts Maximum)", Pub/No. PB 1, "Panelboards", and Pub/No. PB 1.1, "Instructions for Safe Installation, Operation and Maintenance of Panelboards Rated 600 Volts or Less".

1.3.4 Federal Specification Compliance: Comply with FS W-P-115, "Power Distribution Panel", pertaining to panelboards and accessories.

1.4 Sequencing and Scheduling

1.4.1 Coordinate installation of panelboards and enclosures with installation of wire/cables, electrical boxes and fittings, and raceway work.

2.0 PRODUCTS

2.1 Manufacturers

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

2.1.2 Manufacturers: Subject to compliance with requirements, provide panelboard products of one of the following (for each type and rating of panelboard and enclosure):

- Square D Company
- General Electric Company
- Siemens/Energy & Automation

2.2 Panelboards

2.2.1 General: Except as otherwise indicated, provide panelboards, enclosures and ancillary components, of types, sizes, and ratings indicated, which comply with manufacturer's standard materials, with the design and construction in accordance with published product information; equip with proper number of unit panelboard devices as required for complete installation. Where types, sizes, or ratings are not indicated, comply with NEC, UL and established industry standards for those applications indicated.

2.2.2 Service-Entrance Panelboards: Provide factory-assembled, dead-front safety constructed, service-entrance circuit-breaker type panelboards in sizes and ratings indicated. Equip with panelboard unit devices, of types, ratings and characteristics indicated. Construct with rectangular shaped bus bars of solid copper, with conductivity not less than 98-percent, which are securely mounted and braced, and with solderless lugs bolted to main bus bars, suitable for service with 277/480 volts, 3-phase, 4-wire, system. provide branch circuits with molded-case type single-pole circuit-breakers, with toggle handles that indicate when tripped. Select enclosures which are fabricated by same manufacturer as panelboards, and which mate and match properly with panelboards. Provide panelboards with UL markings which indicate "suitable for use as service-entrance equipment".

2.2.3 Power Distribution Panelboards: Provide dead-front safety type power distribution panelboards as indicated, with panelboard switching and protective devices in

quantities, ratings, types, and with arrangement shown, with anti-turn solderless pressure type main lug connectors approved for use with copper conductors. Select unit with feeders connecting at top of panel. Equip with copper bus bars with not less than 98-percent conductivity, and with full-sized neutral bus; provide suitable lugs on neutral bus for outgoing feeders requiring neutral connections. Provide molded-case main and branch circuit-breaker types for each circuit, with toggle handles that indicate when tripped. Where multiple-pole breakers are indicated, provide with common trip so overload on one pole will trip all poles simultaneously. Provide panelboards with bare uninsulated grounding bars suitable for bolting to enclosures. Select enclosures fabricated by same manufacturer as panelboards, which mate and match properly with panelboards.

2.2.4 Lighting and Appliance Panelboards: Provide dead-front safety type lighting and appliance panelboards as indicated, with switching and protective devices in quantities, ratings, types and arrangements shown; with anti-burn solderless pressure type lug connectors approved for use with copper conductors; construct unit for connecting feeders at top of panel; equip with copper bus bars, full-sized neutral bar, with bolt-in type heavy-duty, quick-make, quick-break, single-pole circuit-breakers, with toggle handles that indicate when tripped. provide suitable lugs on neutral bus for each outgoing feeder required; and provide bare uninsulated grounding bars suitable for bolting to enclosures. Select enclosures fabricated by same manufacturer as panelboard, which mate and match properly with panelboards.

2.2.5 Panelboard Enclosures: Provide galvanized sheet steel cabinet type enclosures, in sizes and NEMA types as indicated, code-gage, minimum 16-gage thickness. Construct with multiple knockouts and wiring gutters. Provide fronts with adjustable trim clamps, and doors with flush locks and keys, all panelboard enclosures keyed alike, with concealed piano door hinges and door swings as indicated. Equip with interior circuit-directory frame, and card with clear plastic covering. Provide baked gray enamel finish over a rust inhibitor coating. Design enclosures for surface mounting. Provide enclosures which are fabricated by same manufacturer as panelboards, which mate and match properly with panelboards to be enclosed.

2.2.6 Molded-Case Circuit Breakers: Provide factory-assembled, molded-case circuit breakers of frame sizes, characteristics, and ratings included RMS symmetrical interrupting ratings indicated. Select breakers with permanent thermal and instantaneous magnetic trip, and with fault-current limiting protection, ampere ratings as indicated. Construct with overcenter, trip-free, toggle-type operating mechanisms with quick-make, quick-break action and positive handle trip indication. Construct breakers for mounting and operating in any physical position, and operating in an ambient temperature of 40^{o}C. Provide breakers with mechanical screw type removable connector lugs, AL/CU rated.

2.2.7 Accessories: Provide panelboard accessories and devices including, but not necessarily limited to, cartridge and plug time-delay type fused, ground-fault protection units, etc., as recommended by panelboard manufacturer for ratings and applications indicated.

3.0 EXECUTION

3.1 Examination

3.1.1 Examine areas and conditions under which panelboards and enclosures are to be installed, and notify Contractor in writing of conditions detrimental to proper completion of work. Do not proceed with work until unsatisfactory conditions have been corrected in a manner acceptable to installer.

3.2 Installation of Panelboards

3.2.1 Install panelboards and enclosures as indicated, in accordance with manufacturer's written instructions, applicable requirements of NEC standards and NECA's "Standards of Installation", and in compliance with recognized industry practices to ensure that products fulfill requirements.

3.2.2 Tighten connectors and terminals, including screws and bolts, in accordance with equipment manufacturer's published torque tightening values for equipment connectors. Where manufacturer's torquing requirements are not indicated, tighten connectors and terminals to comply with tightening torques specified in UL Stds 486A and B.

3.2.3 Fasten enclosures firmly to walls and structural surfaces, ensuring that they are permanently and mechanically anchored.

3.2.4 Provide properly wired electrical connections for panelboards within enclosures.

3.2.5 Fill out panelboard's circuit directory card upon completion of installation work.

3.2.6 Insert fuses, if any, of ratings indicated, within installed panelboards.

3.3 Grounding

3.3.1 Provide equipment grounding connections for panelboard enclosures as indicated. Tighten connections to comply with tightening torques specified in UL 486A to assure permanent and effective grounds.

3.4 Field Quality Control

3.4.1 Prior to energization of electrical circuitry, check all accessible connections to manufacturer's tightening torque specifications.

3.4.2 Prior to energization of panelboards, check with ground resistance tester phase-to-phase and phase-to-ground insulation resistance levels to ensure requirements are fulfilled.

3.4.3 Prior to energization, check panelboards for electrical continuity of circuits, and for short-circuits.

3.5 Adjusting and Cleaning

3.5.1 Adjust operating mechanisms for free mechanical movement.

3.5.2 Touch-up scratched or marred surfaces to match original finishes.

3.6 Demonstration

3.6.1 Subsequent to wire and cable hook-ups, energize panelboards and demonstrate functioning in accordance with requirements. Where necessary, correct malfunctioning units, and then retest to demonstrate compliance.

END OF SECTION

SECTION 16450

GROUNDING

1.0 GENERAL

1.1 Scope of Work

1.1.1 The work required under this section of the specifications consists of the installation of the complete grounding system for the project. Provide all materials required for the grounding system under this section of the specifications.

1.1.2 The grounding system shall include grounding at the control panel and valve stand / racks. The support structures shall be attached to the service grounding (ground rod) with a “pig tail” and exothermic connection.

1.2 Related Work

1.2.1 Coordinate installation of grounding system with all work required under Division- 16.

1.2.2 Coordinate installation of the SPD equipment with the grounding system.

1.3 Application

1.3.1 Equipment grounding conductors shall be used to establish grounding of the entire system.

1.3.2 Equipment grounding shall not be by metallic raceway alone.

1.3.3 Table 250-94 of the NEC shall be used to size all grounding electrode conductors.

1.3.4 Table 250-95 of the NEC shall be used to size equipment grounding conductors.

2.0 PRODUCTS

2.1 Ground Rods

2.1.1 Ground rods shall be 3/4" x 10', sectional type coupled together to obtain length required, unless indicated otherwise.

2.1.2 Construction shall be a solid steel core with a heavy uniform covering of electrolytic copper.

2.1.3 Threads, on sectional rods, shall be rolled (not cut) into the composite metal after the copper covering has been applied.

2.1.4 Copper covering shall be work hardened by drawing rods.

2.1.5 Rod couplings shall be of a corrosion resistant alloy.

2.2 Grounding Electrode Conductor and Connections

2.2.1 All grounding electrode conductors shall be stranded copper.

2.2.2 Conductor connections shall be by exothermic weld.

2.3 Equipment Grounding Conductors

2.3.1 Equipment grounding conductors shall be Green with THHN or XHHN insulation (See Section 16120 C Wires and Cables).

3.0 EXECUTION

3.1 Installation

3.1.1 Ground all non-current carrying metal parts of the electrical system to provide a low impedance path for ground fault current.

3.1.2 The neutral conductor(s) of the incoming electrical service shall be grounded to the ground rod system, metal piping system, and structural steel using Table 250-94 of the NEC for conductor sizing. Grounding conductors shall be run in rigid non-metallic conduit.

3.1.3 Separate bus bars shall be provided for branch circuit neutrals and equipment grounding conductors. These bars will be joined together at only one point with a bonding jumper at the service and shall be isolated throughout the system.

3.2 Testing

3.2.1 The Contractor shall test the ground rod (system) for ground resistance by the Fall of Potential method.

3.2.2 Ground resistance shall be measured at 20 ohms or less. If ground resistance is greater than 20 ohms, additional ground rods shall be driven and the ground system retested.

3.2.3 Records of the ground resistance test shall be submitted to the Engineer.

END OF SECTION

SECTION 16601

SURGE PROTECTION DEVICES (SPD)

1.0 GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

1.2.1 This Section includes Surge Protection Devices for low-voltage power (< 600 Volts) equipment.

1.2.2 Related Sections include the following:

1.2.2.1 Other sections and the drawings relate to this specification. It is the intent of the documents that SPD's be provided for all panels (power supply panels and control panels).

1.3 SUBMITTALS

1.3.1 Product Data: For each type of product indicated. Include operating voltage, rated capacities, operating temperature, shipping and installed weights, and items per Section 2: Products.

1.3.2 Product Certifications: Signed by manufacturers of transient voltage suppression devices, certifying that products furnished comply with the following testing and labeling requirements:

1.3.2.1 UL 1449, 3nd Edition and UL Listing and classifications.

1.3.3 Field Test Reports. Written reports of tests specified in Part 3 of this Section. Include the following:

1.3.3.1 Test results that comply with requirements

1.3.4 Maintenance Data: Transient voltage suppression devices to include installation instructions, operation and maintenance manuals specified in Division 1.

1.3.5 Warranties: Special warranties specified in this Section.

1.4 QUALITY ASSURANCE

1.4.1 Product must be made by a company engaged in the manufacture of such devices in the USA for a minimum of ten years.

1.4.2 Source Limitations: Obtain suppression devices from a single manufacturer.

1.4.3 Product Options: Drawings indicate size, dimensional requirements, and electrical performance of suppressors and are based on the specific system indicated. Other manufacturers' products complying with requirements may be considered by the

engineer/architect if submitted more than 14 days prior to bid. Samples may be required for approval. Refer to Division 1 Section “Substitutions”.

1.4.4 Electrical Components, Devices and Accessories: Listed and labeled as defined in NFPA 70, Article 100, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use.

1.4.5 IEEE Compliance: Comply with ANSI/IEEE C62.41, “IEEE Guide for Surge Voltages in Low Voltage AC Power Circuits” and test devices in accordance with ANSI/IEEE C62.45, “IEEE Guide for Surge Suppressor Testing”.

1.4.6 NEMA Compliance: Comply with NEMA LS-1 “Low Voltage Surge Protective Devices”.

1.4.7 UL Compliance: Listed to UL 1449 3rd edition “Surge Protective Devices” and UL1283 “Electromagnetic Filters”. Shall be UL listed.

1.5 PROJECT CONDITIONS

1.5.1 Placing into Service: Do not energize or connect service entrance equipment or panelboards to their sources until the surge protective devices are installed and connected. Do not single phase, hi-pot or meggar Service Entrance Equipment without disconnecting the surge protective device, as damage may result from these procedures to the surge protective device.

1.5.2 Existing Utilities: Do not interrupt utilities serving facilities occupied by Owner or others unless permitted under the following conditions and then only after arranging to provide temporary utility services according to requirements indicated:

1.5.2.1 Notify Architect not less than two days in advance of proposed utility interruptions.

1.5.2.2 Do not proceed with utility interruptions without Architect’s written permission.

1.5.3 Service Conditions: Rate surge protective devices for continuous operation under the following conditions, unless otherwise indicated:

1.5.3.1 Maximum Continuous Operating Voltage: Not less than 125 % of nominal system operating voltage for 120/240 Single Phase or 120/208 VAC Wye systems, Not less than 115 % for 277/480 VAC Wye or 480 VAC Delta systems.

1.5.3.2 Operating Temperature: -40 to +185 degrees F (-40 to +85 degrees C)

1.5.3.3 Humidity: 0 to 95 %, noncondensing.

1.5.3.4 Altitude: Less than 20,000 feet (6,000 m) above sea level.

1.6 COORDINATION

1.6.1 Coordinate location of field mounted surge suppressors to allow adequate clearances for maintenance, clearance per NEC and all local electrical codes.

1.6.2 Coordinate surge protective devices with Division 16 Section “Electrical Power Monitoring and Control”.

1.7 WARRANTY

1.7.1 General Warranty: Special warranties specified in this Article shall not deprive Owner of other rights Owner may have under other provisions of the Contract Documents and shall be in addition to, and run concurrent with, other warranties made by Contractor under requirements of the Contract Documents.

1.7.2 Special Warranty: Written warranty, executed by manufacturer agreeing to repair or replace components of surge suppressors that fail in materials or workmanship within ten years (120 months) from date of Substantial Completion, or 126 months from date of manufacture. Warranty shall include parts and labor.

2.0 PRODUCTS

2.1 MANUFACTURERS

2.1.1 Manufacturers: Subject to compliance with requirements of this specification listed herein, provide products by one of the following manufacturers or equal:

2.1.1.1 Surge Suppression, Inc.

2.1.1.2 APT

2.1.1.3 Siemens

2.1.2 This specification is performance based, and any other vendors who desire approval to bid this project shall provide written documentation of any deviations from this specification, which shall be included in product submittal 14 days prior to bid.

2.1.3 The system for this project is 240/120 VAC three phase (service is an open delta arrangement).

3.0 EXECUTION

3.1 INSTALLATION OF SURGE PROTECTIVE DEVICES

3.1.1 Install devices at service entrance, distribution panels, and panelboards as indicated on electrical one-line drawings.

3.1.2 Provide multi-pole, 100 Amp breaker as a dedicated disconnect for the suppressor at Service Entrance location, unless otherwise indicated on drawings.

3.1.3 Install devices per manufacturer’s instructions with conductors between suppressor and points of attachment as short and as straight as possible. Do not mount internal to switchgear to facilitate ease of future maintenance and/or replacement.

3.1.4 Provide a multi-pole, 30 Amp breaker as a dedicated disconnect for the suppressor at panelboard locations, unless otherwise indicated on drawings.

3.2 CONNECTIONS

3.2.1 Tighten electrical connectors and terminals according to manufacturer’s published torque-tightening values. If manufacturer’s torque values are not indicated, use those specified in UL 486A and UL 486B.

3.3 FIELD QUALITY CONTROL

3.3.1 Testing: Perform the following field quality control testing:

3.3.1.1 After installing the surge protective devices, but before electrical circuitry has been energized, test for compliance with requirements.

3.3.1.2 Complete start-up checks and voltage verifications according to manufacturer's written instructions.

3.3.1.3 Perform visual and mechanical inspection on each unit. Certify that units are installed per manufacturer's recommendations.

3.3.2 Repair or replace malfunctioning units. Retest after repairs or replacements are made.

END OF SECTION

APPENDIX A

Geotechnical Report

GEOTECHNICAL INVESTIGATION

STORMWATER MANAGEMENT FACILITY No. 6
FLOATING INTAKE PUMP FOUNDATION
TALLAHASSEE, FLORIDA

Prepared For:

CAMP, DRESSER & McKEE
3522 THOMASVILLE ROAD
SUITE 300
TALLAHASSEE, FLORIDA 32309

Prepared By:

ENVIRONMENTAL AND GEOTECHNICAL SPECIALISTS, INC.
3154 ELIZA ROAD
TALLAHASSEE, FLORIDA 32308
(850) 386-1253

August 2010
21-21-10-01

EGS

ENVIRONMENTAL AND GEOTECHNICAL SPECIALISTS, INC.

August 26, 2010

EGS Project Number: 21-21-10-01

Camp, Dresser, & McKee
3522 Thomasville Road, Suite 300
Tallahassee, FL 32309

ATTN: Catherine (Katey) Breland, P.E.
Project Manager

SUBJECT: Results of Geotechnical Investigation
Proposed Floating Intake Pump Foundation
Leon County SWMF No. 6
Tallahassee, Florida

Dear Katey:

Environmental and Geotechnical Specialists, Inc. (**EGS**) has completed the subsurface investigation, as authorized by Camp, Dresser, & McKee (**CDM**), for the foundation of the proposed Stormwater Management Facility (**SWMF**) No. 6 Floating Intake Pump.

It is **EGS**' understanding that this investigation was conducted to provide geotechnical recommendations for the design of pile supports, which are needed to secure the proposed floating irrigation intake pump platform. The pile supports will be either round timber or steel round piles.

Project Area

The project site is located north of Tallahassee in Leon County Florida, southwest of the Thomasville Road and Bradfordville Road intersection. A Site Location Map has been provided as **Figure 1**. The proposed floating intake pump will be located at the existing Leon County **SWMF** No. 6, which will provide irrigation to surrounding spray fields. An Aerial Photograph of the Project Location has been included as **Figure 2**, which shows the location of the soil boring installed for this project along with the existing site conditions.

Scope of Services

The Scope of Services authorized by the **CDM** for this project consisted of the following:

- installation of one (1) soil boring to a depth of forty (40) feet along the northwest edge of the existing **SWMF**;

- conducting standard penetration tests to determine the strength characteristics of the existing subsoils;
- testing representative samples of the subsoils for uniformity and classification;
- developing design recommendations for the foundation; and,
- preparation of this Report.

Subsurface Investigation

The subsurface investigation outlined in this Report was conducted in July 2010. Derwood Sheppard, P.E., of **EGS** served as the field and project engineer.

The Soil Boring, labeled **BPF-1**, was installed at the approximate location requested by **CDM**. Global Positioning Satellite (**GPS**) System coordinates were taken at the soil boring location. The **GPS** coordinates and depth of the soil boring are provided in **TABLE 1**. The location of the soil boring is shown on **Figure 2** and on the Report of Core Boring Sheet included as **APPENDIX A**.

It should be noted that the soil boring was installed along the perimeter of the existing **SWMF** and not at the exact location of the proposed foundation elements. This is due to the existing water within the facility. Based on old survey data for the area, it appears that the soil boring installed for this investigation is approximately eight (8) feet higher than the bottom of existing **SWMF**. The soil boring was installed along the edge of the **SWMF** as close to the water line as possible.

In order to evaluate the relative strength and uniformity of the subsurface materials, Static Hand Cone Penetrometer Index (**CPI**) tests were conducted in the top seven and one-half (7 ½) feet of the soil boring, and Standard Penetration Tests (**SPT**) were conducted on two and one-half (2 ½) feet intervals to the boring termination depth. The **CPI** tests were conducted in conjunction with hand-auger soil samples in the top seven and one-half (7 ½) feet to prevent any potential damage to unmarked buried utilities. To facilitate uniformity of the subsurface data the **CPI "C"** values were converted to equivalent **SPT "N"** values using the correlation **N = "C"/4**. All **SPT** soil samples were collected in accordance with ASTM D6066.

The results of the field and laboratory testing are summarized in the Report of Core Boring Sheet provided as **APPENDIX A**, and on the detailed Soil Boring Log and Soil Classification Data sheets provided in **APPENDICES B** and **C**, respectively.

Subsurface Conditions

Soils – As can be seen from the Report of Core Boring Sheet provided in **APPENDIX A**, the general subsurface conditions consist of:

- 0.0 - 5.0 feet – Medium Dense Clayey Sand (**SC**)
- 5.0 - 20.0 feet – Stiff Sandy Clay (**CL**)
- 20.0 - 30.0 feet – Stiff Highly Plastic Silt (**MH**)
- 30.0 - 40.0 feet – Weathered Limestone (**22 ≤ N ≤ 50/2"**)

Groundwater – Groundwater was encountered at a depth of about seven (7) feet, which corresponded approximately to that of the water level in the **SWMF**. For the purposes of this investigation the estimated seasonal high groundwater was assumed to be at the ground surface.

Environmental Classification – A sample of soil was collected from the soil boring and a water sample was collected from the **SWMF** to analyze their aggressiveness with respect to corrosion. The results of the corrosivity tests are summarized in **TABLE 2**. As can be seen in **TABLE 2**, with respect to corrosion, the substructure environmental classification of this site is **MODERATELY AGGRESSIVE** for steel and **SLIGHTLY AGGRESSIVE** for concrete. These conditions will fluctuate throughout the year, especially for the water, which is typical for stormwater management facilities.

Geotechnical Recommendations

Foundation Options – As mentioned previously, the floating intake pump platform will be secured by circular driven piles, which will allow vertical movement of the platform but restrict horizontal movement. Circular piles were chosen to allow smoother vertical movement of the platform along the piles. Additionally, **CDM** provided design axial and lateral loads to be applied to the proposed foundation. The loads are as follows:

- Factored Axial Design Load: **5,000 lbs**
- Ultimate Driving Resistance: **14,000 lbs** (Resistance Factor ϕ=0.35)
- Factored Lateral Load: **750 lbs** (10.0 feet above ground surface)

Based on the soil conditions and proposed loading, **EGS recommends** that either round timber or steel pipe piles be used for the foundation. Timber piles would provide sufficient axial and lateral load capacities; however, steel piles would provide a longer design life and increased lateral capacity. **EGS believes that round timber piles may be the most cost-effective foundation option**.

EGS has included design information for an eight (8), ten (10), and twelve (12) inch diameter round timber and steel pipe piles.

Geotechnical Design Parameters – **EGS** developed the Geotechnical Design Parameters to facilitate the design of a driven piling foundation. The Geotechnical Design Parameters calculated for this investigation are provided as **TABLE 3**. Sample calculations used to develop **TABLE 3** are provided as **APPENDIX D**.

