

INVITATION FOR BIDS
FOR
LAKE ANDERSON STORMWATER TREATMENT SYSTEM

Mail or Hand Deliver

ORIGINAL BID FORM (MARKED "ORIGINAL") & THREE (3) COMPLETE COPIES

BY 2:00 PM – MARCH 3, 2016

To:

BOARD OF COUNTY COMMISSIONERS
ORANGE COUNTY, FLORIDA
INTERNAL OPERATIONS CENTRE II
PROCUREMENT DIVISION
400 E. SOUTH STREET- 2nd FLOOR
ORLANDO, FLORIDA 32801

Bid Opening:

MARCH 3, 2016 - 2:00 PM

Internal Operations Centre II
Procurement Division Conference Room, Second Floor
Orlando, Florida 32801

Non - Mandatory Pre-Bid Conference – February 11, 2016 1:30PM
Public Works Complex, Main Building, Third Floor Conference Room
4200 South John Young Parkway, Orlando, Florida 32839

Interested bidders are encouraged to attend.

NOTICE TO BIDDERS/OFFERORS

To ensure that your bid/proposal is responsive, you are urged to request clarification or guidance on any issues involving this solicitation before submission of your response. Your point-of-contact for this solicitation is Elia R. Batista at (407) 836-5344.

VOLUME I
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NEW BID BOND REQUIREMENT – See Part C, Instructions to Bidders, Paragraph 19 e.

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ISSUED: February 1, 2016

**NOTICE
INVITATION FOR BID NO. Y16-736-EB**

LAKE ANDERSON STORMWATER TREATMENT SYSTEM

Sealed bid offers (Original Bid Form and three (3) complete copies) for furnishing the above will be accepted up to **2:00 PM, MARCH 3, 2016** in the Procurement Division; Internal Operations Centre II, 400 E. South Street; 2nd Floor, Orlando, FL 32801. Bids will be opened shortly thereafter in the Procurement Division Conference Room, 2nd Floor; Internal Operations Centre II.

Bid Documents are available in the following formats:

1. Complete bid documents may be obtained from the Procurement Division, Internal Operations Centre II, 400 E. South Street, 2nd floor, Orlando, FL 32801. Phone (407) 836-5635 and Fax (407) 836-5899. The documents are available for a cost of **\$50.00** non-refundable.
2. A printed copy of the basic solicitation documents and a CD containing the construction plans and specifications are available for a cost of **\$50** per CD non-refundable.
3. Complete bid documents **including construction plans and specifications** are now available for downloading from the internet at **orangecountyfl.net**.

A Non-Mandatory Pre-Bid Conference will be held on February 11, 2016, 1:30PM, Public Works Complex, Main Building, Third Floor Conference Room, 4200 South John Young Parkway, Orlando, Florida 32839. Interested bidders are encouraged to attend.

SCOPE OF WORK: This project is intended to construct an alum injection system to reduce the phosphorous level in the Anderson Road pond in order to provide improved stormwater quality in the pond. The project will construct an alum storage facility, chemical injection equipment, pumps, instrumentation, associated piping, a concrete slab for system components and a roof structure. The major items of work herein include but are not limited to the following:

- Partial clearing of the site
- Construction of a concrete pad and roof structure to accommodate the 2500 gallon alum storage tank, alum pump, control system and electric components.
- A water intake structure
- The pond alum injection structure
- Installation of instrumentation system for alum treatment system

PROJECT LOCATION: The entrance to the lake is located approximately 350' to the east of the intersection between Anderson Road and Conway Gardens Road along south side of Anderson Road, Orlando, Florida.

Johnny M. Richardson, CPPO, CFCM
Manager, Procurement Division

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PART C - INSTRUCTIONS TO BIDDERS

1. GENERAL:

The term County used herein refers to the Board of County Commissioners, Orange County, Florida, or its duly authorized representative. The term Bidder used herein refers to the manufacturer, dealer or business organization submitting a bid to the County in response to this Invitation for Bid.

2. PREPARATION AND SUBMISSION OF BIDS:

- a. Form of Proposal: Each Bidder shall submit the bid in four parts (original Bid Form, marked original, with attachments and three (3) copies of the Bid Form and all attachments) and indicate the base bid price and any alternative(s) that may be included in the proper space(s).

The estimated total base bid is the sum of all pay item totals and the County reserves the right to correct errors in pay item totals arising from incorrect extensions. See "Bid Errors", Item 5.

- b. All bids, proposals or quotations, unless otherwise specified, must be delivered in a sealed envelope, either mailed or hand carried, to the Procurement Division, Orange County Internal Operations Centre II, 400 E. South Street, 2nd Floor, Orlando, Florida 32801, prior to the bid opening time as specified in Part B. Bids received after the date and time specified will be returned unopened. The time/date stamp clock located in the Procurement Division shall serve as the official authority to determine lateness of any bids.

Respondents are cautioned that they are responsible for delivery to the specific location cited above. Therefore, if your bid, proposal or quotation is delivered by an express mail carrier or by any other means, it is your responsibility to ensure delivery to the above address. This office will not be responsible for deliveries made to any place other than the specified address.

The delivery of said bid to the Procurement Division prior to the time and date stated in Part A is solely and strictly the responsibility of the Bidder. The County shall not be responsible for delays in delivery to the Procurement Division caused by the United States Postal Service or courier service, delivery to any other County Office or delays caused by any other occurrence. The bid delivery time will be scrupulously observed. Under no circumstances will bid proposals delivered after the delivery time specified be considered.

The decision to refuse to consider a bid or proposal that was received beyond the date/time established in the solicitation shall not be the basis for a protest pursuant to the Orange County Code (Procurement Ordinance).

Bidders should indicate on the sealed envelope the following:

1. Invitation for Bid Number
 2. Hour and Date of Opening
 3. Name of Bidder
 4. Return Address of the Bidder
- c. Bids will be publicly opened in the Procurement Division Conference Room, 2nd Floor of the Orange County Internal Operations Centre II, 400 E. South Street; Orlando, Florida.
- d. All bid proposals must be manually and duly signed by an authorized corporate officer, principal, or partner (as applicable) with his signature in full. When a firm is a Bidder, the bid proposals shall be signed in the name of the firm by one or more of the partners. When a corporation is a Bidder, the officer signing shall set out the corporate name in full beneath which he shall sign his name, give title of his office and affix the corporate seal. Anyone signing the bid proposal as agent must file with it legal evidence of his authority to do so. Bidders who are nonresident corporations shall furnish to the County a duly certified copy of their permit to transact business in the State of Florida along with the Bid Proposal. Failure to promptly submit this evidence or qualification to do business in the State of Florida may be basis for rejection of the Bid Proposal.
- e. The Bidder is solely responsible for reading and completely understanding the requirements and the specifications of the solicitation.
- f. Bid proposals may be withdrawn by written, telecopied or telegraphic requests dispatched by the Bidder and received by the Manager of the County Procurement Division before the time for receiving bids has expired. Negligence on the part of the Bidder in preparing a bid proposal is not grounds for withdrawal or modification of a bid proposal after such bid proposal has been opened by the County. A Bidder may not withdraw or modify a bid proposal after the appointed bid proposal opening and such bid proposal must be in force for **ninety (90)** days after the bid opening. Bidders may not assign or otherwise transfer their bid proposals.
- g. At the time and place fixed for the opening of bid proposals (see above), every bid proposal properly delivered within the time fixed for receiving bid proposals will be opened and publicly read aloud, irrespective of any irregularities found therein. Bidders and other persons interested may be present, in person or by representative.
- h. A Bid, Payment and Performance Bond are a requirement of the IFB when the bid/contract amount exceeds \$100,000.

Submission of an original Bid Bond (copy not acceptable) completed and signed by all required parties and submitted on the form provided in Exhibit 1 to the Bid Proposal (Part D), or in the alternative, a Certified Check, or a Cashier's Check shall be required to accompany each bid proposal in a stated dollar amount of not less than ten (10%) percent of the sum of the computed total amount of the Bidder's Base Bid proposal. Submittal of a Bid Bond less than 10% of the bid sum shall result in rejection of the bid. **Failure to submit the Bid Bond on the form provided in Exhibit 1 to the Bid Proposal (Part D) shall result in rejection of the bid.**

In order to be acceptable to the County, the Surety company issuing the Bid Bond as called for in this Invitation for Bids, shall meet and comply with the minimum standards described in Part C, Section 19, "Qualifications of Surety Companies". **Failure to submit a Bid Bond from a Surety Company meeting these minimum standards shall result in rejection of the bid.**

Certified checks or cashier's checks shall be drawn on a solvent bank or trust company to the order of the Board of County Commissioners, Orange County, Florida and shall have all necessary documentary revenue stamps attached, if required by law. Personal checks are not acceptable to the County. See Section 19, "Qualifications of Surety Companies" for additional requirement.

- i. A pre-Bid conference will be held at the time and location shown in the Notice, Part B of this Bid package.
- j. No oral interpretation of the meaning of the plans, specifications, or other Contract documents shall be considered binding. Every request for interpretation shall be in writing addressed to **Elia R. Batista, Fax Number (407) 836-5899**. To be given consideration, such requests must be received Ten (10) days prior to bid opening.

Any and all such interpretations and any supplemental instructions will be in the form of a written addendum which, if issued, will be available for downloading from the Internet at orangecountyfl.net. All addenda so issued shall become part of the Contract Documents and receipt shall be acknowledged on the Bid Form, Part D or by completion of the applicable information on the addendum and returning it not later than the date and time for receipt of the bid.

- k. Before submitting bid proposals, Bidders must carefully examine the site of the proposed work and make all necessary investigations to inform themselves thoroughly as to all difficulties involved in the completion of all work required pursuant to the mandates and requirements of this bid package.

No plea of ignorance of conditions or difficulties that may hereafter exist, or of conditions or difficulties that may be encountered in the execution of the work pursuant to this bid package as a result of failure to make the necessary examinations and investigations will be accepted as an excuse for any failure or omission on the part of the successful Bidder (Contractor) to fulfill, in every detail, all of the requirements of the Contract Documents, nor will they be accepted as a basis for any claims whatsoever for extra compensation or for an extension of time.

3. **MINORITY/WOMEN OWNED BUSINESS ENTERPRISES:**

- a. To provide for the participation of certified minority and women owned businesses (M/WBE's) in the County's procurement of construction services, Bidders submitting bids to the County are urged to comply with M/WBE subcontracting goals established by the County Minority/Women Business Enterprise Ordinance, No. 94-02 and amended by Ordinance No.2009-21. The overall goal for all bids (inclusive of all additive and deductive alternates) is 25% participation for M/WBE subcontractors and suppliers. Upon Contract award the Contractor must meet the M/WBE expenditure required by the Contract.

The Ordinance also addresses minority/women group employment levels setting goals to encourage each Bidder to maintain 18% minority and 6% women employees.

Note: Only 50% of material/supply dollars purchased from M/WBE distributors is applied toward the goals for minority and women business enterprise participation on construction projects. Contractor shall list **the total amount of material/supply dollars** to be purchased from each M/WBE distributor on the Subcontractor/Supplier Page (Attachment C-2). **The County will calculate the actual dollars applied toward the goals.**

- b. **NOTICE: Goals for bids under \$100,000**

There are M/WBE goals for all bids including bids for IFB estimated to be less than \$100,000 (inclusive of all additive and deductive alternates).

- c. **M/WBE Bidders competing as primes**

If an M/WBE firm bidding as a prime certifies with his/her bid that it will self-perform 51% percent or more of the project, as evidenced by Attachment C-2, then that firm will not be required to comply with the M/WBE subcontracting goals. **Failure to include the percentage of work and the scope of work to be self-performed, and the dollar amount for the work an M/WBE Bidder competing as a prime intends to self-perform will result in the M/WBE Bidder receiving zero M/WBE participation for the bid.**

However, if the M/WBE Bidder will not be self-performing at least 51% percent of the project, then he/she must comply with the M/WBE participation goal, and good faith effort documentation required from non-M/WBE Bidders to receive M/WBE compliance consideration.

d. **Subcontracts/Purchase Orders**

The successful Bidder shall provide a copy of all fully executed subcontracts and purchase orders issued to M/WBE's listed on Attachment C-2 to the Business Development Division. Submittal of these subcontracts/purchase orders is a condition precedent to execution of the prime Contract by the County.

The Contractor **must** include a Prompt Payment Clause (reference Part F, Article 21, paragraph B) in all subcontracts and purchase orders. The Contractor should include in the subcontracts that they are contingent upon execution of the prime Contract.

The County may, at its discretion, require copies of subcontracts/purchase orders for the non-M/WBE's listed on Attachment C-2. However, if this option is not exercised, the awarded Contractor **must** provide a list of all non-M/WBE Subcontractors and suppliers certifying that a prompt payment clause has been included in that Contract or purchase order.

e. **Good Faith Effort Documentation Requirements -**

If the established goals (reference paragraph 3.a above) are not achieved, to maximize consideration for MWBE participation, Bidders **must** provide with the bid sufficient documentation to substantiate that ALL FIVE of the mandatory efforts listed below were undertaken. Bidders meeting or exceeding the goals need not provide good faith effort documentation. Refer to paragraph f for the sliding scale for enforcement of the good faith effort document.

- i. If a bidder desires to meet the good faith effort documentation requirements he/she must provide written notice to certified M/WBEs that provide the type of work that the Bidder intends to subcontract. The notice shall be by e-mail or fax, no fewer than seven (7) calendar days prior to bid or proposal opening. All e-mails and faxes shall include the legal name of the M/WBE firm. The notice **shall** advise the M/WBE's:
 - a. that their interest in the contract is being solicited;
 - b. of the specific work the Bidder intends to subcontract
 - c. how to obtain information about and review the contract plans and specifications;
 - d. information on bonding, insurance and other pertinent requirements;

- e. the deadline for bid or proposal submissions to the Bidder and the bid due date to the County;
- f. 24 hours notice of any addenda.
- ii. Also bidders shall provide an explanation why the M/WBE goals were not achieved, and list the scopes of service not subcontracted on Attachment C-2
- iii. Bidders shall follow up initial submittals of interest by contacting M/WBEs and documenting using a contact log, which shall include the firm's name address, contact information (e-mail, telephone and/or fax numbers), scope of work requested, the date, name of person making the effort, denote if M/WBEs will bid, time quote received and notes denoting if plans and specifications were sent. Each bidder shall use the standardized contact log, Attachment C-5.
- iv. In instances where a non-minority/non-woman contractor is listed for work for which M/WBE availability exists, the Bidder shall submit **ALL** quotations received from M/WBEs **AND** the listed non-M/WBE **within twenty-four (24) hours, if one of the three (3) apparent low Bidders**. The Bidder shall provide an explanation as to why the M/WBE's quotations were not accepted.

Receipt of a lower quotation from a non-M/WBE prior to bid opening will not in itself excuse a Bidder's failure to meet M/WBE participation goals. However, a Bidder's good faith effort obligation does not require a Bidder to accept a quotation from a M/WBE which is an unreasonable price. For the purpose of this subsection, "unreasonable price" means a price above (or below) competitive levels which cannot be attributed to the M/WBE's attempt to cover costs inflated by the present effect of discrimination.

- v. Bidder shall contact the Business Development Division staff as a resource to obtain M/WBE participation goal.

If the Bidder fails to meet one of the first four good faith effort requirements (i – iv) then the Bidder will be permitted to substitute one good faith effort requirement with only one of the following with documentation showing that:

- (1) The National Entrepreneur Center (NEC) was used to host a workshop that informed M/WBE firms how to better prepare for sub-contracting opportunities;
- (2) The Bidder has participated in Orange County Business Development Division's sponsored "How to do Business" workshop;
- (3) The Bidder has sponsored a match-maker event with certified M/WBE firms.

Orange County Business Development Division will determine the usage of this substitution, along with the appropriate time frame for utilizing this credit.

If, after Contract award, Prime Contractors who have not achieved the M/WBE participation goals choose to subcontract work indicated as being self-performed without prior written approval of the Business Development Division (reference Part F, Article 21, paragraph D), the matter will be reported to the Procurement Division with an appropriate responsibility recommendation for consideration in the event the contractor competes for future County contracts.

f. Sliding scale for enforcement of good faith effort requirements

If the established goals are not achieved by the low Bidder and it has been determined that the good faith efforts required for compliance have not been documented by the low Bidder, then the bid shall be rejected as non-responsive, but only if the next lowest responsive bid does not exceed the low bid by more than:

- i. Eight (8) percent on contract awards up to one hundred thousand dollars (\$100,000.00);or
- ii. Seven (7) percent on contract awards from \$100,000.00 to \$500,000.00;
or
- iii. Six (6) percent on contract awards from five hundred thousand dollars and one cent (\$500,000.01) to seven hundred fifty thousand dollars (\$750,000.01); or
- iv. Five (5) percent on contract awards from seven hundred fifty thousand dollars and one cent (\$750,000.01) to two million dollars (\$2,000,000.00);or
- v. Four (4) percent on contract awards from two million dollars and one cent (\$2,000,000.01) to five million dollars (\$5,000,000.00); or
- vi. Three (3) percent on contract awards over five million dollars and one cent (\$5,000,000.01)

However, if the next low bid is responsive only because of the Bidder having made good faith effort (not because of having met the goals), the Board may approve award of the Contract to the next low Bidder only if the value of its M/WBE participation is equal to or greater than that of the low Bidder.

- g. Letters of Intent **must** match **exactly the information provided on** Attachment C-2 to the Bid Forms D, Attachment C-3 and **must** be executed by the apparent low Bidder and all M/WBE Subcontractors and/or suppliers listed on Attachment C-2 **must** be submitted to the Business Development Division office before 5:00 P.M. on the second business day after bid opening.

- h. Bidders shall not reject an M/WBE as unqualified without sound reasons based on a thorough and documented investigation of that M/WBE's capabilities.
- i. Bidder's efforts will be evaluated considering the ability of other Bidders to meet the requirements relating to the use of M/WBE subcontractors.
- j. Bidders should make whatever additional efforts are necessary to achieve the goals and it is recommended that these efforts be documented. However, this documentation shall not replace the required documentation if the goals are not met. Bidders are encouraged to contact the Business Development Division for guidance and assistance. Additional efforts by Bidders may include but are not limited to the following:
 - i. Bidders should provide interested M/WBE's with assistance in reviewing the Contract plans and specifications.
 - ii Bidders should assist interested M/WBE's in obtaining required lines of credit, insurance or bonding.
 - iii. Bidders should solicit only types of work that match the capabilities of the M/WBE's and for which they are certified.
- k. All participating M/WBE's must be certified by Orange County. The Business Development M/WBE Directory is available by e-mail or through the Orange County web site at Orangecountyfl.net.

Only firms having established offices in the Orlando MSA (Orange, Lake, Seminole and Osceola Counties) are eligible for Orange County certification. All firms must be certified prior to bid opening and must be certified in the area(s) for which they will be used. If a firm claims to be certified, but is not listed in the Directory, Contractor should obtain a copy of their Certificate and/or contact the Business Development Division for verification of certification.

- l. The County has established a credit program whereby Contractors are awarded credits to be applied toward meeting the M/WBE goals on certain County bids. Emphasis will be placed on credits for Non-County Utilization and First-Time M/WBE Utilization. Bidders are encouraged to contact the Business Development Division for information on acquiring and applying the credits.
- m. Effective August 1, 2003, the County implemented a graduation program. Under this program, utilization of M/WBE firms designated as graduates shall count toward meeting M/WBE participation goals only on specified projects. All construction solicitations for which the County has determined the overall contract amount to be awarded to the prime in excess of \$10,000,000 for vertical construction, \$7,000,000 for horizontal construction and \$7,000,000 for all other construction are eligible for graduate M/WBE participation.

Vertical construction is any construction of a structure or building which requires a general or building contractor's license. Horizontal construction includes but is not limited to roadwork, site work, drainage or utilities work. Other construction is any construction other than what is defined as vertical or horizontal construction.

The Bidder's total base bid, which is used by the Procurement Division as the basis for determining Contract award value, will be used to determine if graduated M/WBE firms are eligible to participate. If the contract has option provisions, the total base Bid is the total of the Basic Contract Year plus all Option Years. Prime contractors will receive full M/WBE credit for the use of graduated M/WBE's that meet all other requirements.

It is the Bidder's responsibility to insure that graduate M/WBE's are not listed in proposals to meet M/WBE participation requirements on projects in which they are not eligible to participate.

- n. The County is compiling information about the MWBE program in order to gauge the level of program understanding and acceptance. Bidders should complete the M/WBE Survey, Attachment C-4 and return with their Bid Proposal Form. Failure to submit the completed survey may delay award of the Contract.

Intentional failure to attempt compliance and/or intentional failure to comply with the M/WBE subcontract goals pursuant to the Minority/Women Business Enterprise Ordinance, may result in the County invoking penalties under that ordinance and/or a finding by the County that a Bidder is "non-responsible", thus resulting in that bid being rejected and the Bidder facing possible suspension or debarment from future County IFB's.

4. BID PREFERENCE FOR SERVICE-DISABLED VETERANS (SDV)

The Orange County Service-Disabled Veteran Business Program Ordinance sets vendor preferences for service-disabled veteran business enterprises registered with Orange County Business Development Division.

As part of this program, Contractors are required to complete the Attachment C-2 listing **ALL** subcontractors (majority, women and minority, and service-disabled veteran) their firm will utilize in fulfillment of the requirements of this solicitation.

Also, in accordance with the County SDV Ordinance, preferences for registered service-disabled veteran business enterprises shall be applied on bid awards (sealed bids). The following bid preference scale shall apply to bids submitted by registered service-disabled veteran business enterprises as long as the bid does not exceed the low bid by more than 8% on bid awards up to \$100,000 ; 7% on bid awards from \$100,000.01 to \$500,000; 6% on bid awards from \$500,00.01 to \$750,000; 5% on bid awards from \$750,000.01 to \$2,000,000; 4% on contract awards from \$2,000,000.01 to \$5,000,000.00 and 3% on bid awards over \$5,000,000.01.

Registered service-disabled veteran business enterprises may be awarded or recommended for award of contracts when their bids are within the above allowed percentage in comparison to the low responsive and responsible bid(s).

If a registered service-disabled veteran business enterprise, entitled to the vendor preference under this section, and one (1) or more other businesses also entitled to this preference, or another vendor preference provided by the Orange County Code, submit bids, proposals, or replies for procurement of commodities or contractual services which are otherwise equal with respect to all relevant considerations, including price, quality, and service, then the Procurement Division Manager shall award the procurement or contract to the business having the smallest net worth.

5. BID ERRORS:

Where bid forms have erasures or corrections, each erasure or correction must be initialed in ink by the Bidder. In case of unit price bid items, if an error is committed in the extension of an item, the unit price as shown in the Official Bid Form will govern. Errors between any sum, computed by the Bidder, and the correct sum thereof will be resolved in favor of the correct sum. Any discrepancy between words and numbers will be resolved in favor of the written words.

6. DEVIATIONS:

Bidders are hereby advised that Orange County will only consider bid Proposals that meet the specifications and other requirements imposed upon them by this bid package. In instances where a deviation is stated in the bid form, said bid will be subject to rejection by the County in recognition of the fact that said bid Proposal does not meet the exact requirements imposed upon the Bidder by the Contract Documents.

7. SUBSTITUTE MATERIAL AND EQUIPMENT:

The Contract, if awarded, will be on the basis of material and equipment described in the Drawings or specified in the Specifications without consideration of possible substitute or "or-equal" items. Whenever materials or equipment or patented processes are specified or described in the Contract Documents by naming a trade name, manufacturer, supplier or proprietary item or catalog number, the naming of the item is intended to establish the type, function and quality required and to establish a basis for bidding.

Substitute materials or equipment may be considered after a Contract for the Work is executed if sufficient information is supplied by Contractor to allow Project Manager to evaluate the proposed substitution, unless the naming of the item is followed by words indicating that no substitution is permitted. The procedure for submittal of any such application by Contractor and consideration by Project Manager is set forth in the General Conditions.

In the event that substitute materials or equipment are used and are less costly than the originally specified material or equipment, then the difference in cost of the item shall benefit the County and Contractor in equal proportions.

Applications for substitute materials and equipment shall only be evaluated after the Contract is executed. The Base Bid and Alternates shall reflect the costs for the materials and equipment named or specified only.

8. REQUESTED INFORMATION AND DESCRIPTIVE LITERATURE:

Bidders must furnish all requested information in the spaces provided on the bid form or attachments thereto. Additionally, where required pursuant to the provisions of this bid package, Bidders must submit with their bid proposal cuts, sketches, descriptive literature and/or complete specifications relative to the items proposed and offered.

9. AWARD OF CONTRACT/REJECTION OF BIDS:

The Board of County Commissioners will award a Contract to the low, responsive and responsible Bidder, price and other factors considered. The County will award one Contract for this requirement. The Board of County Commissioners, in its sole discretion, reserves the right to reject any and all bids and to waive any informality concerning bid proposals whenever such rejection or waiver is in the best interest of the County. The ability of a Bidder to obtain a performance bond and a payment bond shall not be regarded as the sole test of such Bidder's competency or responsibility. Nothing contained herein shall place a duty upon the County to reject bids or award a Contract based upon anything other than its sole discretion as described herein.

When more than one method of work is prescribed in the solicitation with separate pricing allowed for each method, the County will select the method determined to be in its best interests, price and other factors considered.

Determination of the low Bidder when additive or deductive bid items are involved shall be as follows:

A. ADDITIVE/DEDUCTIVE BID ITEMS:

1. If it is deemed to be in the best interest of the County to accept the additive or deductive items, award will be made to the Bidder that offers the lowest aggregate amount for the base bid, plus or minus (in the order listed on the bid form), those additive or deductive bid items that provide the most features of the work.
2. All bids will be evaluated on the basis of the same additive or deductive bid items.
3. Failure of the Bidder to provide pricing for all unit priced items and/or the Base Bid and ALL requested additive/deductive bid items, or alternate bids shall be cause for rejection of the bid as non-responsive.

B. RECIPROCAL LOCAL PREFERENCE:

In the event the lowest responsive and responsible bid submitted in response to any invitation for bid is by a bidder whose principal place of business is in a county other than Orange County, and such county grants a bid preference for purchases to a bidder whose principal place of business is in such county, then Orange County may award a preference to the (next) lowest responsive and responsible bidder having a principal place of business within Orange County, Florida. Such preference shall be equal to the preference granted by the county in which the lowest responsive and responsible bidder has its principal place of business **except as provided below.**

Effective July 1, 2015 the reciprocal local preference shall not apply to construction services in which 50 percent or more of the cost will be paid from state-appropriated funds which have been appropriated at the time of the competitive solicitation.

10. POSTING OF RECOMMENDED AWARD AND PROTESTS:

The recommended award will be posted for review by interested parties at the Procurement Division and at <http://apps.ocfl.net/OrangeBids/AwardsRec/default.asp> prior to submission through the appropriate approval process and will remain posted for a period of five full business days.

Failure to file a protest to the Procurement Division Manager by 5:00 PM on the fifth full business day after the posting date shall constitute a waiver of bid/proposal protest proceedings. Additional information relative to protests can be found at: <http://www.orangecountyfl.net/VendorServices/VendorProtestProcedures.aspx>

A lobbying blackout period shall commence upon issuance of the solicitation until the Board selects the successful Bidder. For procurements that do not require Board approval, the blackout period commences upon solicitation issuance and concludes upon Contract award. Additional information relative to lobbying can be found at: <http://www.orangecountyfl.net/OpenGovernment/LobbingAtOrangeCounty.aspx>

The Board of County Commissioners may void any Contract where the County Mayor, one or more County Commissioners, or a County staff person has been lobbied in violation of the blackout period restrictions of Ordinance No. 2002-15.

11. CONTRACT DOCUMENTS:

The Contract Documents shall include the documents stated in the Contract (Titles, Subtitles, Headings, Running Headlines, Table of Contents and Indexes are used merely for convenience purposes).

12. MODIFICATION/ALTERATION OF SOLICITATION AND OR CONTRACT DOCUMENTS

Modification or alteration of the documents contained in this solicitation or the contract resulting from this solicitation shall only be made upon receipt of prior written consent of the County.

13 LAWS AND REGULATIONS:

The Bidder's attention is directed to the fact that all applicable Federal and State laws, municipal and County ordinances, and the rules and regulations of all authorities having jurisdiction over any part of the project shall apply to the solicitation and Contract throughout, and they will be deemed to be included in the solicitation/Contract the same as though herein written.

14. REQUIRED DISCLOSURE:

Bidder shall disclose all material facts with its bid submission pertaining to any felony conviction or any pending felony charges in the last three (3) years anywhere in the United States against (i) Bidder, (ii) any business entity related to or affiliated with Bidder, or (iii) any present or former executive employee, officer, director, stockholder, partner or owner of Bidder or of any such related or affiliated entity. This disclosure shall not apply to any person or entity who is a stockholder, owning less than 20% of the outstanding shares of a Bidder whose stock is publicly owned and traded.

The Bidder shall also disclose any civil conviction or pending civil litigation involving Contract performance during the last three (3) years anywhere in the United States against the Bidder, or against any business controlled by or affiliated with Bidder.

The Board of County Commissioners may reject, at its sole discretion, any Bidder the Commission finds to lack, or whose present or former executive employees, officers, directors, stockholders, partners or owners are found by the Commission to lack honesty, integrity, or moral responsibility. The Commission's finding may be based on the disclosure required herein, the County's own investigation, public records, or any other reliable source of information. The Commission may also reject any Bidder failing to make the disclosure required herein. By submitting a bid, Bidder recognizes and accepts that the Board of County Commissioners may reject any bid at its sole discretion and the Bidder waives any claim it might have for damages or other relief arising from the rejection of its bid or resulting directly or indirectly from the rejection of its bid based on these grounds or from the disclosure of any pertinent information relating to the reasons for rejection of its bid.

15. EXECUTION OF WRITTEN CONTRACT:

The successful Bidder will be required to sign a written Contract which has been made a part of this bid package and identified as the Contract. Said written Contract will evidence in written form the agreement between the parties pursuant to the award having been theretofore made by the County to this Bidder; said signing to be accomplished within ten (10) days after receipt of Notice of Award.

The County will issue an "Official Notice to Proceed" on the project within ninety (90) days after contract award. In the event the Official Notice to Proceed has not been issued by the County within the 90-day period above, the Contractor shall have the option to rescind the Contract or continue with the Contract as originally bid.

16. LICENSING REQUIREMENTS:

The following licensing requirements shall apply when the applicable Florida statute mandates specific licensing for Contractors engaged in the type of work covered by this solicitation.

- a. State of Florida, Department of Professional Regulation, Construction Industries Licensing Board and licensed by other federal, state, regional, county or municipal agencies having jurisdiction over the specified construction work.
- b. Said licenses shall be in the Bidder's name as it appears on the Official Bid Form. Bidder shall supply appropriate license numbers, with expiration dates, as part of their bid. Failure to hold and provide proof of proper licensing, certification and registration may be grounds for rejection of the bid.
- c. Bidder shall provide copies of all applicable licenses with their Bid Proposal.
- d. Subcontractors contracted by the Prime Contractor shall be licensed in their respective fields to obtain construction permits from the County. Said license must be in the name of the subcontractor listed on Attachment C, Subcontractor/Supplier Page, herein.

17. SECURITY FORFEITURE:

When bid security has been required (Part C, Section 2, Paragraph h.): If, within ten (10) days after issuance of Notice of Award of a Contract, the successful Bidder refuses or otherwise neglects to execute the required written Contract and fails to furnish the required Performance Bond and Payment Bond, the amount of the Bidder's bid security (Cashier's Check or Bid Bond) shall be forfeited and the same shall be retained by the County. No plea of mistake in the bid or misunderstanding of the conditions of forfeiture shall be available to the Bidder for the recovery of his bid security or as a defense to any action.

18. PERFORMANCE BONDS AND PAYMENT BONDS:

When the contract amount exceeds \$100,000 a Payment Bond and a Performance Bond issued in a sum equal to one hundred (100%) percent of the total awarded Contract amount by a Surety company considered satisfactory by the County according to the criteria in Section 19 will be required from the successful Bidder for purposes of protecting the County from lawsuits for non-payment of debts as might be incurred during the successful Bidder's performance under such Contract, and insuring the faithful performance of the obligations imposed by the resulting Contract.

The Payment Bond and the Performance Bond forms are included in the Contract Documents and said forms must be properly executed by the Surety Company and successful Bidder within ten (10) days after receipt of notification from the County of its award of the Contract.

The Contractor shall record bonds in Orange County public records as required by Florida Statutes, Chapter 255.05. Before commencing the work the Contractor shall provide to the Manager of the Procurement Division a certified copy of the recorded bond. No payment will be made to the contractor until the contractor has provided the copy of the recorded bond.

19. QUALIFICATIONS OF SURETY COMPANIES:

In order to be **ACCEPTABLE** to the County, the Surety company issuing **the Bid Bond, the Performance Bond and the Payment Bond**, as called for in this Invitation for Bids, shall meet and comply with the following minimum standards:

- a. Surety must be admitted to do business in the State of Florida and shall comply with the provisions of Florida Statute 255.05.
- b. Surety must be listed on the U.S. Department of Treasury Fiscal Service, Bureau of Government Financial Operations, Federal Register, Part V, latest revision, entitled: "Companies Holding Certificates of Authority as Acceptable Sureties on Federal Bonds and as Acceptable Reinsuring Companies".
- c. All bonds shall be originals and issued or countersigned by a producing agent with satisfactory evidence of the authority of the person or persons executing such bond shall be submitted with the bond. Attorneys-in-fact who sign bonds or other Surety instruments must attach with each bond or Surety instrument a signed, certified and effectively dated copy of their power of attorney. Agents of Surety companies must list their name, address and telephone number on all bonds.
- d. The life of the bonds shall extend twelve (12) months beyond the date of Final Completion and shall contain a waiver of alteration to the terms of the Contract, extensions of time and/or forbearance on the part of the County.
- e. **Surety must have financial standing having a rating from A.M. Best Company (or other equivalent rating company) equal to or better than A- Class VI.**
- f. Should the Bid, Payment and Performance Bonds be issued by co-sureties, each surety listed on the bond shall meet the requirements in paragraphs a. – e. above. In addition, each surety shall submit a power of attorney and all signatures of the co-sureties representatives shall be notarized. The "lead" surety shall be identified for the purposes of underwriting and claims management.

FAILURE TO MEET ANY OF THE REQUIREMENTS CONTAINED ABOVE SHALL RESULT IN REJECTION OF THE BID.

20. TRENCH SAFETY ACT:

Pursuant to Chapter 90-96 (CS/SB 2626), Laws of Florida, "Trench Safety Act", any person submitting a bid/proposal is required to complete the form entitled: COMPLIANCE WITH FLORIDA TRENCH SAFETY ACT (90-96, LAWS OF FLORIDA), if applicable, and return the form with the Official Bid Form, (Part D, Attachment D). This is not a pay item. The purpose of this form is to gather information on the costs associated with trench safety measures and to insure that the bidder has considered these costs and included them in the Base Bid. Failure to complete this form may result in the Bid being declared non-responsive.

21. DRUG-FREE WORKPLACE FORM:

The Drug-Free Workplace Form is attached in Part E and shall be completed and submitted with your bid.

22. BID TABULATION AND RECOMMENDED AWARD:

Bid files may be examined during normal working hours, thirty (30) days after bid opening, or upon recommendation for award, whichever occurs first. Bidders desiring to view these documents are urged to schedule an appointment. For information concerning this bid, please contact the Procurement Division at the address listed above or by calling (407) 836-5635. Please specify the bid number for which you are inquiring. Bid opening results will be available at <http://apps.ocfl.net/orangebids/bidresults/results.asp>. Unsuccessful bidders will not be notified, unless a request is submitted in accordance with this paragraph.

23. INDEMNIFICATION FOR TORT ACTIONS/LIMITATION OF LIABILITY:

The provisions of Florida Statute 768.28 applicable to Orange County, Florida apply in full to this Contract. Any legal actions to recover monetary damages in tort for injury or loss of property, personal injury, or death caused by the negligent or wrongful act or omission of any employee of the County acting within the scope of his/her office or employment are subject to the limitations specified in this statute. No officer, employee or agent of the County acting within the scope of his/her employment or function shall be held personally liable in tort or named as a defendant in any action for any or damage suffered as a result of any act, event, or failure to act.

The County shall not be liable in tort for the acts or omissions of an officer, employee, or agent committed while acting outside the course and scope of his/her employment. This exclusion includes actions committed in bad faith or with malicious purpose, or in a manner exhibiting wanton and willful disregard of human rights, safety, or property.

24. OCCUPATIONAL SAFETY AND HEALTH ACT (O.S.H.A.):

In instances where such is applicable due to the nature of the bid matter with which this bid package is concerned, all material, equipment, etc., as proposed and offered by Bidders must meet and conform to all O.S.H.A. requirements; the Bidder's signature upon the bid proposal form (Part D) being by this reference considered a certification of such fact.

25. PUBLIC ENTITY CRIME STATEMENT (FS 287.133):

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

26. SUBCONTRACTOR/SUPPLIER INFORMATION:

If maximum M/WBE participation is desired bidders must list all proposed subcontractors and suppliers to be used, regardless of racial or gender grouping, to include names, addresses, phone numbers, type of work subcontracted (trade or commodity), dollar amount of work, and the M/WBE designation or Majority (Non-M/WBE) owned company. Attachment C-2 is provided for this information. Contractor shall not change any subcontractors without just cause and approval by the County.

27. SUBCONTRACTOR'S PAST PERFORMANCE:

Bidder is responsible for verifying subcontractor's satisfactory performance on previous Orange County projects. Failure to do so may impact Bidder's responsibility determination.

28. REFERENCES:

Bidder shall supply (with form) a list of three (3) similar projects successfully completed **by the Bidder, as Prime or Sub-Contractor**, within the last ten (10) years. **Failure to provide the similar projects may be cause for rejection of the bid.** At least one (1) similar project shall contain element four (4). **If none of the similar projects submitted contains element four (4), this may be cause for rejection of the bid.**

For the purpose of this Invitation for Bids a similar project has been defined as a project which construction has been successfully completed within the last ten (10) years immediately preceding the submittal date for proposal in response to this Invitation for Bids and shall contain the following elements:

Project Elements

1. Construction of a stormwater conveyance system with associated drainage structures for a governmental agency having a minimum construction cost, which excludes any utility work, equal to or greater than fifty thousand dollars (\$50,000).
2. Preparation of as-builts.
3. Coordination with utility companies.
4. Construction of an alum stormwater treatment system for a governmental agency.

EACH SIMILAR PROJECT LISTED SHALL BE LISTED WITH COMPLETE INFORMATION AS SPECIFICALLY PROVIDED ON THE REFERENCE FORM (ATTACHMENT E). THE SPECIFIC INFORMATION ON REFERENCES MUST BE PROVIDED ON THE REFERENCE FORM. DO NOT ATTACH LISTINGS OF REFERENCE INFORMATION. FAILURE TO PROVIDE REFERENCE INFORMATION AS REQUESTED MAY RESULT IN THE REJECTION OF YOUR BID.

The determination of whether a bidder is responsible or not shall be at the sole discretion of the County. Although the County may request submission of a minimum number of similar projects for evaluation, the County's determination of a bidder's responsibility shall not be solely based on the number of similar projects submitted.

The contact person listed as a reference shall be someone who has personal knowledge of the Bidder's performance during the referenced project. Contact persons must have been informed that they are being used as a reference and that the County will be calling or emailing them.

29. BID AND RELATED COSTS:

By submission of a bid, the Bidder agrees that all costs associated with the preparation of his/her bid will be the sole responsibility of the Bidder. The Bidder also agrees that the County bears no responsibility for any costs associated with the preparation of the bid and/or any administrative or judicial proceedings resulting from the solicitation process.

30. SOLICITATION CANCELLATIONS

Orange County reserves the right, and the Manager of the Procurement Division, has the absolute and sole discretion to cancel a solicitation at any time prior to approval of the award by the Board of County Commissioners when such approval is required. The decision to cancel a solicitation cannot be the basis for a protest pursuant to the Orange County Code.

31. LICENSES/PERMITS/FEES:

In compliance with the Public Bid Disclosure Act, Section 218.80, Florida Statutes, each permit, license, and/or fee applicable to this work/project (before and during construction) that will either be paid by the Contractor or by the Orange County Board of County Commissioners as specified below:

Orange County will be responsible for paying for any and all permits, licenses, and fees imposed on the Work by agencies of the Orange County Board of County Commissioners. This does not alleviate the Contractor from obtaining the permits.

Licenses, permits and fees which may be required by the State of Florida, State Agencies or by other local governmental entities are not included in the above list.

For Permits and Fees for Agencies other than Orange County Board of County Commissioners:

The Contractor shall procure and pay for all permits and licenses, charges and fees and give all notices necessary and incidental to the due and lawful prosecution of the work. The cost of all permits, fees, etc ; shall be included in the bid price except where noted otherwise in the specifications or other bid documents.

The Orange County Government Fee Directory, incorporated herein by reference, contains a list of licenses, permits and fees that may apply to this project.

The fee directory link "Fees" is available at:

<http://www.orangecountyfl.net/portals/0/resource%20library/open%20government/FeeDirectory.pdf>

Bidders shall review all applicable licenses, permits and fees and contact the applicable agency if there are any questions.

32. BID ACCEPTANCE PERIOD

Any bid submitted in response to this Invitation for Bids shall remain in effect for a period of 90 days after bid opening. Upon request of the County, the bidder at its sole option may extend this period.

33. EQUAL OPPORTUNITY

It is hereby declared that equal opportunity and nondiscrimination shall be the County's policy intended to assure equal opportunities to every person, regardless of race, religion, sex, sexual orientation and gender expression/identity, color, age, disability or national origin, in securing or holding employment in a field of work or labor for which the person is qualified, as provided by Section 17-314 of the Orange County Code and the County Administrative Regulations.

Further, the awarded Contractor shall abide by the following provisions:

- (a) The awarded Contractor shall represent that awarded Contractor has adopted and maintains a policy of nondiscrimination as defined by applicable County ordinance throughout the term of this contract.
- (b) The awarded Contractor shall allow reasonable access to all business and employment records for the purpose of ascertaining compliance with the nondiscrimination provision of the contract.
- (c) The provisions of the prime contract shall be incorporated by the awarded Contractor into the contracts of any applicable subcontractors.

34. ETHICS COMPLIANCE

The following forms are included in this solicitation as attachments F and G and shall be completed and submitted as indicated below:

- a. Orange County Specific Project Expenditure Report -The purpose of this form is to document any expenses incurred by a lobbyist for the purposes described in Section 2-351, Orange County Code.

This form shall be completed and submitted with any bid, proposal or other response to an Orange County solicitation. The bidder, proposer or responder to the solicitation shall not be awarded a contract unless this form has been completed and submitted.

Any questions concerning this form shall be addressed to the senior contract administrator for this solicitation.

- b. **Relationship Disclosure Form – The purpose of this form is to document any relationships between a bidder, proposer or responder to an Orange County solicitation and the Mayor or any other member of the Orange County Board of County Commissioners.** This form shall be completed and submitted with the applicable bid, proposal or response to an Orange County solicitation.

No contract award will be made unless this form has been completed and submitted. Any questions concerning this form shall be addressed to the senior contract administrator identified in this solicitation. Also, a listing of the most frequently asked questions concerning this form is attached for your information.

35. TOBACCO FREE CAMPUS

All Orange County operations under the Board of County Commissioners shall be tobacco free. This policy shall apply to parking lots, parks, break areas and worksites. It is also applicable to contractors and their personnel during contract performance on county-owned property. Tobacco is defined as tobacco products including, but not limited to, cigars, cigarettes, e-cigarettes, pipes, chewing tobacco and snuff. Failure to abide by this policy may result in civil penalties levied under Chapter 386, Florida Statutes and/or contract enforcement remedies.

36. VERIFICATION OF EMPLOYMENT STATUS

Prior to the employment of any person under this contract, the Contractor shall utilize the U.S. Department of Homeland Security's E-Verify system to verify the employment eligibility of all new employees hired by the Contractor during the contract term, and an express requirement that Contractors include in such subcontracts the requirement that subcontractors performing work or providing services pursuant to the state contract utilize the E-Verify system to verify the employment eligibility of all new employees hired by the subcontractor during the contract term. For more information on this process, please refer to United States Citizenship and Immigration Service site at:

<http://www.uscis.gov/portal/site/uscis>.

Only those employees determined eligible to work within the United States shall be employed under this contract.

By submission of a bid in response to this solicitation, the Contractor affirms that all employees in the above categories shall undergo e-verification before placement on this contract. The Contractor shall commit to comply with this requirement by completing the E-Verification certification, attached to this solicitation.

37. PROPRIETARY INFORMATION

In accordance with Chapter 119 of the Florida Statutes (Public Records Law), and except as may be provided by other applicable State or Federal Law, all proposers should be aware that Request for Proposals or Invitation for Bids and the responses thereto are in the public domain. **Proposers must identify specifically** any information contained in their response which they consider confidential and/or proprietary and which they believe to be exempt from disclosure, **citing specifically the applicable exempting law.**

38. MOBILIZATION:

Mobilization is defined as construction start-up costs required for performance of preparatory work and operations in mobilizing for beginning work on the project. Such costs are necessary for the movement of personnel, equipment, supplies and incidentals to the project site and for the establishment of temporary offices, buildings, safety equipment, first aid supplies, sanitary and other facilities. Include the cost of bonds, insurance and any other preconstruction expense necessary for the start of work. Mobilization costs are not part of the physical construction.

The Contractor shall retain adequate documentation to support all mobilization costs. The County may at its discretion verify reasonableness of actual mobilization costs and make an equitable adjustment to contract price if deemed necessary.

The total cost of mobilization shall not exceed 10% of the Estimated Total Base Bid. For purposes of calculation of maximum allowable mobilization, the "Estimated Total Base Bid" is defined as the total of all line items specified to be included in the mobilization calculation, exclusive of any alternates or options, and exclusive of the Mobilization line item.

Failure of the Bidder to comply with this limitation shall result in a reduction of the line item price for Mobilization; or, in the alternative, the bid may be found non-responsive, at the County's option.

39. UNBALANCED PRICING

A. Unbalanced pricing may increase performance risk and could result in payment of unreasonably high prices. Unbalanced pricing exists when, despite an acceptable total evaluated price, the price of one or more contract line items is significantly over or understated as indicated by the application of cost or price analysis techniques.

The greatest risk associated with unbalanced pricing occur when—

1. Startup work and mobilization are separate line items;
 2. Base year quantities and option year quantities are separate line items ; or
The evaluated price is the aggregate of estimated quantities to be ordered under separate line items of an indefinite-delivery contract.
- B. All offers with separately priced line items or subline items shall be analyzed to determine if the prices are unbalanced. If cost or price analysis techniques indicate that an offer is unbalanced, the Manager of the Procurement Division shall
1. Consider the risks to the County associated with the unbalanced pricing in determining the competitive range and in making the award decision; and
 2. Consider whether award of the contract will result in paying unreasonably high prices for contract performance.
 3. An offer may be rejected if the manager determines that the lack of balance poses an unacceptable risk to the County.

40. UNIT PRICES

Unless the Bid Item Schedule contained in Part D specifies otherwise, unit prices shall include all incidental Project costs, including but not limited to, overhead and profit.

The Contract resulting from this solicitation is based on estimated quantities. The contractor shall only be paid for materials installed in the work in accordance with the applicable unit prices for the specific work element (line item).

No payment shall be made for excess materials delivered to the jobsite and not incorporated into the work. Therefore, it shall be the contractor's responsibility to determine the quantities of materials necessary to perform the project to its completion.

IFB NO. Y16-736 - EB

ISSUED: February 1, 2016

OFFICIAL BID FORM

FOR

LAKE ANDERSON STORMWATER TREATMENT SYSTEM

Mail or Hand Deliver

ORIGINAL BID FORM AND THREE (3) COMPLETE COPIES

BY 2:00 PM - MARCH 3, 2016

To:

BOARD OF COUNTY COMMISSIONERS
ORANGE COUNTY, FLORIDA
INTERNAL OPERATIONS CENTRE II
PROCUREMENT DIVISION
400 E. SOUTH STREET – 2nd FLOOR
ORLANDO, FLORIDA 32801

Bid Opening:

MARCH 3, 2016, - 2:00 PM

INTERNAL OPERATIONS CENTRE II
PROCUREMENT DIVISION CONFERENCE ROOM, 2nd FLOOR
ORLANDO, FLORIDA

COMPANY NAME

COMPLETE MAILING ADDRESS

CITY, COUNTY, STATE, ZIP CODE

TELEPHONE NUMBER

FAX NUMBER

CONTACT PERSON

E-MAIL ADDRESS

TIN#: _____

NOTE: COMPANY NAME MUST MATCH LEGAL NAME ASSIGNED TO TIN
NUMBER. CURRENT W9 MUST BE SUBMITTED WITH BID/PROPOSAL

PART D

**To the Board of County Commissioners
Orange County, Florida**

The Undersigned, hereinafter called "Bidder", having visited the site of the proposed project and familiarized himself with the local conditions, nature and extent of the work, and having examined carefully the Contract Form, General Conditions, Supplementary Conditions, Plans and Specifications and other Contract Documents, with the Bond requirements herein, proposes to furnish all labor, materials, equipment and other items, facilities and services for the proper execution and completion of: **LAKE ANDERSON STORMWATER TREATMENT SYSTEM** in full accordance with the drawings and specifications prepared in accordance with the Contract Documents and, if awarded the Contract, to complete the said work within the time limits specified for the following ESTIMATED TOTAL BASE BID.

It is understood that this is a unit price Contract and the resultant Contract will contain estimated quantities, unit prices, extended totals and that the Estimated Total Base Bid is the sum of all pay item totals from the schedule of prices, Page D-3 through D-4.

The Contract resulting from this solicitation is based on estimated quantities. The contractor shall only be paid for materials installed in the work in accordance with the applicable unit prices for the specific work element (line item). No payment shall be made for excess materials delivered to the jobsite and not incorporated into the work. Therefore, it shall be the contractor's responsibility to determine the quantities of materials necessary to perform the project to its completion.

ESTIMATED TOTAL BASE BID:

_____ DOLLARS
(In Words)

\$ _____

In the event the Contract is awarded to this Bidder, he/she will enter into a formal written agreement with the County in accordance with the accepted bid within ten (10) calendar days after said Contract is submitted to him/her and will furnish to the County a Contract Payment and Performance Bond with good and sufficient sureties, satisfactory to the County, in the amount of 100% of the accepted bid. The Bidder further agrees that in the event of the Bidder's default or breach of any of the agreements of this proposal, the said bid deposit shall be forfeited as liquidated damages.

Failure of the Bidder to provide pricing for all unit priced items and/or the Base Bid and ALL requested additive/deductive bid items, or alternate bids shall be cause for rejection of the bid as non-responsive.

**BID SCHEDULE
Y16-736-EB**

No.	Pay Item #	Description	Qty	Unit	Unit Price	Total Amount
1	101-1*	Mobilization	1	LS		
2	102-1	Maintenance of Traffic	1	LS		
3	104-14	Prevention, Control and Abatement of Erosion and Water Pollution	1	LS		
4	400-7-77	Concrete Foundation/Structures	19.5	CY		
5	425-1521	Water Intake Structure - Type C Inlet with Fiberglass top Grate	1	EA		
6	430-174-115	HDPE Pipe, SDR 21, 15" Round	24	LF		
7	430-984-105	Mitered End Section, Round, 4" PVC	1	EA		
8	430-984-123	Mitered End Section, Round, 15" HDPE with skimmer	1	EA		
9	550-102-42	Fencing, Type B, 8', Vinyl Coated Dark Green Color w/vinyl slats	60	LF		
10	550-60201-1	Fence Gate, Type B, 3' Vinyl Coated Dark Green Color w/vinyl slats	1	EA		
11	550-60221	Fence Gate, Type B, Double 10', Vinyl Coated Dark Green w/vinyl slats	1	EA		
12	570-1-2	Performance Turf (Sod) (Bahia or Match Existing)	622	SY		
13	900-1	As-Built Plans	1	LS		
14	900-2	Indemnification	1	LS	\$100.00	\$100.00
15	900-3	Groundwater Treatment & Disposal	5	DA		
16	999	Potable Water Service and Plumbing	1	LS		
17	ATS-01	Alum Treatment and Instrumentation System Components	1	LS		
18	ATS-02	Aluminum Roof Cover and Supports	1	LS		
19	ATS-03	Site and Control System Electrical	1	LS		
20	ATS-04	Fiberglass-Reinforced Double-Walled Plastic Tank	1	LS		

21	ATS-05	Pond Alum Injection Structure	1	EA		
22	ATS-6-1	1 1/2 " HDPE Sleeve for Alum Tubing	45	LF		
23	ATS-6-2	1 1/2" HDPE - pH Monitoring Line	40	LF		
24	ATS-6-3	3" PVC (Sch. 80) - Water Carrier Piping with Lentel Weights	250	LF		
25	ATS-6-4	2" ID Double Wall HDPE - Alum Tank Fill Line	48	LF		
26	ATS-6-5	4" PVC (Sch. 40) - Building Drain	45	LF		
27	ATS-7	Concrete Utility Box with Aluminum Hatch	2	EA		

* Any amount of Mobilization in excess of 10% of Reference Number 2-27 will be paid upon completion of all work in accordance with Technical Provision TP 101.

TOTAL ESTIMATED BASE BID,
ITEMS 1 THROUGH 27:

The Bidder hereby agrees that there is attached:

- | | | | |
|-----|---|-----|-------------|
| 1. | Non-Collusion Affidavit, Attachment A | Yes | ___ |
| 2. | Required Disclosure, Attachment B | Yes | ___ |
| 3. | M/WBE Forms | | |
| | Employment Data, Attachment C-1 | Yes | ___ |
| | Subcontractor/Supplier Page, Attachment C-2 | Yes | ___ |
| | M/WBE Survey, Attachment C-4 | Yes | ___ |
| | Good Faith Effort, Attachment C-5 | Yes | ___ No ___ |
| 4. | Trench Safety Act Form, Attachment D | Yes | ___ N/A ___ |
| 5. | Drug-Free workplace Form | Yes | ___ |
| 6. | Bid Bond on Form in Exhibit 1 or Cashier's Check
(10% of Base Bid) | Yes | ___ N/A ___ |
| 7. | Original Bid Form (marked "Original") & 3
complete copies with all attachments | Yes | ___ |
| 8. | References, Attachment E | Yes | ___ |
| 9. | Licenses | Yes | ___ N/A ___ |
| 10. | Current W9 | Yes | ___ |
| 11. | Project Expenditure Report, Attachment F | Yes | ___ |
| 12. | Relationship Disclosure Form, Attachment G | Yes | ___ |
| 13. | Verification of Employment Status, Attachment H | Yes | ___ |

ACKNOWLEDGEMENT OF ADDENDA

The Bidder shall acknowledge receipt of any addenda issued to the solicitation by completing the blocks below or by completion of the applicable information on the addendum and returning it not later than the date and time for receipt of the bid. Failure to acknowledge an addendum that has a material impact on the solicitation may negatively impact the responsiveness of your bid. Material impacts include but are not limited to changes to specifications, delivery time, performance period, quantities, bonds, letters of credit, insurance, qualifications, etc.

Addendum No. _____ Dated _____ Addendum No. _____ Dated _____

Addendum No. _____ Dated _____ Addendum No. _____ Dated _____

If awarded this construction Contract, the Bidder agrees to complete the work covered by this Contract as follows:

1. Work shall start at the project site within fourteen (14) days of the effective date of the Notice to Proceed.
2. Substantially complete in **one hundred eighty (180)** consecutive calendar days from date of Official Notice to Proceed.
3. Final completion in **two hundred forty (240)** consecutive calendar days from date of Official Notice to Proceed.
4. Should the Successful Bidder fail to complete work as specified, the liquidated damage clause will apply (Part E, Contract).

The Bidder hereby agrees that the County reserves the right to waive informalities in any bid and to reject any or all bids, or to accept any bid that in its judgment will be for the best interest of the County.

FLORIDA CONSTRUCTION INDUSTRIES LICENSING BOARD CERTIFICATION:

(NAME OF HOLDER) (CERTIFICATE NO.)

(SIGNATURE OF BIDDER) (CERTIFICATE EXPIRATION DATE)

(NAME TYPED)

IDENTIFICATION OF BUSINESS ORGANIZATION

Complete and submit the following information:

Type of Organization

Sole Proprietorship Partnership

Joint Venture Corporation

State of Incorporation: _____

Principal Place of Business (Florida Statute Chapter 607):
_____ City/County/State

THE PRINCIPAL PLACE OF BUSINESS SHALL BE THE ADDRESS OF THE BIDDER'S PRINCIPAL OFFICE AS IDENTIFIED BY THE FLORIDA DIVISION OF CORPORATIONS

AUTHORIZED SIGNATORIES/NEGOTIATORS

The bidder or proposer represents that the following principals are authorized to sign and/or negotiate Contracts and related documents to which the bidder or proposer will be duly bound. Principal is defined as an employee, officer or other technical or professional in a position capable of substantially influencing the development or outcome of an activity required to perform the covered transaction.

Name	Title	Telephone Number	E-Mail Address
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____

IN WITNESS WHEREOF, THE BIDDER HAS HEREUNTO SET HIS SIGNATURE AND AFFIXED HIS SEAL THIS DAY OF _____, A.D. 20__.

BY _____ (SEAL)

TITLE: _____

PRINT NAME AND TITLE _____

FEDERAL I.D.# _____

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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, Orange County, Florida and that it will be relied upon by said County, in any consideration which may give to and any action which 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 _____ 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 Orange 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)

TAKEN, SWORN AND SUBSCRIBED TO BEFORE ME this ____ day of _____, 20__.

Notary Public (SEAL)

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

Personally Known _____ or Produced Identification _____ Type of

Identification: _____

REQUIRED DISCLOSURE

The following Disclosure is of all material facts pertaining to any felony or civil conviction or any pending felony or civil charges in the last three (3) years in this State or any other State of the United States against 1) Bidder, 2) any business entity related to or affiliated with bidder, or 3) any present or former executive employee, officer, director, stockholder, partner or owner of bidder or of any such related or affiliated entity. This Disclosure shall not apply to any person or entity which is only a stockholder, which person or entity owns twenty percent (20) or less of the outstanding shares of a bidder whose stock is publicly owned and traded.

BIDDER

IFB/RFP Number & Title: _____

EMPLOYMENT DATA, SCHEDULE OF MINORITIES AND WOMEN (Rev. 1/99)

Please provide the following data pertaining to your workforce. If you have an Orange County workforce, it should be shown. If you do not have an Orange County workforce, total permanent workforce should be shown. If this is a Joint Venture, employment data shall be furnished for each firm composing the joint venture. It is mandatory that you provide workforce data. Failure to provide this form with your bid/proposals may be cause for rejection of your bid/proposal.

JOB CATEGORIES	MAJORITY		MINORITY MALES				MINORITY FEMALES				TOTAL
	White Male	White Female	Black	Hispanic	American Indian	Asian American	Black	Hispanic	American Indian	Asian American	
Officials, Mgrs. Supervisors											
Professionals											
Technicians											
Sales Workers											
Office and Clerical											
Craftsman (Skilled)											
Operatives (Semi-Skilled)											
Laborers (Unskilled)											
Service Workers											
Apprentices											
Interns/Co-Ops											
Wages to Work Employees											
TOTAL											
Changes Since Last Report											

The above reflects (Check One): _____ Orange County Workforce _____ Total Permanent Workforce (Outside Orange County)
 For Construction Projects Only: Do you intend to hire new employees for the project? ___ Yes ___ No If yes, how many approximately? _____

Name of Firm _____ Period of Report _____ No. of Years in Business in Orange County _____

Form Completed by _____
 Name/Title (Printed or Typed) _____ Signature _____

Form Approved by _____
 Name/Title (Printed or Typed) _____ Signature _____

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PRIME CONTRACTOR/SUBCONTRACTOR/SUPPLIER INFORMATION

If maximum M/WBE participation is desired, bidders must list **all** proposed Subcontractors **and suppliers** to be used. Provide company names; contacts, addresses, phone numbers; work to be performed with the Contractor's own workforce, including estimated dollar amount allocated for that work (work that is consistently and historically performed in-house); total amount to be paid to this sub/supplier (do not discount supply dollars); and M/WBE designation or if non-M/WBE (Majority). See Instructions to Bidders, Part C, for complete M/WBE requirements. Provide **all** information requested. Use additional sheets if necessary. Failure to provide all of the information requested may negatively impact the M/WBE evaluation.