Minimum Pile Embedment – Using the design loads provided by **CDM** and the subsurface conditions encountered during this investigation, **EGS** has determined the following Minimum Pile Embedment Depths for Round Timber and Steel Pipe piles:

- ***Round Timber Piles:***
  - 8-inch **14 feet**
  - 10-inch **13 feet**
  - 12-inch **12 feet**
- ***Steel Pipe Piles:***
  - 8-inch **11 feet**
  - 10-inch **10 feet**
  - 12-inch **9 feet**

Pile Installation – **EGS recommends** that the axial capacity and pile embedment be verified by the CONTRACTOR to ensure that adequate bearing has been achieved. This verification can be achieved by having the CONTRACTOR retain the services of a knowledgeable geotechnical firm to monitor the installation of the piles.

Additionally, **EGS** recommends the following be considered:

- The Pile Driving Equipment should be capable of driving the piles to an anticipated Ultimate Bearing Load of **7 tons**; however, **EGS cautions** that the following Maximum Driving Capacities not be exceeded to prevent damage to the piles:
  - Round Timber Pile: **20 tons**
  - Steel Pile Piles: **60 tons**
- Provided the pile driving is being conducted with the proper combination of pile size and driving equipment, Practical Refusal can be defined as 20 blows per inch for two (2) inches of pile penetration with the hammer operating at its full setting.

If Practical Refusal is reached, pile driving should stop and the Engineer should be notified. The Engineer may request additional driving, as further verification that Practical Refusal has been met. If Practical Refusal is obtained before minimum tip elevation of the pile is obtained, the Engineer should be contacted to assess the need to modify the installation process including preforming the pile holes or jetting or reducing the pile capacities (if appropriate).

Closure

The data and results presented in this Report are intended for the use of the **Camp, Dresser, & McKee** and **Leon County Public Works** for the design of the proposed foundations identified herein. This Report is not intended for any other use and will likely not be applicable. The data and recommendations presented in this Report are based on the boring made at the specific location and depth noted. Subsurface conditions at other locations may vary significantly from those presented herein. Should data become available which is different from the data presented herein, Environmental and Geotechnical Specialists, Inc. requests the opportunity to review the data and make any modifications to the design recommendations which may be appropriate.

Sincerely,

Environmental and Geotechnical Specialists, Inc.
Florida Certificate of Engineering Authorization Number 6222

8/26/10

Derwood C. Sheppard Jr., P.E.
Geotechnical Engineer II
FL P.E. Number 69228

TABLES

TABLE 1
SOIL BORING LOCATION DATA
STORMWATER MANAGEMENT FACILITY No. 6
FLOATING INTAKE PUMP FOUNDATION
LEON COUNTY, FLORIDA

BORING NUMBER	BORING DEPTH [1]	GROUND ELEVATION	GLOBAL POSITIONING SATELLITE SYSTEM COORDINATES				STATE PLANE COORDINATES	
			LATITUDE		LONGITUDE			
	(FEET)	(FEET)	DEG(°)	MIN (')	DEG(°)	MIN (')	NORTHING	EASTING
BFP-1	40.4	--	30	33.556	84	12.858	567243	2058426

NOTE: DEPTH IS BELOW EXISTING GROUND SURFACE.

TABLE 2
ENVIRONMENTAL CLASSIFICATION DATA
STORMWATER MANAGEMENT FACILITY No. 6
FLOATING INTAKE PUMP FOUNDATION
LEON COUNTY, FLORIDA

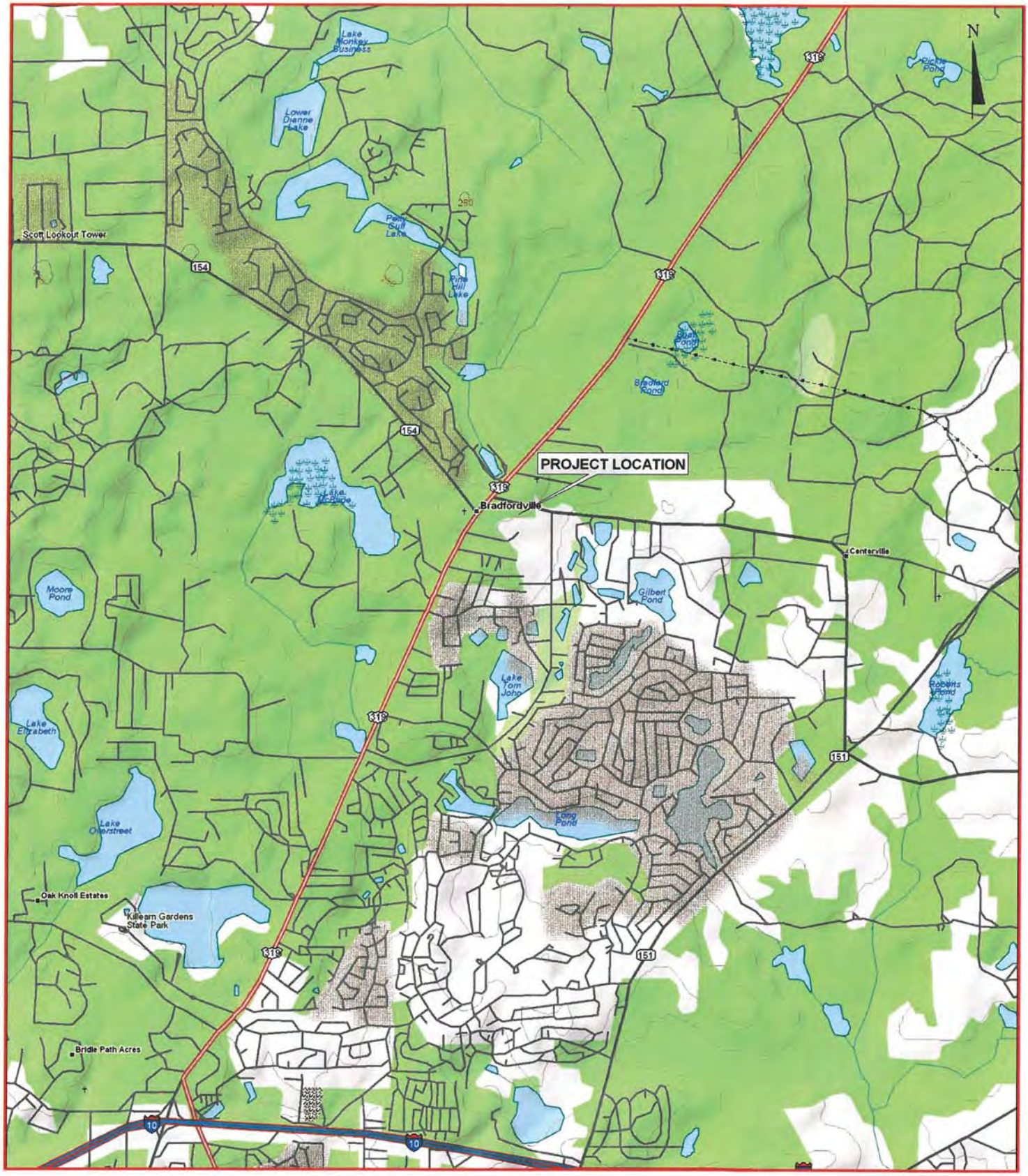
MATERIAL	pH	RESISTIVITY (OHM-CM)	SULFATES (PPM)	CHLORIDES (PPM)	CLASSIFICATION	
					STEEL	CONCRETE
SOIL	6.3	31,000	2	18	MODERATELY AGGRESSIVE	SLIGHTLY AGGRESSIVE
WATER	6.7	18,000	1	27	MODERATELY AGGRESSIVE	SLIGHTLY AGGRESSIVE

TABLE 3
GEOTECHNICAL DESIGN PARAMETERS - SOIL BORING BFP-1
STORMWATER MANAGEMENT FACILITY No. 6
FLOATING INTAKE PUMP FOUNDATION
LEON COUNTY, FLORIDA

SOIL TYPE	CLAYEY SAND	SANDY CLAY	PLASTIC SILT	LIMESTONE
DEPTH AT TOP OF LAYER (ft)	0.0	5.0	20.0	30.0
DEPTH AT BOTTOM OF LAYER (ft)	5.0	20.0	30.0	40.4
WATER TABLE DEPTH (ESHGW) (ft)	0.0	0.0	0.0	0.0
LAYER AVERAGE "N" VALUE	17	14	8	88
LATERAL SOIL PROPERTIES				
LATERAL SOIL LAYER MODEL (P-Y CURVE SOIL TYPE) - 1, 2, 3, 4, 5, 6	2	5	5	5
INTERNAL FRICTION ANGLE (deg)	32	--	--	--
AVERAGE LATERAL SOIL MODULUS (pci)	242	428	258	2,022
TOTAL SOIL UNIT WEIGHT (pcf)	115	120	110	125
EFFECTIVE SOIL UNIT WEIGHT (pcf)	53	58	48	63
UNDRAINED SHEAR STRENGTH (psf)	--	2,000	1,450	7,600
MAJOR STRAIN AT 50%	--	0.03	0.04	0.01
AXIAL SOIL PROPERTIES				
UNCONFINED COMPRESSION STRENGTH (psf) - ROCK ONLY	--	--	--	--
INTERNAL FRICTION ANGLE (deg)	32	--	--	--
TOTAL UNIT WEIGHT (pcf)	115	120	110	125
SHEAR MODULUS (ksi)	8.5	5.4	4.0	44.0
POISSONS RATIO (μ)	0.25	0.55	0.60	0.10
VERTICAL FAILURE SHEAR (psf)	1,380	1,340	710	1,760
TORSIONAL SOIL PROPERTIES				
TORSIONAL SHEAR STRESS (psf)	1,380	1,340	710	1,760
SHAFT TIP SOIL PROPERTIES				
ULTIMATE END BEARING (ksi)	0.4	0.1	0.1	4.4

NOTES:
1. P-Y CURVE SOIL TYPE: 1 - SAND (O'NEILL), 2 - SAND (REESE), 3 - CLAY (O'NEIL), 4 - CLAY (SOFT < WATER TABLE), 5 - CLAY (STIFF < WATER), 6 - CLAY (STIFF > WATER)
2. GROUNDWATER ASSUMED AT GROUND SURFACE FOR DESIGN PARAMETER CALCULATIONS
3. - - MEANS PARAMETERS NOT APPROPRIATE
4. VALUES BASED ON 12-INCH DRIVEN PILE
5. IGM MEANS INTERMEDIATE GEOMATERIAL

FIGURES



DRAWN: A. ROMANELLI	CHECKED: M. HAYDEN, P.E.	EGS Environmental and Geotechnical Specialists, Inc. 3154 Eliza Road Tallahassee, Florida 32308 Office #: (850) 386-1253 Fax #: (850) 385-8050	TITLE: PROJECT LOCATION MAP SWMF No. 6 INTAKE PUMP FOUNDATION TALLAHASSEE, FLORIDA
ENGINEER: D. SHEPPARD, P.E.			
CLIENT: CAMP, DRESSER & McKEE			
PROJ. NO.: 21-21-10-01	SCALE:		DATE: JULY 2010 / FIGURE NO.: 1

DRAWN BY: A. ROMANELLI	CHECKED: M. HAYDEN, P.E.	EGS Environmental and Geotechnical Specialists, Inc. 3154 Eliza Road Tallahassee, Florida 32308 Office #: (850) 386-1253 Fax #: (850) 385-8050	TITLE: AERIAL PHOTOGRAPH OF PROJECT LOCATION SWMF No. 6 INTAKE PUMP FOUNDATION TALLAHASSEE, FLORIDA
ENGINEER: D. SHEPPARD, P.E.			
CLIENT: CAMP, DRESSER & McKEE			
PROJ. NO.: 21-21-10-01	SCALE:		DATE: JULY 2010 / FIGURE NO.: 2

APPENDIX A

REPORT OF CORE BORING

LEGEND

MEASURED GROUNDWATER	(symbol)
LABORATORY TEST RESULTS	(box)
WATER CONTENT (%)	Wc=
-200 SIEVE (%)	-200=
LIQUID LIMIT	LL=
PLASTICITY INDEX	PI=
UNCONFINED COMPRESSIVE STRENGTH	LL=
NATURAL UNIT WEIGHT	γ =
SHELBY TUBE	ST

CLAYEY SAND (SC)

SANDY CLAY (CL)

HIGHLY PLASTIC SILT (MH)

LIMESTONE

WEATHERED LIMESTONE

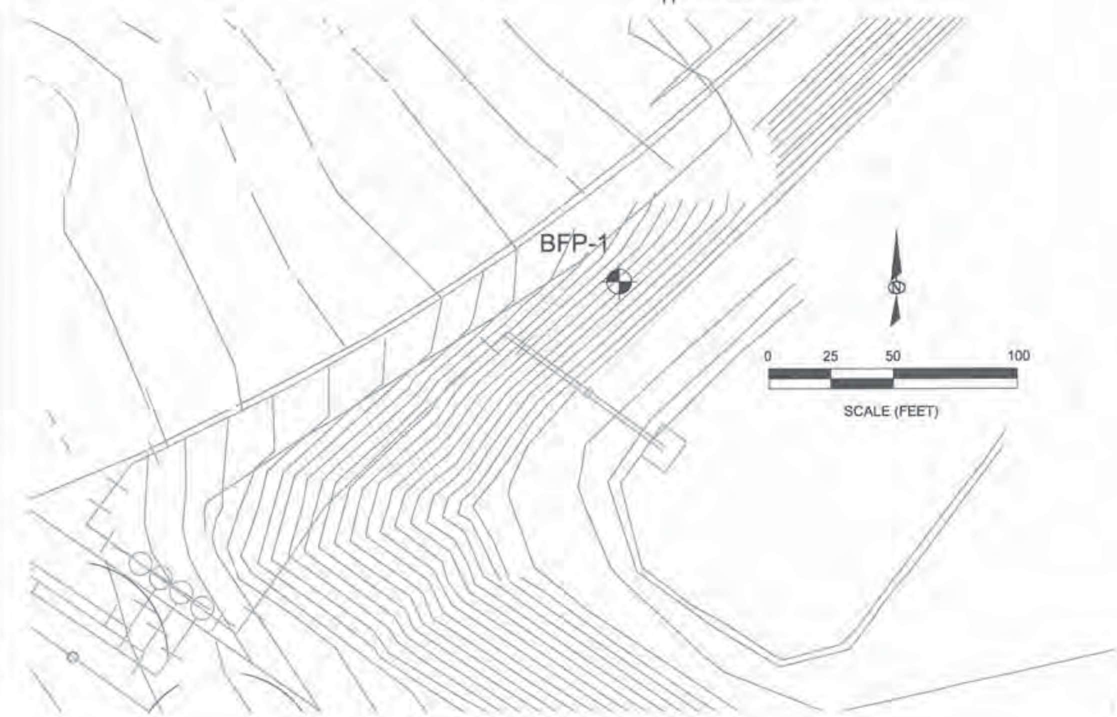
NOTES

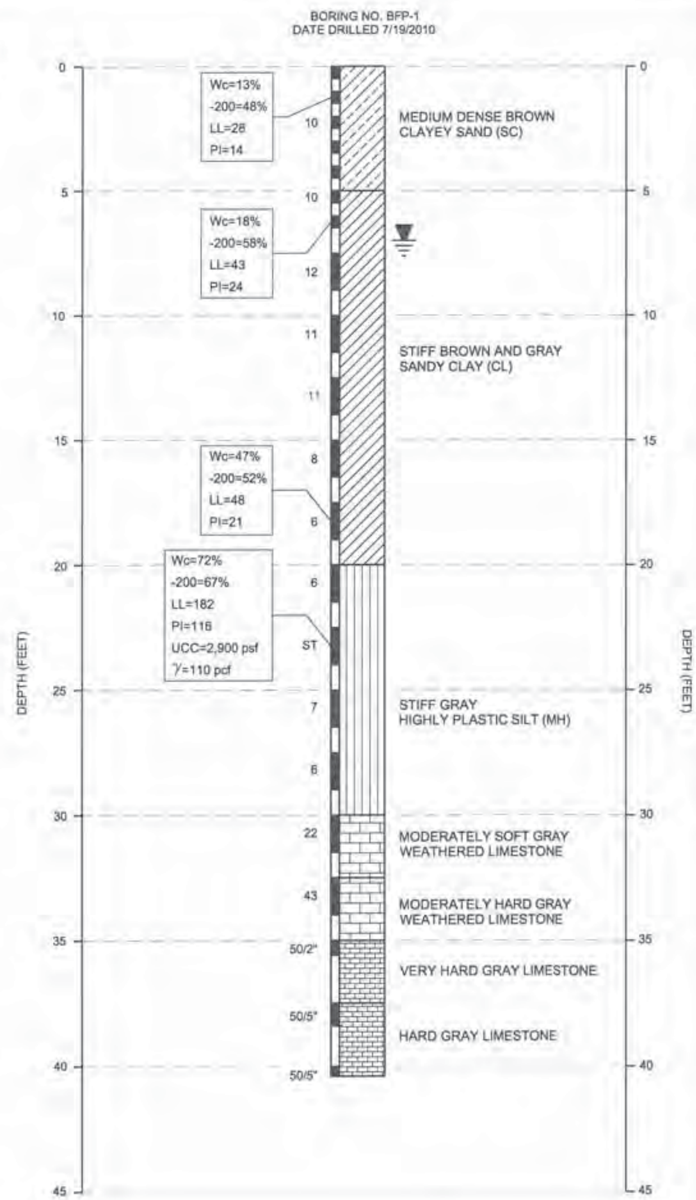
1. Numbers left of borings indicate standard penetration test (SPT) N60-values for 12 in. penetration in accordance with ASTM Standard D 6066.
2. Water elevations shown represent the water elevations encountered. Fluctuations in the elevations of the water should be expected.
3. Soil descriptions, test data, and standard penetration values shown are for the soil boring only and may not apply to any other locations except at the location of the soil boring. Extrapolation of the soil boring data to other locations is the sole responsibility of the person performing the extrapolation.

Granular Materials Relative Density	SPT (blows/12 in.)	Silts and Clays Consistency	SPT (blows/12 in.)
Very Loose	Less than 3	Very Soft	Less than 1
Loose	3 - 8	Soft	1 - 3
Medium or Compact	8 - 24	Firm	3 - 6
Dense	24 - 40	Stiff	6 - 12
Very Dense	Greater than 40	Very Stiff	12 - 24
		Hard	Greater than 24

DRILLING

Type of Drilling Rig: CME 550X
Type of Hammer: Automatic
Driller: Benjamin Guerra





ORIGINAL
REVISIONS:
1
2
3
4
5

SHEET
REPORT OF CORE BORING

PROJECT
SWMF No. 6
FLOATING INTAKE PUMP FOUNDATION

Environmental & Geotechnical Specialists, Inc.
EGS
3154 ELIZA ROAD
TALLAHASSEE, FLORIDA 32308
OFFICE: (850) 386-1253
FAX: (850) 385-8050
Cert. of Auth.: 6222

JOB NO.
DRAWN
DESIGNED
CHECKED
QC

SHEET

APPENDIX B

SOIL BORING LOG

EGS
ENVIRONMENTAL AND GEOTECHNICAL SPECIALISTS, INC.

PROJECT: SWMF #6 FLOATING INTAKE PUMP FOUNDATION	**HAMMER TYPE:** AUTOMATIC
CLIENT: CAMP, DRESSER, & McKEE	**NORTHING:** 567243
PROJECT NO.: 21-21-10-01	**EASTING:** 2058426
PROJECT LOCATION: TALLAHASSEE, FLORIDA	**ELEVATION (FEET):** N/A
BORING NO.: BFP-1	**DATE:** 7/19/2010
DRILLER: B. GUERRA	**FLUID LOSS:** NONE
DEPTH TO - WATER> INITIAL: ▽ 7.0' **24 HR:** ▽ N/A	**CAVING>** NONE

DEPTH (METERS)	DEPTH (FEET)	DESCRIPTION	USCS/ AASHTO	TEST RESULTS	Wc (%)	N
0	0	MEDIUM DENSE BROWN CLAYEY SAND	SC A-6	-200%=48 LL=28 PI=14	19, 13, 12, 19, 22	10
	5	STIFF BROWN SANDY CLAY		-200%=58 LL=43 PI=24	42, 18	10
2.5					30	12
	10	STIFF BROWN AND GRAY SANDY CLAY	CL A-7-6		20, 29	11, 11
5	15	STIFF GRAY SANDY CLAY		-200%=52 LL=48 PI=21	46, 47	8, 6
	20	STIFF GRAY HIGHLY PLASTIC SILT	MH A-7-5	-200%=67 LL=182 PI=116	40, 72, 49, 100	6, 7, 6
7.5	25					
	30	MODERALY SOFT GRAY WEATHERED LIMESTONE	-- --			22
10		MODERATELY HARD GRAY WEATHERED LIMESTONE	-- --			43
	35	VERY HARD GRAY LIMESTONE	-- --			50/2"

Wc (%) axis: 10, 20, 30, 40, 60

N-Value axis: 10, 20, 30, 40, 60, 80

This information pertains only to this boring and should not be interpreted as being indicitive of the site.

EGS

ENVIRONMENTAL AND GEOTECHNICAL SPECIALISTS, INC.