1. What is the estimated percent of work that the Prime Contractor will self-perform? _____%
List these areas below with approximate dollar amounts to be allocated for the work.

2. Is all work (whether to be subbed or self-performed) listed below? Yes ____ No ____
Are all material suppliers listed? Yes ____ No ____
If no, please explain. _____

3. Is your firm certified through Orange County as an M/WBE? Yes ____ No ____
(See Part C for specific requirements for certified M/WBE firms)

4. Is your firm registered through Orange County as a Service Disabled-Veteran (SDV)? Yes ____ No ____

5. Did you include any M/WBE credits- First Time Utilization (FTU) or Non-County Utilization (NC) with this bid? (If so, insert copy of credit Yes ____ No ____
(If so, insert copy of credit and specify credit type below)

O.C. CERTIFIED

<u>COMPANY NAME, CONTACT ADDRESS, PHONE NUMBER</u>	<u>WORK TO BE PERFORMED (TRADE) OR COMMODITY TO BE SUPPLIED</u>	<u>DOLLAR AMOUNT</u>	<u>M/WBE or Non-M/WBE; or SDV; or TYPE OF M/WBE CREDIT-FTU or NC</u>
1 _____ _____ _____	<u>Sub / Supplier / In-house (Circle One)</u> _____ _____	_____ _____	_____ _____
2 _____ _____ _____	<u>Sub / Supplier / In-house (Circle One)</u> _____ _____	_____ _____	_____ _____
3 _____ _____ _____	<u>Sub / Supplier / In-house (Circle One)</u> _____ _____	_____ _____	_____ _____

Signature of Bidder

Title

PRIME CONTRACTOR/SUBCONTRACTOR/SUPPLIER INFORMATION

<u>COMPANY NAME, CONTACT ADDRESS, PHONE NUMBER</u>	<u>WORK TO BE PERFORMED (TRADE) OR COMMODITY TO BE SUPPLIED</u>	<u>DOLLAR AMOUNT</u>	<u>O.C. CERTIFIED M/WBE or Non-MWBE; or SDV; or TYPE OF M/WBE CREDIT-FTU or NC</u>
4 _____ _____ _____	<u>Sub/Supplier/In-house (Circle One)</u> _____ _____	_____	_____
5 _____ _____ _____	<u>Sub/Supplier/In-house (Circle One)</u> _____ _____	_____	_____
6 _____ _____ _____	<u>Sub/Supplier/In-house (Circle One)</u> _____ _____	_____	_____
7 _____ _____ _____	<u>Sub/Supplier/In-house (Circle One)</u> _____ _____	_____	_____
8 _____ _____ _____	<u>Sub/Supplier/In-house (Circle One)</u> _____ _____	_____	_____
9 _____ _____ _____	<u>Sub/Supplier/In-house (Circle One)</u> _____ _____	_____	_____
10 _____ _____ _____	<u>Sub/Supplier/In-house (Circle One)</u> _____ _____	_____	_____
11 _____ _____ _____	<u>Sub/Supplier/In-house (Circle One)</u> _____ _____	_____	_____

Signature of Bidder

Title

INSTRUCTIONS Contractor shall place the following on their letterhead, executed by their authorized agent. Letter is to be submitted **before 5:00 PM on the second business day (i.e., if bid opens on Thursday, due on Monday before 5:00 PM)** after bid opening to: Orange County Business Development Division; 400 E. South Street; 2nd Floor, Orlando, FL 32801; Fax Number (407) 836-5477. A Letter of Intent is to be executed with all M/WBE Subcontractors and suppliers listed by the Contractor on the Subcontractor/Supplier page submitted with this bid. Any M/WBE's not listed on Subcontractor/Supplier page for this bid will not be accepted. Failure to submit this form within the required time frame may result in the bid being found non-responsive.

**LETTER OF INTENT
(VERIFICATION M/WBE UTILIZATION)**

IFB # _____ **PROJECT TITLE** _____

I, _____, (Prime Contractor) have entered into an agreement with the following Minority/Women-owned Business Enterprise to do the work shown on Attachment C-2 of the Bid Form and shown below. I understand that prior to execution of the prime Contract by Orange County, a subcontract and/or purchase order will be executed with this firm and a copy of the agreement will be sent to the Orange County Business Development Division.

SUBCONTRACTOR/SUPPLIER

SPECIFIC SCOPES OF WORK/COMMODITY

SUBCONTRACT/PURCHASE ORDER PRICE

I understand that I shall not be allowed to substitute or change Subcontractors, without the express prior approval of Orange County's Project Manager and the Business Development Division. Such approval shall in no way relieve my obligations pursuant to Orange County's M/WBE requirements and goals contained in the Orange County Minority/Women Business Enterprise Ordinance, Orange County Code, Chapter 17, Article III, Division 4.

Under penalty of perjury, I declare that I have read the foregoing and the facts stated in it are true. False statements may result in criminal prosecution for a felony of the third degree as provided for in Section 92.525(3), Florida Statutes.

Authorized Agent of Prime Contractor

Authorized Agent, Subcontractor/Supplier

Printed Name & Title

Printed Name & Title

Date: _____

Date: _____

Phone Number

Fax Number

INSTRUCTIONS Contractor shall place the following on their letterhead, executed by their authorized agent. Letter is to be submitted **before 5:00 PM on the second business day (i.e., if bid opens on Thursday , due on Monday before 5:00 PM)** after bid opening to: Orange County Business Development Division; 400 E. South Street; 2nd Floor, Orlando, FL 32801; Fax Number (407) 836-5477. A Letter of Intent is to be executed with all **SDV** Subcontractors and suppliers listed by the Contractor on the Subcontractor/Supplier page submitted with this bid. Any **SDV's** not listed on Subcontractor/Supplier page for this bid will not be accepted. Failure to submit this form within the required time frame may result in the bid being found non-responsive.

**LETTER OF INTENT
(VERIFICATION OF SERVICE-DISABLED VETERAN UTILIZATION)**

IFB # _____ **PROJECT TITLE** _____

I, _____, (Prime Contractor) have entered into an agreement with the following Service-Disabled Veteran Business to do the work shown on Attachment C-2 of the Bid Form and shown below (contingent upon award of the prime contract to our company). I understand that prior to execution of the prime Contract by Orange County, a subcontract and/or purchase order will be executed with this firm and a copy of the agreement will be sent to the Orange County Business Development Division.

SDV SUBCONTRACTOR/SUPPLIER

SPECIFIC SCOPES OF WORK/COMMODITY

SUBCONTRACT/PURCHASE ORDER PRICE

I understand that I shall not be allowed to substitute or change Subcontractors, without the express prior approval of Orange County's Project Manager and the Business Development Division. Such approval shall in no way relieve my obligations pursuant to Orange County's Service-Disable Veteran Business Program requirements contained in the Orange County Ordinance, Orange County Code, Chapter 17, Article III, Division 5.

Under penalty of perjury, I declare that I have read the foregoing and the facts stated in it are true. False statements may result in criminal prosecution for a felony of the third degree as provided for in Section 92.525(3), Florida Statutes.

Authorized Agent of Prime Contractor

Authorized Agent, Subcontractor/Supplier

Printed Name & Title

Printed Name & Title

Date: _____

Date: _____

Phone Number

Fax Number

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M/WBE Survey

Company _____ Contact Name: _____

Contact's Phone Number: _____ IFB #: _____

Please answer the following questions regarding Orange County's M/WBE Program:

1. If you failed to meet the County's M/WBE goal for this solicitation, please check reasons below:

- No M/WBE contractors/suppliers available
- Self-performing more than 75% of the work
- Self-performing 100% of the work
- Prices from M/WBE contractors/suppliers too high
- Other (please explain)

2. If checked "self performing work" in question #1, explain in detail why you propose to self perform the work and list any subcontractors you intend to use. Also, provide a detailed listing of the suppliers, items to be purchased and costs thereof:

3. When you submitted your bid without the desired M/WBE participation, were you concerned that this deficiency would cause rejection of your bid?
 Yes No

If no, why not?

4. What steps do you recommend the County take to ensure that the M/WBE goal is achieved on projects of this nature?

5. Do you support the County's M/WBE program?
 Yes No

If no, why not?

6. Do you believe you can remain competitive if you fully complied with the County's M/WBE program?
 Yes No

If no, why not?

7. Do you have any type of working relationship with M/WBE subcontractors?
Yes No

If yes, is it (check all that apply):

- Routine business only
 Only during bid solicitation
 Other (please explain)

8. Do you desire to establish a working relationship with M/WBE subcontractors?
 Yes No

9. Are you aware that you could call the Business Development Division for information or additional assistance with M/WBE participation in bid solicitations?
 Yes No

10. Please provide any additional comments:

Please note that failure to provide this information with your Bid Proposal may delay the award of the contract. Therefore, a timely response is requested. You may be contacted by staff from the Business Development Division in the near future.

GOOD FAITH EFFORT M/WBE CONTACT LOG (See Part C, SECTION 3, Paragraph E-iii)
 (Required only if Good Faith Effort Documentation is being provided as part of this Bid)

IFB No/ Project Name

Firm's Name/Address	Contact Info: E-mail, Phone and /or fax	Scope of Work (Work to be performed/Trade/or Commodity Supplied)	Date	Name of Person Contacting Firms	Firm to Bid (Y or N)	Date & Time Quote Received	Notes

Under penalty of perjury, I declare that I have read the foregoing and the facts stated in it are true. False statements may result in criminal prosecution for a felony of the third degree as provided for in Section 92.525 (3), Florida Statutes. I,

_____, (Signature off Authorized Agent),
 _____ / _____ / _____ (Printed Name, Title, and Date)

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

Bidder hereby acknowledges that all costs for complying with the Florida Trench Safety Act are included in the various items of the Total Estimated Base Bid or Lump Sum Bid. For informational purposes only, the Bidder is required to further identify these costs in the summary below.

TRENCH SAFETY MEASURE (DESCRIPTION)	UNIT OF MEASURE (LF, SY)	UNIT (QUANTITY)	UNIT COST	EXTENDED COST
A) _____	_____	_____	\$ _____	\$ _____
B) _____	_____	_____	\$ _____	\$ _____
C) _____	_____	_____	\$ _____	\$ _____
D) _____	_____	_____	\$ _____	\$ _____
			TOTAL	\$ _____

SIGNED: _____

TITLE: _____

THIS IS NOT A PAY ITEM: The purpose of this form is to gather information on the costs associated with trench safety measures and to insure that the Bidder has considered these costs and included them in the Total Estimated Base Bid or Lump Sum Bid. Contractor will not receive additional payment if actual quantities differ from those estimated or if the Contractor uses a safety measure different than those listed.

(Failure to complete this form may result in the Bid being declared non-responsive.)

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REFERENCES:

Bidder shall supply (with form) a list of three (3) similar projects successfully completed **by the Bidder, as Prime or Sub-Contractor**, within the last ten (10) years. **Failure to provide the similar projects may be cause for rejection of the bid.** At least one (1) similar project shall contain element four (4). **If none of the similar projects submitted contains element four (4), this may be cause for rejection of the bid.**

For the purpose of this Invitation for Bids a similar project has been defined as a project which construction has been successfully completed within the last ten (10) years immediately preceding the submittal date for proposal in response to this Invitation for Bids and shall contain the following elements:

Project Elements

1. Construction of a stormwater conveyance system with associated drainage structures for a governmental agency having a minimum construction cost, which excludes any utility work, equal to or greater than fifty thousand dollars (\$50,000).
2. Preparation of as-builts.
3. Coordination with utility companies.
4. Construction of an alum stormwater treatment system for a governmental agency.

EACH SIMILAR PROJECT LISTED SHALL BE LISTED WITH COMPLETE INFORMATION AS SPECIFICALLY PROVIDED ON THE REFERENCE FORM (ATTACHMENT E). THE SPECIFIC INFORMATION ON REFERENCES MUST BE PROVIDED ON THE REFERENCE FORM. DO NOT ATTACH LISTINGS OF REFERENCE INFORMATION. FAILURE TO PROVIDE REFERENCE INFORMATION AS REQUESTED MAY RESULT IN THE REJECTION OF YOUR BID.

The determination of whether a bidder is responsible or not shall be at the sole discretion of the County. Although the County may request submission of a minimum number of similar projects for evaluation, the County's determination of a bidder's responsibility shall not be solely based on the number of similar projects submitted.

The contact person listed as a reference shall be someone who has personal knowledge of the Bidder's performance during the referenced project. Contact persons must have been informed that they are being used as a reference and that the County will be calling or emailing them.

1. Project Name _____
Owner _____
Contact _____
Address _____

Telephone Number/Email Address _____
Contract Number and Amount # _____ \$ _____
Change Orders \$ _____
Final Contract \$ _____
Completed on Schedule? Yes ___ No ___ Date: _____
Project Description _____

2. Project Name _____
Owner _____
Contact _____
Address _____

Telephone Number/Email Address _____
Contract Number and Amount # _____ \$ _____
Change Orders \$ _____
Final Contract \$ _____
Completed on Schedule? Yes ___ No ___ Date: _____
Project Description _____

3. Project Name _____
Owner _____
Contact _____
Address _____

Telephone Number/Email Address _____
Contract Number and Amount # _____ \$ _____
Change Orders \$ _____
Final Contract \$ _____
Completed on Schedule? Yes ___ No ___ Date: _____
Project Description _____

4. Project Name _____
Owner _____
Contact _____
Address _____

Telephone Number/Email Address _____
Contract Number and Amount # _____ \$ _____
Change Orders \$ _____
Final Contract \$ _____
Completed on Schedule? Yes ___ No ___ Date: _____
Project Description _____

5. Project Name _____
Owner _____
Contact _____
Address _____

Telephone Number/Email Address _____
Contract Number and Amount # _____ \$ _____
Change Orders \$ _____
Final Contract \$ _____
Completed on Schedule? Yes ___ No ___ Date: _____
Project Description _____

6. Project Name _____
Owner _____
Contact _____
Address _____

Telephone Number/Email Address _____
Contract Number and Amount # _____ \$ _____
Change Orders \$ _____
Final Contract \$ _____
Completed on Schedule? Yes ___ No ___ Date: _____
Project Description _____

LAKE ANDERSON STORMWATER TREATMENT SYSTEM
Case or Bid No. **Y16-736 -EB**

ORANGE COUNTY SPECIFIC PROJECT EXPENDITURE REPORT

This lobbying expenditure form shall be completed in full and filed with all application submittals. This form shall remain cumulative and shall be filed with the department processing your application. Forms signed by a principal's authorized agent shall include an executed Agent Authorization Form.

This is the initial Form: _____
This is a Subsequent Form: _____

Part I

Please complete all of the following:

Name and Address of Principal (legal name of entity or owner per Orange County tax rolls): _____

Name and Address of Principal's Authorized Agent, if applicable: _____

List the name and address of all lobbyists, consultants, contractors, subcontractors, individuals or business entities who will assist with obtaining approval for this project. (Additional forms may be used as necessary.)

1. Name and address of individual or business entity: _____
Are they registered Lobbyist? Yes ___ or No ___
2. Name and address of individual or business entity: _____
Are they registered Lobbyist? Yes ___ or No ___
3. Name and address of individual or business entity: _____
Are they registered Lobbyist? Yes ___ or No ___
4. Name and address of individual or business entity: _____
Are they registered Lobbyist? Yes ___ or No ___
5. Name and address of individual or business entity: _____
Are they registered Lobbyist? Yes ___ or No ___
6. Name and address of individual or business entity: _____
Are they registered Lobbyist? Yes ___ or No ___
7. Name and address of individual or business entity: _____
Are they registered Lobbyist? Yes ___ or No ___
8. Name and address of individual or business entity: _____
Are they registered Lobbyist? Yes ___ or No ___

For Staff Use Only:
Initially submitted on _____
Updated On _____

Specific Project Expenditure Report (Revised November 5, 2010)
For use as of March 1, 2011

LAKE ANDERSON STORMWATER TREATMENT SYSTEM
Case or Bid No. **Y16-736 -EB**

Company Name: _____

Part II
Expenditures:

For this report, an "expenditure" means money or anything of value given by the principal and/or his/her lobbyist for the purpose of lobbying, as defined in section 2-351, Orange County Code. This may include public relations expenditures including, but not limited to, petitions, fliers, purchase of media time, cost of print and distribution of publications. However, the term "expenditure" **does not** include:

- Contributions or expenditures reported pursuant to chapter 106, Florida Statutes;
- Federal election law, campaign-related personal services provided without compensation by individuals volunteering their time;
- Any other contribution or expenditure made by or to a political party;
- Any other contribution or expenditure made by an organization that is exempt from taxation under 26 U.S.C. s. 527 or s. 501(c)(4), in accordance with s.112.3215, Florida Statutes; and/or
- Professional fees paid to registered lobbyists associated with the project or item.

The following is a complete list of all lobbying expenditures and activities (including those of lobbyists, contractors, consultants, etc.) incurred by the principal or his/her authorized agent and expended in connection with the above-referenced project or issue. **You need not include de minimus costs (under \$50) for producing or reproducing graphics, aerial photographs, photocopies, surveys, studies or other documents related to this project.**

Date of Expenditure	Name of Party Incurring Expenditure	Description of Activity	Amount Paid
TOTAL EXPENDED THIS REPORT			\$

For Staff Use Only:
Initially submitted on _____
Updated On _____

LAKE ANDERSON STORMWATER TREATMENT SYSTEM
Case or Bid No. **Y16-736 -EB**

Company Name: _____

Part III
ORIGINAL SIGNATURE AND NOTARIZATION REQUIRED

I hereby certify that information provided in this specific project expenditure report is true and correct based on my knowledge and belief. I acknowledge and agree to comply with the requirement of section 2-354, of the Orange County code, to amend this specific project expenditure report for any additional expenditure(s) incurred relating to this project prior to the scheduled Board of County Commissioner meeting. I further acknowledge and agree that failure to comply with these requirements to file the specific expenditure report and all associated amendments may result in the delay of approval by the Board of County Commissioners for my project or item, any associated costs for which I shall be held responsible. In accordance with s. 837.06, Florida Statutes, I understand and acknowledge that whoever knowingly makes a false statement in writing with the intent to mislead a public servant in the performance of his or her official duty shall be guilty of a misdemeanor in the second degree, punishable as provided in s. 775.082 or s. 775.083, Florida Statutes.

Date: _____

Signature of Principal or Principal's Authorized Agent

(check appropriate box)

PRINT NAME AND TITLE: _____

STATE OF _____ :

COUNTY OF _____ :

I certify that the foregoing instrument was acknowledged before me this ____ day of _____, 20__ by _____ He/she is personally known to me or has produced _____ as identification and did/did not take an oath.

Witness my hand and official seal in the county and state stated above on the ____ day of _____, in the year _____.

(Notary Seal)

Signature of Notary Public

Notary Public for the State of _____

My Commission Expires: _____

Staff signature and date of receipt of form _____

Staff reviews as to form and does not attest to the accuracy or veracity of the information provided herein.

FREQUENTLY ASKED QUESTIONS (FAQ) ABOUT THE SPECIFIC PROJECT EXPENDITURE REPORT

Updated 3-1-11

WHAT IS A SPECIFIC PROJECT EXPENDITURE REPORT (SPR)?

A Specific Project Expenditure Report (SPR) is a report required under Section 2-354(b) of the Orange County Lobbying Ordinance, codified at Article X of Chapter 2 of the Orange County Code, reflecting all lobbying expenditures incurred by a principal and his/her authorized agent(s) and the principal's lobbyist(s), contractor(s), subcontractor(s), and consultant(s), if applicable, for certain projects or issues that will ultimately be decided by the Board of County Commissioners (BCC).

Matters specifically exempt from the SPR requirement are ministerial items, resolutions, agreements in settlement of litigation matters in which the County is a party, ordinances initiated by County staff, and some procurement items, as more fully described in 2.20 of the Administrative Regulations.

Professional fees paid by the principal to his/her lobbyist for the purpose of lobbying need not be disclosed on this form. (See Section 2-354(b), Orange County Code.)

WHO NEEDS TO FILE THE SPR?

The principal or his/her authorized agent needs to complete and sign the SPR and warrant that the information provided on the SPR is true and correct.

A principal that is a governmental entity does not need to file an SPR.

HOW ARE THE KEY RELEVANT TERMS DEFINED?

Expenditure means "a payment, distribution, loan, advance, reimbursement, deposit, or anything of value made by a lobbyist or principal for the purpose of lobbying. This may include public relations expenditures (including but not limited to petitions, flyers, purchase of media time, cost of print and distribution of publications) but does not include contributions or expenditures reported pursuant to Chapter 106, Florida Statutes, or federal election law, campaign-related personal services provided without compensation by individuals volunteering their time, any other contribution or expenditure made by or to a political party, or any other contribution or expenditure made by an organization that is exempt from taxation under 26 U.S.C. s. 527 or s. 501(c)(4)." (See Section 112.3215, Florida Statutes.) Professional fees paid by the principal to his/her lobbyist for the purpose of lobbying are not deemed to be "expenditures." (See Section 2-354, Orange County Code.)

Lobbying means seeking "to encourage the approval, disapproval, adoption, repeal, rescission, passage, defeat or modification of any ordinance, resolution, agreement, development permit, other type of permit, franchise, vendor, consultant, contractor, recommendation, decision or other foreseeable action of the [BCC]," and "include[s] all communications, regardless of whether initiated by the lobbyist or by the person being lobbied, and regardless of whether oral, written or electronic." (See Section 2-351, Orange County Code.) Furthermore, *lobbying* means communicating "directly with the County Mayor, with any other member of the [BCC], or with any member of a procurement committee." (See Section 2-351, Orange County Code.) *Lobbying* also means communicating "indirectly with the County Mayor or any other member of the [BCC]" by communicating with any staff member of the Mayor or any member of the BCC, the county administrator, any deputy or assistant county administrator, the county attorney, any county department director, or any county division manager. (See Section 2-351, Orange County Code.) *Lobbying* does not include the act of appearing before a Sunshine Committee, such as the Development Review Committee or the Roadway Agreement Committee other than the BCC.

Principal means “the person, partnership, joint venture, trust, association, corporation, governmental entity or other entity which has contracted for, employed, retained, or otherwise engaged the services of a lobbyist.” *Principal* may also include a person, partnership, joint venture, trust, association, corporation, limited liability corporation, or other entity where it or its employees do not qualify as a lobbyist under the definition set forth in Section 2-351 of the Orange County Code but do perform lobbying activities on behalf of a business in which it has a personal interest.

DOES THE SPR NEED TO BE UPDATED IF INFORMATION CHANGES?

Yes. It remains a continuing obligation of the principal or his/her authorized agent to update the SPR whenever any of the information provided on the initial form changes.

WHERE DO THE SPR AND ANY UPDATES NEED TO BE FILED?

The SPR needs to be filed with the County Department or County Division processing the application or matter. If and when an additional expenditure is incurred subsequent to the initial filing of the SPR, an amended SPR needs to be filed with the County Department or County Division where the original application, including the initial SPR, was filed.

WHEN DO THE SPR AND ANY UPDATES NEED TO BE FILED?

In most cases, the initial SPR needs to be filed with the other application forms. The SPR and any update must be filed with the appropriate County Department or County Division not less than seven (7) days prior to the BCC hearing date so that they may be incorporated into the BCC agenda packet. (See Section 2-354(b), Orange County Code.) When the matter is a discussion agenda item or is the subject of a public hearing, and any additional expenditure occurs less than 7 days prior to BCC meeting date or updated information is not included in the BCC agenda packet, the principal or his/her authorized agent is obligated to verbally present the updated information to the BCC when the agenda item is heard or the public hearing is held. When the matter is a consent agenda item and an update has not been made at least 7 days prior to the BCC meeting or the update is not included in the BCC agenda packet, the item will be pulled from the consent agenda to be considered at a future meeting.

WHO WILL BE MADE AWARE OF THE INFORMATION DISCLOSED ON THE SPR AND ANY UPDATES?

The information disclosed on the SPR and any updates will be a public record as defined by Chapter 119, Florida Statutes, and therefore may be inspected by any interested person. Also, the information will be made available to the Mayor and the BCC members. This information will accompany the other information for the principal’s project or item.

CONCLUSION:

We hope you find this FAQ useful to your understanding of the SPR. Please be informed that in the event of a conflict or inconsistency between this FAQ and the requirements of the applicable ordinance governing specific project expenditure reports, the ordinance controls.

Also, please be informed that the County Attorney’s Office is not permitted to render legal advice to a principal, his/her authorized agent, or any other outside party. Accordingly, if after reading this FAQ the principal, his/her authorized agent or an outside party has any questions, he/she is encouraged to contact his/her own legal counsel.

For Staff Use Only:

OC CE FORM 2P

Date Submitted _____

FOR PROCUREMENT-RELATED ITEMS (November 5, 2010) Date Updated _____

For use after March 1, 2011

Bid Number **Y16-736 -EB**

RELATIONSHIP DISCLOSURE FORM

FOR USE WITH PROCUREMENT ITEMS, EXCEPT THOSE WHERE THE COUNTY IS THE PRINCIPAL OR PRIMARY APPLICANT

For procurement items that will come before the Board of County Commissioners for final approval, this form shall be completed by the bidder, offerer, quoter or respondent and shall be submitted to the Procurement Division by the bidder, offerer, quoter or respondent.

In the event any information provided on this form should change, the applicant must file an amended form on or before the date the item is considered by the appropriate board or body.

Part I

INFORMATION ON APPLICANT (BIDDER, OFFEROR, QUOTER, PROPOSER, OR RESPONDENT):

Legal Name of Applicant: _____

Business Address (Street/P.O. Box, City and Zip Code):

Business Phone () _____

Facsimile () _____

INFORMATION ON APPLICANT'S AUTHORIZED AGENT, IF APPLICABLE:

(Agent Authorization Form also required to be attached)

Name of Applicant's Authorized Agent:

Business Address (Street/P.O. Box, City and Zip Code):

Business Phone () _____

Facsimile () _____

For Staff Use Only:

OC CE FORM 2P

Date Submitted _____

FOR PROCUREMENT-RELATED ITEMS (November 5, 2010) Date Updated _____

For use after March 1, 2011

Bid Number **Y16-736 -EB**

Company Name: _____

Part II

IS THE APPLICANT A RELATIVE OF THE MAYOR OR ANY MEMBER OF THE BCC?

___ YES ___ NO

IS THE MAYOR OR ANY MEMBER OF THE BCC THE APPLICANT'S EMPLOYEE?

___ YES ___ NO

IS THE APPLICANT OR ANY PERSON WITH A DIRECT BENEFICIAL INTEREST IN THE OUTCOME OF THIS MATTER A BUSINESS ASSOCIATE OF THE MAYOR OR ANY MEMBER OF THE BCC?

___ YES ___ NO

If you responded "YES" to any of the above questions, please state with whom and explain the relationship:

(Use additional sheets of paper if necessary)

For Staff Use Only:

OC CE FORM 2P

Date Submitted _____

FOR PROCUREMENT-RELATED ITEMS (November 5, 2010) Date Updated _____

For use after March 1, 2011

Bid Number **Y16-736 -EB**

Company Name: _____

Part III

ORIGINAL SIGNATURE AND NOTARIZATION REQUIRED

I hereby certify that information provided in this relationship disclosure form is true and correct based on my knowledge and belief. If any of this information changes, I further acknowledge and agree to amend this relationship disclosure form prior to any meeting at which the above-referenced project is scheduled to be heard. In accordance with s. 837.06, Florida Statutes, I understand and acknowledge that whoever knowingly makes a false statement in writing with the intent to mislead a public servant in the performance of his or her official duty shall be guilty of a misdemeanor in the second degree, punishable as provided in s. 775.082 or s. 775.083, Florida Statutes.

Signature of Applicant

Date: _____

Print Name and Title of Person completing this form: _____

STATE OF _____ :
COUNTY OF _____ :

I certify that the foregoing instrument was acknowledged before me this ____ day of _____, 20__ by _____. He/she is personally known to me or has produced _____ as identification and did/did not take an oath.

Witness my hand and official seal in the county and state stated above on the ____ day of _____, in the year _____.

(Notary Seal) _____
Signature of Notary Public
Notary Public for the State of _____
My Commission Expires: _____

Staff signature and date of receipt of form

Staff reviews as to form and does not attest to the accuracy or veracity of the information provided herein.



**AGENT AUTHORIZATION FORM
FOR PROCUREMENTS IN ORANGE COUNTY, FLORIDA**

I/WE, (PRINT BIDDER, OFFEROR, QUOTER OR RESPONDENT NAME)

_____, DO HEREBY AUTHORIZE TO ACT AS MY/OUR AGENT
(PRINT AGENT'S NAME), _____, TO EXECUTE ANY PETITIONS OR
OTHER DOCUMENTS NECESSARY TO AFFECT THE **CONTRACT APPROVAL PROCESS** MORE SPECIFICALLY
DESCRIBED AS FOLLOWS, **IFB NO. Y16- 736-EB, LAKE ANDERSON STORMWATER TREATMENT
SYSTEM**, AND TO APPEAR ON MY/OUR BEHALF BEFORE ANY ADMINISTRATIVE OR LEGISLATIVE BODY IN THE
COUNTY CONSIDERING THIS **CONTRACT** AND TO ACT IN ALL RESPECTS AS OUR AGENT IN MATTERS
PERTAINING TO THIS CONTRACT.

Date: _____
Signature of Bidder, Offeror, Quoter or Respondent

STATE OF _____ :
COUNTY OF _____ :

I certify that the foregoing instrument was acknowledged before me this ____ day of _____, 20__ by _____. He/she is personally known to me or has produced _____ as identification and did/did not take an oath.

Witness my hand and official seal in the county and state stated above on the ____ day of _____, in the year _____.

(Notary Seal)

Signature of Notary Public
Notary Public for the State of _____

My Commission Expires: _____

FREQUENTLY ASKED QUESTIONS (FAQ)
ABOUT THE
RELATIONSHIP DISCLOSURE FORM
Updated 6-28-11

WHAT IS THE RELATIONSHIP DISCLOSURE FORM?

The Relationship Disclosure Form (form OC CE 2D and form OC CE 2P) is a form created pursuant to the County's Local Code of Ethics, codified at Article XIII of Chapter 2 of the Orange County Code, to ensure that all development-related items and procurement items presented to or filed with the County include information as to the relationship, if any, between the applicant and the County Mayor or any member of the Board of County Commissioners (BCC). The form will be a part of the backup information for the applicant's item.

WHY ARE THERE TWO RELATIONSHIP DISCLOSURE FORMS?

Form OC CE 2D is used only for development-related items, and form OC CE 2P is used only for procurement-related items. The applicant needs to complete and file the form that is applicable to his/her case.

WHO NEEDS TO FILE THE RELATIONSHIP DISCLOSURE FORM?

Form OC CE 2D should be completed and filed by the owner of record, contract purchaser, or authorized agent. Form OC CE 2P should be completed and filed by the bidder, offeror, quoter, or respondent, and, if applicable, their authorized agent. In all cases, the person completing the form must sign the form and warrant that the information provided on the form is true and correct.

WHAT INFORMATION NEEDS TO BE DISCLOSED ON THE RELATIONSHIP DISCLOSURE FORM?

The relationship disclosure form needs to disclose pertinent background information about the applicant and the relationship, if any, between, on the one hand, the applicant and, if applicable, any person involved with the item, and on the other hand, the Mayor or any member of the BCC.

In particular, the applicant needs to disclose whether any of the following relationships exist: (1) the applicant is a business associate of the Mayor or any member of the BCC; (2) any person involved with the approval of the item has a beneficial interest in the outcome of the matter *and* is a business associate of the Mayor or any member of the BCC; (3) the applicant is a relative of the Mayor or any member of the BCC; or (4) the Mayor or any member of the BCC is an employee of the applicant. (See Section 2-454, Orange County Code.)

HOW ARE THE KEY RELEVANT TERMS DEFINED?

Applicant means, for purposes of a development-related project, the owner, and, if applicable, the contract purchaser or owner's authorized agent. *Applicant* means, for purposes of a procurement item, the bidder, offeror, quoter, respondent, and, if applicable, the authorized agent of the bidder, offeror, quoter, or respondent.

Business associate means any person or entity engaged in or carrying on a business enterprise with a public officer, public employee, or candidate as a partner, joint venture, corporate shareholder where the shares of such corporation are not listed on any national or regional stock exchange, or co-owner of property. In addition, the term includes any person or entity engaged in or carrying on a business enterprise, or otherwise engaging in common investment, with a public officer, public employee, or candidate as a partner, member, shareholder, owner, co-owner, joint venture partner, or other investor, whether directly or indirectly, whether through a Business Entity or through interlocking Parent Entities, Subsidiary Entities, or other business or investment scheme, structure, or venture of any nature. (See Section 112.312(4), Florida Statutes, and Section 2-452(b), Orange County Code.)

Employee means any person who receives remuneration from an employer for the performance of any work or service while engaged in any employment under any appointment or contract for hire or apprenticeship, express or implied, oral or written, whether lawfully or unlawfully employed, and includes, but is not limited to, aliens and minors. (See Section 440.02(15), Florida Statutes.)

Relative means an individual who is related to a public officer or employee as father, mother, son, daughter, brother, sister, uncle, aunt, first cousin, nephew, niece, husband, wife, father-in-law, mother-in-law, son-in-law, daughter-in-law, brother-in-law, sister-in-law, stepfather, stepmother, stepson, stepdaughter, stepbrother, stepsister, half brother, half sister, grandparent, great grandparent, grandchild, great grandchild, step grandparent, step great grandparent, step grandchild, step great grandchild, person who is engaged to be married to the public officer or employee or who otherwise holds himself or herself out as or is generally known as the person whom the public officer or employee intends to marry or with whom the public officer or employee intends to form a household, or any other natural person having the same legal residence as the public officer or employee. (See Section 112.312(21), Florida Statutes.)

DOES THE RELATIONSHIP DISCLOSURE FORM NEED TO BE UPDATED IF INFORMATION CHANGES?

Yes. It remains a continuing obligation of the applicant to update this form whenever any of the information provided on the initial form changes.

WHERE DO THE RELATIONSHIP DISCLOSURE FORM AND ANY SUBSEQUENT UPDATES NEED TO BE FILED?

For a development-related item, the Relationship Disclosure Form and any update need to be filed with the County Department or County Division where the applicant filed the application. For a procurement item, the Relationship Disclosure Form and any update need to be filed with the Procurement Division.

WHEN DO THE RELATIONSHIP DISCLOSURE FORM AND ANY UPDATES NEED TO BE FILED?

In most cases, the initial form needs to be filed when the applicant files the initial development-related project application or initial procurement-related forms. However, with respect to a procurement item, a response to a bid will not be deemed unresponsive if this form is not included in the initial packet submitted to the Procurement Division.

If changes are made after the initial filing, the final, cumulative Relationship Disclosure Form needs to be filed with the appropriate County Department or County Division processing the application not less than seven (7) days prior to the scheduled BCC agenda date so that it may be incorporated into the BCC agenda packet. When the matter is a discussion agenda item or is the subject of a public hearing, and an update has not been made at least 7 days prior to BCC meeting date or is not included in the BCC agenda packet, the applicant is obligated to verbally present such update to the BCC when the agenda item is heard or the public hearing is held. When the matter is a consent agenda item and an update has not been made at least 7 days prior to the BCC meeting or the update is not included in the BCC agenda packet, the item will be pulled from the consent agenda to be considered at a future meeting.

WHO WILL REVIEW THE INFORMATION DISCLOSED ON THE RELATIONSHIP DISCLOSURE FORM AND ANY UPDATES?

The information disclosed on this form and any updates will be a public record as defined by Chapter 119, Florida Statutes, and may therefore be inspected by any interested person. Also, the information will be made available to the Mayor and the BCC members. This form and any updates will accompany the information for the applicant's project or item.

However, for development-related items, if an applicant discloses the existence of one or more of the relationships described above and the matter would normally receive final consideration by the Concurrency Review Committee or the Development Review Committee, the matter will be directed to the BCC for final consideration and action following committee review.

CONCLUSION:

We hope you find this FAQ useful to your understanding of the Relationship Disclosure Form. Please be informed that if the event of a conflict or inconsistency between this FAQ and the requirements of the applicable ordinance or law governing relationship disclosures, the ordinance or law controls.

Also, please be informed that the County Attorney's Office is not permitted to render legal advice to an applicant or any other outside party. Accordingly, if the applicant or an outside party has any questions after reading this FAQ, he/she is encouraged to contact his/her own legal counsel.

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E VERIFICATION CERTIFICATION

IFB NO. Y16-736-EB

NAME OF CONTRACTOR: _____ (referred to herein as “Contractor”)

ADDRESS OF CONTRACTOR:

The undersigned does hereby certify that the above named contractor:

- 1. Is registered and is using the E-Verify system; or
- 2. Does not have any employees and does not intend to hire any new employees during the period of time that the contractor will be providing services under the contract and consequently is unable to register to use the E-Verify system; or
- 3. Employs individuals that were hired prior to the commencement of providing labor on the contract and does not intend to hire any new employees during the period of time that the contractor will be providing labor under the contract, and consequently is unable to use the E-Verify system.

The undersigned acknowledges the use of the E-Verify system for newly hired employees is an ongoing obligation for so long as the contractor provides labor under the contract and that the workforce eligibility of all newly hired employees will be properly verified using the E-Verify system.

In accordance with Section 837.06, Florida Statutes, Contractor acknowledges that whoever knowingly makes a false statement in writing with the intent to mislead a public servant in the performance of his or her official duties shall be guilty of a misdemeanor in the second degree, punishable as provided in Section 775.082 or Section 775.083, Florida Statutes.

AUTHORIZED SIGNATURE: _____

NAME: _____

TITLE: _____

DATE: _____

BID BOND

BOND NUMBER _____

STATE OF FLORIDA)
SS
COUNTY OF ORANGE)

KNOW ALL MEN BY THESE PRESENTS, that we, _____, as Principal, and _____, as Surety, are held firmly bound unto Orange County, Florida, in the penal sum of: \$ _____ Dollars **(Ten percent {10%} of base bid if no amount entered)**
(Total Sum Written in Words)

lawful money of the United States, for the payment of which sum well and truly to be made, we bound ourselves, our heirs, executors, administrators and successors, jointly and severally, firmly by these presents.

THE CONDITION OF THIS OBLIGATION IS SUCH, that whereas the Principal has submitted the attached Bid, dated the _____ day of _____, **20**__, for a Contract entitled: **LAKE ANDERSON STORMWATER TREATMENT SYSTEM, IFB Y16-736-EB.**

NOW THEREFORE, if the Principal shall withdraw said Bid prior to the date of opening the same, or shall within ten (10) days after the prescribed forms are presented to him for signature, enter in a written Contract with Orange County, Florida, in accordance with the Bid as accepted, and give a Performance Bond and a Payment Bond with good and sufficient Surety or sureties as may be required, for the faithful performance and proper fulfillment of such Contract and for prompt payment of all persons furnishing labor or materials in connection therewith, or in the event of the failure to enter into such Contract and give such Bonds within the time specified, if the Principal shall pay the County the difference between the amount specified in said Bid and the amount for which the County may procure the required work and/or supplies, provided the latter amount to be in excess of the former, then the above obligations shall be void and of no effect; otherwise to remain in full force and virtue.

IN WITNESS WHEREOF, the above written parties have executed this instrument under their several seals this the _____ day of _____, **20**__, the name and corporate seal of each corporate party being affixed and these presents duly signed by its undersigned, pursuant to authority of its governing body.

CONTRACTOR-PRINCIPAL:

SURETY:

NAME OF BUSINESS ENTITY

NAME OF SURETY

SIGNATURE
(SEAL)

SIGNATURE: SURETY AGENT
(SEAL)

TYPE NAME AND TITLE

TYPE NAME AND TITLE

BUSINESS ADDRESS

BUSINESS ADDRESS

TELEPHONE

TELEPHONE

NAIC NUMBER: _____

Licensed Florida Insurance Agent? Yes _____ No _____

License Number: _____

STATE OF _____)

COUNTY OF _____) SS

CITY OF _____)

Before me, a Notary Public duly commissioned, qualified and acting personally, appeared:

to me well known, who being by me first duly sworn upon oath says that he is Attorney-in-Fact for

as Surety, and that he has been authorized by said Surety to execute the foregoing Bid Bond on behalf of the Principal (Contractor) named therein in favor of the owner.

Subscribed and sworn to before me this the _____ day of _____, 20__.

Notary Public

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

Personally Known _____ or Produced Identification _____

Type of Identification: _____

In accordance with Part C, Section 19 and Part F Article 8 of the Invitation for Bids, if applicable, list the Lead Surety.

LEAD SURETY

AGENT FOR SURETY

Signature

BY: _____

AGENCY ADDRESS: _____

SURETY ADDRESS: _____

PHONE _____

**BOARD OF COUNTY COMMISSIONERS
ORANGE COUNTY, FLORIDA
UNIT PRICE CONSTRUCTION CONTRACT**

CONTRACT:

Made between the Board of County Commissioners, Orange County, Florida (hereinafter called County), represented by the Manager of the Procurement Division executing this Contract, and:

Federal Identification Number: _____

A Corporation formed under the laws of the State of Florida, hereinafter called Contractor.

The Contractor shall perform all the Work required by the Contract Documents for the proper execution and completion of **LAKE ANDERSON STORMWATER TREATMENT SYSTEM** in full accordance with the drawings and as elaborated in the specifications of **Invitation for Bids No. Y16-736-EB** which is made a part of this Contract as completely as if set forth herein.

**I
AMOUNT OF CONTRACT:**

The County shall pay the Contractor in current funds, and in accordance with the progress payment schedule as stated herein, for the performance of the Work, subject to additions and deductions by Change Order as provided in the Contract Documents, the Estimated Contract Amount of _____ (\$_____) at the unit prices set forth in the Invitation for Bid Official Bid Form, Part D.

MAXIMUM CONTRACT AMOUNT:

The Contractor shall provide written notification to the County's Project Manager when 90% of the total contract amount has been reached. The Contractor shall not proceed beyond 100% of the total contract amount unless duly authorized by a written change order.

ESTIMATED QUANTITIES:

This Contract is based on estimated quantities. The contractor shall only be paid for materials installed in the work in accordance with the applicable unit prices for the specific work element (line item). No payment shall be made for excess materials delivered to the jobsite and not incorporated into the work. Therefore, it shall be the contractor's responsibility to determine the quantities of materials necessary to perform the project to its completion.

II
ASBESTOS FREE MATERIALS:

Project is to be constructed with asbestos free materials. A written, notarized statement on company letterhead is to be submitted with the final payment request. Final payment shall be withheld until such statement is submitted. Contractor shall agree that if materials containing asbestos are subsequently discovered at any future time to have been included in the construction done by the Contractor or any of its Subcontractors or agents and were not specified in the design or required by the Contract document, Contractor shall be liable for all costs related to the abatement of such asbestos and damages or claims against the County.

III
ADMINISTRATIVE DATA:

Progress Payments: Based upon Applications for Payment submitted to the Project Manager by the Contractor and Certificates for Payment issued by the Project Manager the County shall make progress payments on account of the Contract Amount to the Contractor as provided in the Contract Documents as follows:

Not later than 30 days following approval of an application for Payment, ninety percent (90%) of the portion of the Contract Amount properly allocable to labor, materials and equipment incorporated in the Work and ninety percent (90%) of the portion of the Contract Amount properly allocable to materials and equipment suitably stored at the site or at some other location agreed upon in writing, for the period covered by the application for payment, less the aggregate of previous payments made by the Owner.

When the completion of the Work ascertained as payable exceeds fifty percent (50%) of the total contract amount the retainage percentage withheld shall be reduced to 5%. Upon Final completion of the entire Work, a sum sufficient to increase the total payments to one hundred percent (100%) of the Contract Amount, less such amounts as the Owner shall determine for all incomplete work and unsettled claims as provided in the Contract Documents.

Should the Contractor fail to substantially complete all Work under this Contract and make the project available for beneficial use on or before the date stipulated for Substantial Completion (or such later date as may result from extension of time granted by County), he shall pay and/or the County may retain from the compensation otherwise to be paid to the Contractor, as liquidated damages, the sum of **\$500.00** for each consecutive calendar day that terms of the Contract remain unfulfilled beyond date allowed by the Contract, which sum is agreed upon as a reasonable and proper measure of damages which County will sustain per diem by failure of Contractor to complete work within time as stipulated; it being recognized by County and Contractor that the injury to County which could result from a failure of Contractor to complete on schedule is uncertain and cannot be computed exactly. In no way shall costs for liquidated damages be construed as a penalty on the Contractor. For each consecutive calendar day that the work remains incomplete after the date established for Final Completion, the County will retain from the compensation otherwise to be paid to the Contractor the sum of **\$500.00**. This amount is the mutually agreed upon minimum measure of damages the County will sustain by failure of the Contractor to complete all

remedial work, correct deficient work, clean up the project and other miscellaneous tasks as required to complete all Work specified and this amount of liquidated damages is in addition to the liquidated damages prescribed above for failure to timely achieve Substantial Completion.

IV
CONTRACT DOCUMENTS:

This Contract entered into this date by the Board of County Commissioners hereinafter called the County, represented by the Manager of the Procurement Division executing this Contract and the individual, partnership or corporation named above, hereinafter called the Contractor. Witnesseth that the parties hereto do mutually agree as follows:

The Contractor shall furnish all labor, equipment and materials and perform the Work described for the amount stated above in strict accordance with the General Conditions, Supplementary Conditions/Special Provisions, Plans and Specifications and other Contract Documents, all of which are made a part hereof and designated as follows:

- a. Orange County Invitation for Bids/Project Manual, **IFB No. Y16-736-EB dated February 1, 2016**, (which contains the Invitation for Bids, Notice, Instruction to Bidders, Bid Form and Attachments, this Contract, General Conditions, Supplementary Conditions / Special Provisions, and Specifications);
- b. Drawings bearing the title "**Construction Plans, LAKE ANDERSON STORMWATER TREATMENT SYSTEM**".
- c. Addendum No.____ dated _____;
- d. _____'s Bid Proposal dated **MARCH 3, 2016**;
- e. Payment/Performance Bond;
- f. Certificates of Insurance;

V
PRIORITY OF DOCUMENTS:

The order of precedence of items and documents is as follows:

- Construction Contract
- Permits
- Supplemental Conditions/Special Provisions
- General Conditions
- Specifications/Technical Provisions
- Drawings/Plans
- Road Design, Structures, and Traffic Operations Standards (If applicable)
- Florida Department of Transportation Standard Specifications for Road and Bridge Construction (If applicable)
- Bid Proposal
- Instructions to Bidders

VI

TIME OF COMMENCEMENT AND FINAL COMPLETION:

- a. Work to commence within fourteen (14) days of Official Notice to Proceed date and shall be completed, unless amended by written Change Order or Amendment executed by both parties to this Contract.
- b. Substantial Completion of the Work shall be achieved not later than **one hundred eighty (180)** consecutive calendar days from date of Official Notice to Proceed.
- c. Final Completion of the Work shall be achieved not later than **two hundred forty (240)** consecutive calendar days from date of Official Notice to Proceed.

VII

COMPLIANCE WITH M/WBE CONTRACT REQUIREMENTS:

By entering into this Contract, the Contractor affirmatively commits to comply with the MWBE subcontracting requirements submitted with his/her bid. The failure of the Contractor to comply with this commitment during the Contract's performance period may be considered a breach of Contract.

The County may take action up to and including termination for default if this condition is not remedied within the time period specified by the Manager, Procurement Division.

VIII

MISCELLANEOUS PROVISIONS:

- a. Terms used in this Contract that are defined in the General Conditions shall have the meanings designated in those conditions.
- b. No price adjustments shall be made on this contract to the bid price of any products or materials including but not limited to gasoline, diesel or other fuels, and bituminous materials, including asphalt due to fluctuations in market prices, changes in suppliers or any other reason.
- c. County and Contractor each binds himself, his partners, successors, assigns and legal representatives to the other party hereto, his partners, successors, assigns, and legal representatives in respect to all covenants, agreements, and obligations contained in the Contract Documents.

- d. The laws of the State of Florida shall govern this Contract. Any and all legal action necessary to enforce the provisions of this Contract will be held in Orange County, Florida. Venue for any litigation involving this Contract shall be the Ninth Circuit Court in and for Orange County, Florida.

**BOARD OF COUNTY COMMISSIONERS
ORANGE COUNTY, FLORIDA**

BY _____
**Johnny M. Richardson, CPPO, CFCM
Manager, Procurement Division**

BY _____
Signature

DATE _____
(For County use only)

Type or Print Name

**Corporate
Seal**

P E R F O R M A N C E B O N D

BOND NUMBER _____

KNOW ALL MEN BY THESE PRESENTS that

Name of Contractor _____

Address _____

Phone Number _____

Corporation, Partnership or Individual _____

hereinafter referred to as the Contractor, as Principal, and

Name of Surety _____

Address _____

Phone Number _____

hereinafter called SURETY, as SURETY, are held and firmly bound unto Orange County, 400 East South Street, Orlando, FL 32801, (407)836-5635 a Political Subdivision of the State of Florida as Obligee, hereinafter referred to as Owner, in the full and just sum of \$ _____, lawful money of the United States of America, to the payment of which sum, well and truly to be made, the Contractor and SURETY bind themselves, their representatives, and each of their heirs, executors, administrators, successors and assigns, jointly and severally, firmly by these presents.

WHEREAS, the Contractor has entered into **Contract No. Y16-736** with the "County", also referred to herein as the OWNER, for the project entitled: **LAKE ANDERSON STORMWATER TREATMENT SYSTEM, intersection of Anderson Road and Conway Gardens Road, Orlando, Florida** with conditions and provisions as are further described in the aforementioned Contract, which Contract is by reference made a part hereof for the purpose of explaining this bond.

General description of the Work: This project is intended to construct an alum injection system to reduce the phosphorous level in the Anderson Road pond in order to provide improved stormwater quality in the pond. The project will construct an alum storage facility, chemical injection equipment, pumps, instrumentation, associated piping, a concrete slab for system components and a roof structure.

NOW, THEREFORE, the condition of this obligation is such that if Contractor shall fully, promptly and faithfully perform said Contract and all obligations thereunder, including all obligations imposed by the Contract documents (which includes the Notice to Bidders, Instruction to Bidders, Proposal and Bid Form, General and Supplementary Conditions, Detail Specifications, Form(s) of Contract Bond(s), Plans and Specifications and such amendments thereof as may be made as provided for therein), then this obligation shall be void; otherwise it shall remain in full force and effect.

1. The undersigned shall indemnify and save harmless said Owner against and from all costs, expenses and damages, including litigation costs and attorney's fees arising out of, or in connection with the neglect, default or want of care or skill, including patent infringement on the part of said Contractor, his agents, servants or employees in the execution or performance of said Contract.

The applicable provisions of Section 255.05 and 713.01 Florida Statutes apply to this bond.

2. Whenever Contractor shall be, and declared by Owner to be in default under the Contract, the Owner having performed Owner's obligations thereunder, the SURETY may promptly remedy the default or shall promptly:
 - A. Complete the Contract in accordance with its terms and conditions; or
 - B. Obtain a bid or bids for completing the Contract in accordance with its terms and conditions, and upon determination by SURETY of the lowest responsible bidder, or, if the Owner elects, upon determination by the Owner and the SURETY jointly of the lowest responsible bidder, arrange for a Contract between such bidder and the Owner. SURETY shall make available as the work progresses (even though there should be a default or a succession of defaults under the Contract or Contracts of completion arranged under this Paragraph) sufficient funds to pay the costs of completion, including other costs and damages for which the SURETY may be liable hereunder, the amount set forth in the first paragraph hereof.
3. Any changes in or under the Contract Documents and compliance or noncompliance with any formalities connected with the Contract or the changes shall not affect SURETY'S obligation under this bond. Any increase in the total Contract amount as authorized by the Owner shall accordingly increase the SURETY'S obligation by the same dollar amount of said increase. The Principal shall be responsible for notification to SURETY of all such changes.
4. The undersigned expressly acknowledges its obligations and liabilities for liquidated damages suffered by the Owner under the provisions of the Contract Documents.
5. The undersigned, covenant and agree that no change, extension of time, exercise of options for Contract renewals, changes to Contract amounts, alterations or additions to the terms of the Contract or the work to be performed thereunder, or the specifications accompanying the same shall in any way affect their obligation on this bond, and the SURETY does hereby expressly waive notice of any such change, extension of time, change to Contract amount, alteration, or addition. Moreover, no alterations or additions to this bond form shall be binding unless specifically agreed to in writing by the parties.
6. The Contractor shall save the Owner harmless from any and all damages, expenses and costs which may arise by virtue of any defects in said work or materials within a period of one (1) year from the date of Final Completion of the Project.

Signed and sealed this the _____ day of _____, 20__.

CONTRACTOR, AS PRINCIPAL

WITNESS:

_____ BY: _____
 Firm Name
 Signature

 Type Name and Title

SURETY

AGENT FOR SURETY

NAIC Number: _____

Signature

BY: _____ AGENCY ADDRESS: _____

SURETY ADDRESS: _____

_____ PHONE _____

Licensed Florida Insurance Agent? Yes _____ No _____

License Number: _____

STATE OF _____)

COUNTY OF _____) SS

CITY OF _____)

Before me, a Notary Public duly commissioned, qualified and acting personally, appeared:

to me well known, who being by me first duly sworn upon oath says that he is Attorney-in-Fact for

as Surety, and that he has been authorized by said Surety to execute the foregoing Performance Bond on behalf of the Principal (Contractor) named therein in favor of the owner.

Subscribed and sworn to before me this the _____ day of _____, 20__.

Notary Public

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

Personally Known _____ or Produced Identification _____

Identification: _____ Type of _____

In accordance with Part C, Section 19 and Part F Article 8 of the Contract, if applicable, list the Lead Surety.

LEAD SURETY

AGENT FOR SURETY

Signature

BY: _____ AGENCY ADDRESS: _____

SURETY ADDRESS: _____

PHONE _____

P A Y M E N T B O N D

BOND NUMBER _____

KNOW ALL MEN BY THESE PRESENTS that

Name of Contractor _____

Address _____

Phone Number _____

Corporation, Partnership or Individual _____

Thereinafter called Contractor, as Principal, and

Name and Address of Surety _____

hereinafter called SURETY, as SURETY, are held and firmly bound unto Orange County, 400 East South Street, Orlando, FL 32801, (407) 836-5635 a Political Subdivision of the State of Florida as Obligee, in the full and just sum of \$ _____, lawful money of the United States of America, to the payment of which sum, well and truly to be made, the Contractor and SURETY bind themselves, their representatives, and each of their heirs, executors, administrators, successors, and assigns, jointly and severally, firmly by these presents.

WHEREAS, the Contractor has entered into **Contract No. Y16-736** with the "County", also referred to herein as the OWNER, for the project entitled: **LAKE ANDERSON STORMWATER TREATMENT SYSTEM, intersection of Anderson Road and Conway Gardens Road, Orlando, Florida** with conditions and provisions as are further described in the aforementioned Contract, which Contract is by reference made a part hereof for the purpose of explaining this bond.

General description of the Work: This project is intended to construct an alum injection system to reduce the phosphorous level in the Anderson Road pond in order to provide improved stormwater quality in the pond. The project will construct an alum storage facility, chemical injection equipment, pumps, instrumentation, associated piping, a concrete slab for system components and a roof structure.

NOW, THEREFORE, THE CONDITION OF THIS OBLIGATION IS such that if Contractor shall promptly make payments to all claimants for any and all labor and material used or reasonably required for use or furnished in connection with the performance of said Contract, and shall perform all other covenants and obligations of this bond, then this obligation shall be void; otherwise it shall remain in full force and effect.

1. The undersigned shall promptly make payment to all persons supplying services, labor, material or supplies used directly or indirectly by said Contractor, or any subcontractor(s) or sub-subcontractor(s), in the prosecution of the work provided for in said Contract.
2. Subject to the Owner's priority, claimants covered by Section 713.01 of the Florida Statutes shall have a direct right of action against the Principal and SURETY under this obligation, after written notice of the performance of labor or delivery of materials or supplies, and non-payment therefore. Any claimant who seeks to recover against the Principal or SURETY under this obligation must also satisfy the notice requirement and time limitations of Section 255.05 of the Florida Statutes, as amended.
3. The undersigned, covenant and agree that no change, extension of time, exercise of options for Contract renewals, change to Contract amounts, alterations or additions to terms of the Contract or the work to be performed thereunder, or the specifications accompanying the same shall in any way affect their obligation on this bond and the SURETY does hereby expressly waive notice of any such change, extension of time, exercise of options for Contract renewal, changes to Contract amount, alternations or additions. Moreover, no alterations or additions to this bond form shall be binding unless specifically agreed to in writing by the parties.

The applicable provisions of Sections 255.05 and Florida Statutes apply to this bond.

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

Signed and sealed this the _____ day of _____, 20_____

CONTRACTOR, AS PRINCIPAL:

WITNESS:

Firm Name

Signature

BY: _____
Signature

Type Name and Title

SURETY: _____

AGENT FOR SURETY: _____

NAIC Number: _____

BY: _____
Signature

BY: _____

AGENCY ADDRESS: _____

SURETY ADDRESS _____

PHONE NO. _____

Licensed Florida Insurance Agent? Yes _____ No _____

License Number: _____

STATE OF _____)

COUNTY OF _____) SS

CITY OF _____)

Before me, a Notary Public duly commissioned, qualified and acting personally, appeared:

_____ to me well known, who being by me first duly sworn upon oath says that he is Attorney-in-Fact for

_____ as Surety, and that he has been authorized by said Surety to execute the foregoing Payment Bond on behalf of the Principal (Contractor) named therein favor of the owner.

Subscribed and sworn to before me this the _____ day of _____, 20_____.

Notary Public

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

Personally Known _____ or Produced Identification (Type) _____

In accordance with Part C, Section 19 and Part F Article 8 of the Contract, if applicable, list the Lead Surety.

_____	_____
LEAD SURETY	AGENT FOR SURETY
_____	_____
	Signature
BY: _____	AGENCY ADDRESS: _____
SURETY ADDRESS: _____	_____
_____	PHONE _____

(THIS FORM MUST BE UTILIZED IN ALL FINAL PAY APPLICATIONS)

FINAL RELEASE OF LIEN

KNOW ALL MEN BY THESE PRESENTS, that for and in consideration of the sum of monies, set out in the accompanying Estimate Statement No. _____, final, which quantity, the receipt of which is hereby acknowledged, is accepted as full and complete compensation for all work done, materials furnished and damages or claims arising under Orange County Contract No. Y16-736, entitled:

LAKE ANDERSON STORMWATER TREATMENT SYSTEM

By:

Contractor
(SEAL)

STATE OF _____

COUNTY OF _____

The foregoing instrument was acknowledged before this _____ day of

_____ 20_____, by _____.

Personally Known _____ OR Produced Identification _____

Type of identification Produced _____

**CHANGE ORDER REQUEST
PURCHASE ORDER / DELIVERY ORDER / CONTRACT**

*Vendor Code: _____ *Vendor Name: _____ *Date: _____

*Change Order Request No.: _____ *Document No.: _____ Contract No. _____

*Department: _____ *Contact/Phone No.: _____

ACCOUNTING LINE CHANGE ONLY:

Accounting Line From: _____ Amount: _____

Accounting Line To: _____ Amount: _____

COMMODITY LINE NUMBER ADD:

Comm. Line No.: _____ Commodity Code: _____ Quantity: _____ Unit of Measure: _____

Unit Cost: _____ Description: _____ MA Line No. _____

Accounting Line: _____ Amount: _____

COMMODITY LINE NUMBER INCREASE / DECREASE / DELETE:

Comm. Line No. _____ Increase Qty By: _____ Decrease Qty By: _____ Increase Unit Cost By: _____

Decrease Unit Cost By: _____ Accounting Line: _____

Delete: _____ (check only if you want to delete this line number).