PROJECT: SWMF #6 FLOATING INTAKE PUMP FOUNDATION
CLIENT: CAMP, DRESSER, & McKEE
PROJECT NO.: 21-21-10-01
PROJECT LOCATION: TALLAHASSEE, FLORIDA
BORING NO.: BFP-1
DRILLER: B. GUERRA
DEPTH TO - WATER> INITIAL: ▽ 7.0' **24 HR:** ▼ N/A

HAMMER TYPE: AUTOMATIC
NORTHING: 567243
EASTING: 2058426
ELEVATION (FEET): N/A
DATE: 7/19/2010
FLUID LOSS: NONE
CAVING> ⊏ NONE

DEPTH (METERS)	DEPTH (FEET)	SAMPLE	SYMBOL	DESCRIPTION	USCS/ AASHTO	TEST RESULTS	Wc (%)	N	N-Value
	40			HARD GRAY LIMESTONE	-- --			50/5" 50/5"	50/5" 50/5"
12.5									
	45								
15									
	50								
	55								
17.5									
	60								
	65								
20									
	70								
22.5									

Wc (%): 10 20 30 40 60

N-Value: 10 20 30 40 60 80

APPENDIX C

SOIL CLASSIFICATION DATA

SOIL CLASSIFICATION DATA

Project: SWMF #6 FLOATING INTAKE PUMP FOUNDATION

Client: CAMP, DRESSER, & McKEE **Project No.: 21-21-10-01**

Boring: BFP-1 **Location: TALLAHASSEE, FLORIDA**

DEPTH (FEET)	Wc (%)	-4 (%)	-10 (%)	-20 (%)	-40 (%)	-60 (%)	-100 (%)	-200 (%)	LL	PI	Org. (%)	N Value	USCS	AASHTO	Description
0.0-0.5	19												SC	A-6	MEDIUM DENSE BROWN CLAYEY SAND
1.0-1.5	13	100	100	100	96	88	70	48	28	14			SC	A-6	MEDIUM DENSE BROWN CLAYEY SAND
2.0-2.5	12											10	SC	A-6	MEDIUM DENSE BROWN CLAYEY SAND
3.0-3.5	19												SC	A-6	MEDIUM DENSE BROWN CLAYEY SAND
4.0-4.5	22												SC	A-6	MEDIUM DENSE BROWN CLAYEY SAND
5.0-5.5	42											10	CL	A-7-6	STIFF BROWN SANDY CLAY
6.0-6.5	18	100	100	98	92	83	71	58	43	24			CL	A-7-6	STIFF BROWN SANDY CLAY
7.5-9.0	30											12	CL	A-7-6	STIFF BROWN AND GRAY SANDY CLAY
10.0-11.5	20											11	CL	A-7-6	STIFF BROWN AND GRAY SANDY CLAY
12.5-14.0	29											11	CL	A-7-6	STIFF BROWN AND GRAY SANDY CLAY
15.0-16.5	46											8	CL	A-7-6	STIFF GRAY

SOIL CLASSIFICATION DATA

Project: SWMF #6 FLOATING INTAKE PUMP FOUNDATION

Client: CAMP, DRESSER, & McKEE **Project No.: 21-21-10-01**

Boring: BFP-1 **Location: TALLAHASSEE, FLORIDA**

DEPTH (FEET)	Wc (%)	-4 (%)	-10 (%)	-20 (%)	-40 (%)	-60 (%)	-100 (%)	-200 (%)	LL	PI	Org. (%)	N Value	USCS	AASHTO	Description
															SANDY CLAY
17.5-19.0	47	100	100	100	100	97	78	52	48	21		6	CL	A-7-6	STIFF GRAY SANDY CLAY
20.0-21.5	40											6	MH	A-7-5	STIFF GRAY HIGHLY PLASTIC SILT
22.0-24.0	72	100	100	100	99	99	90	67	182	116			MH	A-7-5	GRAY HIGHLY PLASTIC SILT
25.0-26.5	49											7	MH	A-7-5	STIFF GRAY HIGHLY PLASTIC SILT
27.5-29.0	100											6	MH	A-7-5	STIFF GRAY HIGHLY PLASTIC SILT
30.0-31.5												22	--	--	MODERALY SOFT GRAY WEATHERED LIMESTONE
32.5-34.0												43	--	--	MODERATELY HARD GRAY WEATHERED LIMESTONE
35.0-35.6												50/2"	--	--	VERY HARD GRAY LIMESTONE
37.5-38.4												50/5"	--	--	HARD GRAY LIMESTONE
40.0-40.4												50/5"	--	--	HARD GRAY LIMESTONE

APPENDIX D
SAMPLE CALCUATIONS

f = COEFFICIENT OF VARIATION OF LATERAL SUBGRADE REACTION WITH DEPTH
B = BASE WIDTH
z = DEPTH
E_S = MODULUS OF ELASTICITY
μ = POISSON'S RATIO
U_{CC} = UNCONFINED COMPRESSION

SOIL BORING: BFP-1

LAYER 1

DEPTH 0.0 to 5.0 FEET MEDIUM DENSE - CLAYEY SAND

$N_{cor} := 17$ $\phi := 32 \cdot deg$ $\gamma_1 := 52.6 \cdot \frac{lb}{ft^3}$ $K_a := \frac{1 - \sin(\phi)}{1 + \sin(\phi)}$ $K_a = 0.31$ $K_p := \frac{1 + \sin(\phi)}{1 - \sin(\phi)}$ $K_p = 3.25$

$B := 12 \cdot in$ $f_1 := 20.0 \cdot tcf$ $y_1 := 5.0 \cdot ft$ $z_1 := 2.5 \cdot ft$ $E_s := 20(N_{cor}) \cdot ksf$ $\mu_1 := 0.25$

$k_{s\_bowles} := \frac{3 \cdot (E_s)}{B}$ $k_{s\_bowles} = 590 \frac{lb}{in^3}$ **<~ BOWLES**

$k_{s\_navfac} := \frac{f_1 \cdot z_1}{2 \cdot B}$ $k_{s\_navfac} = 29 \frac{lb}{in^3}$ **<~ NAVFAC**

OVERBURDEN PRESSURE: $\sigma := \gamma_1 \cdot z_1$ $\sigma = 0.91 \frac{lb}{in^2}$

$k_{s\_flpier} := 175 \cdot \frac{lb}{in^3}$ **<~ FL PIER**

$k_{s\_design} := \frac{k_{s\_bowles} + k_{s\_navfac} + 2 \cdot k_{s\_flpier}}{4}$ $k_{s\_design} = 418700 \frac{lb}{ft^3}$

SHEAR MODULUS

$G_s := 0.5 \cdot N_{cor} \cdot \frac{kip}{in^2}$ $G_s = 1224000 \frac{lb}{ft^2}$

VERTICAL SHEAR STRESS

$\tau_s := \frac{N_{cor} \cdot (110 - N_{cor})}{164999} \cdot ksi$ $\tau_s = 1380 \frac{lb}{ft^2}$

RECOMMENDED FBPIER SOIL TYPE

REESE COX KOOP - SAND

f = COEFFICIENT OF VARIATION OF LATERAL SUBGRADE REACTION WITH DEPTH
B = BASE WIDTH
z = DEPTH
E_S = MODULUS OF ELASTICITY
μ = POISSON'S RATIO

LAYER 2

DEPTH 5.0 to 20.0 FEET

STIFF - SANDY CLAY

$N_{cor} := 14$ $\gamma_2 := 57.6 \cdot \frac{lb}{ft^3}$ $C := 29 \cdot \left(N_{cor}^{.72}\right) \cdot 20.885 \cdot psf$ $C = 4050\,psf$ $c := \frac{C}{2}$ $c = 2025\,psf$

$B := 12 \cdot in$ $f_2 := 22.0 \cdot tcf$ $y_2 := 15.0 \cdot ft$ $z_2 := 7.5 \cdot ft$ $E_S := 20\left(N_{cor}\right) \cdot ksf$ $\mu_2 := 0.35$ $\alpha := 0.55$

$$k_{s\_bowles} := \frac{1.6 \cdot E_S}{B} \qquad k_{s\_bowles} = 259 \frac{lb}{in^3}$$ **<~ BOWLES**

$$k_{s\_navfac} := \frac{f_1 \cdot y_1}{2 \cdot B} + \frac{f_2 \cdot z_2}{2 \cdot B}$$

$$k_{s\_navfac} = 153 \frac{lb}{in^3}$$ **<~ NAVFAC**

$$k_{s\_fhwa} := 650 \cdot \frac{lb}{in^3}$$ **<~ FHWA**

$$k_{s\_design} := \frac{k_{s\_bowles} + k_{s\_navfac} + 2 \cdot k_{s\_fhwa}}{4} \qquad k_{s\_design} = 739850 \frac{lb}{ft^3}$$

SHEAR MODULUS

$$G_S := \left[5 + 0.1 \cdot \left(N_{cor} - 10\right)\right] \cdot \frac{kip}{in^2} \qquad G_S = 777600 \frac{lb}{ft^2}$$

VERTICAL SHEAR STRESS

$$\tau_S := \frac{N_{cor} \cdot \left(110 - N_{cor}\right)}{144238} \cdot ksi \qquad \tau_S = 1342 \frac{lb}{ft^2}$$

RECOMMENDED FBPIER SOIL TYPE

STIFF - CLAY

f = COEFFICIENT OF VARIATION OF LATERAL SUBGRADE REACTION WITH DEPTH
B = BASE WIDTH
z = DEPTH
E_S = MODULUS OF ELASTICITY
μ = POISSON'S RATIO

LAYER 3

DEPTH 20.0 to 30.0 FEET

STIFF - HIGHLY PLASTIC SILT

$N_{cor} := 8$ $\gamma_3 := 47.6 \cdot \frac{lb}{ft^3}$ $UCC := 2900 \cdot \frac{lb}{ft^2}$ $c := \frac{UCC}{2}$ $c = 1450\,psf$

$B := 12 \cdot in$ $f_3 := 12.0 \cdot tcf$ $y_3 := 10.0 \cdot ft$ $z_3 := 5.0 \cdot ft$ $E_s := 20(N_{cor}) \cdot ksf$ $\mu_3 := 0.35$ $\alpha := 0.60$

$k_{s\_bowles} := \frac{1.6 \cdot E_s}{B}$ $k_{s\_bowles} = 148 \frac{lb}{in^3}$ **<~ BOWLES**

$k_{s\_navfac} := \frac{f_1 \cdot y_1}{2 \cdot B} + \frac{f_2 \cdot y_2}{2 \cdot B} + \frac{f_3 \cdot z_3}{2 \cdot B}$

$k_{s\_navfac} = 284 \frac{lb}{in^3}$ **<~ NAVFAC**

$k_{s\_fhwa} := 300 \cdot \frac{lb}{in^3}$ **<~ FHWA**

$k_{s\_design} := \frac{k_{s\_bowles} + k_{s\_navfac} + 2 \cdot k_{s\_fhwa}}{4}$ $k_{s\_design} = 445700 \frac{lb}{ft^3}$

SHEAR MODULUS

$G_s := 0.5 \cdot N_{cor} \cdot \frac{kip}{in^2}$ $G_s = 576000 \frac{lb}{ft^2}$

VERTICAL SHEAR STRESS

$\tau_s := \frac{N_{cor} \cdot (110 - N_{cor})}{164999} \cdot ksi$ $\tau_s = 712 \frac{lb}{ft^2}$

RECOMMENDED FBPIER SOIL TYPE

STIFF - CLAY

f = COEFFICIENT OF VARIATION OF LATERAL SUBGRADE REACTION WITH DEPTH
B = BASE WIDTH
z = DEPTH
E_S = MODULUS OF ELASTICITY
μ = POISSON'S RATIO

LAYER 4

DEPTH 30.0 to 40.4 FEET

WEATHERED LIMESTONE

$N = 22, 43, \frac{50}{2}, \frac{50}{5}, \frac{50}{5}$

$N_{cor} := 88$ $\gamma_4 := 62.6 \cdot \frac{lb}{ft^3}$ $C := 29 \cdot \left(N_{cor}^{.72}\right) \cdot 20.885 \cdot psf$ $C = 15215\ psf$ $c := \frac{C}{2}$ $c = 7607 \frac{lb}{ft^2}$

$B := 12 \cdot in$ $f_4 := 50.0 \cdot tcf$ $y_4 := 10.4 \cdot ft$ $z_4 := 5.2 \cdot ft$ $E_S := 20\left(N_{cor}\right) \cdot ksf$ $E_S = 1760000 \frac{lb}{ft^2}$ $\mu_4 := 0.1$ $\alpha := 0.1$

$k_{s\_bowles} := \frac{1.6 \cdot E_S}{B}$ $k_{s\_bowles} = 1630 \frac{lb}{in^3}$ **<~ BOWLES**

$k_{s\_navfac} := \frac{f_1 \cdot y_1}{2 \cdot B} + \frac{f_2 \cdot y_2}{2 \cdot B} + \frac{f_3 \cdot y_3}{2 \cdot B} + \frac{f_4 \cdot z_4}{2 \cdot B}$ $k_{s\_navfac} = 460 \frac{lb}{in^3}$ **<~ NAVFAC**

$k_{s\_fhwa} := 3000 \cdot \frac{lb}{in^3}$ **<~ FHWA**

$k_{s\_design} := \frac{k_{s\_bowles} + k_{s\_navfac} + 2 \cdot k_{s\_fhwa}}{4}$ $k_{s\_design} = 3494750 \frac{lb}{ft^3}$

SHEAR MODULUS

$G_S := 0.5 \cdot N_{cor} \cdot \frac{kip}{in^2}$ $G_S = 6336000 \frac{lb}{ft^2}$

VERTICAL SHEAR STRESS

$\tau_S := N_{cor} \cdot 20 \cdot psf$ $\tau_S = 1760 \frac{lb}{ft^2}$

RECOMMENDED FBPIER SOIL TYPE

STIFF - CLAY

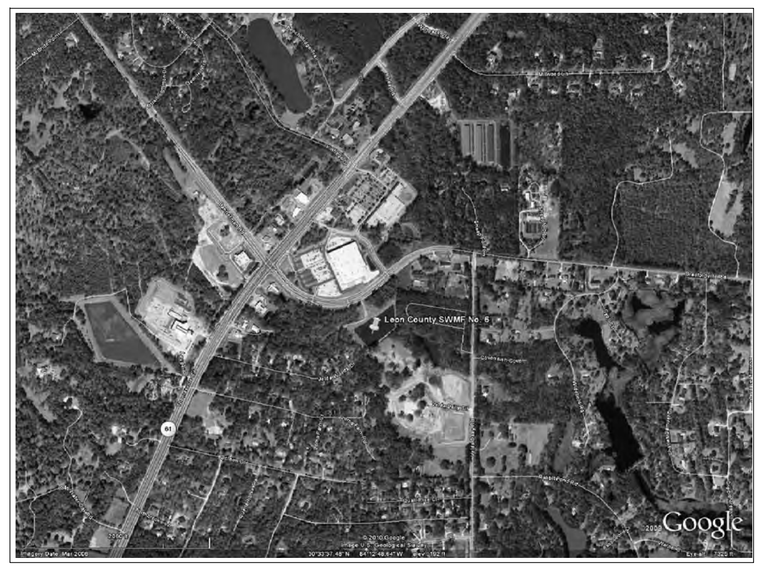
www.cdm.com

LEON COUNTY, FLORIDA

SWMF No. 6 MODIFICATION

INDEX OF SHEETS

SHEET NO.	TITLE
GENERAL	
–	COVER, INDEX
CIVIL	
C–1	PROPOSED SITE LAYOUT
C–2	PROFILE
STRUCTURAL	
S–1	GENERAL NOTES
S–2	FLOATING DOCK PLANS, SECTIONS AND DETAILS
S–3	FLOATING DOCK PLANS, SECTIONS AND DETAILS
S–4	FLOATING DOCK PLANS, SECTIONS AND DETAILS
ELECTRICAL	
E–1	ELECTRICAL SITE PLAN AND DETAILS
E–2	ELECTRICAL PLAN AND DETAILS
E–3	ELECTRICAL PUMP STATION RISER DIAGRAM & CONTROL
	PANEL ARRANGEMENT
E–4	ELECTRICAL PUMP STATION CONTROL PANEL AND SCHEMATIC
E–5	ELECTRICAL SPRAYFIELD CONTROL PANEL LAYOUT
	AND BILL OF MATERIALS
E–6	ELECTRICAL SPRAYFIELD CONTROL PANEL AND SCHEMATIC



LOCATION MAP
NTS

AERIAL IMAGE OBTAINED FROM GOOGLE EARTH PRO APRIL 2009

Board of County Commissioners

William C. Proctor, Jr. – District 1
Jane G. Sauls – District 2
John Dailey – District 3
Bryan Desloge – District 4
Kristin Dozier – District 5
Nick Maddox – At-Large
Akin Akinyemi – At-Large

JANUARY 2011

Prepared For:
ENGINEERING SERVICES DIVISION

Stormwater Management Coordinator
Theresa B. Heiker, P.E.

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FL COA No. EB-0000020

consulting • engineering • construction • operations

CDM Project No. 6021 - 72753

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PUMP PLATFORM AND WALKWAY

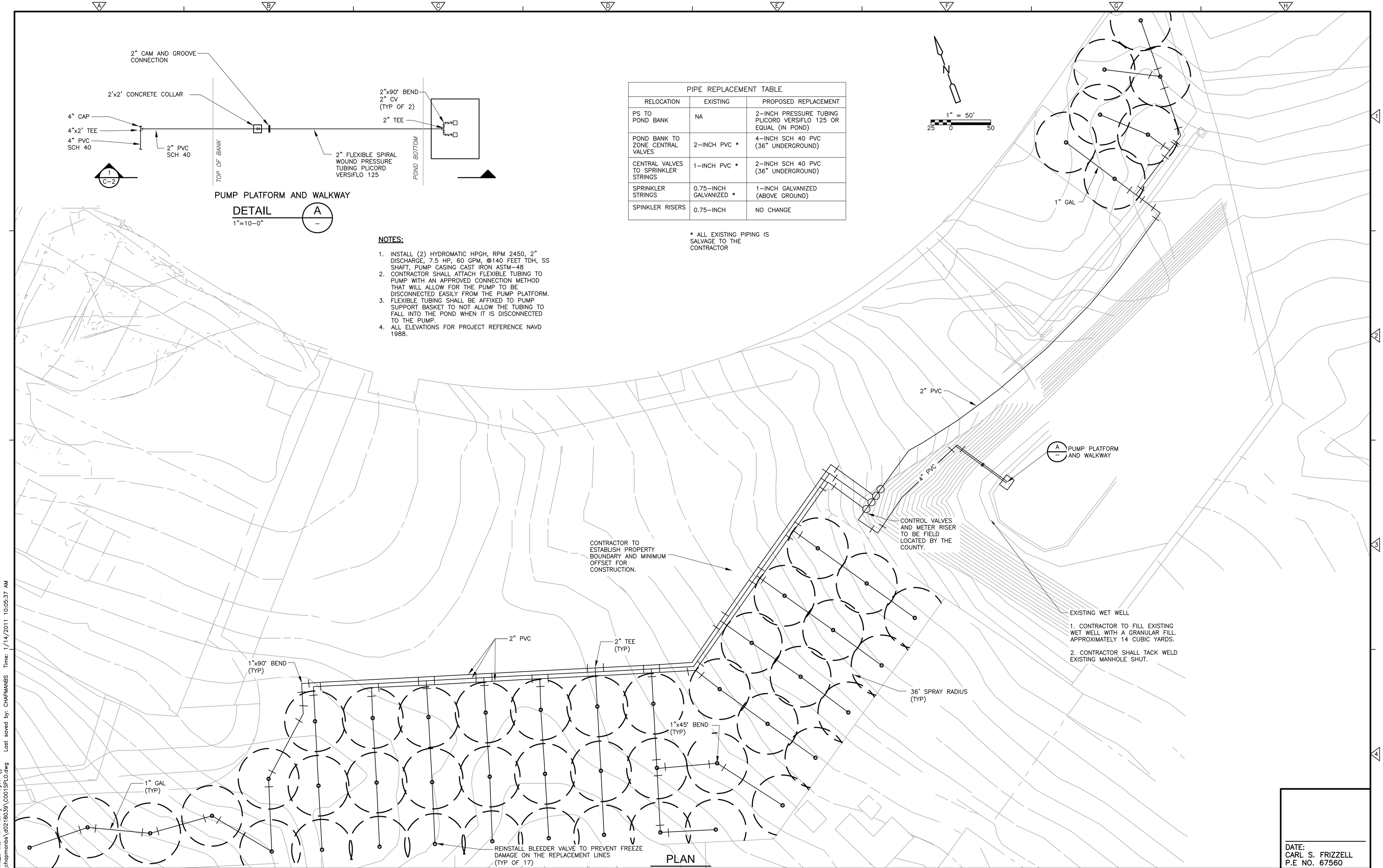
DETAIL A
1"=10-0"

PIPE REPLACEMENT TABLE		
RELOCATION	EXISTING	PROPOSED REPLACEMENT
PS TO POND BANK	NA	2-INCH PRESSURE TUBING PLICORD VERSIFLO 125 OR EQUAL (IN POND)
POND BANK TO ZONE CENTRAL VALVES	2-INCH PVC *	4-INCH SCH 40 PVC (36" UNDERGROUND)
CENTRAL VALVES TO SPRINKLER STRINGS	1-INCH PVC *	2-INCH SCH 40 PVC (36" UNDERGROUND)
SPRINKLER STRINGS	0.75-INCH GALVANIZED *	1-INCH GALVANIZED (ABOVE GROUND)
SPINKLER RISERS	0.75-INCH	NO CHANGE

* ALL EXISTING PIPING IS SALVAGE TO THE CONTRACTOR

NOTES:

1. INSTALL (2) HYDROMATIC HPGH, RPM 2450, 2" DISCHARGE, 7.5 HP, 60 GPM, @140 FEET TDH, SS SHAFT, PUMP CASING CAST IRON ASTM-48
2. CONTRACTOR SHALL ATTACH FLEXIBLE TUBING TO PUMP WITH AN APPROVED CONNECTION METHOD THAT WILL ALLOW FOR THE PUMP TO BE DISCONNECTED EASILY FROM THE PUMP PLATFORM.
3. FLEXIBLE TUBING SHALL BE AFFIXED TO PUMP SUPPORT BASKET TO NOT ALLOW THE TUBING TO FALL INTO THE POND WHEN IT IS DISCONNECTED TO THE PUMP.
4. ALL ELEVATIONS FOR PROJECT REFERENCE NAVD 1988.