CANCELLATION:

_____ Please cancel Purchase Order / Delivery Order

Original sent to vendor: _____ Yes _____ No

***JUSTIFICATION (Required for all transactions):** _____

Enter Retainage for line number(s) _____ in the amount of _____ %

*Original PO/DO/Contract Award/Encumbrance <u>circle one</u>	Contract Amount	Encumbered/De-Encumbered Amount
	\$ _____	\$ _____
*Net Dollars for Previous Change Orders (Addition/Subtraction) <u>circle one</u>	\$ _____	\$ _____
*Net Dollars for This Change Order (Addition/Subtraction) <u>circle one</u>	\$ _____	\$ _____
*Total Dollars	\$ _____	\$ _____

By signing this agreement, the Contractor hereby releases the County, its agents, and employees from any and all liabilities under this contract for further equitable adjustments and/or claims associated with this change order.

*Vendor/Contractor Authorization: _____ Date: _____

*Departmental Approval: _____ Date: _____

*Purchasing & Contracts Approval: _____ Date: _____

For Purchasing Use Only Track Change Order: Yes No Change Award Amount to: \$ _____

Add the following text to the PO/DO: _____

CHANGE ORDER REQUEST CONTINUATION SHEET Document No.: _____
PURCHASE ORDER / DELIVERY ORDER / CONTRACT

ACCOUNTING LINE CHANGE ONLY:

Accounting Line From: _____ Amount: _____
Accounting Line To: _____ Amount: _____
Accounting Line Add: _____ Amount: _____
Accounting Line From: _____ Amount: _____
Accounting Line To: _____ Amount: _____
Accounting Line Add: _____ Amount: _____

COMMODITY LINE NUMBER ADD:

Comm. Line No.: _____ Commodity Code: _____ Quantity: _____ Unit of Measure: _____
Unit Cost: _____ Description: _____ MA Line No. _____
Accounting Line: _____ Amount: _____
Comm. Line No.: _____ Commodity Code: _____ Quantity: _____ Unit of Measure: _____
Unit Cost: _____ Description: _____ MA Line No. _____
Accounting Line: _____ Amount: _____
Comm. Line No.: _____ Commodity Code: _____ Quantity: _____ Unit of Measure: _____
Unit Cost: _____ Description: _____ MA Line No. _____
Accounting Line: _____ Amount: _____

COMMODITY LINE NUMBER INCREASE / DECREASE / DELETE:

Comm. Line No. ____ Increase Qty By: _____ Decrease Qty By: _____ Increase Unit Cost By: _____
Decrease Unit Cost By: _____ Accounting Line: _____
Delete: ____ (check only if you want to delete this line number).
Comm. Line No. ____ Increase Qty By: _____ Decrease Qty By: _____ Increase Unit Cost By: _____
Decrease Unit Cost By: _____ Accounting Line: _____
Delete: ____ (check only if you want to delete this line number).
Comm. Line No. ____ Increase Qty By: _____ Decrease Qty By: _____ Increase Unit Cost By: _____
Decrease Unit Cost By: _____ Accounting Line: _____
Delete: ____ (check only if you want to delete this line number).

*Departmental Approval: _____	Date: _____
Purchasing & Contracts Approval: _____	Date: _____

CONSENT OF SURETY AND INCREASE OF PENALTY

BOND NUMBER _____

1.CONTRACT#	2.MODIFICATION#	3.DATED
4.The Surety consents to the foregoing Contract notification and agrees that its bond or bonds shall apply and extend to the Contract as modified or amended. The principal and Surety further agree that on or after the execution of this consent, the penalty of the performance bond or bonds is increased by _____dollars (\$ _____) and the penalty of the payment bond or bonds is increased by _____dollars (\$ _____). However, the increase of the liability of each co-Surety resulting from this consent shall not exceed the sums shown below.		
5.NAME OF SURETY	6.INCREASE IN LIABILITYLIMIT UNDER PERFORMANCE BOND	7.INCREASE IN LIABILITYLIMIT UNDER PAYMENT BOND
a. SURETY ADDRESS	b. SIGNATURE c. TYPED NAME AND TITLE d. DATE THIS CONSENT EXECUTED	

SURETY _____

FLORIDA RESIDENT AGENT FOR SURETY _____

Signature

BY: _____ AGENCY

ADDRESS: _____

SURETY ADDRESS: _____

PHONE _____

Signature

Type Name and Title

Business Address

License Number

Telephone Number (Include Area Code)

STATE OF _____)

COUNTY OF _____) SS

CITY OF _____)

Before me, a Notary Public duly commissioned, qualified and acting personally, appeared:

to me well known, who being by me first duly sworn upon oath says that he is Attorney-in-Fact for

as Surety, and that he has been authorized by said Surety to execute the foregoing Performance Bond on behalf of the Principal (Contractor) named therein in favor of the owner.

Subscribed and sworn to before me this the _____ day of _____, 20__.

Notary Public

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

Personally Known _____ or Produced Identification _____

DRUG-FREE WORKPLACE FORM

The undersigned vendor, in accordance with Florida Statute 287.087 hereby certifies that _____ does:

Name of Business

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. Informs 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, employee assistance programs and the penalties that may be imposed upon employees for drug abuse violations.
3. Gives each employee engaged in providing the commodities or contractual services that are under bid a copy of the statement specified in Paragraph 1.
4. In the statement specified in Paragraph 1, notifies the employees that, as a condition of working on the commodities or contractual services that are under bid, the employee will abide by the terms of the statement and will notify the employer of any conviction of, or plea of guilty or nolo contendere to, any violation of Chapter 893 or of any controlled substance law of the United States or any State, for a violation occurring in the workplace no later than five (5) days such conviction.
5. Imposes a sanction on, or requires the satisfactory participation in a drug abuse assistance or rehabilitation program if such is available in the employee's community, by any employee who is so convicted.
6. Makes a good faith effort to continue to maintain a drug-free workplace through implementation of Paragraphs 1 thru 5.

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

Bidder's Signature

Date

PART F

GENERAL CONDITIONS

ARTICLE 1 - THE CONTRACT

The Contract Documents are identified in the Contract, Part E. Titles, Subtitles, Headings, Running Headlines, Table of Contents, and Indexes are printed in the Contract Documents merely for convenience.

ARTICLE 2 - DEFINITIONS

The words and expressions (or pronouns used in their stead) defined in this Article shall, wherever they appear in the Contract Documents, be construed as follows unless a different meaning is clear from the context.

"Addenda" shall mean any additional Contract provisions issued in writing by the County prior to receipt of Bid.

"Bid Proposal" shall mean the offer or proposal of the Bidder submitted on the Official Bid Form and Attachments setting forth the prices for the Work to be performed.

"Bidder" shall mean any person, firm or corporation submitting a Bid for the Work.

"Board of County Commissioners" shall mean the Board of County Commissioners, Orange County, Florida, or their duly authorized representative(s).

"Change Order" shall mean a written order to the Contractor, signed by the County, authorizing an addition, deletion or revision in the Work, or an adjustment in the Contract Amount or the Contract Time issued after execution of the Contract.

"Contract" shall mean the written agreement between the County and the Contractor covering the Work to be performed; the Contract will be attached to and made a part of the Contract Documents.

"Contractor" shall mean successful bidder (and vice versa), whether a corporation, firm, individual or any combination thereof, and its (or their) successors, personal representatives, executors, administrators and assigns.

"Contract Amount" shall mean the total monies payable to the Contractor under the Contract Documents. The term "Contract Price" where used in the Contract Documents refers to the Contract Amount.

"Contract Float" shall mean the number of days that an activity or a sequence of activities does not necessarily have to start or end on the scheduled dates to maintain the schedule, or as a minimum, the number of days that an activity may be delayed from its early start date without delaying completion of the Work beyond the Contract Time for Substantial Completion or Final Acceptance.

"Contract Time" will mean the number of calendar days stated in the Agreement for the completion of the Work.

"County" shall mean the Board of County Commissioners, Orange County, Florida, or their duly authorized representative(s), for whom the Work is being performed.

"Day " shall mean one calendar day when used in the Contract Documents.

"Defective Work" shall mean (a) Work that is unsatisfactory, deficient or damaged, does not conform to the Contract Documents, or does not meet the requirements of any inspection, test or approval, or (b) Work associated with punch list items that the Contractor fails to complete within a reasonable time after issuance of the punch list by the Project Manager.

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

"Final Acceptance" shall mean acceptance of the Work by the County upon the expiration of the correction period required by the Contract Documents.

"Final Completion" shall mean acceptance of the Work by the County as evidenced by its signature upon Final Certificate of Completion and approval thereof by the Board of County Commissioners. The Final Certificate of Completion shall be signed only after the County has assured itself by tests, inspection or otherwise that all of the provisions of the Contract have been carried out to its satisfaction.

"Notice" shall mean written Notice. Notice shall be served upon the Contractor either personally or by leaving the said Notice at his residence or with his Agency in charge of the Work, or addressed to the Contractor at the residence or place of business given in the Bid and deposited in a postpaid wrapper in any post box regularly maintained by the United States Post Office.

"Notice of Award" shall mean the written notice of award of the Contract given by the County to the apparent successful Bidder.

"Notice to Proceed" shall mean the written notice given by the County to Contractor fixing the date the Contract Times will commence to run.

"Professional" shall mean the professional independent Architectural/Engineering firm designated to assist the County in the work by a prior agreement entered into by the County and the said firm. The terms "Engineer" and "Architect", where used in the Contract Documents, refer to the Professional.

"Project" shall mean the entire improvement of which this Contract forms a part.

"Project Manager" shall be the duly authorized representative of the County during the construction period.

“Record Schedule” shall mean the time table of predicted tasks, milestones, task durations, deadlines and the start and end dates of the Work indicated in a Progress Schedule accepted by the County and provided to the County prior to the first progress payment. County acceptance of a revised and/or updated Progress Schedule will result in a revised Record Schedule, if so noted in the County’s written acceptance, that will be used to evaluate progress and delays occurring after the acceptance of the revised Record Schedule.

"Shop Drawings" shall mean all drawings, diagrams, illustrations, brochures, schedules and other data which are prepared by the Contractor, a Subcontractor, a manufacturer, supplier or distributor and which illustrate the equipment, material and/or some portion of the Work.

"Site" shall mean the area upon or in which the Contractor's operations are carried on and such other areas adjacent thereto as may be designated as such by the Project Manager.

"Specifications" shall mean parts of the Contract Documents identified as "Specifications" and organized into Divisions. The specifications include general requirements and technical descriptions of materials, equipment, construction systems, standards and workmanship. The term "Technical Provisions" where used in the Contract Documents refers to the Specifications.

"Subcontractor" shall mean any person, firm or corporation other than employees of the Contractor who or which contracts with the Contractor to furnish, or actually furnishes labor, materials and/or equipment for the Work.

"Substantial Completion" shall mean the completion of the Work by the Contractor to the point where the County may make beneficial use of the Work.

"Surety" shall mean any corporation that executes, as Surety, the Contractor's Bid Bond, Payment Bond and Performance Bonds securing the performance of this Contract.

"Work" shall mean any and all obligations, duties and responsibilities necessary to the successful completion of the construction assigned to or undertaken by the Contractor under the Contract Documents, including the furnishing of all labor, materials, equipment, and other incidentals.

ARTICLE 3 -ASSIGNMENT OF CONTRACT

The Contractor may not make any assignment of the contractual agreement between the parties, in whole or in part, without prior written authorization as may be given by the County, at its sole discretion.

No assignment by a party hereto of any rights under or interests in the Contract Documents will be binding on another party hereto without written consent of the party sought to be bound; and specifically but without limitation, monies that may become due and monies that are due may not be assigned without such consent (except to the extent that the effect of this restriction may be limited by law), and unless specifically stated to the

contrary in any written consent to an assignment, no assignment will release or discharge the assignor from any duty or responsibility under the Contract Documents.

ARTICLE 4 - QUALIFICATIONS OF SUBCONTRACTORS AND SUPPLIERS

The Project Manager will notify the Contractor in writing if the Project Manager, after due investigation, has reasonable objection to any Subcontractor or Supplier on the Subcontractor or Supplier Page, Bid Form Attachment C-2. If the Project Manager has reasonable objection to any Subcontractor or Supplier, the Contractor shall submit another acceptable one to the County. No increase in Contract Amount or Contract Time will be allowed under this article, unless Contractor can prove substantial increase due to the change, in which case Contractor may request an equitable adjustment to the Contract Amount or Contract Time. If Contractor requests an equitable adjustment as a result of a requested change, Contractor shall make available to the County all documents necessary, as requested by the County, to substantiate such adjustment.

The failure of the Project Manager to make objections to any Subcontractor or Supplier on the list shall not constitute a waiver of any right of the County to reject defective Work, material or equipment; or work, material or equipment not in conformance with the requirements of the Contract Documents. Should the Contractor desire to add, change or delete a Subcontractor or Supplier previously listed, the Contractor shall submit written justification for said change to the Project Manager for approval prior to the new Subcontractor or Supplier performing any Work on the Project.

ARTICLE 5 - STARTING THE WORK

The Contractor will start the Work within **fourteen (14)** calendar days of the official "Notice to Proceed" date. The Contract Time shall commence on the effective date of the "Notice to Proceed."

Preconstruction Conference: Within 20 days after the effective date of the Contract, but before Contractor starts the Work at the site, a conference attended by Contractor, Project Manager, Professional and others as appropriate will be held to discuss such topics as may include, but not limited to; schedules, procedures for handling Shop Drawings and other submittals and for processing Applications for Payment, maintenance of traffic, initiation of coordination with affected utilities, agreement upon the Notice to Proceed date, and to establish a working understanding among the parties as to the Work.

ARTICLE 6 - INTERPRETATION AND INTENT OF THE CONTRACT DOCUMENTS

It is the intent of the Specifications and Drawings to describe the complete Work to be constructed in accordance with the Contract Documents. However, the County makes no representation or warranty of any nature whatsoever to the Contractor concerning such documents. The Contract Documents are complementary; what is called for by one is as binding as if called for by all. If the Contractor finds a conflict, error or discrepancy in the Contract Documents, he will call it to the Project Manager's attention in writing before proceeding with the Work affected thereby. Any work that may reasonably be inferred from the Specifications or Drawings as being required to produce the intended result shall be supplied whether or not it is specifically called for. Work, materials or equipment described in words which so applied have a well known technical or trade meaning shall be deemed to refer to such recognized standards. In case of conflict, the more stringent requirements shall take precedence and govern.

Written clarifications or interpretations (which shall be consistent with or reasonably inferable from the Contract Documents) will be issued in response to a Contractor Request for Interpretation (RFI) or as the Project Manager or Professional may otherwise determine necessary. If the Contractor believes a written clarification or interpretation justifies an increase in Contract Amount or Contract Time, the Contractor shall make a claim for such increase in accordance with Article 13 of the General Conditions. If the Contractor is authorized by the County to proceed with the Work involved before full agreement is reached on (a) whether any increases are due at all, or (b) the extent of any such increases (if any are determined to be due), the Contractor shall furnish daily to the Project Manager, or Professional, actual cost records.

ARTICLE 7 - REFERENCE POINTS

Availability of Lands: The County will furnish, as indicated in the Contract Documents and not later than the date when needed by the Contractor, the lands upon which the Work is to be done, rights-of-way for access thereto and such other lands which are designated for the use of the Contractor. Easements for permanent structures or permanent changes in existing facilities will be obtained by the County unless otherwise specified in the Contract Documents. If the Contractor believes that any delay in the County's furnishing these lands or easements entitles him to an extension of the Contract Time, he may make a claim therefore as provided in Article 13. The Contractor will provide for all additional lands and access thereto that may be required for temporary construction facilities or storage of materials and equipment. The Project Manager will, upon request, furnish to the Contractor copies of all available boundary surveys and subsurface test.

Unforeseen Subsurface Conditions: The Contractor will promptly notify the Project Manager in writing of any subsurface or latent physical conditions at the site which may differ materially from those indicated in the Contract Documents. The Project Manager will promptly investigate those conditions and advise the Contractor in writing if further surveys or subsurface tests are necessary. Promptly thereafter, if needed, the Project Manager will obtain the necessary additional surveys and tests and furnish copies to the Contractor. If the Project Manager finds that the results of such surveys or tests indicate subsurface or latent physical conditions differing significantly from those indicated in the Contract Documents, a Change Order shall be issued incorporating the necessary revisions, in accordance with Article 12.

Reference Points: The Contractor shall be responsible for all field survey work coincidental with completion of this Work as specified herein. All survey work shall be done under the supervision of a Registered Professional Surveyor and Mapper. The County shall furnish, one time, a set of permanent reference markers along the line of work to form the basis for the above Contractor's survey.

All **Section Corners** and **Quarter Section** corners falling within the limits of this Work shall be perpetuated by a Florida Registered Surveyor and Mapper.

- A. All such corners falling within or on the boundaries of this project shall have reference ties made, certified to and submitted to the County Surveyor, Orange County, Florida, prior to the commencing of construction.

- B. Upon completion of construction and prior to Final Completion, certified corner records shall be submitted to the Department of Natural Resources in compliance with Florida Statutes, Chapter 177.507 and a copy of said certified corner record shall also be submitted to the Orange County Surveyor. Said corner records shall reflect the corner as perpetuated and which shall meet these minimum standards.
1. If the corner falls in asphalt or concrete construction, the corner shall be a 2 1/4" metal disc marked according to standard government practices and set in concrete no less than 18" in depth and shall be encased in an adjustable 5 1/4" diameter or larger valve box raised to the finished surface of construction.
 2. If the corner falls at any other location, it shall be a 4" x 4" concrete monument no less than 23" long with a 2 1/4" metal disc marked according to standard government practices. The top of said monument shall be set flush with the ground ($\pm 0.5'$ depending on conditions).
- C. Any U.S.C. and G.S. monument within limits of construction are to be protected. If monuments are in danger of damage, the Contractor shall contact the Project Manager and the Orange County Surveyor prior to the commencing of construction.
- D. Payment for all necessary survey work shall be included in the bid as part of other items of work.

ARTICLE 8 – BONDS, INSURANCE AND INDEMNIFICATION

Payment and Performance Bonds: The CONTRACTOR shall execute and deliver to the County the Payment and Performance Bonds (see Part C, 2-h) included herein as security for the faithful performance and completion of the Work and payment for all materials and labor furnished or supplied in connection with all Work included in the Contract Documents. These Bonds shall be in amounts at least equal to the Contract Amount, shall name the County as obligee and shall be in such form and by sureties of financial standing having a rating from A.M. Best Company (or other equivalent rating company) equal to or better than A- VI and must be included on the approved list of sureties issued by the United States Department of Treasury. Prior to execution of the Contract Documents the County may require the Contractor to furnish such other Bonds, in such form and with such sureties as it may require. If such Bonds are required by written instructions given prior to opening of Bids, the premium shall be paid by the Contractor. If the Contract Amount is increased by Change Order, it shall be the Contractor's responsibility to insure that the Payment and Performance Bonds be amended accordingly and a copy of the amendment is forwarded to the County.

The Contractor shall record bonds in Orange County public records as required by Florida Statutes, Chapter 255.05. Before commencing the work the Contractor shall provide to the Manager of the Procurement Division a certified copy of the recorded bond. No payment will be made to the contractor until the contractor has provided the copy of the recorded bond.

If the Surety on any bond furnished by Contractor is declared bankrupt or becomes insolvent or its right to do business is terminated in any State where any part of the Work is located or it ceases to meet the requirements imposed by the Contract Documents, the Contractor shall within five (5) days thereafter substitute another Bond with another Surety both of which shall be acceptable to the County.

Insurance Requirements:

Contractor agrees to maintain on a primary basis and at its sole expense, at all times throughout the duration of this Contract the following types of insurance coverage with limits and on forms (including endorsements) as described herein. These requirements, as well as the County's review or acceptance of insurance maintained by Contractor is not intended to and shall not in any manner limit or qualify the liabilities assumed by Contractor under this Contract. Contractor is required to maintain any coverage required by federal and state workers' compensation or financial responsibility laws including but not limited to Chapter 324 and 440, Florida Statutes, as may be amended from time to time. Insurance carriers providing coverage shall be authorized and/or eligible to do business in the State of Florida and shall possess a current A.M. Best's Financial Strength Rating of A- Class VIII.

The Contractor shall require and ensure that each of its subcontractors maintain insurance until the completion of their work under any contract associated with this Contract. Failure of the Contractor to maintain insurance coverage for itself or for any other persons or entities for whom it is responsible or to ensure that its subcontractors maintain coverage shall not relieve the Contractor of any contractual responsibility, obligation or liability.

If the CONTRACTOR intends to bid on this Contract as a Joint Venture then all insurance coverage required herein shall include the Joint Venture as "named insured". If the Joint Venture has no employees then this requirement is waived for workers' compensation. The Joint Venture shall also purchase discontinued completed operations coverage for any claims made after the dissolution of the Joint Venture. This coverage shall be for a period of two years following final completion of the project or continuing service contract.

The minimum types and amounts of insurance inclusive of any amount provided by an umbrella or excess policy, shall be as follows:

Workers' Compensation – The Contractor shall maintain coverage for its employees with statutory workers' compensation limits, and no less than the limits indicated in the Schedule of Limits (see below) for Employers' Liability. Said coverage shall include a waiver of subrogation in favor of the County. The County will not accept elective exemptions. Any contractor using an employee leasing company shall complete the Leased Employee Affidavit (Exhibit A).

Required Endorsements:

Waiver of Subrogation- WC 00 03 13 or its equivalent (Exhibit G)

- Commercial General Liability – The Contractor shall maintain coverage issued on an ISO form CG 00 01 or its equivalent, with a limit of liability of not less than the limits indicated in the Schedule of Limits (see below). Contractor further agrees coverage shall not contain any endorsement(s) excluding or limiting Product/Completed Operations, Independent Contractors, Contractual Liability, or Separation of Insureds. The General Aggregate limit shall either apply separately to this Contract or shall be at least twice the required occurrence limit.

All projects with a Contract Amount greater than \$20,000,000 shall be written on a Designated Premises or Projects basis (Exhibit B). Commercial umbrella and excess coverage shall include liability coverage for damage to the Contractor's completed work equivalent to that provided under ISO Form CG 00 01 04 13.

Required Endorsements:

- Additional Insured- CG 20 10 04 13 and CG 20 37 04 13 or its equivalent (Exhibits E and F)

- Waiver of Subrogation- CG 24 04 05 09 or its equivalent

Note: If blanket endorsements are being submitted please include the entire endorsement. The policy number to which the endorsement applies shall be indicated directly on the endorsement.

- Business Automobile Liability - The Contractor shall maintain coverage for all owned; non-owned and hired vehicles issued on ISO form CA 00 01 or its equivalent, with limits of not less than the limits indicated in the Schedule of Limits (see below). In the event the Contractor does not own automobiles the Contractor shall maintain coverage for hired and non-owned auto liability, which may be satisfied by way of endorsement to the Commercial General Liability policy or separate Business Auto Liability policy.

Required Endorsements:

- MCS-90- for operations governed under Sections 29 & 30 of the Motor Carrier Act of 1980

Schedule of Limits:

Contract Amount	Workers' Comp/ Employers' Liability	General Liability	Automobile Liability
Up to \$10 million	Statutory/\$500,000	\$1,000,000	\$1,000,000
\$10 - \$20 million	Statutory/\$1,000,000	\$5,000,000	\$5,000,000

Over \$20 million To Be Determined by the County

- Pollution Legal Liability - The Contractor agrees to maintain Contractor's Pollution Legal Liability with a limit of not less than one million (\$1,000,000) per occurrence on a per-project basis.

- Builders' Risk** - If this Contract includes: (1) construction of a new above-ground structure or structures, (2) any addition, improvement, alteration, or repair to an existing structure or structures, or (3) the installation of machinery or equipment into an existing structure or structures, the Contractor shall maintain builders' risk insurance providing coverage to equally protect the interests of the County, the Professional, the Contractor and subcontractors of any tier. Coverage shall be written on a completed value form (Exhibit C) in an amount at least equal to 100% of the estimated completed value of the project plus any subsequent modifications of that sum.

The coverage shall be written on an "all-risk" basis and shall, at a minimum cover the perils insured under the ISO CP 10 30 Special Causes of Loss Form (Exhibit D) and shall include property in transit and property stored on or off premises, which shall become part of the project. The Contractor agrees not to maintain a wind or flood sub-limit less than 25% of the estimated completed value of the project. The Contractor agrees any flat deductible(s) shall not exceed \$25,000, and any wind percentage deductible (when applicable) shall not exceed five-percent (5%). The coverage shall not be subject to automatic termination of coverage in the event the project/building is occupied in whole or in part, or put to its intended use, or partially accepted by the County. If such restriction exists the Contractor shall request that the carrier endorse the policy to amend the automatic termination clause to only terminate coverage if the policy expires, is cancelled, the County's interest in the project ceases, or the project is accepted and insured by the County.

- Professional Liability**- If the construction method is "design-build" the Contractor agrees to maintain Professional Liability on a per-project basis. The Contractor agrees to provide coverage with limits and deductibles as prescribed below.

<u>Project Cost</u>	<u>Minimum Limit</u>	<u>Maximum Deductible</u>
\$0-1,000,000	50% of project cost subject to a minimum of \$100,000/occurrence	10% of project cost or \$25,000, whichever is smaller
\$1,000,000-5,000,000	\$1,000,000	\$100,000
over \$5,000,000	Determined by the County	

When a self-insured retention or deductible exceeds \$100,000 the County reserves the right to request a copy of the Contractor's most recent annual report or audited financial statement. For policies written on a "Claims-Made" basis the Contractor agrees to maintain a retroactive date prior to or equal to the effective date of this contract. In the event the policy is canceled, non-renewed, switched to occurrence form, or any other event which triggers the right to purchase a Supplemental Extended Reporting Period (SERP) during the life of this contract the Contractor agrees to purchase the SERP with a minimum reporting period of not less than two years. Purchase of the SERP shall not relieve the Contractor of the obligation to provide replacement coverage.

The Contractor shall be responsible for all risk of loss whether insured or not until final acceptance of the project by the County. The Contractor agrees to be fully and solely responsible for any costs or expenses resulting from a coverage deductible, co-insurance penalty, or self-insured retention; including any loss not covered because of the application of said deductible, co-insurance penalty, self-insured retention, or coverage exclusion or limitation. The County has the right to request that the Contractor procure and maintain a surety bond for any deductible amounts that exceed any amount stated herein in such amount and on such form that are acceptable to the County.

The County reserves the right, but not the responsibility to periodically review any and all policies of insurance and to reasonably adjust the limits and/or types of coverage required herein, from time to time throughout the term of this Contract. In such event, the County shall provide the Contractor written notice of such adjustments and the Contractor shall comply within thirty (30) days of receipt thereof. Any request for an exception to these insurance requirements must be submitted in writing to the County for approval.

The Contractor agrees to specifically include the County as an Additional Insured on the Commercial General Liability policy with a CG 20 37 – Additional Insured - Owners, Lessees or Contractors-Completed Operations (Exhibit E) or CG 20 10 – Additional Insured-Owners, Lessees or Contractors-Scheduled Person or Organization Endorsement, or their equivalent (Exhibit F). The Contractor shall also specifically include the County as an Additional Insured on any Commercial Umbrella or Excess policies unless the County is automatically defined under the policy as an Additional Protected Person. Additionally, the Contractor agrees to specifically include the County as an Additional Insured under the Contractor's Pollution Liability coverage (when applicable). The name of the organization identified in each Additional Insured endorsement's schedule shall read Orange County Board of County Commissioners.

The Contractor agrees by entering into this written Contract to provide a Waiver of Subrogation in favor of the County, Contractor, Professional, and sub-contractors of any tier for each required policy providing coverage during the life of this Contract. When required by the insurer, or should a policy condition not permit an endorsement, the Contractor agrees to notify the insurer and request that the policy(ies) be endorsed with a Waiver of Transfer of Rights of Recovery Against Others, or an equivalent endorsement. This Waiver of Subrogation requirement shall not apply to any policy, which includes a condition that specifically prohibits such an endorsement or voids coverage should the Contractor enter into such an agreement on a pre-loss basis.

Before execution of this Contract by the County and the start of any Work and for the duration of this Contract, the Contractor shall provide the COUNTY with current certificates of insurance evidencing all required coverage. The certificates shall clearly indicate that the Contractor has obtained insurance of the type, amount and classification as required for strict compliance with this insurance section. No material change or cancellation of the insurance shall be effective without thirty (30) days prior written notice to the COUNTY. Certificates shall specifically reference the project title and contract number. The certificate holder shall read:

Orange County Board of County Commissioners
c/o Procurement Division
400 E. South Street
Orlando, Florida 32801

Prior to commencement of any Work performed by subcontractors (if any), the Contractor shall obtain certificates of insurance evidencing coverage from each of its subcontractors and shall furnish within five days, copies of said certificates upon request by the County. In addition to the certificate(s) of insurance the Contractor shall also provide a blanket or specific additional insured endorsement and all waivers of subrogation or transfer of rights of recovery endorsements for each policy.

Failure of the County to demand such certificate or other evidence of full compliance with these insurance requirements or failure of the County to identify a deficiency from evidence provided will not be construed as a waiver of the Contractor's obligation to maintain such insurance.

Indemnification:

Subject to the limitations in the third paragraph under this heading, the Contractor will defend, indemnify and hold harmless the County, its agents and employees from and against all liabilities, claims, damages, losses, costs and expenses (including attorney's fees) arising out of or resulting from the performance of the Work, provided that any such liability, claim, damage, loss, cost or expense:

- is attributable to bodily injury, sickness, disease or death, or to injury to or destruction of tangible property (other than the Work itself) including the loss of use resulting there from and,
- is caused in whole or in part by any act or omission of the Contractor, any subcontractor, anyone directly or indirectly employed by any of them or anyone for whose acts any of them may be liable, regardless of whether or not it is caused in whole or in part by a party indemnified hereunder.

The Contractor hereby acknowledges receipt of One Hundred Dollars (\$100) and other good and valuable consideration from the County as consideration for the indemnification provisions in this Contract.

In any and all claims against the County, its agents or employees; employees of the Contractor and subcontractor; all persons directly or indirectly employed by any of them or anyone for whose acts any of them may be liable, the indemnification obligation under the previous paragraph shall not be limited in any way as to the amount or type of damages, compensation or benefits payable by or for the Contractor or any subcontractor under workers' compensation acts, disability benefit acts or other employee benefit acts.

The indemnification obligations of the Contractor under this section shall not extend to the liability of the Professional and its agents or employees arising out of the preparation or approval of maps, drawings, opinions, reports, surveys, change orders, designs or specifications, or the giving or the failure to give requested interpretations by the Professional and their agents or employees, provided such giving or failure to give is the primary cause of injury or damage.

The Contractor will defend, indemnify and hold harmless the County and anyone directly or indirectly employed by it from and against all claims, damages, losses and expenses (including attorney's fees) arising out of any infringement of patent rights or copyrights held by others during or after completion of the Work, and shall defend all such claims in connection with any alleged infringement of such rights.

Provided however, if this Contract is deemed by a court of competent jurisdiction to be a construction contract under Section 725.06, Florida Statutes, any obligation of the Contractor to defend, indemnify or hold harmless the County, its officers and employees shall be limited to an obligation to indemnify and hold harmless to the extent caused by the negligence, recklessness or intentionally wrongful conduct of the Contractor and persons employed or utilized by the Contractor in the performance of the Contract.

The indemnification provisions contained herein shall survive the termination of this Contract.

ARTICLE 9 - CONTRACTOR'S RESPONSIBILITIES

Supervision and Superintendence - The Contractor will supervise and direct the work efficiently and with his best skill and attention. He will be solely responsible for the means, methods, techniques, sequences and procedure of construction, unless otherwise specified. The Contractor will be responsible to see that the finished Work complies accurately with the Contract Documents. The Contractor will keep on the site at all times during its progress a competent, resident superintendent who shall not be replaced without written notice to the Project Manager. The superintendent will be the Contractor's representative at the site and shall have authority to act on behalf of the Contractor. All communications given to the superintendent shall be as binding as if given to the Contractor.

The Project Manager may require in writing that the Contractor remove from the Work any of Contractor's personnel that the Project Manager determines to be incompetent, careless or otherwise objectionable.

No claims for an increase in Contract Amount or Contract Time based on the Project Manager's use of this provision will be valid. Contractor shall indemnify and hold the County harmless from and against any claim by Contractor's personnel on account of the use of this provision.

Labor, Materials and Equipment - The Contractor will provide competent, suitable, qualified personnel to lay out the Work and perform construction as required by the Contract Documents. He will at all times maintain good discipline and order at the site. The Contractor will furnish all materials, equipment, labor, transportation, construction equipment and machinery, tools, appliances, fuel, power, light, heat, telephone, water and sanitary facilities and incidentals necessary for the execution, testing, initial operation and completion of the Work.

All materials and equipment will be new except as otherwise provided in the Contract Documents. If required by the Project Manager, the Contractor will furnish satisfactory evidence as to the kind and quality of materials and equipment furnished.

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

Substitute Material or Equipment - If it is indicated in the Specifications that the Contractor may furnish or use a substitute that is equal to any material or equipment specified, and if the Contractor wishes to furnish or use a proposed substitute, he will within thirty (30) days after the award of the Contract make written application to the Project Manager for acceptance of such a substitute, certifying in writing that the proposed substitute will perform adequately the duties imposed by the general design, be similar and of equal substance to that specified and be suited to the same use and capable of performing in an efficient and economic manner as that specified. The application will include sufficient information to allow the Project Manager to evaluate the substitutions.

The application will state the extent, if any, to which the review, acceptance, furnishing and installation of the proposed substitute will prejudice Contractor's completion of the Work within the Contract Time(s). If the cost of the review of the substitution is greater than that of the originally specified item, the Contractor will reimburse the County for all costs. County may require Contractor to furnish at Contractor's expense a special performance guarantee or other Surety with respect to any substitute. The benefit of lower cost items shall be shared between the County and Contractor as specified in the Instructions to Bidders. No substitute shall be ordered or installed without the written acceptance of the Project Manager who shall be the sole judge of acceptability.

Concerning Subcontractors - The Contractor will not employ any Subcontractor, other person or organization of the types referred to in Article 4 (whether initially or as a substitute) against whom the County or the Project Manager may have reasonable objections, nor will the Contractor be required to employ any Subcontractor against whom he has reasonable objection.

The Contractor will not make any substitution for any Subcontractor who has been accepted by the Project Manager, unless the County and the Project Manager determine that there is good cause for doing so.

The Contractor will be fully responsible for all acts and omissions of his Subcontractors and of persons directly or indirectly employed by them and of persons for whose acts any of them may be liable to the same extent that they are employed by him. Nothing contained in the Contract Documents shall create, nor be interpreted to create, privity or any other contractual relationship whatsoever between the County and any Subcontractor or any person except the Contractor, or any obligation on the part of the County to payor to see to the payment of any monies due any Subcontractor, except as may otherwise be required by law. The County may furnish to any Subcontractor, to the extent practicable, evidence of amounts paid to the Contractor on account of specific Work done. The divisions and sections of the Specifications and the identifications of any Drawings shall not control the Contractor in dividing the Work among Subcontractors or delineating the Work to be performed by any specific trade.

The Contractor agrees to bind specifically every Subcontractor to the applicable terms and conditions of the Contract Documents for the benefit of the County.

All Work performed for the Contractor by Subcontractors shall be pursuant to an appropriate agreement between the Contractor and the Subcontractor which shall contain provisions that waive all rights the contracting parties may have against one another for damages caused by fire or other perils covered by insurance held by the County as trustee. The Contractor will pay each Subcontractor a share of any insurance monies received by the Contractor under this insurance.

Patent Fees And Royalties - The Contractor will pay all license fees and royalties and assume all costs incident to the use of any invention, design, process or device which is the subject of patent rights or copyrights held by others.

Permits - The Contractor will secure and pay for all construction permits and licenses and will pay all governmental charges and inspection fees necessary for the prosecution of the Work which are applicable at the time of his Bid except those as may be identified in the Specifications. The Contractor will also pay all public utility charges except as provided for in the Contract Documents.

Laws and Regulations - The Contractor will give all notices and comply with all laws, ordinances, rules and regulations applicable to the work. If the Contractor observes that the Specifications or Drawings are at variance therewith, he will give the Project Manager prompt written notice thereof, and any necessary changes shall be adjusted by an appropriate Change Order. If the Contractor performs any Work knowing it to be contrary to such laws, ordinances, rules and regulations and without such notice to the Project Manager, he will bear all costs arising therefrom; however, it shall not be his primary responsibility to make certain that the Drawings and Specifications are in accordance with such laws, ordinances, rules and regulations.

Use Of Premises - The Contractor will confine his equipment, the storage of materials and equipment, and the operations of his workers to the areas permitted by law, ordinances, permits or the requirements of the Contract Documents and shall not unreasonably encumber the premises with materials or equipment.

The Contractor shall confine the operation of workmen and equipment, and the storage of materials and equipment to the County's property or to other non-County property or in public right-of-way areas indicated on the Contract Drawings as including work to be done pursuant to the Contract documents. In the event the Contractor desires to have access to the project site, or perform work or operations pertaining to the Contract on, over or from non-County property adjacent to the project site, the Contractor shall obtain written authorization to do so from the respective adjacent property owner(s) prior to using such property. Such written authorization shall include a provision whereby the property owner agrees to hold the County harmless, and to defend the County, in the event of any liability,

loss, injury, or claim incurred as a result of the Contractors work or operations involving the use of the adjacent non-County property.

The County shall be provided with a notarized, certified copy of such written authorization(s) before the Contractor commences work or operations or use of such property in connection with work or operations pursuant to this Contract.

Record Drawings - The Contractor will keep one record copy of all Specifications, Drawings, Addenda, Change Orders and Shop Drawings at the site in good order, and annotated and/or marked on a current basis to indicate the progress of the work done and to show all changes made during the construction process or conditions varying from the Bid Documents. These shall be available to the Project Manager for inspection throughout construction and shall be delivered to the Project Manager upon completion of the Work, but prior to final payment.

Safety And Protection - The Contractor will be responsible for initiating, maintaining and supervising all safety precautions and programs in connection with the Work. He will take all necessary precautions for the safety of and will provide the necessary protection to prevent damage, injury or loss to:

- A. All employees on the Project and other persons who may be affected thereby:
- B. All the Work and all materials or equipment to be incorporated therein, whether in storage on or off the site; and
- C. Other property at the site or adjacent thereto including trees, shrubs, lawns, walks, pavements, roadways, structures and utilities not designated for removal, relocation or replacement in the course of construction.

The Contractor will comply with all applicable laws, ordinances, rules, regulations and orders of any public body or public or private utility service organization having jurisdiction for the safety of persons or property or to protect them from damage, injury or loss. He will erect and maintain, as required by the conditions and the progress of the Work, all necessary safeguards for safety and protection and, in addition, he will comply with all applicable recommendations of the Manual of Accident Prevention in Construction of the Associated General Contractors of America, Inc., and the Manual on Uniform Traffic Control Devices for Streets and Highways (MUTCD) and subsequent revisions and addenda as published by the U.S. Department of Transportation, Federal Highway Administration and adopted by the Florida Department of Transportation. He will notify owners of adjacent utilities when prosecution of the Work may affect them.

All damage, injury or loss to any property or all damage, disruption, discontinuance or other loss to any utility system or roadways referred to in Paragraph B. and C. caused directly or indirectly, in whole or in part by the Contractor, any Subcontractor, anyone directly or indirectly employed by any of them, or anyone for whose acts any of them may be liable, will be remedied by the Contractor, except damage or loss attributable to the fault of the Drawings or the Specifications or to the acts or omissions of the County, and not attributable, directly or indirectly, in whole or in part, to the fault of negligence of the Contractor. The Contractor must also comply with the guidelines set forth in the Orange County Safety & Health Manual. The manual can be accessed online at the address below:

<http://www.orangecountyfl.net/VendorServices/OrangeCountySafetyandHealthManual.asp>

X

The Contractor will designate a responsible member of his organization whose duty shall be the prevention of accidents at the site. **This person shall be the Contractor's superintendent unless otherwise designated in writing by the Contractor to the Project Manager.**

Emergencies - In emergencies affecting the safety of persons, the Work or property at the site or adjacent thereto, the Contractor, without special instruction or authorization from the Project Manager, is obligated to act at his discretion to prevent threatened damage, injury or loss. He will give the Project Manager prompt written notice of any significant changes in the Work or deviations from the Contract Documents caused thereby, and a Change Order shall thereupon be issued covering the changes and deviations involved. If the Contractor believes that additional Work done by him in an emergency which arose from causes beyond his control entitles him to an increase in the Contract Amount or an extension of the Contract Time, he may make a claim therefore as provided in Article 13.

Shop Drawing and Samples - After checking and verifying all field measurements, the Contractor will submit to the Project Manager for review, in accordance with the accepted schedule of Shop Drawing submission, five copies (or at the Project Manager's option, one reproducible copy) of all Shop Drawings, which shall have been checked by and stamped with the approval of the Contractor and identified as the Project Manager may require. The data shown on the Shop Drawings will be complete with respect to dimensions, design criteria, materials of construction and the like to enable the project manager to review the information as required.

The Contractor will also submit to the Project Manager for review with such promptness as to cause no delay in the Work, all samples required by the Contract Documents. All samples shall be checked by and stamped with the approval of the Contractor, identified clearly as to material, manufacturer, any pertinent numbers and the use for which intended.

At the time of each submission, the Contractor will in writing call to the Project Manager's attention to any deviations that the Shop Drawing or sample may have from the requirements of the Contract documents.

The Project Manager will review with reasonable promptness and take appropriate action with regard to Shop Drawings and samples, but its review shall be only for general conformance with the design concept of the Project and for compliance with the information given in the Contract Documents. The acceptance of a separate item as such will not indicate approval of the assembly in which the item functions.

The Contractor will make any corrections required by the Project Manager and will return the required number of corrected copies of Shop Drawings and re-submit new samples until accepted.

The Contractor's stamp of approval on any Shop Drawing or sample shall constitute a representation to the Project Manager that the Contractor has either determined and verified all quantities, dimensions, field construction criteria, materials, catalog numbers and similar data or he assumes full responsibility for doing so, and that he has reviewed or coordinated each Shop Drawing or sample with the requirements of the Work and Contract Documents.

No Work requiring a Shop Drawing or sample submission shall be commenced until the submission has been accepted by the Project Manager. A copy of each accepted Shop Drawing and each accepted sample shall be kept in good order by the Contractor at the site and shall be available to the Project Manager.

The Project Manager's acceptance of Shop Drawings or samples shall not relieve the Contractor from his responsibility for any deviations from the requirements of the Contract Documents, unless the Contractor has in writing called the Project Manager's attention to such deviation at the time of submission and the County and the Project Manager have given written acceptance to the specific deviation; nor shall any acceptance by the Project Manager relieve the Contractor from responsibility for errors or omissions in the Shop Drawing.

Each Shop Drawing or sample submittal or substitution request by the Contractor shall contain a reference identifying the applicable, specific Section of the Specifications to which it pertains. Submittals failing to comply with this provision shall be rejected and returned to the Contractor without review.

Each Shop Drawing or sample submittal or substitution request shall include the following stamped certification by the Contractor:

"The General Contractor has reviewed the Shop Drawing, sample or substitution submitted herewith and has determined and hereby certifies that in all respects this submittal is in full compliance and conformance with the Contract specifications, drawings and all other Contract requirements pertaining thereto".

Failure of the Contractor to include the above stated specification reference number or certification of compliance shall result in the rejection of the submittal. The Contractor will also submit within five (5) days of Contract Award to the Project Manager for acceptance all samples required by the Contract Documents. All samples will have been checked by and stamped with the approval of the Contractor, identified clearly as to material, manufacturer, any pertinent numbers and the use for which intended.

In the event that the Contractor, or anyone working for or on behalf of the Contractor on this project, should commence or do any work requiring submission of a Shop Drawing or sample, or involving a substitution or an "or-equal" request without having such submittal accepted by the County in writing, then the Contractor is advised that any and all such work will be done at its risk and is subject to rejection and/or removal at the Contractor's expense and at no additional cost to the County if applicable Shop Drawing, sample, substitution, "or-equal" or other submittal is not accepted.

Further, the Contractor will not receive "progress" or "final" payment for any and all work commenced or done which requires, but has not received acceptance of Shop Drawings, samples, substitution requests, or "or-equal" requests or any other required submittal, nor will the Contractor receive "progress" or "final" payment for any and all work that has been determined by the Professional or the County's Project Manager not to be in compliance or conformance with the established Contract requirements, Contract change orders, written directives, written clarifications provided to the Contractor, or accepted Shop Drawings, accepted samples, accepted substitutions, or accepted "or-equals".

Cleaning Up - The Contractor will keep the premises free from accumulations of waste materials, rubbish and other debris resulting from the Work; at the completion of the Work he will remove all waste materials, rubbish and debris from and about the premises as well as all tools, construction equipment and machinery, and surplus materials, and will leave the site clean and ready for occupancy by the County.

The Contractor will restore to their original condition those portions of the Site not designated for alteration by the Contract Documents. If at any time during construction of this project, the Contractor fails to clean up on a daily basis, the County may do so. All costs associated with the County's cleanup activities on behalf of the Contractor shall be deducted from amounts due to the Contractor.

ARTICLE 10 – WORK BY OTHERS AND UTILITY COORDINATION

Work by Others – The County may perform additional work related to the project by itself, or it may let other direct contracts which shall contain general conditions similar to these. The Contractor will afford the other contractors who are parties to such direct contracts (or the County, if it is performing the additional work itself), reasonable opportunity for the introduction and storage of materials and equipment and the execution of work, and shall properly connect and coordinate his Work with theirs.

Should the contract entail relocation of facilities not a part of this Contract, the Contractor will coordinate and cooperate with the applicable entity responsible for this portion of the work.

If any part of the Contractor's Work depends (for proper execution of results) upon work of any such other Contractor (or the County), the Contractor will inspect and promptly report to the Project Manager in writing any defects, deficiencies or delays in such work that render it unsuitable for such proper execution and results.

The Contractor's failure to report shall constitute an acceptance of the other work, except as to defects, deficiencies and delays which may appear in the other work after the execution of the work.

The Contractor will do all cutting, fitting and patching of his Work that may be required to make its several parts come together properly, and fit it to receive or be received by such other work. The Contractor will not endanger any work of others by cutting, excavating or otherwise altering such other work and will only cut or alter such other work with the written consent of the Project Manager.

If the performance of additional work by other Contractors or the County is not noted in the contract documents prior to the execution of the Contract, written notice thereof shall be given to the Contractor prior to starting any such additional work. If the Contractor believes that the performance of such additional work by the County or others involves him in additional expense or entitles him to an extension of the Contract Time, he may make a claim therefore as provided in Article 13.

Utility Coordination – Section 337.401 (1), Florida Statutes and other applicable law allows utility owners to install and maintain along, above, under, across or on any road or right-of-way any electric transmission or distribution facilities, telephone, telegraph, pole lines, poles, railway structures, ditches, sewers, water, heat, gas mains, pipelines, fences, gasoline tanks and pumps, waterlines, gas lines, wire lines, utility service connections, water and gas meter boxes, valve boxes, light standards, cable lines, cable ways, signals, signal boxes, and all other utility installations, improvements and utility appurtenances to be installed and maintained in the right-of-way.

The Contractor understands and agrees that the lands upon which the Work is to be performed consists of prior existing right-of-way, as well as, recently acquired right-of-way. The Contractor acknowledges and agrees that utility installations and appurtenances are located within the limits of the planned construction Work. The utility installations and appurtenances may be in conflict with the Contractor's Work or require relocation or adjustments. All utility conflict resolutions, relocations, or adjustments are to be moved by the utility owners at their expense, unless otherwise provided in the Contract documents.

The Contractor, by submission of a bid, agrees that prior to bid he has studied, performed field inspections, and evaluated all potential utility conflicts, the locations of permanent and temporary utility appurtenances in their present and relocated positions as may be shown on the plans. The Contractor acknowledges and agrees that the Contractor's bid has considered all potential utility conflicts, the locations of permanent and temporary utility appurtenances in their present and relocated positions including those shown on the plans, not shown on the plans, and those identified during the Contractor's pre-bid study or that should have been identified during the Contractor's field inspections, and evaluation of the limits of the planned construction Work.

The design Professional may show surface or subsurface utility conflicts, relocations, or adjustments in the drawings and plans. The surface and subsurface utility information shown in the drawings and plans was obtained and used by the design Professional to establish design criteria for the design plans. The accuracy as to location and the identification of all surface or subsurface utility information is not warranted or guaranteed and is not to be construed as part of the construction plans governing the construction Work. The Contractor shall solely make his own determinations as to surface and subsurface conditions.

The Contractor shall be solely responsible for utility coordination including all utility conflict resolutions, relocations, and adjustments. The concept of "utility coordination" means that the Contractor shall, at a minimum:

- A. Investigate both subsurface and aboveground conditions to identify potential conflicts far enough in advance of his planned construction operations to allow the Contractor to coordinate with utility owners and responsible parties any necessary conflict resolutions, relocations, or adjustments such that they can occur without delay to the Contractor's operations and Progress Schedule.
- B. Conduct regularly scheduled Utility Coordination Meetings with all affected utilities, and shall maintain detailed minutes of the discussions.
- C. Contact all utility owners in advance of any needed conflict resolutions, relocations, or adjustments.
- D. Contact the Project Manager as to all Contractor scheduled utility conflict resolutions, relocations, or adjustments.
- E. Schedule all work to be performed by the utility owners related to utility conflict resolutions, relocations, or adjustments.

- F. Schedule all work to be performed by the utility owners so as not to delay or disrupt in any way the Contractor's own performance of the Contractor's Performance Schedule.
- G. Assure the proper connection of the Contractor's Work with the work of the utility owners.
- H. Assure that the schedule, contacts, and proper connections between the Contractor's Work and the utility owner's work harmonize the work of both in a common action to achieve resolution of utility conflicts, relocations, and adjustments.
- I. Contractor shall, at no cost to the County, adjust the project schedule to allow the work to proceed in such a manner that delays to the progress of the work are minimized.

As discussed more fully in Article 17, delays to the Contractor's Progress Schedule resulting from the resolution of utility conflicts, relocations, and adjustments to utilities will not be considered as the basis for granting a change in Contract Amount or Contract Time.

ARTICLE 11 - PROJECT OWNER STATUS DURING CONSTRUCTION

The Contractor shall provide the following information to all subcontractors and suppliers:

County's Representatives - The Project Owner shall be the Board of County Commissioners. The Board shall be represented by the Project Manager listed below during the construction period:

Manager, Public Works Engineering Division, or designee
 Address: to be provided after award of the contract
 Phone: to be provided after award of the contract
 Email: to be provided after award of the contract

ARTICLE 12 - CHANGES IN THE WORK

Without invalidating the Contract, the County may, at any time or from time to time, order additions, deletions or revisions in the Work authorized by written Change Orders or directive. Upon receipt of a Change Order, the Contractor will proceed with the work involved. All such work shall be executed under the applicable conditions of the Contract documents. If any Change Order causes an increase or decrease in the Contract Amount or any extension or shortening of the Contract Time, an equitable adjustment will be made as provided in Article 13.

Additional Work performed by the Contractor without authorization of a Change Order will not entitle him to an increase in the Contract Amount or any extension of the Contract Time, except in the case of an emergency as provided in Article 9.

It is the Contractor's responsibility to notify his Surety of any changes affecting the general scope of the Work or change of the Contract Amount and the amount of the applicable bonds shall be adjusted accordingly, and an amended bond document furnished to the County.

In the event the County directs the Contractor to make a change in the Work, and if the County and the Contractor do not arrive at a mutually acceptable increase or decrease in the Contract Amount, the Contractor shall not use any such lack of mutual acceptance as a basis or cause to stop or otherwise delay the progress or the execution and completion of any of the work ordered, directed or required pursuant to the Contract Documents.

If the Contractor believes an event or situation has occurred which justifies a change in the Contract Amount or Contract Time, he shall deliver a written notice to the Project Manager. Each such written notice shall be delivered promptly, and in any event no later than 15 days after the Contractor first discovered the occurrence. The Contractor shall be deemed to have waived the right to collect any and all costs incurred more than 15 days prior to the date of delivery of the written notice, and shall be deemed to have waived the right to seek an extension of the Contract Time with respect to any delay in the Progress Schedule which accrued more than 15 days prior to the date of delivery of the written notice.

Any such notice shall include sufficient detail to explain the basis of entitlement to a claim for an adjustment to the Contract Amount or Contract Time. When requested by the Project Manager, the Contractor shall furnish any additional information and details as may be required to determine the facts or allegations involved, which shall be provided within fifteen (15) days of the request unless a longer time period is allowed by the Project Manager.

The Contractor shall prepare proposals detailing proposed adjustments to Contract Amount and/or Contract Time in accordance with Article 13 and submit them to the Project Manager within 15 days of the County's issuance of a proposed Change Order or the Contractor's submitting a written notice of a change or claim for an adjustment to the Contract Amount or Contract Time. Contractor's proposals shall be irrevocable for a period of at least sixty (60) days after receipt by the County. Any delay in the submittal of a complete, adequate and acceptable proposal will not justify an increase in Contract Amount or Contract Time. Contractor agrees that it shall give the County access to any and all of Contractor's and Subcontractors' books, records and other materials relating to proposed Change Orders and other claims for adjustment to Contract Amount or Contract Time.

ARTICLE 13 - CHANGE OF CONTRACT AMOUNT AND CONTRACT TIME

Contract Amount - The Contract Amount constitutes the total compensation payable to the Contractor for performing the Work. All duties, responsibilities and obligations assigned to or undertaken by the Contractor shall be at his expense without change in the Contract Amount. The Contract Amount may only be changed by written Change Order issued by the County. Any claim for an increase in the Contract Amount shall be in writing and delivered to the Project Manager within fifteen (15) days of the occurrence of the event giving rise to the claim.

All claims for adjustment in the Contract Amount shall be determined by the Project Manager. However, no claim for an adjustment to the Contract Amount will be considered for unforeseeable causes that were beyond the fault or negligence of the Contractor or his Subcontractors or supplier such as acts of God, floods, riots, etc. This restriction does not restrict submission of claims for additional Contract Time due to events of this nature. Any change in the Contract Amount shall be incorporated in a Change Order.

Proposals or Claims Substantiating Adjustments; Limitations:

- A. Contractor proposals or claims shall cover all aspects of the Work involved and shall be fully documented and itemized as to all costs, quantities and charges for overhead and profit. Amounts for Subcontractors or Suppliers at any tier shall be similarly supported. When determining Subcontractors' costs, the methods to be Used shall be those used for the Contractor's costs, except that the term "Subcontractor" shall replace the term "Contractor," context permitting.
- B. Where the change in Contract Amount arises from changes in the time required to perform any Work, or where a change in Contract Time is sought, the Contractor's itemized estimates shall detail all productivity and production data, and include an analysis of the Record Schedule demonstrating the schedule status just before and after the occurrence of events on which the request is based (thereby showing the extent of delay resulting from the event involved) and any measures taken or planned to mitigate the impacts.
- C. Neither the Contract Time nor Contract Amount shall be changed due to a delay in Contractor's early completion date until all the corresponding Contract Float available in the Record Schedule at the start of the delay is used and performance of the specified Work extends necessarily beyond that Contract Time. The Contractor shall not recover from the County (a) acceleration costs incurred to overcome delays which warrant extensions in Contract Time but exclude changes in Contract Amount, (b) escalation costs for any part of the Work having Contract Float or not delayed beyond the late dates in the Record Schedule, or (c) delay costs not expressly allowed in General Conditions Article 13 as supplemented.
- D. Changes in Contract Amount for extensions in Contract Time shall exclude costs that are unaffected or do not relate to the extension in Contract Time, such as: (a) operating costs of construction equipment assigned to the Work on a continuing basis, (b) operating costs and owned/rental costs of construction equipment (crane used for specific lifts, concrete pump used for specific pours, etc.), and (c) fully paid site facilities, tools, etc.

The value of any Work covered by a Change Order or of any claim for an increase or decrease in the Contract Amount shall be determined in one of the following ways:

- A. Where the Work involved is covered by unit prices contained in the Contract Documents, by application of unit prices to the quantities of the items involved.

If the quantities originally contemplated are so changed in a proposed Change Order, that application of the Unit Prices to the quantities proposed will cause substantial inequity to the County or the Contractor, the applicable unit price(s) shall be equitably adjusted by mutual agreement.

- B. By mutual acceptance of a lump sum.
- C. By cost and mutually acceptable fixed amount for overhead and profit.
- D. If the value of work covered by a Change Order cannot be established or mutually agreed to utilizing any of the above three methods, the value shall be determined by the County on the basis of an estimate of the out-of-pocket cost and percentages that are acceptable to the County for overhead and profit. The out-of-pocket cost shall only include those direct costs which are needed to perform the work such as labor (including payroll taxes, fringe benefits, labor burden and workers' insurance), materials, equipment, and other incidental out-of-pocket construction costs directly involved in the work, including but not limited to small tools, expendables and material costs but shall not include project management or project supervisory costs unless the Change Order includes an increase in the Contract time.

Methods for Determining Adjustments in Contract Amount:

- A. If the County directs the Contractor to proceed with the Work involved pursuant to actual out-of-pocket costs plus contractual allowances for overhead and profit and states a Not-to-exceed price, Contractor claims for costs, overhead or profit beyond the Not-to-exceed price shall be invalid, unless, prior to incurring those costs, overhead or profit Contractor provides written notice and County increases the Not-to-exceed price in writing..
- B. If payment for the Work involved is to be determined by a court of law, it is agreed by the Contractor that the actual out-of-pocket cost and overhead and profit method contained in the General and Supplemental Conditions shall represent an appropriate method for determining the cost and overhead and profit for the Work involved.
- C. In computing Cost of the Work involved in a Change Order or claim, costs shall be allowable only to the extent costs (a) are consistent with those prevailing in the Orlando Metropolitan Statistical Area (which includes Orange, Seminole, Lake and Osceola Counties) and with applicable criteria set forth in 48 CFR Part 31 (federal contract cost principles and procedures), (b) include only the appropriate items for labor, material or equipment, construction equipment and special cost items specified in General Conditions Articles 13.

In such case, the Contractor will submit in the form prescribed by the County an itemized cost breakdown together with supporting data.

The amount of credit to be allowed by the Contractor to the County for any such change which results in a net decrease in cost, will be the amount of the actual net decrease as determined by the County. When both additions and credits are involved in any one change, the combined overhead and profit shall be figured on the basis of the net increase, if any.

To be eligible for consideration, the Contractor's written claim for a change in the Contract price, including claim(s) from sub-contractors, shall include an itemized cost breakdown with supporting data as described below:

- A. For labor: Provide written documentation from the Contractor and Subcontractors or others as appropriate in the form of a detailed breakdown by each labor classification involved indicating the number of hours of Work involved and the hourly payroll rate applicable to each to substantiate the basis and amount of the direct labor cost. The direct labor cost may be increased to provide an allowance for indirect payroll costs (labor burden), such as payroll taxes, fringe benefits, and workers insurance after all premium discounts, rebates and other appropriate reductions have been taken.

Allowable labor costs shall be limited to craft labor (including foremen) in the direct employ of the Contractor (or Subcontractor) assigned to the site and engaged in furnishing and incorporating materials or equipment in the Work involved in the Change Order or Claim.

When determining actual payroll costs, daily time sheets certified by the Contractor and verified by the Project Manager along with certified payroll records shall be the valid records.