PLAN

REV. NO.	DATE	DRWN	CHKD	REMARKS

DESIGNED BY: J. ADDISON
DRAWN BY: D. AUST
SHEET CHK'D BY: J. HOFFMAN
CROSS CHK'D BY: C. FRIZZELL
APPROVED BY: C. FRIZZELL
DATE: JANUARY 2011

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consulting • engineering • construction • operations

LEON COUNTY, FLORIDA

SWMF NO. 6 MODIFICATION

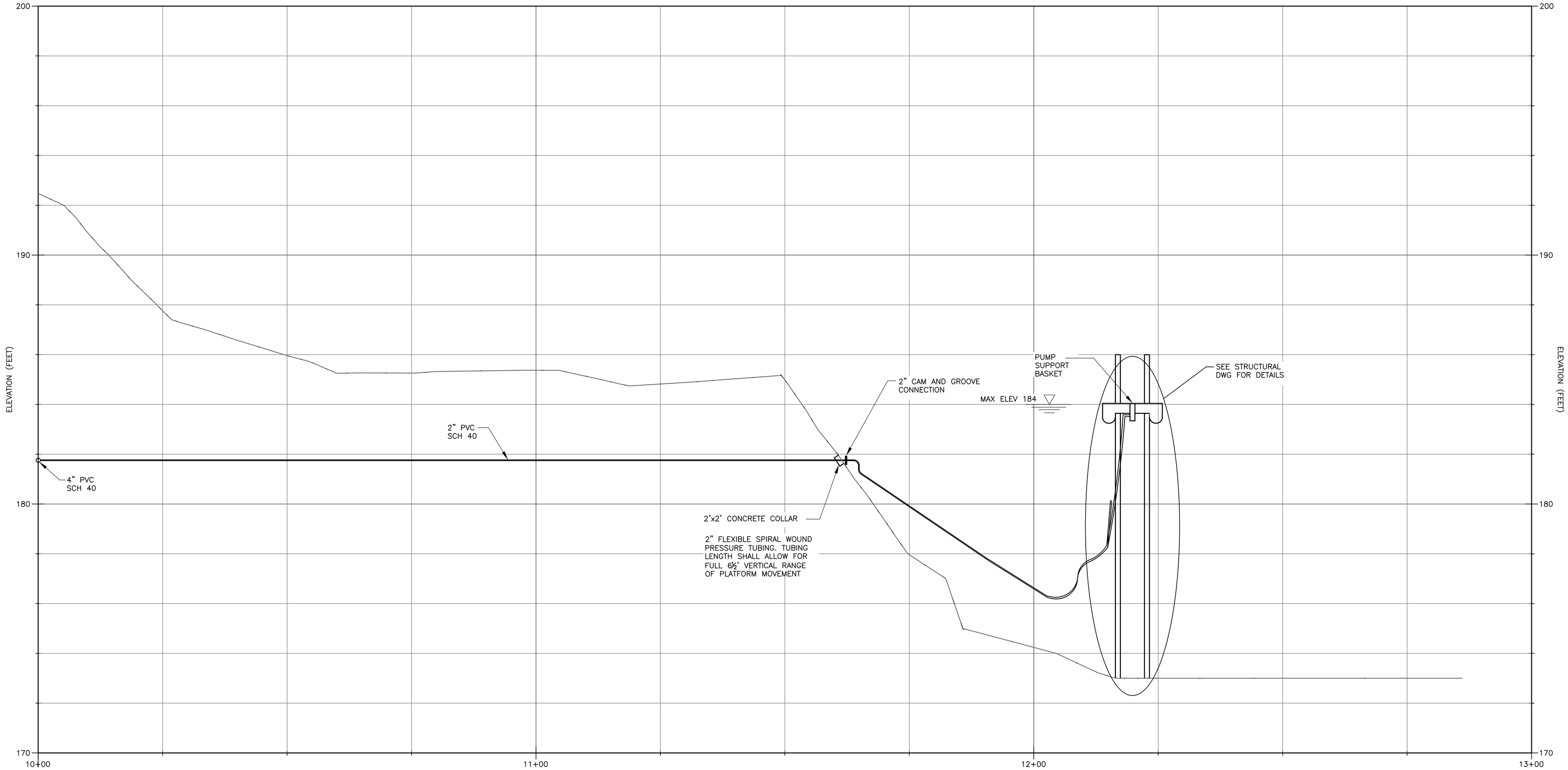
PROPOSED SITE LAYOUT

DATE:
CARL S. FRIZZELL
P.E NO. 67560

PROJECT NO. 6021-72753
FILE NAME: C001SPLO

SHEET NO.
C-1

ISSUED FOR BID



POND SECTION

SECTION 1

HORZ. 1"=10'
VERT. 1"=2'

DATE:
CARL S. FRIZZELL
P.E NO. 67560

REV. NO.	DATE	DRWN	CHKD	REMARKS

DESIGNED BY: J. ADDISON
DRAWN BY: D. AUST
SHEET CHK'D BY: J. HOFFMAN
CROSS CHK'D BY: C. FRIZZELL
APPROVED BY: C. FRIZZELL
DATE: JANUARY 2011

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LEON COUNTY, FLORIDA

SWMF NO. 6 MODIFICATION

PROFILE

PROJECT NO. 6021-72753
FILE NAME: C002SPLO

SHEET NO.
C-2

ISSUED FOR BID

GENERAL NOTES

DESIGN CRITERIA:

CODES:

- FLORIDA BUILDING CODE, 2007 EDITION WITH 2009 AMENDMENTS
- ENVIRONMENTAL STRUCTURES: ACI 350 "CODE REQUIREMENTS FOR ENVIRONMENTAL ENGINEERING CONCRETE STRUCTURES"
- OTHER STRUCTURES: ACI 318 "BUILDING CODE REQUIREMENTS FOR REINFORCED CONCRETE"
- AISC MANUAL OF STEEL CONSTRUCTION, THIRTEENTH EDITION

DESIGN LOADS:

LIVE LOADS:

– GANGWAY	30	PSF
– FLOATING DOCK	20	PSF
– PROCESS SLABS ON GRADE	N/A	

WINDLOADS:

– BASIC WIND SPEED	110	MPH
– EXPOSURE CATEGORY	C	
– IMPORTANCE FACTOR	1.15	

CONCRETE 28–DAY STRENGTH:

– SLABS, WALLS, FOOTINGS	4500	PSI

REINFORCING STEEL:

- ALL BARS ASTM A615, GRADE 60
- WELDED WIRE FABRIC ASTM A185

FOUNDATIONS:

- ALLOWABLE BEARING PRESSURE FOR SPREAD FOOTINGS OVER SUBSURFACE PREPARED AS PER SPECIFICATIONS: 1500 PSF

GENERAL CONDITIONS:

ALL STRUCTURAL DRAWINGS SHALL BE USED IN CONJUNCTION WITH THE MECHANICAL, CIVIL, ELECTRICAL AND SHOP DRAWINGS AND SPECIFICATIONS.

THE CONTRACTOR SHALL REVIEW AND VERIFY DIMENSIONS SHOWN IN ALL PLANS AND REVIEW ALL FIELD CONDITIONS THAT MAY AFFECT THE INSTALLATION OF THE FACILITY, SHOULD DISCREPANCIES APPEAR, THE CONTRACTOR SHALL NOTIFY THE ENGINEER IN WRITING TO OBTAIN ENGINEER'S CLARIFICATION BEFORE COMMENCING WITH THE WORK.

THE CONTRACTOR SHALL TAKE ANY AND ALL NECESSARY MEASURES TO PROTECT EXISTING STRUCTURES FROM DAMAGE WHEN WORKING IN AND AROUND EXISTING STRUCTURES PERFORMING WORK SUCH AS DEMOLITION, FOUNDATION EXCAVATION AND OTHERS.

SIZE AND LOCATION OF EQUIPMENT PADS AND ANCHOR BOLTS SHALL BE PER EQUIPMENT MANUFACTURER'S REQUIREMENTS.

ANY EQUIPMENT THAT MAY INDUCE VIBRATION TO THE STRUCTURE SHALL BE ADEQUATELY ISOLATED FROM THE STRUCTURES.

ALL DETAILS AND SECTIONS SHOWN ON THE DRAWINGS ARE INTENDED TO BE TYPICAL AND SHALL BE CONSTRUED TO APPLY TO ANY SIMILAR SITUATION ELSE–WHERE ON THE PROJECT, EXCEPT WHERE A DIFFERENT DETAIL IS SHOWN.

STANDARD DETAILS (SHOWN ON SD1, SD2 AND SD3) APPLY TO ALL SIMILAR SITUATIONS ON THE PROJECT, EXCEPT WHERE A DIFFERENT DETAIL IS SHOWN.

STRUCTURAL ALUMINUM:

DESIGN, FABRICATION, ERECTION MATERIALS AND WORKMANSHIP SHALL BE IN ACCORDANCE WITH THE LATEST "ALUMINUM DESIGN MANUAL" (ADM) SPECIFICATIONS AND DESIGN DRAWINGS.

ALL STRUCTURAL ALUMINUM:

ALUMINUM EXTRUDED PIPE –	ASTM B429, ALLOY 6063–T6
ALUMINUM EXTRUDED SHAPE –	ASTM B221, ALLOY 6061–T6
ALUMINUM SHEET AND PLATE –	ASTM B209, ALLOY 6061–T6
ALUMINUM ALLOY ROLLED THREAD PLATE –	ASTM B209, ALLOY 6061–T6
ALUMINUM CASTING –	ASTM B26/B36M, ALLOY 443.0–F

SHOP AND ERECTION DRAWINGS SHALL BE SUBMITTED TO THE ENGINEER FOR REVIEW.

WELDED CONNECTIONS SHALL BE IN ACCORDANCE WITH THE LATEST ANS D1.2/D1.2M "STRUCTURAL WELDING CODE – ALUMINUM".

WHERE ALUMINUM CONTACTS A DISSIMILAR METAL, APPLY TO THE DISSIMILAR METAL A HEAVY BRUSH COAT OF ZINC–CHROMATE PRIMER FOLLOWED BY TWO COATS OF ALUMINUM METAL PAINT.

WHERE ALUMINUM CONTACTS MASONRY OR CONCRETE, APPLY A HEAVY COAT OF BITUMASTIC OR EPOXY PAINT.

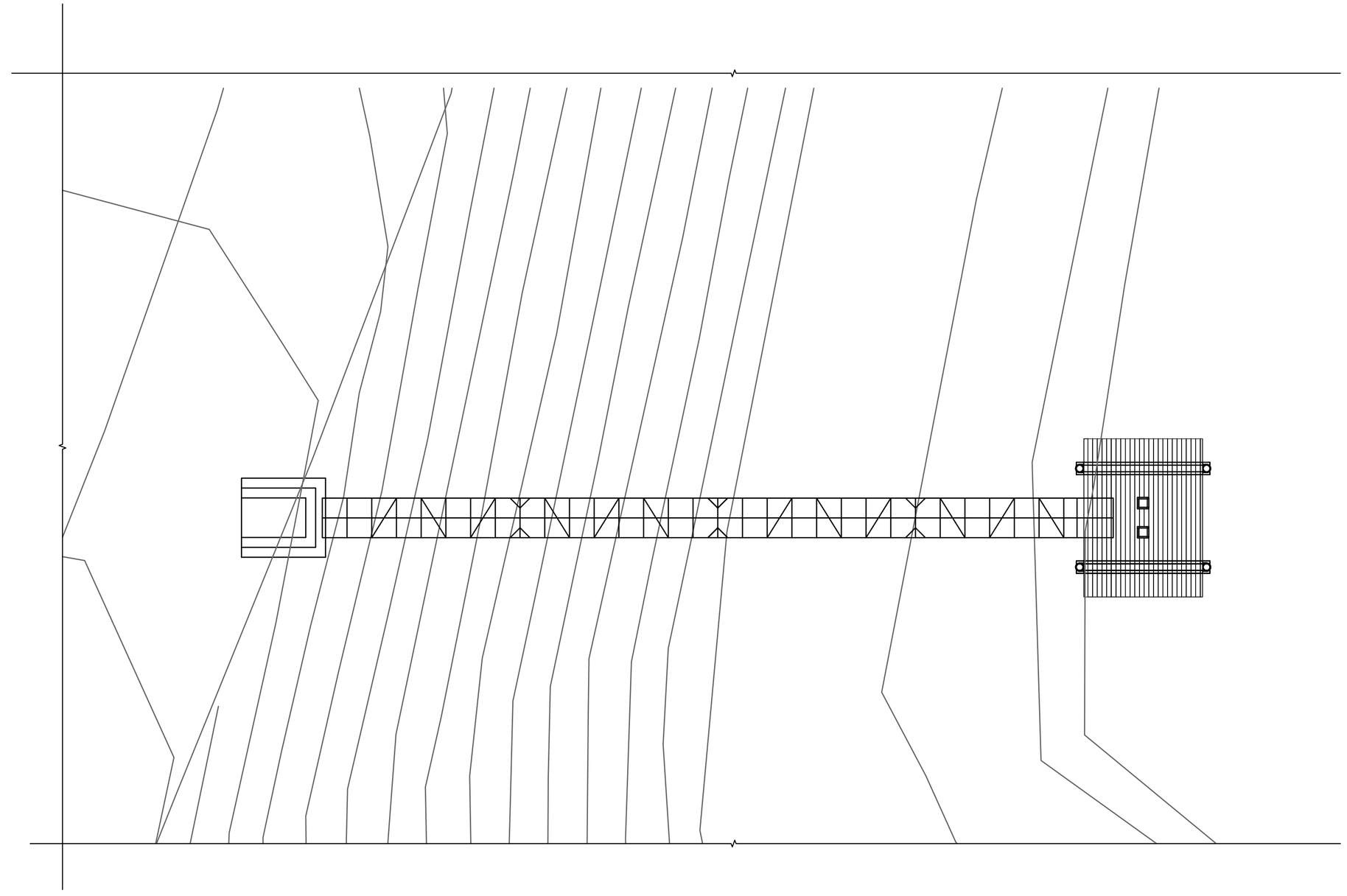
STRUCTURAL TIMBER:

LUMBER SHALL BE PRESSURE TREATED NO. 2 SOUTHERN PINE PER S.P.I.B.

LUMBER SHALL BE GRADED AND MARKED BY SOUTHERN PINE INSPECTION BUREAU.

PRESSURE TREATED LUMBER SHALL CONFORM TO AWPA STANDARDS. AWPB QUALITY MARKS SHALL BE PROVIDED.

LUMBER SHALL BE PRESSURE TREATED WITH ALKALINE COPPER QUAT (ACQ) AND SHALL CONFORM TO AWPA STANDARD C2 (SOIL CONTACT). RETENTION OF PRESERVATIVE SHALL BE 0.6 PCF. EACH PIECE OF MATERIAL SHALL BEAR THE AWPB QUALITY MARK LP–22. ALL MATERIAL SHALL BE KILN DRIED AFTER TREATMENT TO 19 PERCENT OR LESS MOISTURE CONTENT. FIELD CUTS AND HOLES SHALL BE TREATED IN ACCORDANCE WITH AWPA STANDARD M4 WHEN LUMBER THICKNESS EXCEEDS 2".



PLAN
1/8" = 1'–0"

ABBREVIATIONS:

AL	ALUMINUM	MIN	MINIMUM
BLDG	BUILDING	MISC	MISCELLANEOUS
BOT	BOTTOM	NF	NEAR FACE
CC	CENTER TO CENTER	NTS	NOT TO SCALE
CJ	CONTROL JOINT	OC	ON CENTER
CMU	CONCRETE MASONRY UNIT	PL	PLATE
CONC	CONCRETE	PLF	POUNDS PER LINEAR FOOT
CONST JT	CONSTRUCTION JOINT	PROJ	PROJECTION
CONT	CONTINUOUS	PSF	POUNDS PER SQUARE FOOT
DIA	DIAMETER	PSI	POUNDS PER SQUARE INCH
DWG	DRAWING	REINF	REINFORCEMENT
EF	EACH FACE	SPECS	SPECIFICATIONS
EJ	EXPANSION JOINT	SS	STAINLESS STEEL
EL	ELEVATION	STD	STANDARD
EW	EACH WAY	T&B	TOP AND BOTTOM
FF	FAR FACE	T/STRUCTURE	TOP OF STRUCTURE
FTG	FOOTING	TYP	TYPICAL
HORIZ	HORIZONTAL	UON	UNLESS OTHERWISE NOTED
HP	HIGH POINT	VERT	VERTICAL
ID	INSIDE DIAMETER	WSTP	WATERSTOP
LP	LOW POINT	WWF	WELDED WIRE FABRIC
MAT'L	MATERIAL		
MAX	MAXIMUM		

NOTE:
THESE ABBREVIATIONS ARE FOR USE ON STRUCTURAL DRAWINGS ONLY.

REV. NO.	DATE	DRWN	CHKD	REMARKS

DESIGNED BY: T. VERWEY
DRAWN BY: R. NYSTROM
SHEET CHK'D BY: T. VERWEY
CROSS CHK'D BY: C. FRIZZEL
APPROVED BY: T. VERWEY
DATE: JANUARY 2011

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LEON COUNTY, FLORIDA

SWMF NO. 6 MODIFICATION

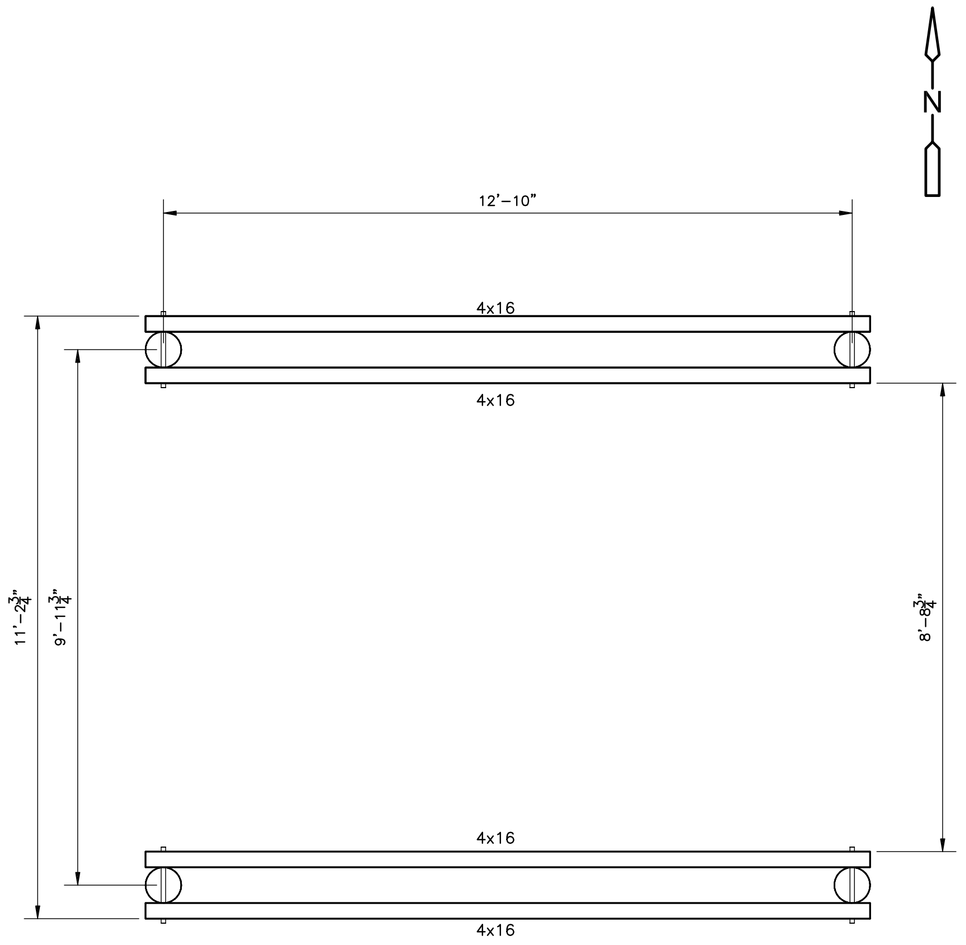
GENERAL NOTES

DATE:
TIMOTHY A. VERWEY
P.E NO. 50947

PROJECT NO. 6021–72753
FILE NAME: S001STNT

SHEET NO.
S-1

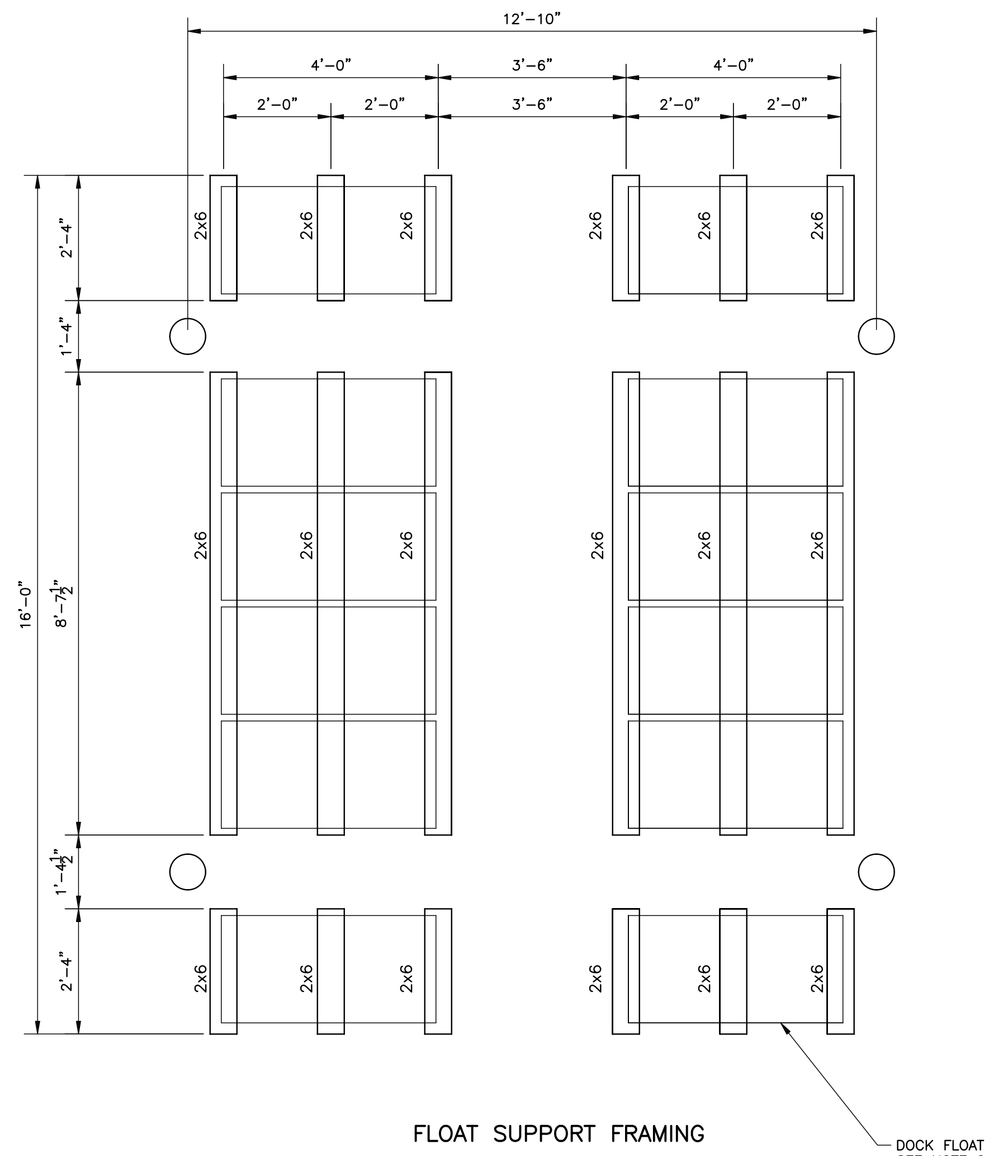
ISSUED FOR BID



LOWER SUPPORT FRAMING

PLAN

1/2" = 1'-0"



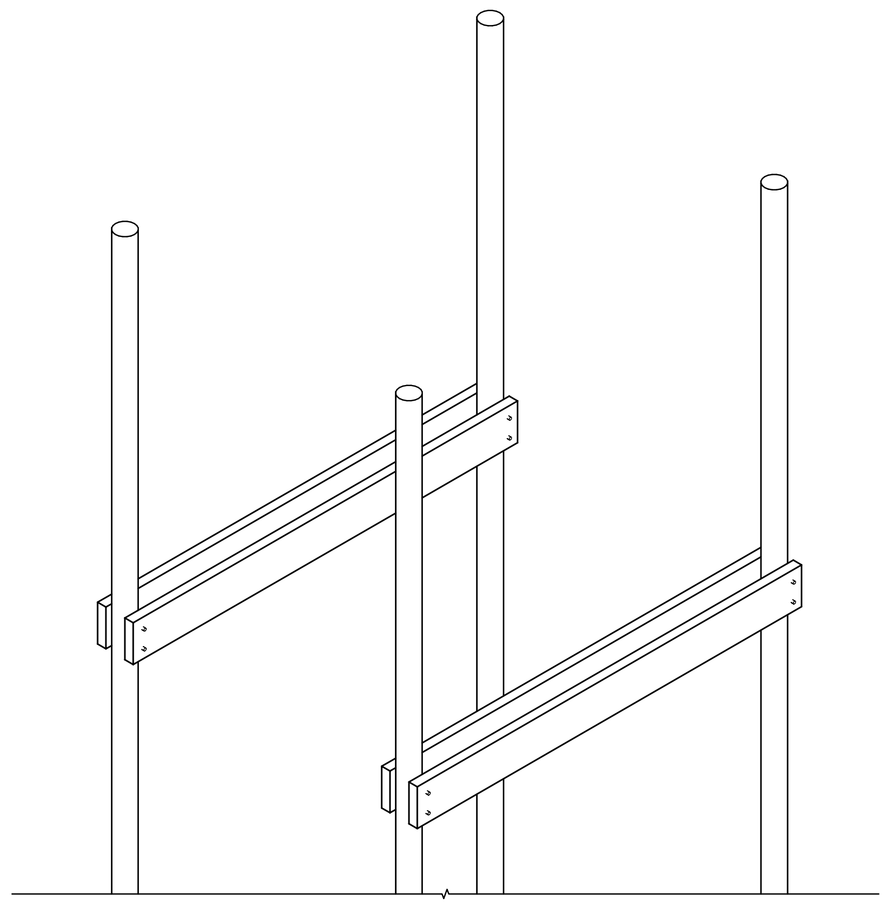
FLOAT SUPPORT FRAMING

PLAN

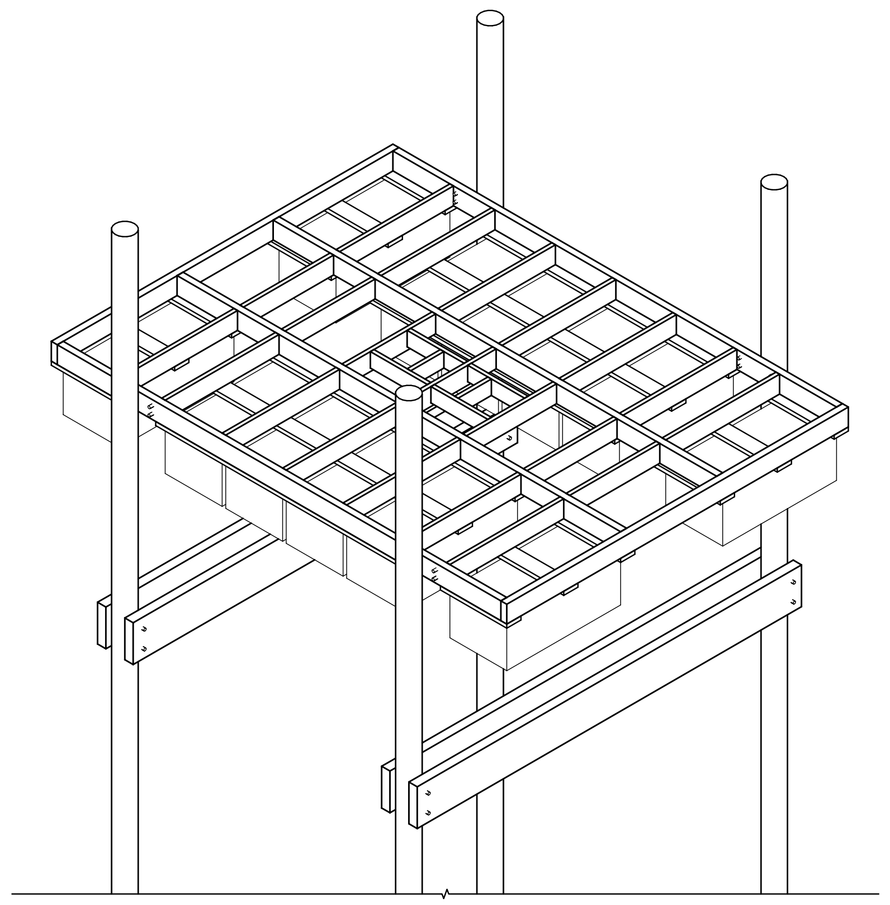
1/2" = 1'-0"

NOTES:

1. PROVIDE 12 – 2'x4'x20" DEEP DOCK FLOATS.
2. DOCK FLOATS SHALL BE ONE PIECE, NO SEAM, BLOW MOLDED HIGH DENSITY POLYETHYLENE FILLED WITH EXPANDED POLYSTYRENE AND SHALL BE "POLYFLANGE" AS MANUFACTURED BY PERMAFLOAT OR APPROVED EQUAL.



LOWER SUPPORT FRAMING ISOMETRIC



FLOAT SUPPORT FRAMING ISOMETRIC

DATE:
TIMOTHY A. VERWEY
P.E NO. 50947

REV. NO.	DATE	DRWN	CHKD	REMARKS

DESIGNED BY: T. VERWEY
DRAWN BY: R. NYSTROM
SHEET CHK'D BY: T. VERWEY
CROSS CHK'D BY: C. FRIZELL
APPROVED BY: T. VERWEY
DATE: JANUARY 2011

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LEON COUNTY, FLORIDA

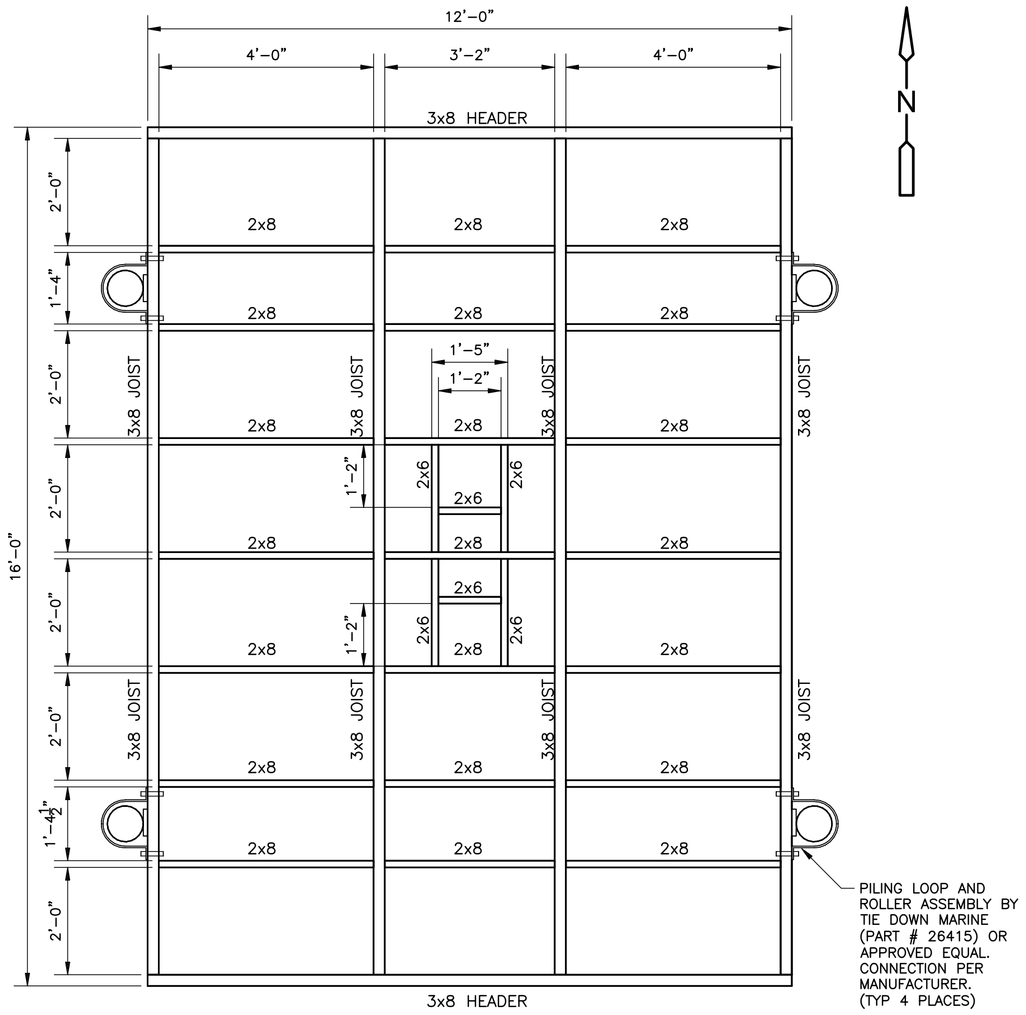
SWMF NO. 6 MODIFICATION

FLOATING DOCK
PLANS, SECTIONS AND DETAILS

PROJECT NO. 6021-72753
FILE NAME: S002DKPL

SHEET NO.
S-2

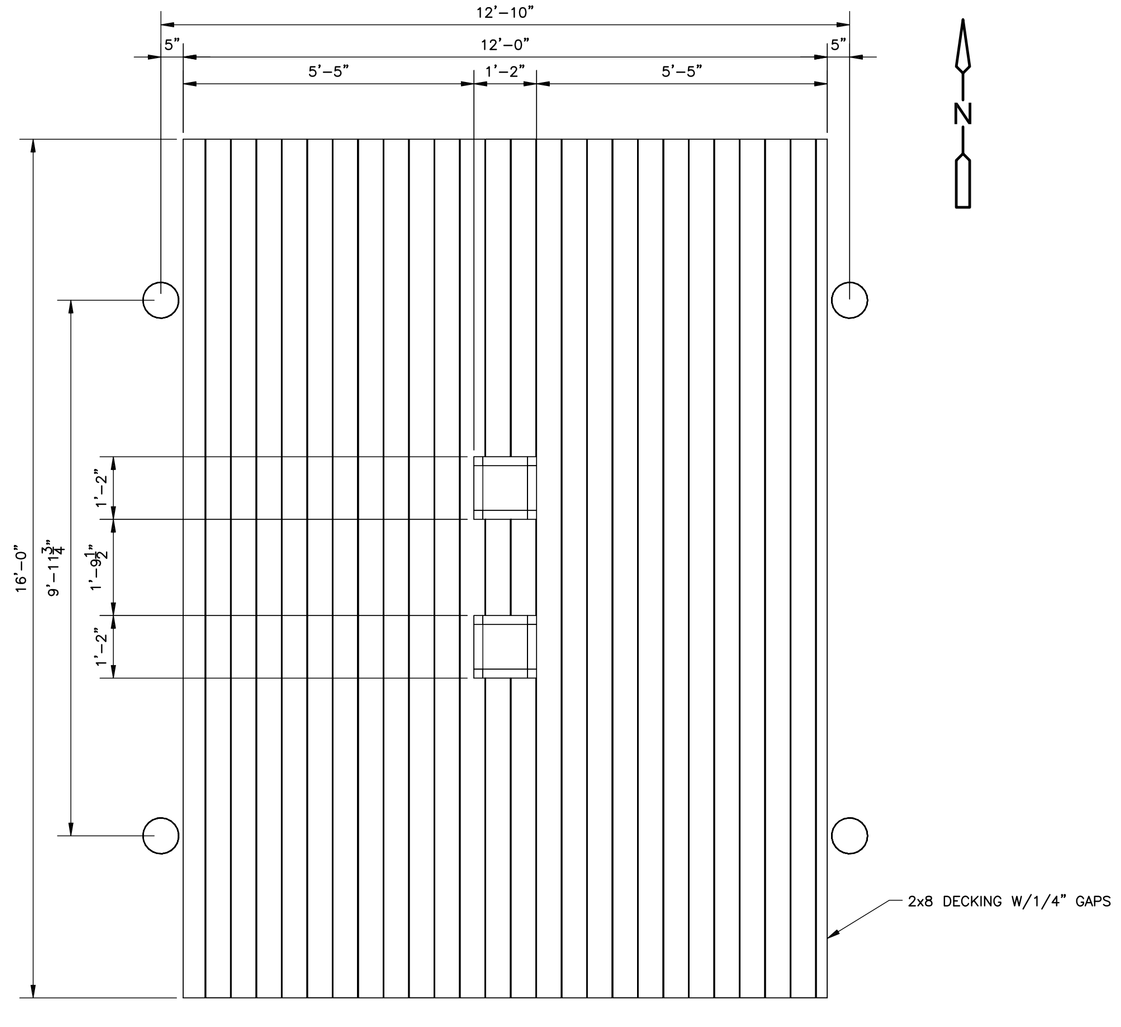
ISSUED FOR BID



FLOATING DECK FRAMING

PLAN

1/2" = 1'-0"

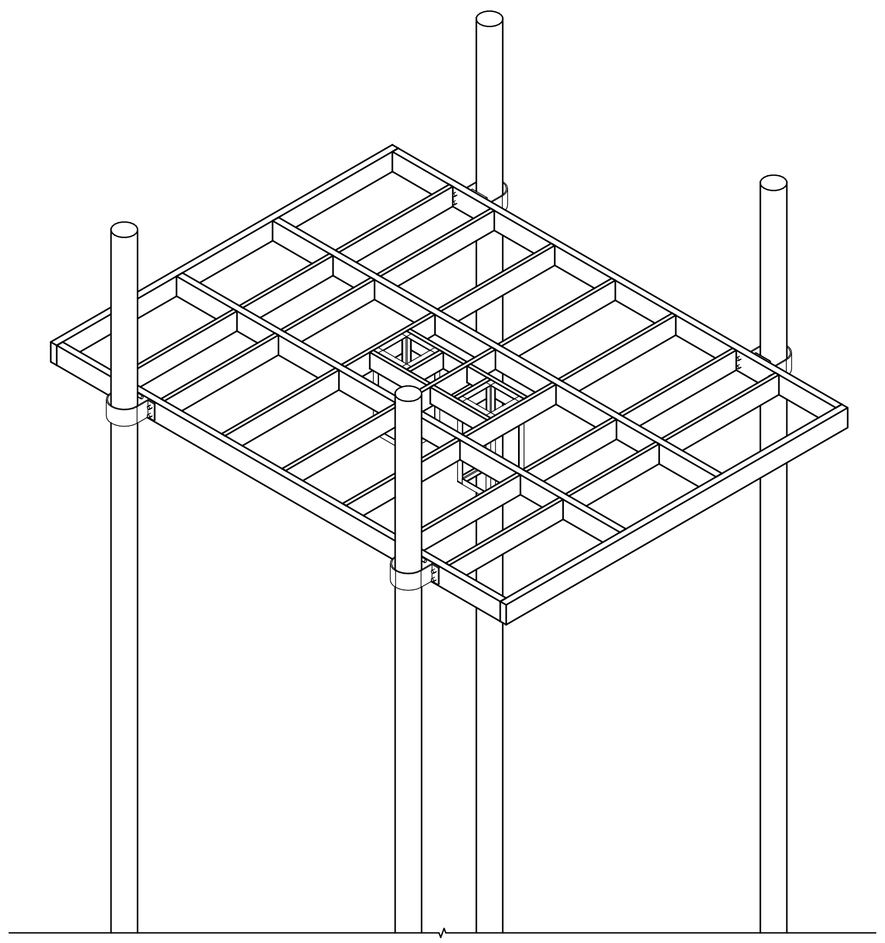


DECKING

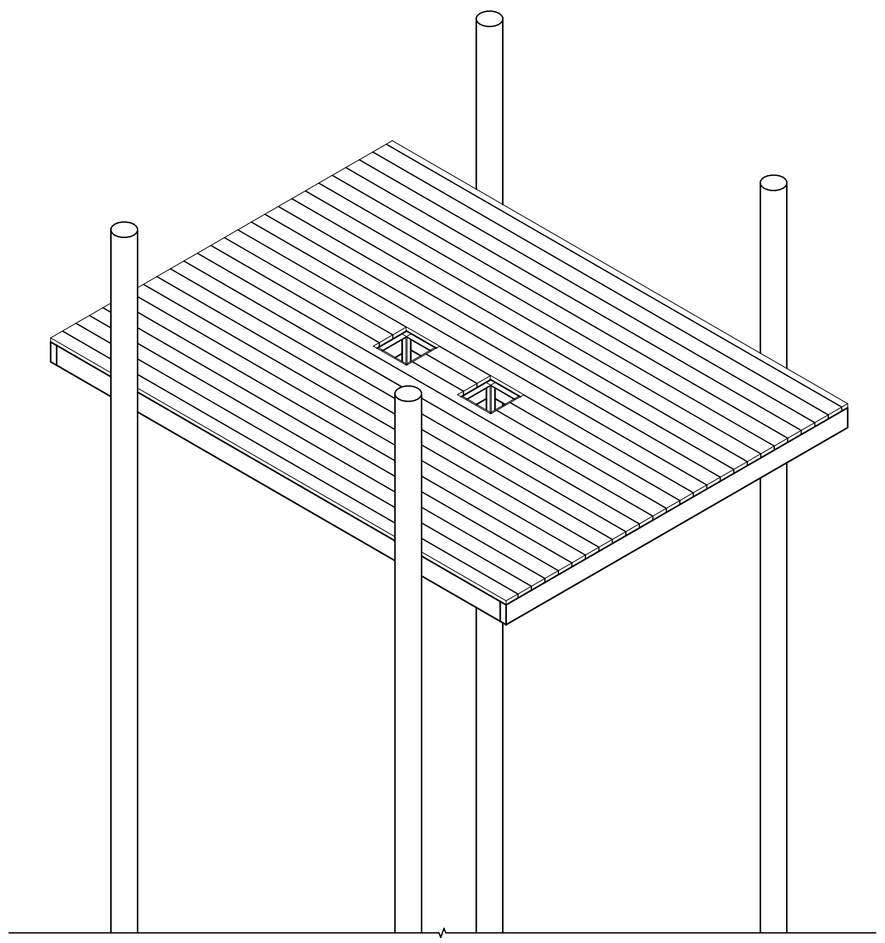
PLAN

1/2" = 1'-0"

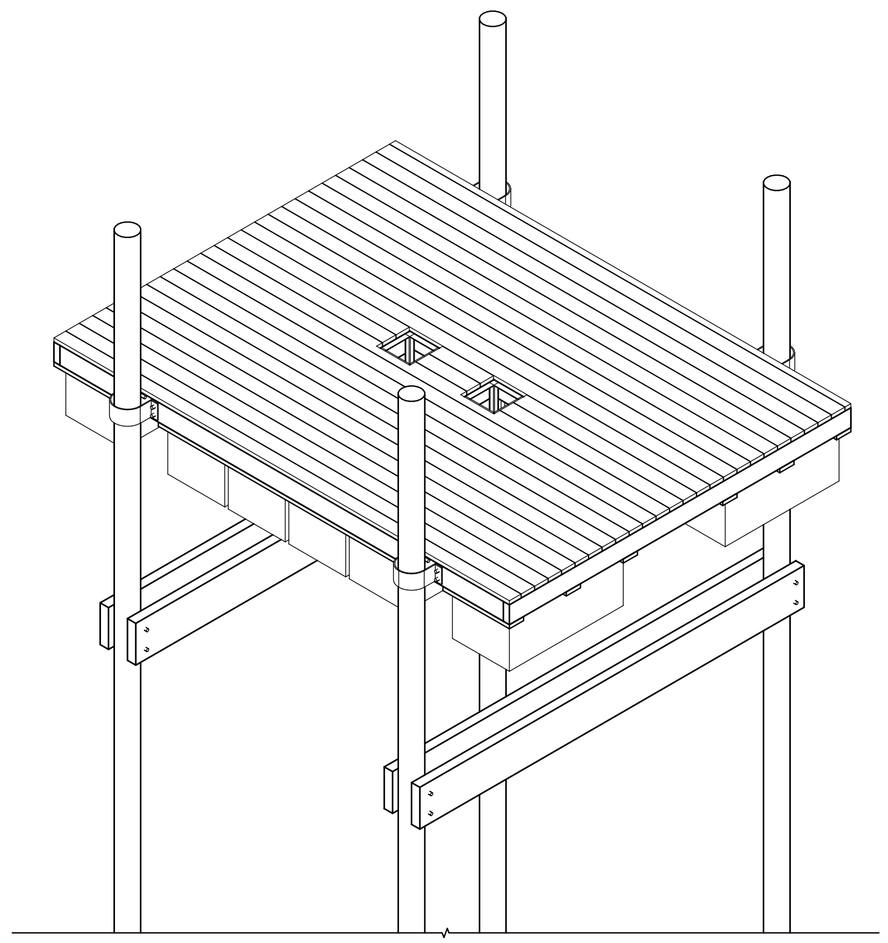
CONNECTORS				
LOCATION	SIMPSON CONNECTOR	FASTENER		FINISH
		HEADER	JOIST	
3x8 HEADER TO 3x8 JOIST	HUC38	10–16d	4–10x1–1/2	HOT DIP GALVANIZED
2x8 JOIST TO 3x8 JOIST	LUS26	4–10d	4–10d	HOT DIP GALVANIZED
2x6 FLOAT SUPPORTS TO 2x8 JOIST	–	3–10d EACH END		HOT DIP GALVANIZED
2x6 JOIST TO 2x8 JOIST	LUS26	4–10d	4–10d	HOT DIP GALVANIZED
4x16 BEAM TO PILE	–	2–1"ø CARRIAGE BOLT EACH END		HOT DIP GALVANIZED
DOCK FLOAT TO 2x6 SUPPORT	–	6–5/16x4" LAG BOLTS		HOT DIP GALVANIZED
DECK TO FRAME	–	#8 x 2-1/2" 3 PER JOIST MODEL WSCTC212S BY SIMPSON		HOT DIP GALVANIZED