- B. For material, supplies, equipment, furnishings, etc., to be installed or included in the Work: Provide written documentation from the Contractor and Subcontractors, suppliers, etc., to substantiate the basis and amount of the various cost items involved. Material costs shall reflect the Contractor's reasonably anticipated net actual cost after consideration of trade discounts and volume rebates.
- C. For construction equipment: Provide written documentation in the form of a detailed breakdown by each construction equipment category indicating, the applicable unit rates (i.e., \$'s per hour, \$'s per day etc.,) and the number of hours, days, etc. to substantiate the basis and amount of the construction equipment out-of-pocket costs.
- D. Special cost items (any out-of-pocket cost items not considered to be material, labor or construction equipment as set forth above including but not limited to small tools and expendables): Provide written documentation in the form of a detailed breakdown or itemization of the costs, fees, charges, hours, hourly rates, etc., to clarify, document and substantiate the basis and amount of the out-of-pocket cost. Special cost items due to the Work or a delay involved in a Change Order or Claim may include a proportion of the following indirect costs, to the extent those indirect costs increase or decrease on account of (a) the Cost of the Work involved for labor, Subcontractor or Supplier furnished materials or equipment, or (b) an extension in Contract Time as follows (provided that no cost shall be paid for holidays or weather days during the delay):
 1. Payroll costs for the Contractor's full-time superintendent and payroll costs for other personnel in the employ of the Contractor resident (engaged in activities) at the site if those costs arise solely from an extension in Contract Time;

2. Costs of small tools and expendables (less market value if not consumed) of items individually valued at less than \$1,000.00 that are not owned by the workers, if the Contractor provides an itemized list of items required for the performance of the Work involved; however, no such costs shall be allowed over 4% of the direct labor costs, unless the Contractor furnishes detailed data sufficient to allow verification that a higher percentage is appropriate for the Work involved;
3. Costs of office and temporary facilities at the site, including utilities, fuel and sanitary facilities, telephone and internet service at the site, materials, supplies, equipment, other minor expenses (e.g. expressage and petty cash), if those costs arise solely from an extension in Contract Time;
4. Costs of consultants not in the direct employ of the Contractor, if those costs are or were authorized by the County before proceeding with the Work involved;
5. Taxes on the Work involved, and for which the Contractor is liable; and royalty payments and charges and fees for permits, if any of them relate solely to the Work involved;
6. Physical losses, damages and expenses to the Work, not compensated by property insurance, or otherwise to be sustained by the Contractor in the prosecution of the Work (except losses and damages within the deductible amounts of property insurance, if any), but only if the losses, damages and expenses result from the fault or negligence of the County, or
7. Bond premiums and insurance premiums not included as part of the indirect labor cost, if they relate solely to the Work involved.

E. Construction Equipment Costs:

1. For equipment owned by Contractor (or Subcontractor) or rented or leased from lessors associated with or owned by them, allowable costs shall be limited to equipment required for the Work involved in a Change Order or claim with individual replacement values exceeding \$1,000.00. Transportation, loading/unloading, installation, dismantling and removal costs shall be allowed only if prior written consent is obtained from the Project Manager, and if the equipment is, or was, transported to the site solely for the Work involved. Shipping costs will be allowed only if the equipment is not available in the Orlando Metropolitan Statistical Area.

Contractor shall be entitled to ownership and operation costs of the equipment based on the Contractor's normal accounting practices, but in no event shall equipment ownership or operation costs exceed the applicable hourly rates listed in the "Cost Reference Guide," published by Prism Business Media. For multiple shifts, the equipment rate shall not exceed the shift Work adjustments recommended in the referenced Cost Guide.

Equipment costs shall be computed using the same accounting and estimating rules and prices, whether related to added or deleted Work, and shall cease when the equipment is no longer needed for the Work involved.

2. For equipment rented or leased from lessors not associated with or owned by the Contractor (or Subcontractor), the Contractor shall be entitled to rental or lease rates, but in no event shall the rates or hourly operating costs exceed applicable rates in the Rental Rate "Blue Book" published by Prism Business Media. The equipment rate for second or third shifts shall not exceed fifty percent (50%) of the base rate. Hourly rates for equipment previously in use at the site for at least a month shall be based on the monthly rate divided by 176 hours. Equipment previously in use for only one week or not previously in use at the site shall not be invoiced to the County at rates higher than the following schedule correlating equipment usage to payment category:

Less than 8 hours	Hourly Rate
1 day but less than 7 days	Daily Rate
1 week but less than 30 days	Weekly Rate
30 days or more (when in use)	Monthly Rate

3. Rented (or owned) equipment idled by actions of the County *for* reasons under the sole control of the County shall be paid as rented equipment (or as one-half of owned equipment), provided the idle period exceeds what is normal for such equipment and occurs during normal working hours.

When determining actual construction equipment costs, daily logs of the equipment, operators and actual usage, verified by the Project Manager, shall be the valid records.

With respect to the allowances for overhead and profit the following schedule shall be used in determining the total cost of any Work covered by a Change Order or of any claim for an increase or decrease in the Contract price:

- A. For the Contractor, for Work (i.e., the cost of labor, materials and construction equipment as described above) performed by the Contractors own forces; 15% of the cost.
- B. For the Contractor, for the Work performed by the Contractor's Subcontractor; 7 ½% of the amount due the Subcontractor.
- C. For each Subcontractor involved, for Work performed by that Subcontractor's own forces 7 ½% of the cost.
- D. For each Subcontractor, for Work performed by the Subcontractor's Sub-Subcontractor's 5% of the amount due the Sub-Subcontractor.
- E. Cost to which overhead and profit is to be applied shall be determined in accordance with provisions of this Article 13.
- F. The Cost of the Work involved in a Change Order or claim shall not include any of the following costs (considered administrative costs or contingencies covered by the overhead and profit):

1. Payroll costs and other compensation of (a) executives, general and administrative managers, estimators, claim consultants, attorneys, accountants, labor relation coordinators, contract and subcontract administrators, purchasers, expeditors and other administrative staff, whether employed at the site or in the Contractor's (or Subcontractor's) principal or branch offices; and (b) project managers, construction managers, engineers, architects, schedulers, detailers, safety personnel, clerks and other administrative staff employed in his principal or branch offices;
2. Costs in the preparation of Change Orders or claims (whether or not ultimately authorized by the County);
3. Costs of engineers, architects, accountants, consultants, attorneys and others, in the direct employ of the Contractor or otherwise, utilized for services related to a controversy or claim about the acceptability of the Work;
4. Any part of the Contractor's capital expenses, including interest on capital for the Work involved, lost interest on unpaid retainage, and charges for delinquent payments;
5. Any other expenses of the Contractor's principal and branch offices, including storage and yard facilities; and any costs not specifically and expressly allowed in General Conditions Article 13 as supplemented.

If deemed necessary, the overhead and profit allowance schedule shown above may be adjusted by the Project Manger.

Cash Allowances - It is understood that the Contractor has included in the Contract Amount any allowances so named in the Contract Documents and shall cause the Work so covered to be done by such Suppliers or Subcontractors and for such sums within the limit of the allowances as the County may accept. Prior to final payment, the Contract Amount shall be adjusted as required and an appropriate Change Order issued. The Contractor agrees that the original Contract amount includes such sums as he deems proper for cost and profit on account of cash allowances. No demand for additional cost or profit in connection therewith will be allowed.

Change of Contract Time - The Contract Time may only be changed by written Change Order. Any claim for an extension in the Contract Time shall be in writing and include an analysis of the Progress Schedule as further described in the Specifications, and shall be delivered to the Project Manager within fifteen (15) days of the occurrence of the event giving rise to the claim.

All claims for adjustment in the Contract Time shall be determined by the Project Manager. Any change in the Contract Time resulting from any such claim shall be incorporated in a Change Order.

The Contract Time may be extended for an amount equal to time lost due to unforeseeable causes beyond the control of the Contractor (and his Subcontractors and Suppliers) if he makes a claim therefore. Such delays shall include, but not be restricted to, acts or neglect by any separate Contractor employed by the County; fires; floods; labor disputes; epidemics or acts of God.

All time limits stated in the Contract Documents are of the essence to the Contract. The stated time limits are agreed to be adequate to complete the work, including the procurement, manufacture and delivery of all material and equipment required, and account for any and all potential impact, delays, disruptions and costs that may be expected.

ARTICLE 14 - CONDITION OF MATERIALS AND PACKAGING:

In instances where the Specifications, (Part H) make this subject applicable (and unless otherwise indicated), all goods and items offered for sale and/or shipped by the Contractor pursuant to the requirements imposed upon said Contractor by this bid package, will be new and in first class condition; all related containers being new and suitable for storage and shipment; all prices including the cost of standard commercial packaging. Contractors will be solely responsible for making any and all claims against carriers as concerns missing or damaged items.

ARTICLE 15 - ASBESTOS FREE MATERIALS:

Project is to be constructed with asbestos free materials. A written, notarized statement on company letterhead is to be submitted with the final payment request. Final payment shall be withheld until such statement is submitted.

Contractor shall agree that if materials containing asbestos are subsequently discovered at any future time to have been included in the construction done by the Contractor or any of its Subcontractors or agents and were not specified in the design or required by the Contract document, Contractor shall be liable for all costs related to the abatement of such asbestos and damages or claims against the County.

ARTICLE 16 – WARRANTY AND GUARANTEE, ACCEPTANCE OF DEFECTIVE WORK

Warranty and Guarantee - The Contractor warrants and guarantees to the County that all materials and equipment will be new unless otherwise specified and that all Work will be of good quality, free from faults or defects and in accordance with the requirements of the Contract Documents including any required inspections, tests or approvals. All unsatisfactory Work, all faulty Work, and all Work not conforming to the requirements of the Contract Documents or such inspections, tests or approvals shall be considered defective. Prompt notice of all defects shall be given to the Contractor. All defective Work, whether or not in place, may be rejected, corrected or accepted as provided in this Article. All warranty and guarantee coverage periods shall commence from the Final Completion date of the project as determined by the Project Manager. The coverage commencement date of warranties and guarantees shall, in accordance with the provisions stated above, be entered on each warranty or guarantee document.

However, in the event the coverage commencement date entered on the warranty or guarantee document is not in accordance with the provisions stated above, the coverage commencement date shall nonetheless be the date determined by applying the provisions stated above.

Tests and Inspections - If the Contract Documents, laws, ordinances, rules, regulations or order of any public authority having jurisdiction require any Work to specifically be inspected, tested or approved by someone other than the Contractor, the Contractor will give the Project Manager timely notice of readiness therefore. The Contractor will furnish the Project Manager with the required certificates of inspection, testing or approval. All such tests will be in accordance with the methods prescribed by the American Society for Testing Materials or such other applicable organizations as may be required by law or the Contract Documents.

If any such Work required to be inspected, tested or approved is covered without written approval of the Project Manager, it must, if requested by the Project Manager, be uncovered for observation at the Contractor's expense. The cost of all such inspections, tests and approvals shall be borne by the Contractor unless otherwise provided. Neither observations by the Contractor nor inspections, tests or approvals by persons other than the Contractor shall relieve the Contractor from his obligations to perform the Work in accordance with the requirements of the Contract Documents.

Access To The Work - The Project Manager and his representative and other representatives of the County and the Professional will at all times have access to the Work. The Contractor will provide proper facilities for such access and observation of the Work and also for any inspection or testing thereof by others.

Uncovering Work - If any Work is covered contrary to the request of the Project Manager it must, if requested by the Project Manager be uncovered for observation and replaced at the Contractor's expense. If any Work has been covered which the Project Manager has not specifically requested to observe prior to its being covered, or if the Project Manager considers it necessary or advisable that covered Work be inspected or tested by others, the Contractor, at the Project Manager's request, will uncover, expose or otherwise make available for observation, inspection or testing as the Project Manager may require, that portion of the Work in question, furnishing all necessary labor, material and equipment. If it is found that such Work is defective, the Contractor will bear all the expense of such uncovering, exposure, observation, inspection and testing, and of satisfactory reconstruction. If, however, such Work is not found to be defective, the Contractor will be allowed an increase in the Contract amount or an extension of the Contract Time, or both, directly attributable to such uncovering, exposure, observation, inspection, testing and re-construction, if he makes a claim therefore as provided in Article 13.

Notice to Cure - If the County determines the Work is defective or deficient; if the Contractor fails to supply sufficient skilled workers or suitable materials or equipment; if the Contractor fails to make prompt payments to Subcontractors for labor, materials or equipment; if the work is not progressing in a safe, orderly or well coordinated manner; or if the general progress and/or quality of the work is not adequate to ensure continuation or completion of the work in accordance with the Contract completion time requirements, then the Procurement Division Manager shall issue a notice to cure, giving the Contractor a specific period of time

(1) in which to submit to the Project Manager a written Plan of Action including a schedule setting forth a plan by which the deficiencies will be corrected, and (2) a specific period of time in which to correct the deficiencies.

If the Contractor does not submit a Plan of Action to indicate how and when the deficiencies indicated in the notice to cure will be cured within the specified time frame that is acceptable to the Project Manager, and if those deficiencies are not corrected within that time frame, then the County shall take further action, up to and including Contract termination. The Contractor shall not be entitled to any delay claims as a result of the County's issuance of the notice to cure.

Correction or Removal of Defective Work - If required by the Project Manager prior to approval of final payment, the Contractor will, promptly, without cost to the County and as specified by the Project Manager, either correct any defective Work whether or not fabricated, installed or completed or, if the Work has been rejected by the Project Manager, remove it from the Site and replace it with non-defective Work.

If the Contractor does not correct such defective Work or remove and replace such rejected work within a reasonable time, or as specified in a written notice from the Project Manager, the County may have the deficiency corrected or the rejected work removed and replaced. All direct and indirect costs of such correction or removal and replacement shall be paid by the

Contractor. The Contractor will also bear the expense of making good all work of others destroyed or damaged by this correction, removal or replacement of his defective Work.

One (1) Year Correction Period - The Contractor shall be responsible for the timely correction of any deficiencies in the work for a period of one (1) year after final acceptance or such longer period of time as may be prescribed by law or by any other terms required by the Contract. The Contractor will promptly without cost to the County and in accordance with the Project Manager's written instructions either correct such defective Work or, if it has been rejected by the Project Manager, remove it from the site and replace it with non-defective Work. If the Contractor does not promptly comply with the terms of such instructions, the Project Manager may have the defective Work corrected or the rejected Work removed and replaced. All direct and indirect costs of such removal and replacement will be paid by the Contractor.

Acceptance Of Defective Work - If, instead of requiring correction or removal and replacement of defective Work, the Project Manager prefers to accept it, then he may do so. In such case, if acceptance occurs prior to approval of final payment, a Change Order shall be issued incorporating the necessary revisions in the Contract Documents including an appropriate reduction in the Contract amount. If the acceptance occurs after approval of final payment, the appropriate amount shall be paid by the Contractor to the County.

Neglected Work By Contractor - If the Contractor should neglect to prosecute the Work in accordance with the Contract Documents, including any requirements of the progress schedule, the County may, after reasonable written notice to the Contractor and without prejudice to any other remedy it may have, make good such deficiency and the cost thereof shall be charged against the Contractor. A Change Order shall be issued incorporating the necessary revision in the Contract Documents including an appropriate reduction in the Contract Amount. If the payments then or therefore due the Contractor are not sufficient to cover such amount, the Contractor will pay the difference to the County.

Notice is hereby given that the County will retain and pay for an independent materials testing laboratory to perform certain tests as follows:

- a. Initial concrete test cylinder making and testing (concrete mix design will be by Contractor).
- b. Initial earthwork compaction.
- c. Initial in-place testing of sub-grade, sub-base and base for roadways including thickness and compaction (soil cement design will be by Contractor). The County reserves the right to perform any other tests it deems necessary to ensure that any all construction is adequate for the purposes intended and meets all applicable criteria.
- d. Subsequent tests required after the initial tests to verify compliance with the Contract Documents in areas failing the initial tests shall be paid for by the Contractor by back charge to subsequent applications for payment.

The Contractor will perform and pay for all material testing and other testing specified in the Contract Documents and as stated in paragraphs a. through e. above. The purpose of performing these tests is to verify compliance with the specifications as set forth in the Contract Documents.

ARTICLE 17 – DELAYS AND EXTENSION OF TIME

County Obligation – The County owes no duty, obligation, damages, change in Contract Amount, or liability to Contractor as a result of any delay, interference, suspension or other event which may impact Contractor’s progress schedule of its contract.

Extension of Time Sole Remedy – Should Contractor’s performance, in whole or in part, be interfered with, delayed, re-sequenced, disrupted, or be suspended in the commencement, prosecution or completion, for reasons beyond Contractor’s control, and without any fault or negligence on its part contributing thereto, Contractor’s sole remedy shall be an extension of Contract Time in which to complete the Contract.

Contract Time Extension – The County may grant an extension of Contract Time when a controlling item of work on the critical path of Contractor’s progress schedule is delayed by factors not reasonably anticipated or foreseeable at the time of bid. Such time extension may be allowed only for delays occurring during the time for performance set forth in the progress schedule. Extensions of Contract Time will not be granted for delays due, in whole or in part, to the fault or negligence of Contractor or any entity or person for whom Contractor is responsible.

Utility Conflicts, Relocation, and Adjustment Delays – The Contractor is solely responsible for the coordination and resolution of all utility conflicts, relocations, and adjustments. Delays resulting from the resolution of utility conflicts, relocations, and adjustments to utilities will not be considered as the basis for granting a change in Contract Amount or Contract Time.

Limitation on Damages – In the event the provision regarding an extension of time as being the sole remedy, see above, is not legally enforceable and Contractor is not limited to the sole remedy of an extension of time,

Contractor shall not under any circumstances be allowed to recover any of the following items of damage against the County: (1) profit; (2) loss of profit; (3) work inefficiencies; (4) loss of productivity; (5) overtime premiums; (6) escalation; (7) home office overhead, including but not limited to costs of any kind for home office personnel; (8) indirect damages; and (9) consequential damages, including but not limited to loss of bonding capacity, loss of bidding opportunities, and insolvency.

ARTICLE 18 - PAYMENT AND COMPLETION

Schedule of Values – The Contractor shall submit a schedule of values for the work including quantities and unit prices totaling the total Contract Amount no later than twenty (20) days after receipt of the Notice to Proceed and prior to commencing Work on the project. The schedule of values shall be in a form satisfactory to the County.

The schedule of values shall subdivide the Work into sufficient detail to serve as the basis for progress payments during construction. Upon acceptance of the schedule of values by the Project Manager, it may be incorporated into the form of application for payment prescribed by the County.

The Contractor shall not imbalance its schedule of values nor artificially inflate any element thereof. The violation of this provision by the Contractor shall constitute a material breach of this contract.

Progress Schedule – The Contractor's Progress Schedule shall utilize the Critical Path Method ("CPM"). The Contractor's Progress Schedule shall be prepared using Primavera P-6 or other software approved by the County; the software shall be specifically intended for the preparation of construction schedules incorporating a critical path. The software used by the Contractor must be approved in advance by the County. The Contractor shall submit a Progress Schedule CPM (both in hard printed copy with network diagrams and electronic disc files) no later than twenty (20) days after receipt of the Notice to Proceed, and prior to commencing Work on the project. The Progress Schedule CPM shall clearly identify all controlling items of Work and activities defined as the critical path, which if delayed or prolonged, will delay the time of completion of the Contract. The critical path shall include a minimum 10% float time as part of the Contract Time for unforeseen conditions. Contractor shall provide additional float time above the required minimum 10% based on his experience, understanding of the scope, and inspection of the site.

Progress Payment Update Schedules CPM – The Contractor shall submit an Update Schedule CPM to the Project Manager concurrent with each Application for Progress Payment. The Update Schedule CPM shall focus on the period from the last Update Schedule CPM to the current Update Schedule CPM submitted with the Application for Progress Payment. Activities that have either started or finished shall be reported as they actually occurred and designated as complete, if actually completed. For activities in progress that are forecasted to complete longer than planned, the remaining durations shall be revised, not the original durations. All out of sequence activities are to be reviewed and their relationships either verified or changed.

The Contractor's failure to submit a Progress Payment Schedule CPM and Progress Payment Narrative Report as described herein with an Application for Progress Payment shall be sufficient reason for rejection of the Progress Payment request.

If the Project Manager rejects the Progress Payment Update Schedule CPM or the Progress Payment Narrative Report, the entire Progress Payment request shall be rejected and must be resubmitted with the corrected Progress Payment Update Schedule CPM and Progress Payment Narrative Report.

Progress Payment Narrative Report – Each Update Schedule CPM shall be accompanied by a written Narrative Report. The Narrative Report shall describe the physical progress during the report period, plans for continuing the Work during the forthcoming report period, actions planned to correct any delays, and a detailed explanation of potential delays or problems and their estimated impact on performance, milestone completion dates, the forecasted completion date, and the forecasted substantial completion date. In addition, alternatives for possible schedule recovery to mitigate any potential delays shall be discussed.

The Contractor's Progress Payment Narrative Report shall include a detailed list of all outstanding Contract Claims with a detailed description of each Contract Claim. The Narrative Report shall follow the outline set forth below:

Contractor's Narrative Report Outline:

- (1) Contractor's dated transmittal letter.
- (2) Work completed during the report period.
- (3) Description of the current critical path.
- (4) Description of problem areas.
- (5) Current and anticipated delays:
 - a. Cause of the delay
 - b. Corrective action and schedule adjustments to correct the delay.
- (6) Impact of the delay on other activities, milestones, and completion dates. Changes in construction sequences.
- (7) Pending items and status thereof:
 - a. Permits.
 - b. Change orders.
 - c. Time extensions.
- (8) A list of all outstanding Contract Claims and a detailed description of each Contract Claim.
- (9) Contract completion date status:
 - a. Ahead of schedule and number of days.
 - b. Behind schedule and number of days.

Schedule and Report Format – The Contractor shall submit the Progress Schedule CPM, Progress Payment Update Schedules CPM, and the Progress Payment Narrative Report to the Project Manager on both: (1) electronic disc files; and, (2) printed copies of the network diagrams and narrative reports.

Project Manager Review – The Project Manager shall review the Contractor's Progress Schedule CPM, Progress Payment Update Schedules CPM, and Progress Payment Narrative Reports.

The Project Manager may accept or reject Update Schedule CPMs or Narrative Reports. Rejected Update Schedule CPMs and Narrative Reports shall be corrected and re-submitted to the Project Manager.

Final Schedule Update – The Contractor within fifteen (15) days after substantial completion shall submit a final update of the schedule with actual start and actual finish dates for all activities and controlling items of Work identified as the critical path. The Final Schedule Update shall be accompanied by a certification signed by the Contractor stating, “To the best of my knowledge, the enclosed final update of the project schedule reflects the actual start and completion dates of the activities and controlling items of Work on the critical path.”

Application For Progress Payment – Applications for payments shall be processed in accordance with Florida Statute 218.735, Part VII, “Local Government Prompt Payment Act”.

The Project Manager shall provide written notice to the Contractor identifying the name, address, phone number and email address of the agent or employee the Contractor is required to submit payment requests or invoices to. This notice will be provided no later than ten (10) days after issuance of the Notice to Proceed.

Not more often than once a month, on a date established at the Project Pre-Construction Conference, the Contractor may submit to the Project Manager for review the County's standard application for payment form filled out and signed by the Contractor covering the Work completed as of the date of the Application and supported by such data as the Project Manager may reasonably require. Also, if payment is requested on the basis of materials and equipment not incorporated in the work but delivered and suitably stored at the site or at another location agreed to in writing, the application for payment shall also be accompanied by such supporting data, satisfactory to the Project Manager, as will establish the County's title to the material and equipment and protect its interest therein, including applicable insurance, partial Consent of Surety, and detailed inventory listing of stored material. Each such request shall include the submittal by the Contractor of (1) a detailed, itemized inventory listing the material stored at the site for which payment is requested, (2) documentation to indicate and substantiate the cost or value attributed to the items included in the stored material inventory list, and (3) the County's "Responsibility And Liability For Materials And Equipment Not Included In The Work" form executed by the Contractor. Failure to provide proper supporting documentation may subject the Progress Payment application to rejection. All progress payments will be subject to the retainage percentage specified in the Contract Documents that will be issued in the final payment after acceptance by the County of the Work.

Based upon Applications for Payment submitted to the Project Manager by the Contractor and Certificates for Payment issued by the Project Manager the County shall make progress payments on account of the Contract Amount to the Contractor as provided in the Contract Documents as follows:

In the timeframes outlined in FS 218.735, Section 2, ninety percent (90%) of the portion of the Contract Amount properly allocable to labor, materials and equipment incorporated in the Work and ninety percent (90%) of the portion of the Contract Amount properly allocable to materials and equipment suitably stored at the site

or at some other location agreed upon in writing, for the period covered by the application for payment, less the aggregate of previous payments made by the Owner. When the completion of the Work ascertained as payable exceeds fifty percent (50%) of the total contract amount the retainage percentage withheld shall be reduced to 5%.

Upon Final completion of the entire Work, a sum sufficient to increase the total payments to one hundred percent (100%) of the Contract Amount, less such amounts as the Owner shall determine for all incomplete work and unsettled claims as provided in the Contract Documents.

The Contractor may, at the discretion of the County's Project Manager, be required to have applications for Progress Payments accompanied by Consent of Surety to Partial Payment. However, if payment or performance bonds are not required by the contract, the County's Project Manager may require applications for Progress Payments to be accompanied by legally effective partial releases or waivers of liens executed by all Subcontractors that performed services and suppliers of material or equipment for the Contractor for services or supplies which were included in the previous Application for Progress Payment. The Contractor shall include the following certification on each Application for Progress Payments and the Application for Final Payment:

"The undersigned Contractor certifies that the work covered by this application for payment has been done, or completed in accordance with the Contract documents, that all amounts have been paid by Contractor for work, supplies, material or equipment for which previous Certificates for Payment were issued and that the current payment shown herein is now due".

Contractor's Warranty Of Title - The Contractor warrants and guarantees that title to all work, materials and equipment covered by an application for payment, whether incorporated in the Project or not, will have passed to the County prior to the making of the application for payment, free and clear of all liens, claims, security interests and encumbrances; and that no work, materials or equipment covered by an application for payment will have been acquired by the Contractor or by any other person performing the work at the site or furnishing materials and equipment for the Project subject to an agreement under which an interest therein or encumbrance thereon is retained by the seller or otherwise imposed by the Contractor or such other person.

Approval of Payments - The Project Manager will, within twenty (20) business days after receipt of each application for payment, either indicate his approval of payment or return the Application to the Contractor indicating in writing the reason for refusing to approve payment. In the latter case, the Contractor may make the necessary corrections and re-submit the Application. The County will pay the Contractor the amount approved within the time frame set forth in the Local Government Prompt Payment Act.

In the event the Contractor and the Project Manager do not achieve mutual agreement on the basis or amount of the payment, and should the Contractor be unwilling to make the necessary corrections or modifications, and re-submit the Application, then the County, to avoid delay in paying the Contractor the amount the County has determined the Contractor is entitled to receive, shall approve and process the Application by making such adjustments thereto as the County deems appropriate so that the Contractor receives, without delay, payment of the amount the County has determined to have been earned and owing to the Contractor.

In the event a dispute arises involving payments or invoices that have been rejected by the Project Manager and resubmitted by the Contractor and that cannot be resolved in accordance with F.S. 218.735 (3) the Orange County Payment/Invoice Disputes Resolution Process Procedures shall be used to resolve the dispute. The procedures can be obtained by contacting the Procurement Division at (407)-836-5635.

The Project Manager's approval of any payment requested in an application for payment shall constitute a representation by him to the County, based on the Project Manager's on-site observations of the Work in progress and on his review of the application for payment and the supporting data, that the Work has progressed to the point indicated; that, to the best of his knowledge, information and belief, the quality of the Work is in accordance with the Contract Documents (subject to an evaluation of the Work as a functioning Project upon Substantial Completion, to the results of any subsequent tests called for in his approval); and that the Contractor is entitled to payment of the amount approved.

However, by approving any such payment, the Project Manager shall not thereby be deemed to have represented that he made exhaustive or continuous on-site inspections to check the quality or quantity of the Work, that he has reviewed the means, methods, techniques, sequences and procedures of construction nor that he has made any examination to ascertain how or for what purpose the Contractor has used the moneys paid or to be paid to him on account of the Contract Amount.

The Project Manager's approval of final payment shall constitute an additional representation by him to the County that the conditions precedent to the Contractor's belief being entitled to final payment as set forth in this Article have been fulfilled.

The Project Manager may refuse to approve the whole or any part of any payment if in his opinion he is unable to make such representations to the County. He may then refuse to approve any such payment because of subsequently discovered evidence or the results of subsequent inspections or tests, nullify any such payment previously approved, to such extent as may be necessary in his opinion to protect the County from loss because:

- A. The Work is defective;
- B. Claims have been filed or there is reasonable evidence indicating the probable filing thereof;
- C. The Contract Amount has been reduced because of Change Order(s);
- D. The County has been required to correct defective Work or complete the Work in accordance with Article 16; or
- E. Of unsatisfactory prosecution of the Work, including failure to clean up as required by Article 9.

Substantial Completion - Prior to final payment, the Contractor shall certify in writing to the Project Manager that the entire Work is Substantially Complete and request that the Project Manager issue a certificate of Substantial Completion.

Within a reasonable time thereafter, the Project Manager and Contractor will make an inspection of the Work to determine the status of completion. If the Project Manager does not consider the Work Substantially Complete, the Contractor will be notified in writing giving the reasons therefore. If the Project Manager considers the Work Substantially complete, a tentative certificate of Substantial Completion will be issued. This Certificate shall fix the date of Substantial Completion and the responsibilities between the County and the Contractor for maintenance, heat and utilities.

There shall be attached to the Certificate a single punch list of items to be completed or corrected by the Contractor. The punch list must specify a date, not to exceed five (5) days after the punch list has been developed and reviewed, in which the delivery of the punch list to the Contractor must be made. Items not included on the punch list cannot be used as a basis to withhold final payment for retainage. In addition, the final contract completion date shall be at least thirty (30) days after the delivery of the punch list to the Contractor. Punch lists not provided to the Contractor by the date agreed upon for delivery will cause the contract time for completion to be extended by the number of days the local government exceeded the delivery date.

Damages may only be assessed against the Contractor in the event the Contractor fails to complete the project within the contract period as was extended by the guidelines set forth in this provision.

The final undisputed retainage payment must be made within twenty (20) business days after receipt of a proper payment request. This would be less any amount withheld in accordance with the contract provisions for incomplete or uncorrected work unless otherwise provided for by written notice to the Contractor specifying the failure of the Contractor to meet contract requirements in the development of the punch list.

The County shall have the right to exclude the Contractor from the Work after achievement of Substantial Completion, but the County will allow the Contractor reasonable access to complete items on the punch list.

Partial Utilization - Prior to Substantial Completion, the Project Manager may request the Contractor to permit the use of a specified part of the Work which it believes it may use without significant interference with construction of other parts of the Work. If the Contractor agrees, he will certify to the Project Manager that said part of the Work is Substantially Complete and request the Project Manager issue a certificate of Substantial Completion for that part of the Work. Within a reasonable time thereafter, the Project Manager and Contractor will make an inspection of that part of the Work to determine its status of completion.

If the County and the Project Manager consider that part of the Work to be Substantially Complete, the Project Manager will deliver to the Contractor a certificate to that effect, fixing the date of Substantial Completion as to that part of the Work, attaching thereto a punch list of items to be completed or corrected before final payment and fixing the responsibility between the County and Contractor for maintenance, heat and utilities as to that part of the Work.