FLOATING DOCK FRAMING ISOMETRIC



DECKING ISOMETRIC



FLOATING DOCK SYSTEM ISOMETRIC

DATE:
TIMOTHY A. VERWEY
P.E NO. 50947

REV. NO.	DATE	DRWN	CHKD	REMARKS

DESIGNED BY: T. VERWEY
DRAWN BY: R. NYSTROM
SHEET CHK'D BY: T. VERWEY
CROSS CHK'D BY: C. FRIZZELL
APPROVED BY: T. VERWEY
DATE: JANUARY 2011

CDM
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3522 Thomasville Road, Suite 300
Tallahassee, FL 32309
Tel: (850) 386-9500
FL COA No. EB-0000020
consulting • engineering • construction • operations

LEON COUNTY, FLORIDA

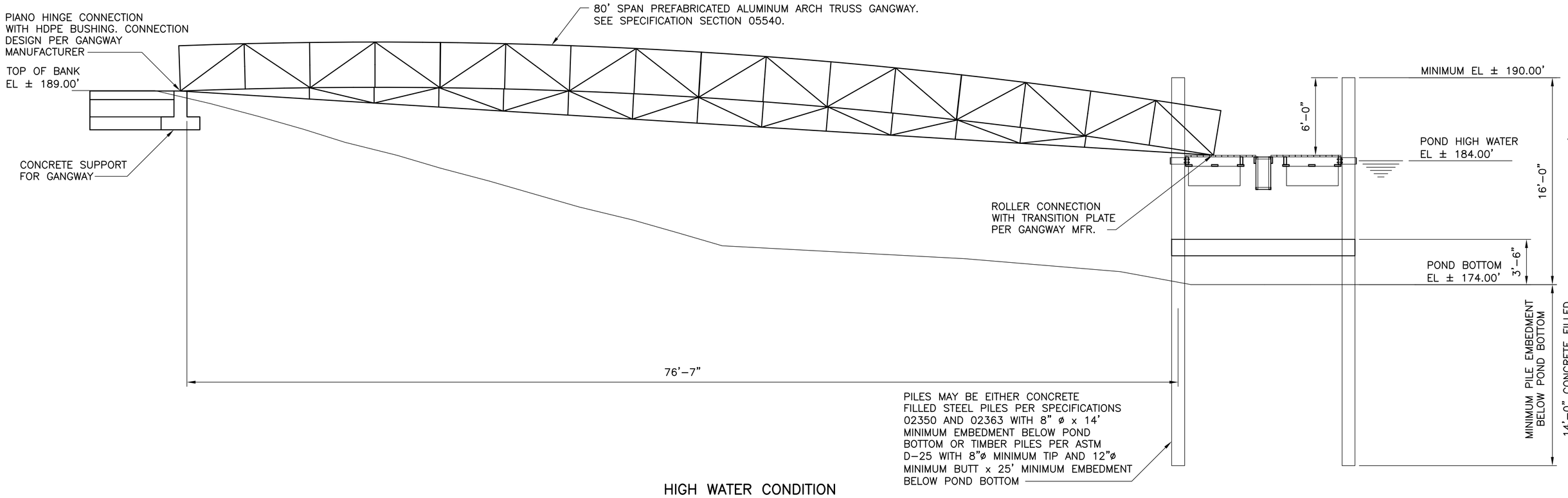
SWMF NO. 6 MODIFICATION

FLOATING DOCK
PLANS, SECTIONS AND DETAILS

PROJECT NO. 6021–72753
FILE NAME: S003DKPL

SHEET NO.
S-3

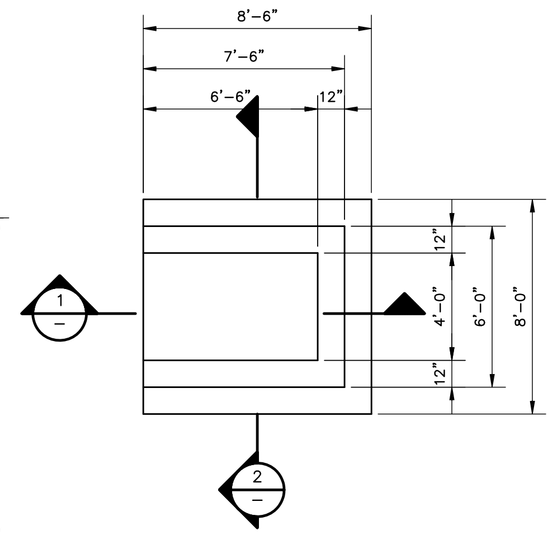
ISSUED FOR BID

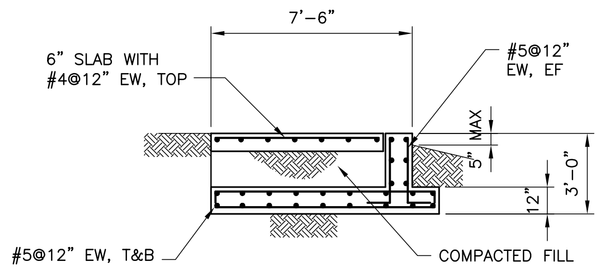


HIGH WATER CONDITION

ELEVATION

3/8" = 1'-0"

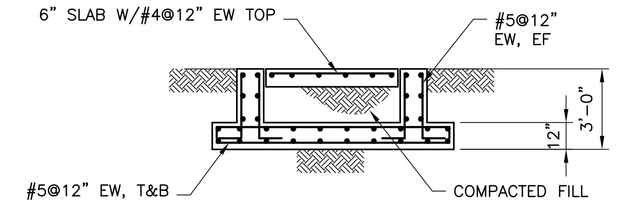




CONCRETE GANGWAY SUPPORT

SECTION 1

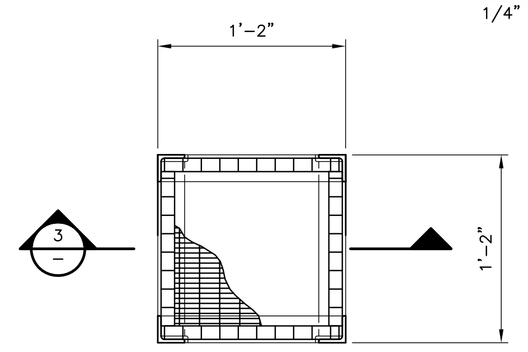
1/4" = 1'-0"



CONCRETE GANGWAY SUPPORT

SECTION 2

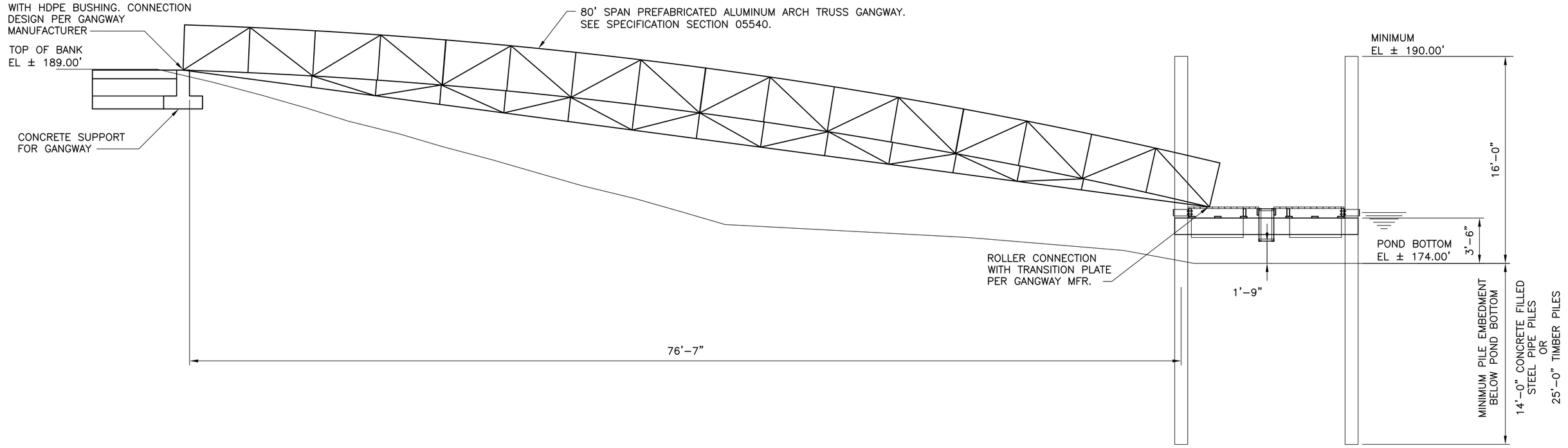
1/4" = 1'-0"



PUMP BASKET

PLAN

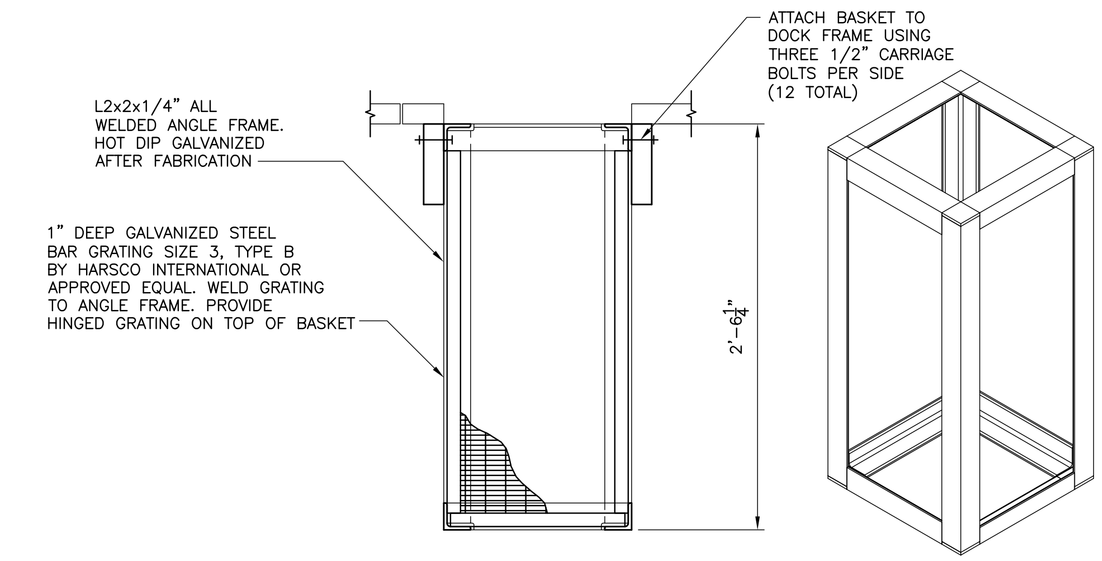
1-1/2" = 1'-0"



LOW WATER CONDITION

ELEVATION

3/8" = 1'-0"



PUMP BASKET

SECTION 3

1-1/2" = 1'-0"

PUMP BASKET

ISOMETRIC

REV. NO.	DATE	DRWN	CHKD	REMARKS

DESIGNED BY: T. VERWEY
DRAWN BY: R. NYSTROM
SHEET CHK'D BY: T. VERWEY
CROSS CHK'D BY: C. FRIZZELL
APPROVED BY: T. VERWEY
DATE: JANUARY 2011

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consulting • engineering • construction • operations

LEON COUNTY, FLORIDA

SWMF NO. 6 MODIFICATION

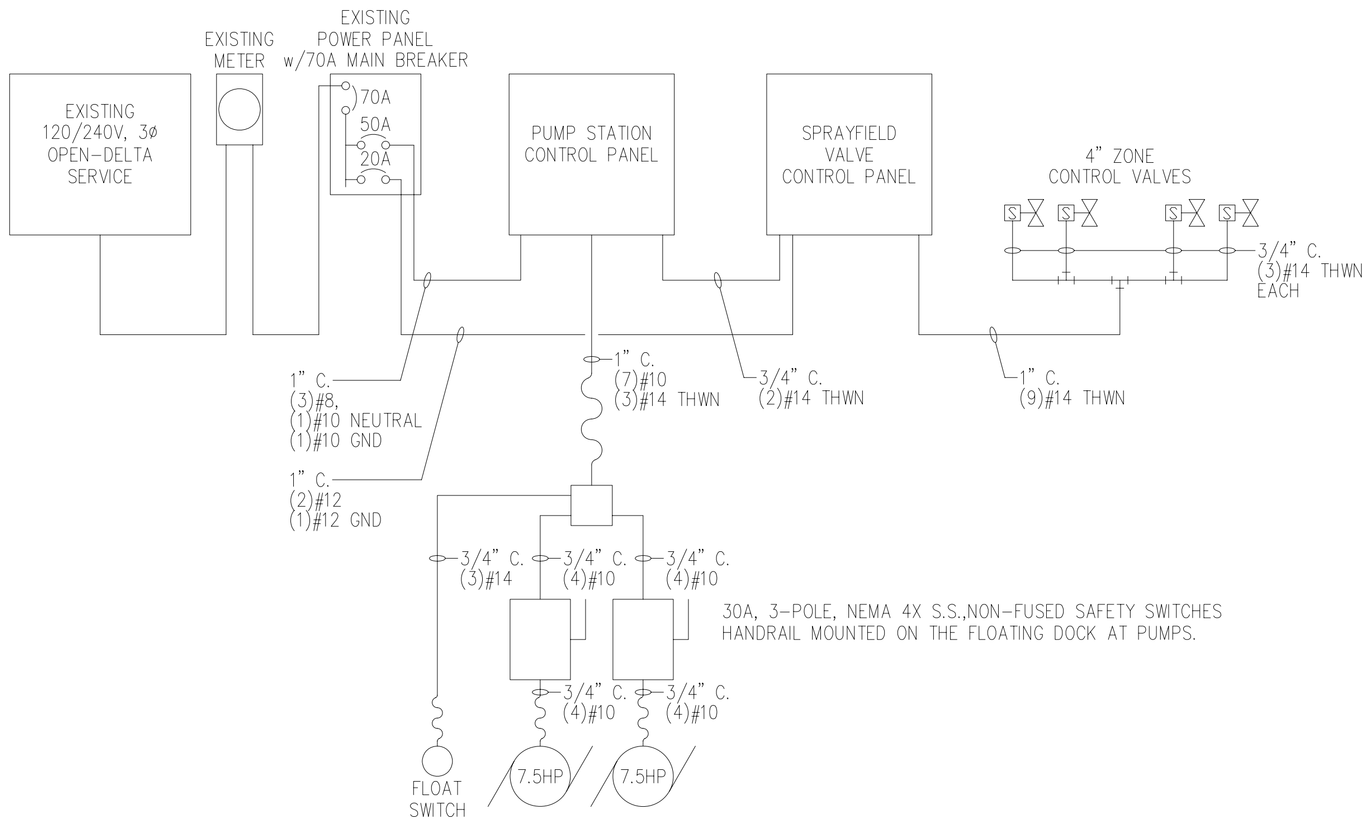
FLOATING DOCK
PLANS, SECTIONS AND DETAILS

DATE:
TIMOTHY A. VERWEY
P.E NO. 50947

PROJECT NO. 6021-72753
FILE NAME: S004DKPL

SHEET NO.
S-4

ISSUED FOR BID



RISER DIAGRAM (7.5HP DUPLEX PUMP STATION)

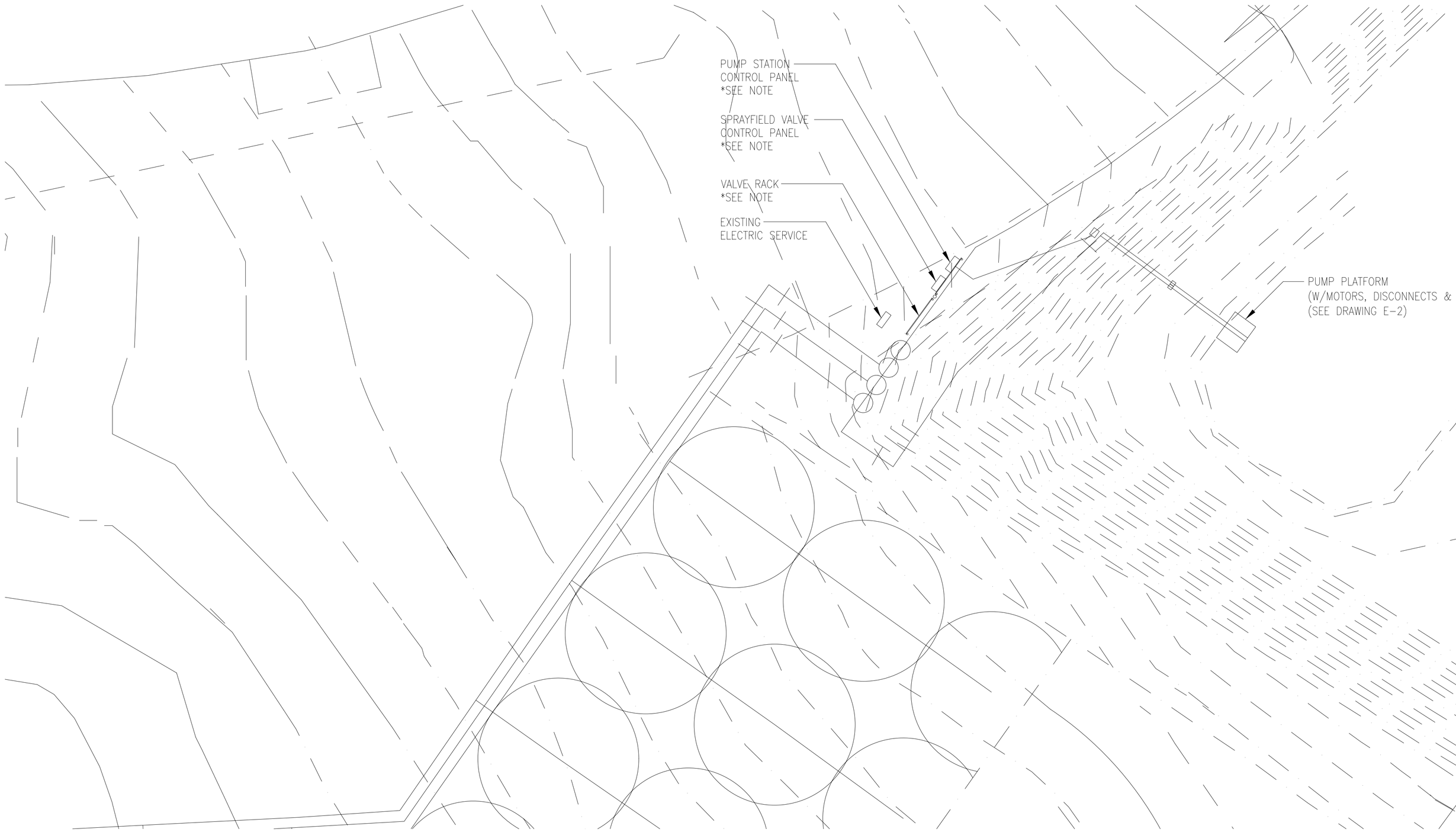
SCALE: NONE

100 AMP
70 AMP MAIN BREAKER
120/240 VAC
NEMA 3R/12
SURFACE MOUNT
12 CIRCUITS

PANEL-PP

CKT	BRK	DESCRIPTION	KVA	Ø	KVA	DESCRIPTION	BRK	CKT
1	50A	PUMP STATION CONTROL PANEL		A		-	-	2
3				B				4
5				C				6
7	20A	SPRAYFIELD CONTROL PANEL		A				8
9				B				10
11				C				12

PANEL SCHEDULE



*NOTE: EXACT INSTALLATION LOCATION TO BE FIELD LOCATED BY COUNTY STAFF.

REV. NO.	DATE	DRWN	CHKD	REMARKS
1	1/14/11	JDS	JAL	ISSUED FOR BID
0	10/13/10	JDS	JAL	100% SUBMITTAL
A	07/26/10	JDS	JAL	60% SUBMITTAL

DESIGNED BY: J. SCOTT
DRAWN BY: J. SCOTT
SHEET CHK'D BY: J. LANE
CROSS CHK'D BY: S. NEHRKE
APPROVED BY: C. FRIZZEL
DATE: JANUARY 2011

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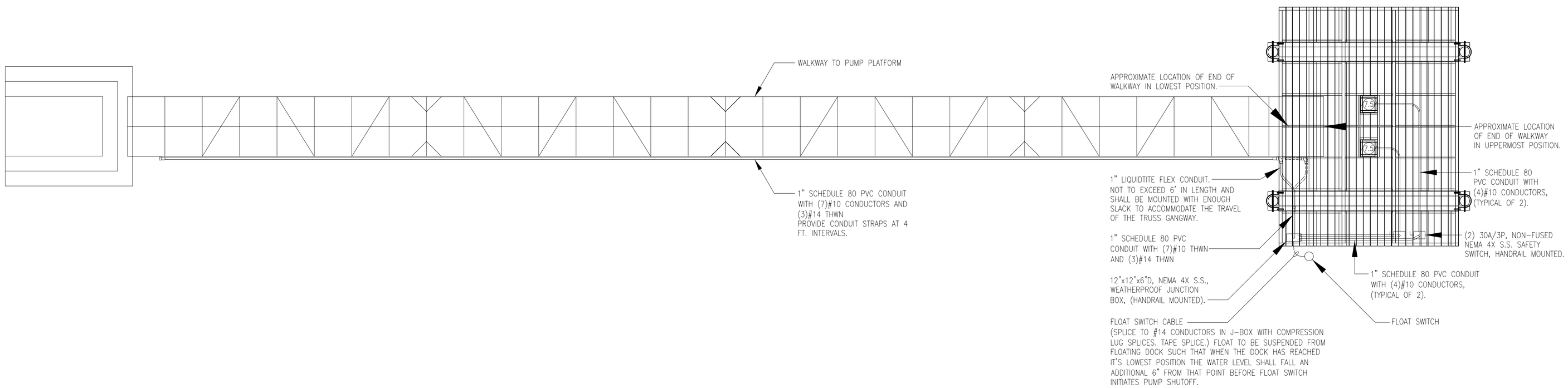
LEON COUNTY, FLORIDA

SWMF NO. 6 MODIFICATION

ELECTRICAL
SITE PLAN AND DETAILS
SCALE: 1"=30'

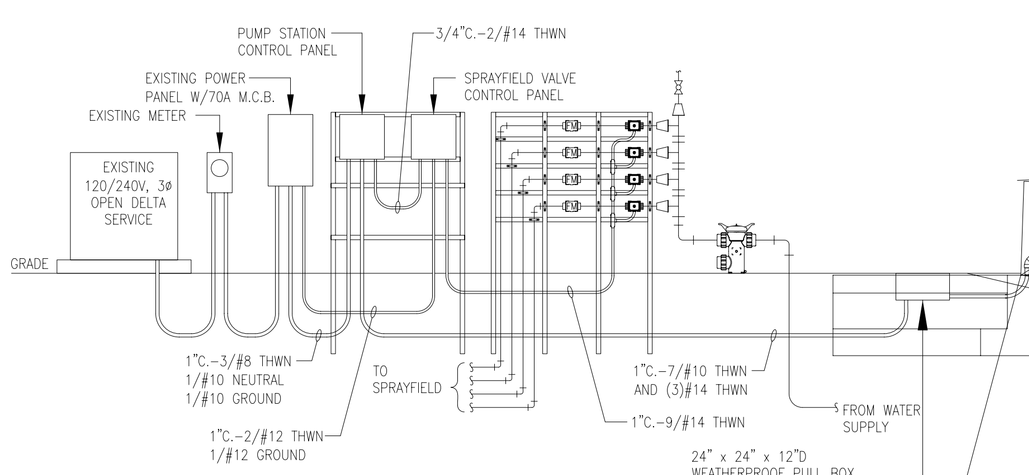
DATE:
NAME: Joseph A. Lane
P.E. No. Fl. #42632
PROJECT NO. 6021-72753
FILE NAME:
SHEET NO.
E-1

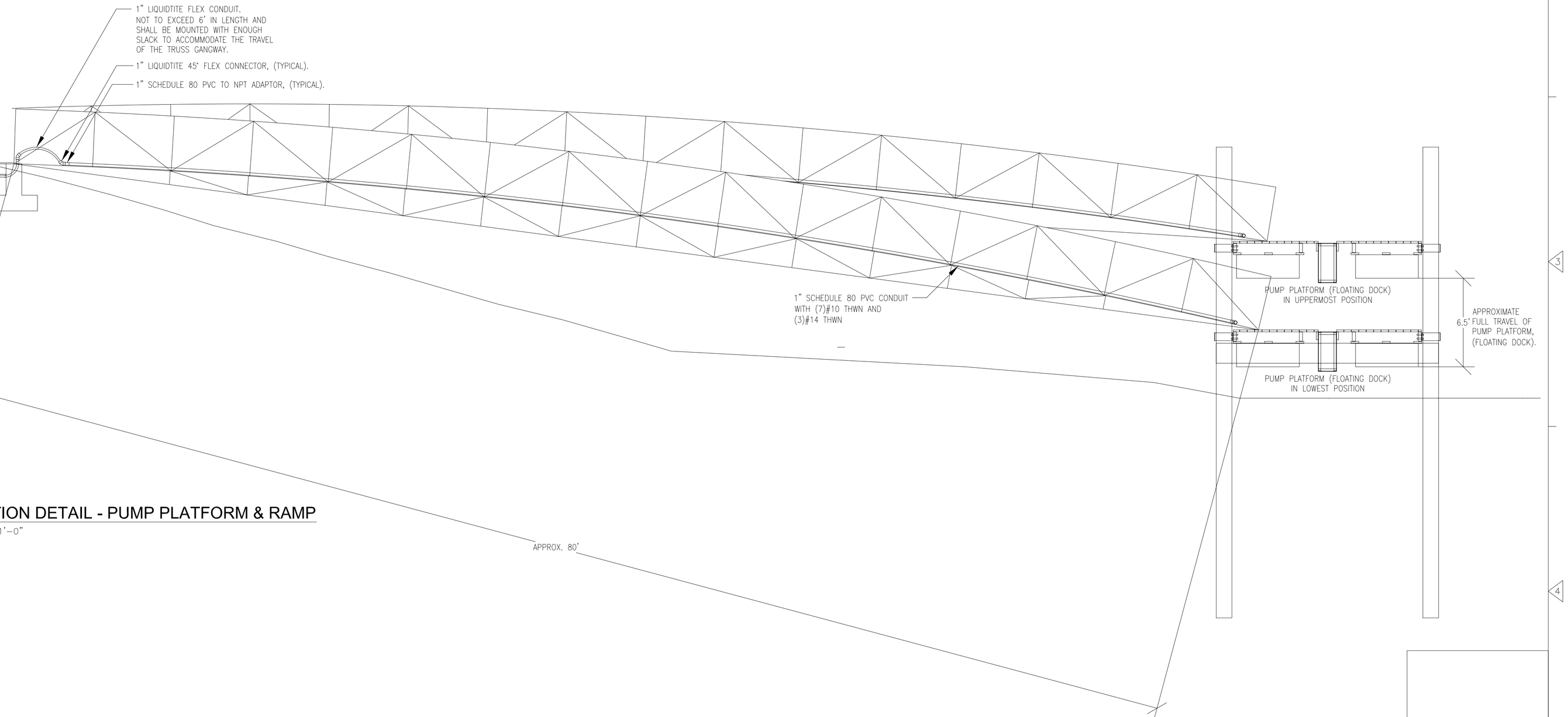
ISSUED FOR BID



PLAN VIEW - PUMP PLATFORM & RAMP

SCALE:1/4"=1'-0"





ELEVATION DETAIL - PUMP PLATFORM & RAMP

SCALE:1/4"=1'-0"

REV. NO.	DATE	DRWN	CHKD	REMARKS
1	1/14/11	JDS	JAL	ISSUED FOR BID
0	10/13/10	JDS	JAL	100% SUBMITTAL
A	07/26/10	JDS	JAL	60% SUBMITTAL

DESIGNED BY: J. SCOTT
DRAWN BY: J. SCOTT
SHEET CHK'D BY: J. LANE
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APPROVED BY: C. FRIZZEL
DATE: JANUARY 2011

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LEON COUNTY, FLORIDA

SWMF NO. 6 MODIFICATION

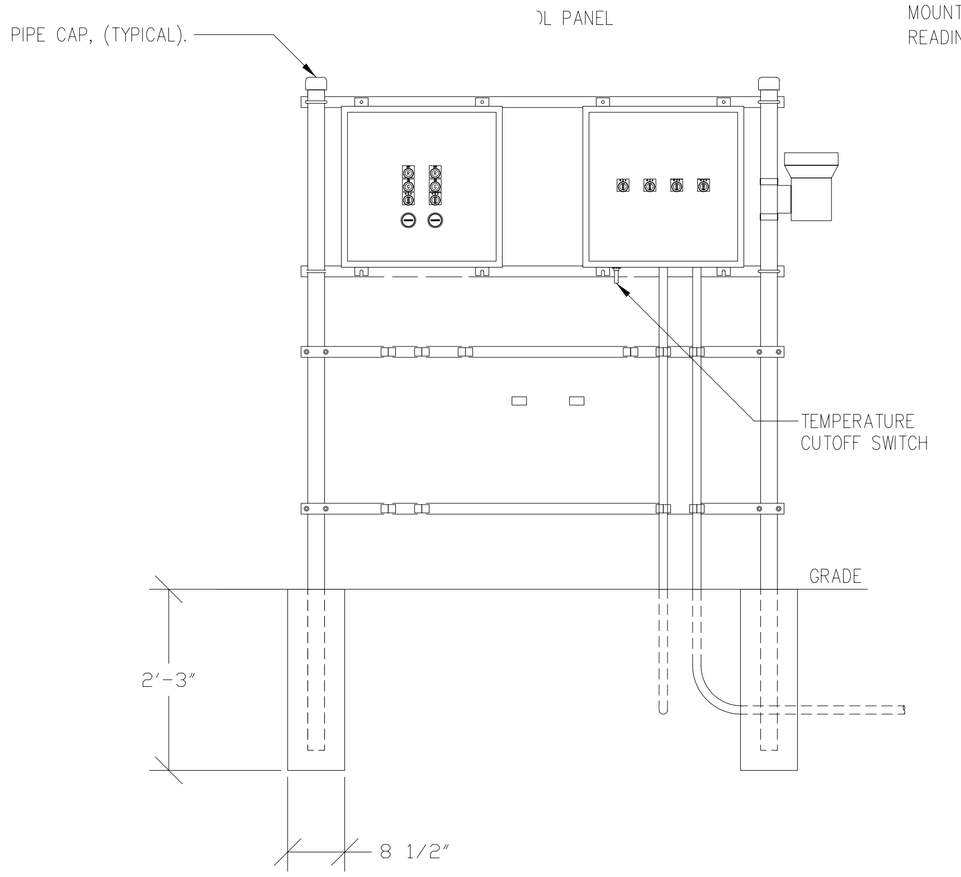
ELECTRICAL
PLAN AND DETAILS
SCALE: 1/4"=1'-0"

DATE:
NAME: Joseph A. Lane
P.E. No. Fl. #42632

PROJECT NO. 6021-72753
FILE NAME:

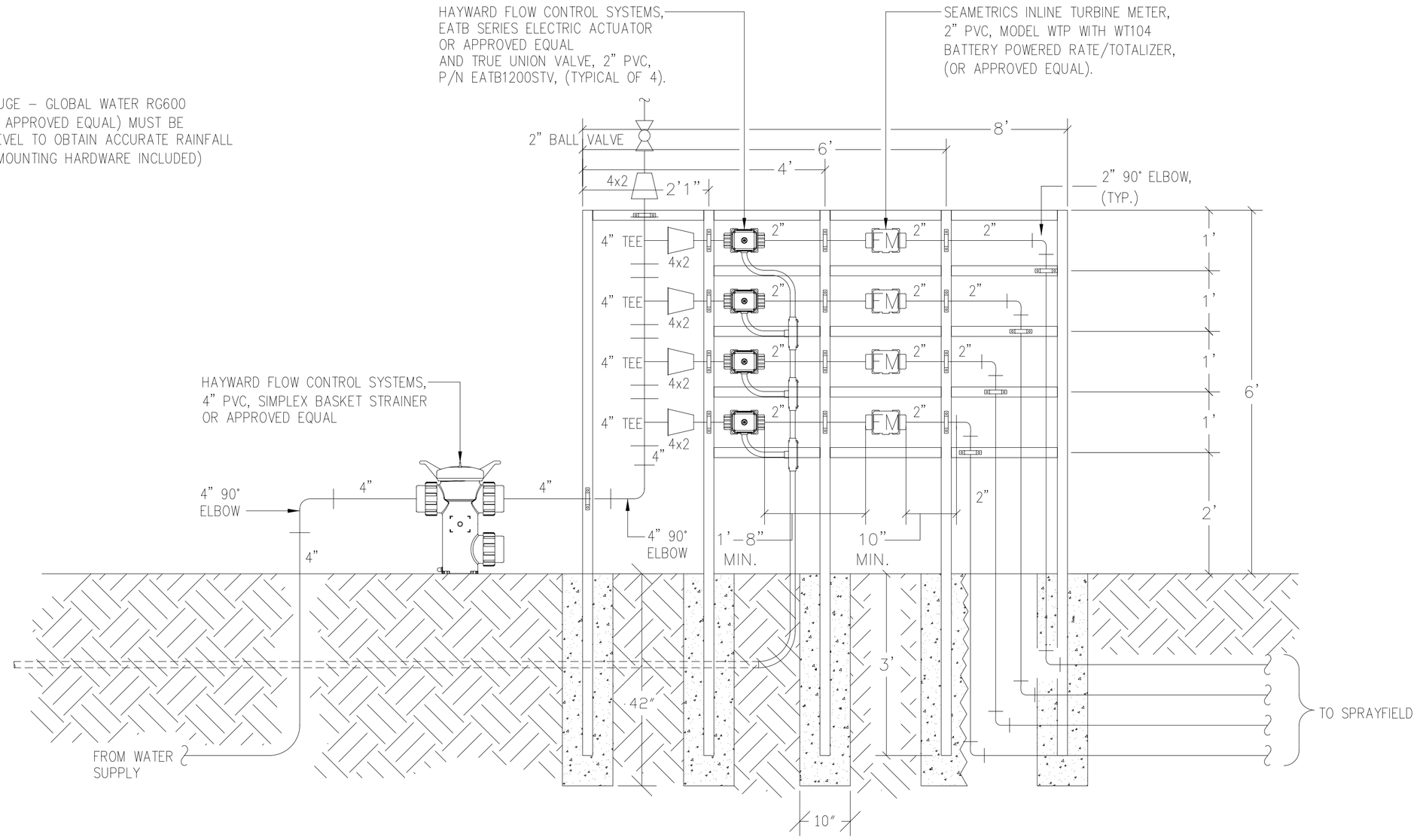
SHEET NO.
E-2

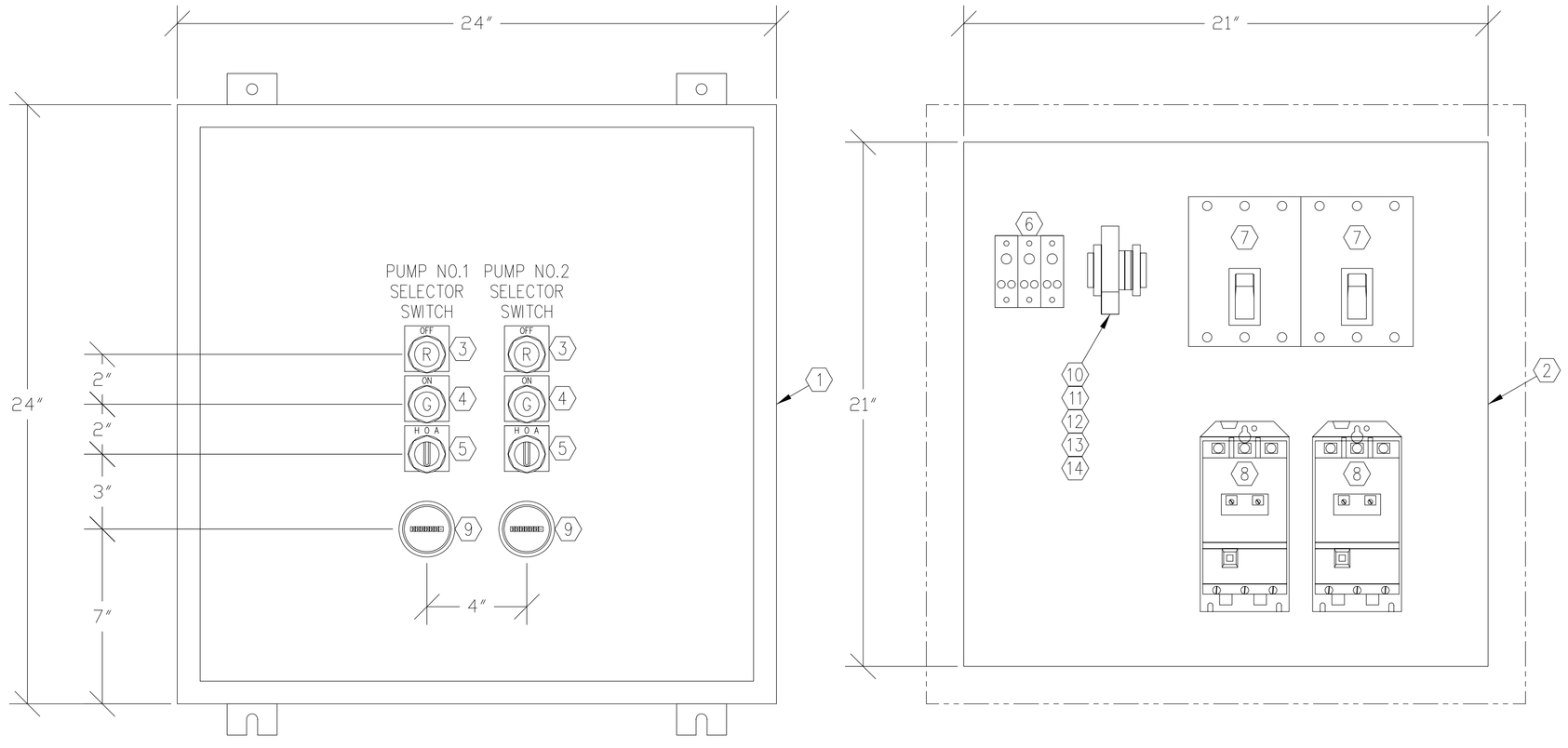
ISSUED FOR BID



CONTROL PANEL SUPPORT STRUCTURE ELEVAT

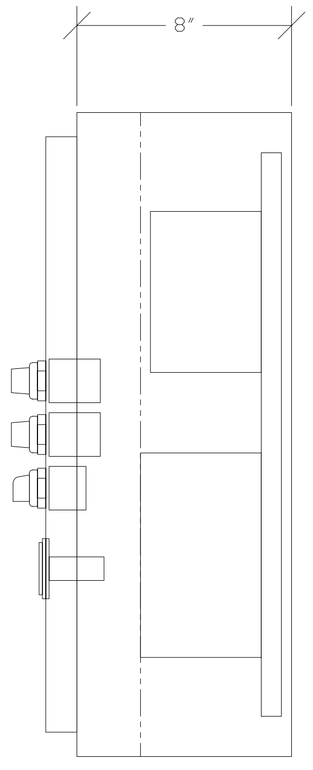
6" RAIN GAUGE – GLOBAL WATER RG600 GAUGE, (OR APPROVED EQUAL) MUST BE MOUNTED LEVEL TO OBTAIN ACCURATE RAINFALL READINGS (MOUNTING HARDWARE INCLUDED)





PUMP STATION CONTROL PANEL FRONT
SCALE: 3"=1'-0"

PUMP STATION CONTROL PANEL INTERIOR
SCALE: 3"=1'-0"



PUMP STATION CONTROL PANEL SIDE VIEW
SCALE: 3"=1'-0"

BILL OF MATERIAL

ITEM	DESCRIPTION	MANUFACTURER	CATALOG NO.	QTY.
1	24"x24"x8" ENCLOSURE – CONTINUOUS HINGE, TYPE 4	HOFFMAN	A-24H24BLP	1
2	BACK PANEL –	HOFFMAN	A-24P24	1
3	PILOT LIGHT-FULL VOLTAGE LED, RED LENS w/"OFF" LEGEND PLATE	ALLEN-BRADLEY	800T-QH10R 800T-X527	2
4	PILOT LIGHT-FULL VOLTAGE LED, GREEN LENS w/"ON" LEGEND PLATE	ALLEN-BRADLEY	800T-QH10G 800T-X530	2
5	3 POSITION SELECTOR SWITCH (HOA) w/"H-O-A" LEGEND PLATE	ALLEN-BRADLEY	800T-J2A 800T-X511	2
6	POWER BLOCK TERMINAL –	SQUARE-D	LBC362104	1
7	CIRCUIT BREAKER – 240V, 3-PHASE –	SQUARE-D	FAL32030	2
8	MOTOR STARTER – SIZE 1, FVNR –	ALLEN-BRADLEY	509-BOD	2
9	TOTALLY SEALED HOUR METER – 90-264V w/NEMA 4X,12 GASKET	REDINGTON	722-0003 5003-012	2
10	DIN MOUNTING RAIL –	ALLEN-BRADLEY	1492-DR1	1
11	TERMINAL BLOCK –	ALLEN-BRADLEY	1492-HM1	2
12	END BARRIER –	ALLEN-BRADLEY	1492-NM36	1
13	END ANCHOR –	ALLEN-BRADLEY	1492-EA35	2
14	CIRCUIT BREAKER – 20A, SINGLE POLE –	ALLEN-BRADLEY	1492-CB1G200	1
15	– –	–	–	–

REV. NO.	DATE	DRWN	CHKD	REMARKS
1	1/14/11	RJC	JAL	ISSUED FOR BID
0	10/13/10	RJC	JAL	100% SUBMITTAL
A	7/26/10	RJC	JAL	60% SUBMITTAL

DESIGNED BY: R. CRAIG
DRAWN BY: R. CRAIG
SHEET CHK'D BY: J. LANE
CROSS CHK'D BY: S. NEHRKE
APPROVED BY: C. FRIZZEL
DATE: JANUARY 2011

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FL COA No. EB-0000020
consulting • engineering • construction • operations

LEON COUNTY, FLORIDA

SWMF NO. 6 MODIFICATION

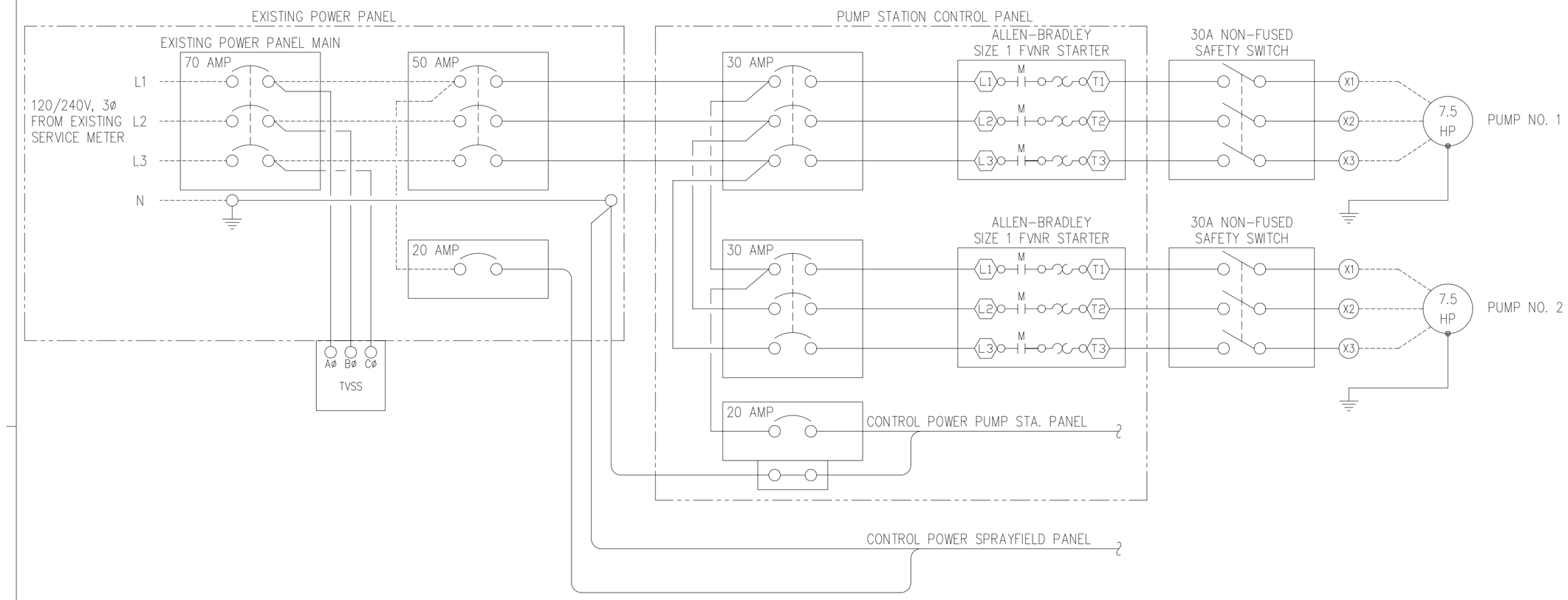
ELECTRICAL
PUMP STATION RISER DIAGRAM
& CONTROL PANEL ARRANGEMENT

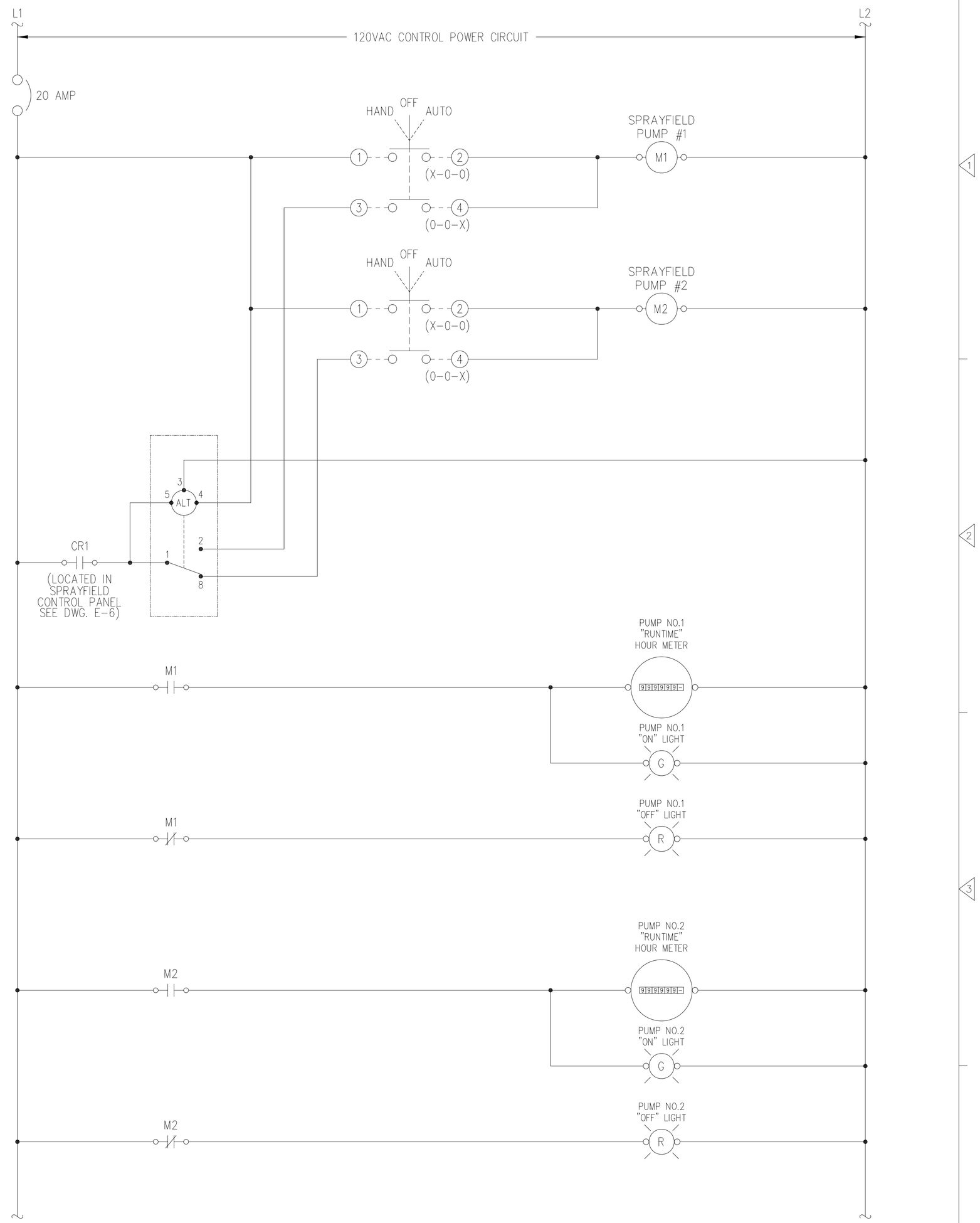
DATE:
NAME: Joseph A. Lane
P.E. No. Fl. #42632

PROJECT NO. 6021-72753
FILE NAME:

SHEET NO.
E-3

ISSUED FOR BID





PUMP STATION CONTROL PANEL SCHEMATIC

REV. NO.	DATE	DRWN	CHKD	REMARKS
1	1/14/11	RJC	JAL	ISSUED FOR BID
0	10/13/10	RJC	JAL	100% SUBMITTAL
A	7/26/10	RJC	JAL	60% SUBMITTAL

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LEON COUNTY, FLORIDA

SWMF NO. 6 MODIFICATION

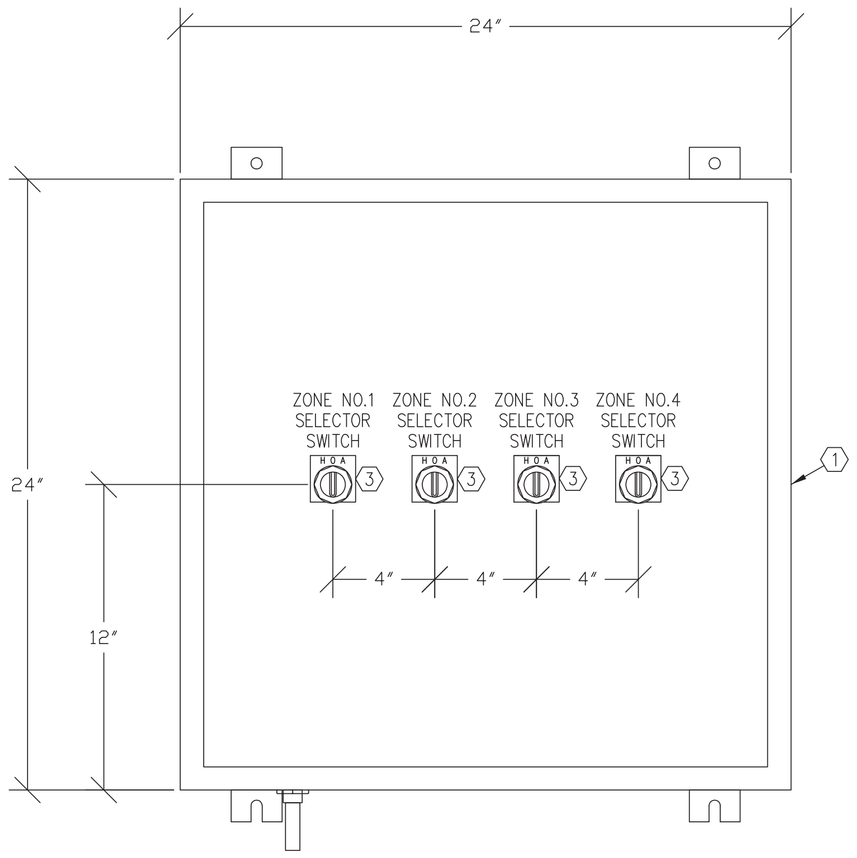
ELECTRICAL
PUMP STATION CONTROL PANEL
SCHEMATIC

DATE:
NAME: Joseph A. Lane
P.E. No. Fl. #42632

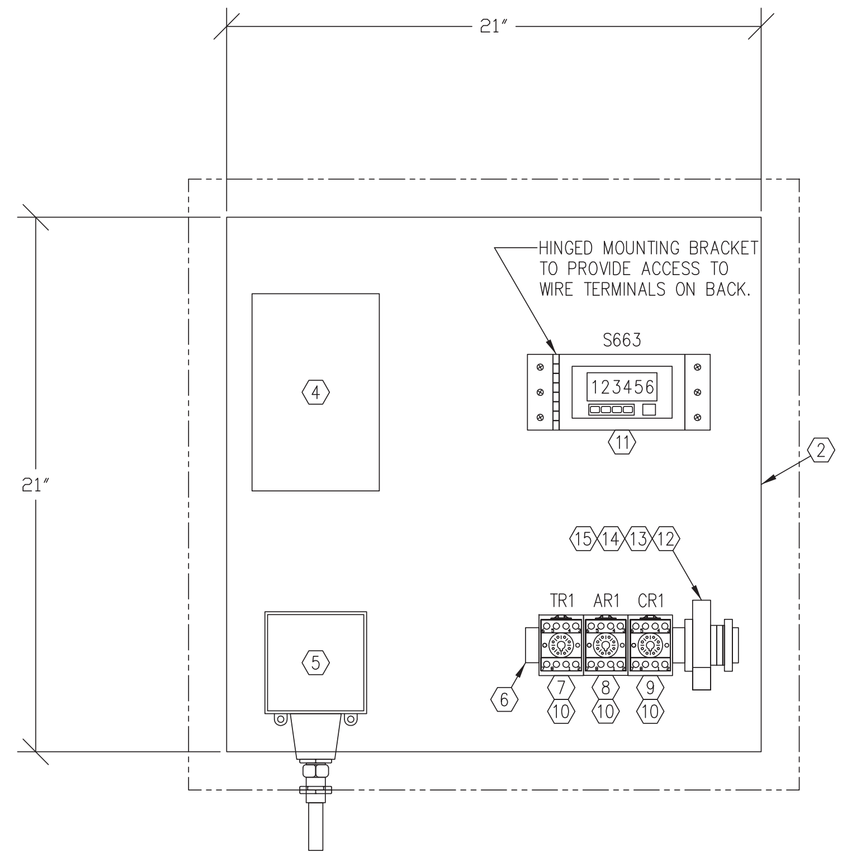
PROJECT NO. 6021-72753
FILE NAME:

SHEET NO.
E-4

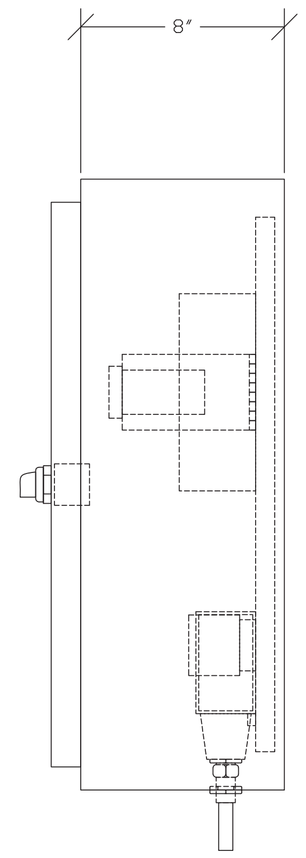
ISSUED FOR BID



SPRAYFIELD CONTROL PANEL FRONT
SCALE: 3"=1'-0"



SPRAYFIELD CONTROL PANEL INTERIOR
SCALE: 3"=1'-0"



SPRAYFIELD CONTROL PANEL SIDE VIEW
SCALE: 3"=1'-0"

BILL OF MATERIAL

ITEM	DESCRIPTION	MANUFACTURER	CATALOG NO.	QTY.
1	24"x24"x8" ENCLOSURE – CONTINUOUS HINGE, TYPE 4	HOFFMAN	A–24H24BLP	1
2	BACK PANEL	HOFFMAN	A–24P24	1
3	3 POSITION SELECTOR SWITCH (HOA)	ALLEN–BRADLEY	800T–J2A	4
4	ELECTRONIC TIME SWITCH	INTERMATIC	ET70215C	1
5	TEMPERATURE SWITCH	UNITED ELECTRIC	B100	1
6	DIN MOUNTING RAIL	ALLEN–BRADLEY	1492–DR1	1
7	OFF DELAY TIMER RELAY	DIVERSIFIED ELECTRONICS	TDD120KA24H	1
8	DUPLEX ALTERNATING RELAY	DIVERSIFIED ELECTRONICS	ARA120ABA	1
9	GENERAL PURPOSE RELAY	ALLEN–BRADLEY	700–HA32A1	1
10	MOUNTING SOCKET, 8–PIN	ALLEN–BRADLEY	700–HN125	3
11	TOTALIZER COUNTER & RATE METER w/HINGED MOUNTING BRACKET	SIMPSON	S66311200	1
12	TERMINAL BLOCK –	ALLEN–BRADLEY	1492–HM1	2
13	END BARRIER –	ALLEN–BRADLEY	1492–NM36	1
14	END ANCHOR –	ALLEN–BRADLEY	1492–EA35	2
15	CIRCUIT BREAKER – 20A, SINGLE POLE –	ALLEN–BRADLEY	1492–CB1G200	1

REV. NO.	DATE	DRWN	CHKD	REMARKS
1	1/14/11	RJC	JAL	ISSUED FOR BID
0	10/13/10	RJC	JAL	100% SUBMITTAL
A	7/26/10	RJC	JAL	60% SUBMITTAL

DESIGNED BY: R. CRAIG
DRAWN BY: R. CRAIG
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DATE: JANUARY 2011

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FL COA No. EB-0000020
consulting • engineering • construction • operations

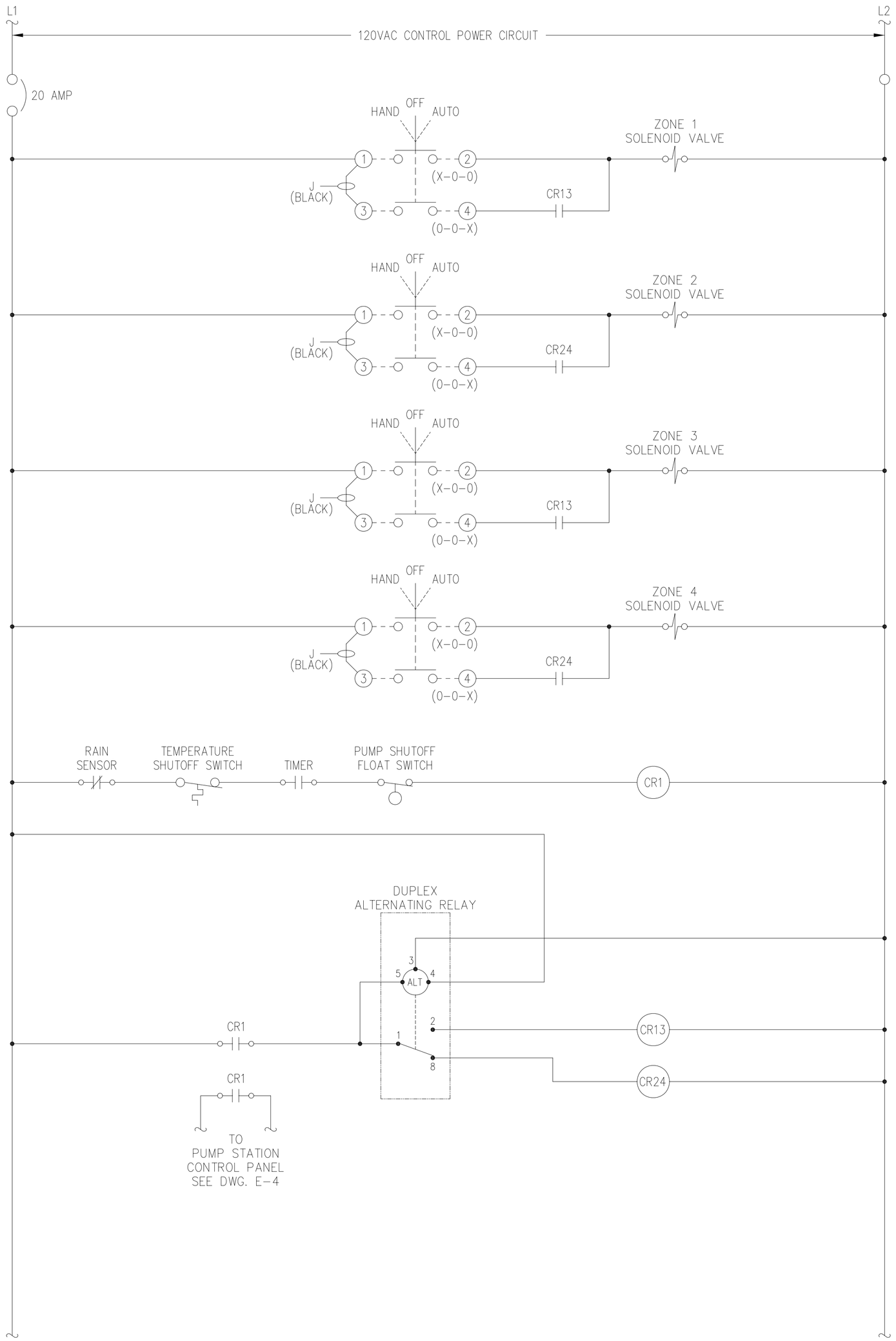
LEON COUNTY, FLORIDA

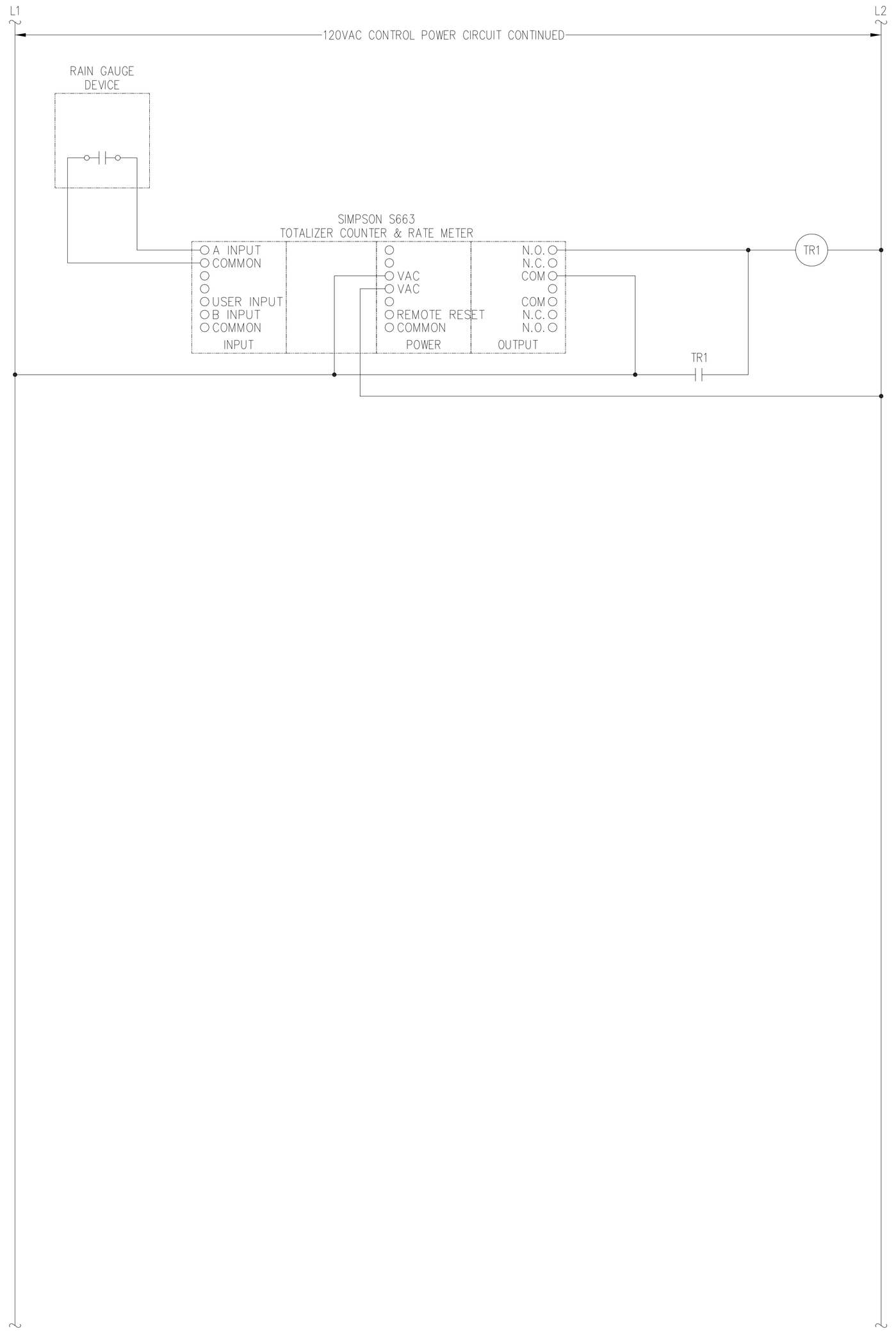
SWMF NO. 6 MODIFICATION

ELECTRICAL
SPRAYFIELD CONTROL PANEL
LAYOUT & BILL OF MATERIALS

DATE:
NAME: Joseph A. Lane
P.E. No. Fl. #42632
PROJECT NO. 6021–72753
FILE NAME:
SHEET NO.
E-5

ISSUED FOR BID





SPRAYFIELD CONTROL PANEL SCHEMATIC

REV. NO.	DATE	DRWN	CHKD	REMARKS
1	1/14/11	RJC	JAL	ISSUED FOR BID
0	10/13/10	RJC	JAL	100% SUBMITTAL
A	7/26/10	RJC	JAL	60% SUBMITTAL

DESIGNED BY: R. CRAIG
DRAWN BY: R. CRAIG
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APPROVED BY: C. FRIZZEL
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LEON COUNTY, FLORIDA

SWMF NO. 6 MODIFICATION

ELECTRICAL
SPRAYFIELD CONTROL PANEL
SCHEMATIC

DATE:
NAME: Joseph A. Lane
P.E. No. Fl. #42632

PROJECT NO. 6021-72753
FILE NAME:

SHEET NO.
E-6

ISSUED FOR BID