The County shall have the right to exclude the Contractor from any part of the Work which is so certified to be Substantially Complete but the County will allow the Contractor reasonable access to complete or correct items on the punch list.

Final Inspection - Upon written notice from the Contractor that the Work is complete, including the "punch" listed deficiencies, the Project Manager will make a final inspection with the Contractor and will notify the Contractor in writing of any particulars in which this inspection reveals that the Work is defective. The Contractor shall immediately make such corrections as are necessary to remedy such defects and to complete all the required work.

Final Inspection For Payment - After the Contractor has completed any such corrections to the satisfaction of the Project Manager and delivered all maintenance and operating instructions, schedules, guarantees, bonds, Certificates of Inspection and other documents as required by the Contract Documents, he may make application for final payment following the procedure for progress payments.

For projects that the Contractor was required to furnish a payment and performance bond, the final application for payment shall be accompanied by legally effective final release or waiver of lien from the Contractor and the consent of Surety to final payment. The Final Release of Lien, Form E-12, must be utilized in all Final Pay Applications.

For projects **not** requiring bonds the final application for payment shall be accompanied by legally effective final releases or waivers of liens from the Contractor and all Subcontractors which performed services for the Contractor and all suppliers of material and/or equipment to the Contractor. The Final Release of Lien, Form E-12, must be utilized in all Final Pay Applications.

Approval Of Final Payment - If, on the basis of its observations and review of the Work during construction, its final inspection and its review of the final application for payment (all as required by the Contract Documents), the Project Manager is satisfied that the Work has been completed and the Contractor has fulfilled all of his obligations under the Contract Documents, it will, within twenty (20) business days after receipt of the final application for payment, indicate in writing its approval of payment. Otherwise, it will return the Application to the Contractor, indicating in writing its reason for refusing to approve final payment, in which case the Contractor will make the necessary corrections and re-submit the Application.

The County will, in accordance with the Local Government Prompt Payment Act, pay the Contractor the amount approved by the County and issue a Certificate of Final Completion.

If after Substantial Completion of the Work, Final Completion is materially delayed through no fault of the Contractor, and the Project Manager so confirms, the County shall, and without terminating the Contract, make payment of the balance due for that portion of the Work fully completed and accepted. If the remaining balance for Work not fully completed or corrected is less than the retainage stipulated in the Contract, the written consent of the Surety to the payment of the balance due for that portion of the Work fully completed and accepted shall be submitted by the Contractor to the Project Manager prior to certification of such payment. Such payment shall be made under the terms and conditions governing final payment, except that it shall not constitute a waiver of claims.

Contractor's Continuing Obligation - The Contractor's obligation to perform the Work and complete the Work in accordance with the Contract Documents shall be absolute. Neither approval of any progress or final payment by the County, the issuance of Certificate of Completion, any payment by the County to the Contractor under the Contract Documents, any use or occupancy of the Work or any part thereof by the County, any act of acceptance by the County, any failure to do so, nor any correction of defective Work by the County shall constitute an acceptance of Work not in accordance with the Contract Documents.

Waiver Of Claims - The making and acceptance of final payment shall constitute:

- A. A waiver of all claims by the County against the Contractor other than those arising from unsettled liens, from defective Work appearing after final payment or from failure to comply with the requirements of the Contract Documents, or from the terms of any special guarantees specified therein, and,
- B. A waiver of all claims by the Contractor against the County other than those previously made in writing and still unsettled.

ARTICLE 19 - SUSPENSION OF WORK AND TERMINATION

County May Suspend Work - The County may at any time and without cause suspend the Work or any portion thereof by notice in writing to the Contractor. The Project Manager shall fix the date on which Work shall be resumed and the Contractor will resume the Work on the date so fixed.

For unreasonable delays, the Contractor will be allowed an increase in the Contract Amount, an extension of the Contract Time or both, if directly attributable to any suspension and if he makes a claim therefore provided in Article 13. However, no profits will be allowed on claims for suspended work. Also, during any period of suspension, the Contractor shall take all available measures to mitigate costs such as taking on new work, reassigning resources to other Contracts, etc.

County May Terminate for Cause - If the Contractor is adjudged bankrupt or insolvent; if he makes a general assignment for the benefit of his creditors without County approval; if a trustee or receiver is appointed for the Contractor or for any of his property; if he files a petition to take advantage of any debtor's act or to reorganize under the bankruptcy or similar laws; if he fails to prosecute and complete the Work in accordance with the established Project schedule or within the Contract Time allowed; if he repeatedly fails to supply sufficient skilled workers or suitable materials or equipment; if he repeatedly fails to make prompt payment to Subcontractors for labor, materials or equipment; if he disregards laws, ordinances, rules, regulations or orders of any public body having jurisdiction; if he disregards the authority of the Project Manager; or if he otherwise substantially violates any provisions of the Contract Documents, then the County may, without prejudice to any other right or remedy and after giving the Contractor and his Surety if applicable seven (7) days written notice, terminate the services of the Contractor and take possession of the Work and of all materials, equipment, tools, construction equipment and machinery thereon owned by the Contractor and assign the completion of the Work to the Surety, or finish the Work by whatever method it may deem expedient. In such case, the Contractor shall not be entitled to receive any further payment until the Work is finished.

If the unpaid balance of the Contract Amount exceeds the direct and indirect cost of completing the Work, including compensation for additional professional services, such excess shall be paid to the Contractor. If such cost exceeds the unpaid balance, the Contractor shall pay the difference to the County within fifteen (15) days after notification.

If the contractor fails to provide such payment to the County, the County at its sole discretion may deduct the balance owed from payments due the Contractor on any other contracts between the Contractor and the County. Such cost incurred by the County will be determined by the County and incorporated in a Change Order.

If the County elects to assign the completion of the Work to the Surety, and the Surety tenders a replacement contractor, then Surety shall provide performance, payment and other surety bonds as may be required in accordance with the Contract Documents.

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

Upon Termination for Cause, the Contractor shall not be entitled to payment for any anticipated supplemental costs, administrative expenses and/or profit for uncompleted Work.

If the Contractor's failure to perform the contract arises from causes beyond the control and without the fault or negligence of the Contractor the contract shall not be terminated for default. Examples of such causes include (1) acts of God or the public enemy, (2) acts of a government in its sovereign capacity, (3) fires, (4) floods, (5) epidemics, (6) strikes and (7) unusually severe weather.

If after notice of termination of the services of the Contractor for cause, it is determined that the Contractor was not in default, the termination shall be deemed to have been for the convenience of the County. In such event the Contractor may recover from the County payment for Work completed and reasonable termination costs as provided in the following paragraph.

Termination for Convenience: Upon seven (7) days written notice to the Contractor and the Surety, or sooner if reasonable under the circumstances, the County may, without cause and without prejudice to any other right or remedy, elect to terminate any part of the Work, or the Contract in whole or in part, as the County may deem appropriate. In any termination for convenience, the Contractor shall be paid for Work completed by the Contractor, Subcontractors and Suppliers at the time of termination provided the Work has been inspected and accepted by the County. However, the payment to the Contractor will exclude any and all anticipated supplemental costs, administrative expenses and profit for uncompleted Work. Upon termination for convenience, the County shall have full power and authority to take possession of the Work, assume any sub-agreements with Subcontractors and suppliers that the County selects, and prosecute the Work to completion by Contract or as the County may deem expedient. A termination for convenience may apply to individual delivery orders, purchase orders or to the contract in its entirety.

Authority to Terminate: The authority to terminate this Contract including all notices thereto is the sole responsibility of the Manager, Procurement Division.

ARTICLE 20 - MAINTENANCE AND EXAMINATION OF RECORDS

The Contractor shall keep adequate records and supporting documents applicable to this Contract. Said records and documentation shall be retained by the Contractor for a minimum of five (5) years after the date of final payment on this contract. If any litigation, claim or audit is commenced prior to the expiration of the five (5) year period, the records shall be maintained until all litigation, claims or audit findings involving the records have been resolved.

If applicable, time records and cost data shall be maintained in accordance with generally accepted accounting principles. This includes full disclosure of all transactions associated with the contract.

Contractor's "records and supporting documents" as referred to in this Contract shall include any and all information, materials and data of every kind and character, including without limitation, records, books, papers, documents, subscriptions, recordings, agreements, purchase orders, invoices, leases, contracts, commitments, arrangements, notes, daily diaries, superintendent reports, drawings, receipts, vouchers and memoranda, and any and all other agreements, sources of information and matters that may in the County's judgment have any bearing on or pertain to any matters, rights, duties or obligations under or covered by any Contract document. Such records and documents shall included (hard copy, as well as computer readable data, written policies and procedures; time sheets; payroll registers; cancelled checks; subcontract files (including proposals of successful and unsuccessful bidders, bid recaps, etc.); original estimates; estimating worksheets; correspondence; change order files (including pricing data used to price change proposals and documentation covering negotiated settlements); back-charge logs and supporting documentation; general ledger entries detailing cash and trade discounts earned, insurance rebates and dividends; and any other contractor records which may have a bearing on matters of interest to the County in connection with the Contractor's dealings with the County (all foregoing hereinafter referred to as "records and supporting documents") to the extent necessary to adequately permit evaluation and verification of:

- a) Contractor compliance with contract requirements; or
- b) Compliance with provisions for pricing change orders; or
- c) Compliance with provisions for pricing invoices; or
- d) Compliance with provisions regarding pricing of claims submitted by the Contractor or his payees; or
- e) Compliance with the County's business ethics; or
- f) Compliance with applicable state statutes and County Ordinances and regulations.

Records and documents subject to audit shall also include those records and documents necessary to evaluate and verify direct and indirect costs, (including overhead allocations) as they may apply to costs associated with this Contract. In those situations where Contractor's records have been generated from computerized data (whether mainframe, mini-computer, or PC based computer systems), Contractor agrees to provide the County's representatives with extracts of data files in computer readable format on data disks or suitable alternative computer exchange formats.

The County and its authorized agents shall have the right to audit, inspect and copy records and documentation as often as the County deems necessary throughout the term of this contract and for a period of five (5) years after final payment. Such activity shall be conducted during normal business hours. The County, or any of its duly authorized representatives, shall have access within forty-eight (48) hours to such books, records, documents, and other evidence for inspection, audit and copying.

The County, during the period of time defined by the preceding paragraph, shall have the right to obtain a copy of and otherwise inspect any audit made at the direction of the Contractor as concerns the aforesaid records and documentation. Records and documents shall be made accessible at the Contractor's local place of business.

If the records are unavailable locally, it shall be the Contractor's responsibility to insure that all required records are provided at the Contractor's expense including payment of travel and maintenance costs incurred by the County's authorized representatives or designees in accessing records maintained out of the county. The direct costs of copying records, excluding any overhead cost, shall be at the County's expense.

Contractor shall require all payees (examples of payees include subcontractors, insurance agents, material suppliers, etc.) to comply with the provisions of this article by including the requirements hereof in a written contract agreement between contractor and payee. Such requirements include a flow-down right of audit provisions in contracts with payees, which shall also apply to Subcontractors and Sub-subcontractors, material suppliers, etc. Contractor shall cooperate fully and shall cause all aforementioned parties and all of Contractor's subcontractors (including those entering into lump sum subcontracts and lump sum major material purchase orders) to cooperate fully in furnishing or in making available to the County from time to time whenever requested in an expeditious manner any and all such records, documents, information, materials and data.

The County's authorized representatives or designees shall have reasonable access to the Contractor's facilities, shall be allowed to interview all current or former employees to discuss matters pertinent to the performance of this Contract and shall have adequate and appropriate work space, in order to conduct audits in compliance with this article.

Even after a change order proposal has been approved, Contractor agrees that if the County later determines the cost and pricing data submitted was inaccurate, incomplete, not current or not in compliance with the terms of the contract regarding pricing of change orders, then an appropriate contract price reduction will be made. Such post-approval contract price adjustment will apply to all levels of contractors and/or subcontractors and to all types of change order proposals specifically including lump sum change orders, unit price change orders, and cost-plus change orders.

If an audit inspection or examination by the County, or its designee, in accordance with this article discloses overpricing or overcharges (of any nature) by the Contractor to the County in excess of one-half of one percent (.5%) of the total contract billings, the reasonable actual cost of the County's audit shall be reimbursed to the County by the Contractor.

Any adjustments and /or payments that must be made as a result of any such audit or inspection of the contractor's invoices and /or records and supporting documents shall be made within a reasonable amount of time (not to exceed 90 days) from presentation of the County's findings to the Contractor.

ARTICLE 21 - MINORITY/WOMEN OWNED BUSINESS ENTERPRISE REQUIREMENTS AND SMALL BUSINESS PROVISIONS

The Contractor will comply with all requirements of Orange County's Minority/Women Owned Business Enterprise Ordinance No. 94-01, as amended by Ordinance No. 2009-21. In summary, the ordinances establish a goal of 25% of the County's annual monetary value of contracts be awarded to minority/women owned business enterprises meeting Contract specifications.

The goals for work force employment levels are 18% minority and 6% women. Other provisions of the Ordinance as it pertains to construction projects may be found in Part C of this document.

To facilitate monitoring for compliance with the Ordinance, the Contractor **must**:

- A. Provide to the County's Business Development Division all subcontracts and/or purchase orders, fully executed by both parties, with each Subcontractor and supplier listed on Attachment C-2 in the Prime Contractor's bid (M/WBE's and non-M/WBE's). **The prime Contract will not be executed by the County until these documents are on file in the Business Development Division.** Prime Contractor should include in the subcontract / purchase order a statement that makes the legality of the document contingent upon execution of the prime Contract by the County.
- B. The Contractor **must** include a **Prompt Payment Clause** and payment schedule in all subcontracts and purchase orders (including those with non-M/WBE's) stating that payment will be made to the Subcontractor/suppliers within 72 hours of receipt of payment from the County. The Contractor **must** pay each Subcontractor and supplier for all work covered under an Application for Payment within the 72 hour timeframe.

This provision in no way creates any contractual relationship between any Subcontractor and Orange County or any liability on Orange County for the Contractor's failure to make timely payments. The timeliness of such payments may be evaluated by the Business Development Division in considering compliance with the Ordinance.

- C. The Contractor **must** submit:
 - 1) A Monthly Workforce Report (Current Field Employment Data). Contractor shall also ensure that all Subcontractors/suppliers with contracts over \$50,000 supply a Monthly Workforce Report; and
 - 2) A Monthly Prime Contractor's Report including M/WBE Utilization Reports

The Contractor shall furnish written documentation evidencing actual dollars paid to each Subcontractor/supplier listed and/or utilized by the Contractor. This will include, but not be limited to: copies of canceled checks, approved invoices, and signed, sworn affidavits certifying the accuracy of payments so that the County may determine actual participation achieved by the Contractor prior to issuance of final payment.

The required reports are to be submitted to the Business Development Division no later than the fifth day of each month beginning one month after the Work begins and to continue until Final Completion. Contractor's Progress Payments may be delayed if reports are not submitted in a timely manner.

The final Prime Contractor's Report-M/WBE Utilization Report must be signed by the Contractor's authorized agent certifying that all information contained therein is a true and accurate account of M/WBE utilization per the bid and contract documents. Approval of the final Application for Payment is contingent upon receipt of this certification.

- D. Contractor **must** not substitute, replace or terminate any M/WBE firm without **prior written authorization of the County**, nor **must** the Contractor reduce the scope of work or monetary value of a subcontract without prior written authorization of the County. All modifications, additions and deletions to any and all Contracts issued to said M/WBE's **must** also have prior written authorization of the County.
- E. The Contractor shall expeditiously advise all M/WBE's and the Business Development Division of all Change Orders, contract modifications, additions and deletions to any and all contracts issued to said M/WBE's.
- F. Failure of the Contractor to adhere to the provisions of the Ordinance may subject the Contractor to penalties as outlined in Sec. 17-326 of the Ordinance. The penalties include:
 - 1) Liquidated damages up to 10% of the Contract;
 - 2) Suspension or permanent debarment from bidding;
 - 3) Termination of any present contracts;
 - 4) Withholding retainage;
 - 5) A negative evaluation of good-faith effort on future bids;
 - 6) Withholding of payments.

ARTICLE 22 - FEDERAL REQUIREMENTS

In the event this Contract is paid in whole or in part from any federal government agency or source, the specific terms, regulations and requirements governing the disbursement of these funds shall be specified herein and become a part of this clause.

All Contracts in excess of one hundred thousand dollars (\$100,000) shall comply with all the requirements of Section 114 of the Clean Air Act (42 USC 7401 et seq.) as amended and Section 308 of the Federal Water Pollution Control Act (33 USC 1251 et seq.) as amended.

ARTICLE 23 – VERBAL ORDERS

The Project Manager under the following conditions may issue verbal change orders to the contract:

- A. To address bona fide emergency requirements. Emergency requirements are described as those requiring immediate action due to (1) an imminent or existing threat to the health, safety or welfare of persons or property and (2) conditions which poses serious economic damage to the County.
- B. To ensure the continuity of critical elements of contract performance.

Any such verbal direction shall be confirmed in writing by the Project Manager to the contractor within five (5) calendar days after issuance. Concurrently, a copy of the written direction shall be provided to the Manager, Procurement Division with documentation in the form of an emergency justification to support the action taken.

A formal change order and associated contract amendment, if applicable, will be negotiated in conjunction with the Procurement Division and shall succeed the written confirmation not later than thirty (30) calendar days after issuance of the verbal direction.

Board approval, as applicable, shall be obtained.

ARTICLE 24 – MISCELLANEOUS

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

All Specifications, Drawings and copies thereof furnished by the County shall remain its property. They shall not be used on another Project and, with the exception of those sets which have been signed in connection with the execution of the Contract, shall be returned to the County upon completion of the Work.

The duties and obligations imposed by these General Conditions and the rights and remedies available hereunder, and, in particular but without limitation, the warranties, guarantees and obligations imposed upon the Contractor and the rights and remedies available to the County thereunder shall be in addition to and not a limitation of any otherwise imposed or available by law, by special guarantee or other provisions of the Contract Documents.

Should the County or the Contractor suffer injury or damage to its person or property because of any error, omission or act of the other or of any of his employees, agents or others for whose acts he is legally liable, claim should be made in writing to the other party within a reasonable time of the first observance of such injury or damage.

This Contract shall be governed by the laws of the State of Florida. Any and all legal action necessary to enforce the provisions of this Contract will be held in Orange County, Florida. Venue for any litigation involving this Contract shall be the Ninth Circuit Court in and for Orange County, Florida.

The obligations of Orange County under this award are subject to the availability of funds lawfully appropriated for its purpose by the State of Florida and the Board of County Commissioners, or other specified funding source for this contract.

The County will be represented on site by one or more Inspectors who are employed by the County or by a Construction Engineering and Inspection (CEI) firm under contract to the County. The Contractor is to follow all directions provided by these Inspectors. Provided, however, that any such directions shall not be construed to:

- a. Authorize any deviation from the Contract Documents that:
 - Requires a change in the Contract Price or Contract Time;
 - Materially changes any aspect of the work covered by a permit to the extent that the regulatory agency having jurisdiction would require modification of the permit;
 - Materially changes any aspect of the work to the extent that the intent of the design is compromised;
- b. Approve any substitute materials or equipment;
- c. Undertake any of the responsibilities of Contractor, subcontractors or Contractor's superintendent, or expedite the Work; Direct the Contractor as to any aspect of the means, methods, techniques, sequences or procedures of construction unless such is specifically called for in the Contract Documents;
- d. Advise on or issue directions as to safety precautions and programs in connection with the Work.

ARTICLE 25 – CONTRACT CLAIMS

“Claim” as used in this provision means a written demand or written assertion by one of the contracting parties seeking as a matter of right, the payment of a certain sum of money, the adjustment or interpretation of contract terms, or other relief arising under or relating to this contract.

Claims made by a Contractor against the County relating to a particular contract shall be submitted to the Procurement Division Manager in writing clearly labeled “Contract Claim” requesting a final decision.

“Claim” as used in this provision applies after failure of the parties to agree to an adjustment as provided in Article 13, Change of Contract Amount and Contract Time.

The Contractor also shall provide with the claim a certification as follows: "I certify that the claim is made in good faith; that the supporting data are accurate and complete to the best of my knowledge and belief; that the amount requested accurately reflects the contract adjustment for which the Contractor believes the County is liable; and that I am duly authorized to certify the claim on behalf of the Contractor."

Failure to document a claim in this manner shall render the claim null and void. Moreover, no claim shall be accepted after final payment of the contract.

The decision of the Procurement Division Manager shall be issued in writing and shall be furnished to the Contractor.

The decision shall state the reasons for the decision reached. The Procurement Division Manager shall render the final decision within sixty (60) days after receipt of Contractor's written request for a final decision. The Procurement Division Manager's decision shall be final and conclusive.

The Contractor shall proceed diligently with performance of this contract pending final resolution of any request for relief, claim, appeal or action arising under the contract and shall comply with any final decision rendered by the Manager of the Procurement Division.

ARTICLE 26 - VALUE ENGINEERING

A. Intent and Objective: This Section applies to any cost reduction proposal (hereinafter referred to as a Value Engineering Change Proposal or VECP) initiated and developed by the CONTRACTOR for the purpose of refining the Contract Documents so as to contribute to design cost effectiveness or significantly improve the quality of the Work. This Section does not, however, apply to any such proposal unless it is identified by the CONTRACTOR, at the time of its submission to the COUNTY, as a proposal submitted pursuant to this Section.

VECPs contemplated are those that would result in net savings to the COUNTY by providing either: (A) a decrease in the cost of performance of the Work, or; (B) a reduction in cost of ownership (hereinafter referred to as collateral costs) of the Work, regardless of acquisition costs. VECPs must result in savings without impairing essential functions and characteristics such as safety, service, life, reliability, economy of operation, ease of maintenance, aesthetics and necessary standard design features. However, nothing herein prohibits the submittal of VECPs where the required functions and characteristics could be combined, reduced or eliminated as being nonessential or excessive. Plan errors which are identified by the CONTRACTOR and which result in a cost reduction, will not qualify for submittal as a VECP.

The COUNTY reserves the right to reject at its discretion any VECP submitted. Substitution of another design alternate, which is detailed in the Plans, for the one on which the CONTRACTOR bid, will not be allowed under this Section.

Pending execution of a formal supplemental Agreement, implementing an approved VECP, the CONTRACTOR shall remain obligated to perform in accordance with the terms of the existing Contract. No time extensions will be granted due to the time required to review a VECP.

B. Subcontractors: The CONTRACTOR is encouraged to include the provisions of this Section in contracts with subcontractors. The CONTRACTOR shall encourage submission of VECPs from subcontractors, however, it is not mandatory that VECPs be submitted nor is it mandatory that the CONTRACTOR accept or transmit to the COUNTY VECPs proposed by his subcontractors.

C. Data Requirements: As a minimum, the following information shall be submitted by the CONTRACTOR with each VECP;

- (1) A description of the difference between the existing requirements and the proposed change, and the comparative advantages and disadvantages.
- (2) Separate detailed cost estimates for both the existing requirements and the proposed change. The cost estimates shall be broken down by item numbers indicating quantity increases or decreases and deleted pay items.

Additional proposed Work, now covered by the Contract Documents, shall be identified by current COUNTY pay item numbers. In preparing the estimates, the CONTRACTOR shall include overhead, profit and bond. No separate pay item(s) for these costs will be allowed.

- (3) An itemization of plan details, plan sheets, design standards and Specifications that must be changed or added if the VECP is adopted. Preliminary plan drawings must be sufficient to describe the proposed changes.
- (4) An estimate of the effects the VECP would have on collateral costs to the COUNTY.
- (5) Engineering Incentive or other analysis in sufficient detail to identify and describe specific features of the Contract Documents which must be changed if the VECP is accepted, with a proposal as to how these changes can be accomplished and an assessment of their effect on other Project elements. The COUNTY may require that Engineering Incentive analyses be performed by a prequalified consultant in the applicable class of Work. Any design changes which result from the VECP must be supported by computations sealed by a Professional registered in the State of Florida.
- (6) A statement of the time by which approval of the VECP must be issued by the COUNTY to obtain the total estimated cost reduction during the remainder of this Contract noting any effect on the Contract completion time or delivery schedule.

- D. Processing Procedures:** Two copies of each VECP shall be submitted to the County's Project Manager, or his/her duly authorized representative, VECPS will be processed expeditiously; however, the COUNTY will not be liable for any delay in acting upon a VECP submitted pursuant to this Section. The CONTRACTOR may withdraw, in whole or in part, a VECP not accepted by the COUNTY within the period specified in the VECP.

The COUNTY shall not be liable for any VECP development cost in the case where a VECP is rejected or withdrawn.

The COUNTY shall be the sole judge of the acceptability of a VECP and of the estimated net savings in construction and/or collateral costs from the adoption of all or any part of such proposal. In determining the estimated net savings, the right is reserved to disregard the Contract prices if, in the judgment of the COUNTY, such prices do not represent a fair measure of the value of Work to be performed or to be deleted. Prior to approval, the COUNTY may modify a VECP, with the concurrence of the CONTRACTOR, to make it acceptable. If any modification increases or decreases the net savings resulting from the VECP, the CONTRACTOR'S fair share will be determined upon the basis of the VECP modified and upon determination of final quantities. The net savings shall be computed by subtracting the revised total cost of all bid items affected by the VECP design from the total cost of the same bid items as represented in the Contract Documents. Prior to approval of the VECP, which initiates the supplemental Contract, the CONTRACTOR shall provide acceptable contract quality Plan sheets revised to show all details consistent with the VECP design.

- E. Computations for Change in Contract Cost of Performance:** CONTRACTOR development and implementation costs for the VECP will not be recoverable. If the VECP is adopted, the CONTRACTOR'S share of the net savings as defined hereinafter shall be considered full compensation to the CONTRACTOR for the VECP. COUNTY costs of processing or implementation of a VECP will not normally be considered in the estimate.

However, the COUNTY reserves the right, where it deems such action appropriate, to require the CONTRACTOR to pay the COUNTY'S cost of investigating and implementing a VECP submitted by the CONTRACTOR as a condition of considering such proposal. Where such a condition is imposed, the CONTRACTOR shall indicate his acceptance thereof in writing, and such acceptance shall constitute full authority for the COUNTY to deduct amounts payable to the COUNTY from any monies due or that may become due to the CONTRACTOR under the Contract.

- F. Computations for Collateral Costs:** When collateral cost savings are sought by the CONTRACTOR, separate estimates must be prepared for collateral costs of both the existing Contract requirement and the proposed change.

Each estimate shall consist of an itemized breakdown of all costs and the basis for the data used in the estimate. Cost benefits to the COUNTY include, but are not limited to: reduced costs of operation, maintenance or repair, and extended useful service life. Increased collateral costs include the converse of such factors. Computations shall be as follows:

- (1) Costs shall be calculated over a 20-year period on a uniform basis for each estimate.
- (2) If the difference in the estimates as approved by the COUNTY indicate a savings, the CONTRACTOR shall divide the resultant amount by 20 to arrive at the average annual net collateral savings. The resultant savings shall be shared as stipulated in paragraph G below.

G. Sharing Arrangements: If a VECP is approved by the COUNTY, the CONTRACTOR may be entitled to share in both construction savings and collateral savings to the full extent provided for in this subsection. Except for innovative ideas, the CONTRACTOR and COUNTY shall each receive 50 percent of net reduction in the cost of performance of this Contract. For innovative ideas, the reduction in the cost of performance shall be shared as follows:

ACCRUED NET SAVINGS	CONTRACTOR'S SHARE %	COUNTY'S SHARE %
Less than \$25,000	85	15
\$25,000 to \$50,000	75	25
Over \$50,000	50	50

If an approved change is identical or similar to a previously submitted VECP or an idea previously utilized by the COUNTY it will not be considered an innovative idea, thus, will only qualify for a 50 percent sharing of savings. When collateral savings occur, the CONTRACTOR shall receive 20 percent of the average one year's net collateral savings. The CONTRACTOR shall not receive construction savings or collateral savings on optional Work listed in this Contract until the COUNTY exercises its option to obtain that Work.

ARTICLE 27 – PATENTS AND ROYALTIES

Unless otherwise provided, the bidder shall be solely responsible for clearing the right to use any patented or copyrighted materials in the performance of the contract.

The Contractor, without exception, shall indemnify and save harmless the County and its employees from liability of any nature or kind, including cost and expenses for or on account of any copyrighted, patented, or unpatented invention, process, or article manufactured or supplied by the Contractor.

In the event of any claim against the County of copyright or patent infringement, the County shall promptly provide written notification to the Contractor. If such a claim is made, the Contractor shall use its best efforts to promptly purchase for the County any infringing products or services or procure a license, at no cost to the County, which will allow continued use of the service or product. If none of the alternatives are reasonably available, the County agrees to return the article on request to the Contractor and receive reimbursement, if any, as may be determined by a court of competent jurisdiction.

ARTICLE 28 – OWNER DIRECT PURCHASE

Pursuant to *Florida Statutes*, Section 212.08(6), and *Florida Administrative Code*, Number 12A-1.094, Orange County Florida is exempt from Florida Sales Tax for the purchase of construction materials, supplies and/or equipment incorporated into a construction project.

For construction Contracts valued at \$10,000,000, or lesser amounts as determined by the County, the County may, at its discretion, use the direct purchase method for large dollar value equipment and materials that realize a tax savings of at least \$5000.

Direct purchases will be negotiated with the Contractor based on those items identified by the Professional. The final determination as to whether to direct purchase any materials or equipment shall be made by the Manager of the Procurement Division after consultation with the County's Project Manager.

When it has been determined that the use of direct purchases is warranted, the, Orange County Owner Direct Purchase Provision in Exhibit 2 shall govern.

**EXHIBIT A
LEASED EMPLOYEE AFFIDAVIT**

CONTRACT #Y_____

I affirm that an employee leasing company provides my workers' compensation coverage. I further understand that my contract with the employee leasing company limits my workers' compensation coverage to enrolled worksite employees only. My leasing arrangement does not cover un-enrolled worksite employees, independent contractors, uninsured sub-contractors or casual labor exposure.

I hereby certify that 100% of my workers are covered as worksite employees with the employee leasing company. I certify that I do not hire any casual or uninsured labor outside the employee leasing arrangement. I agree to notify the County in the event that I have any workers not covered by the employee leasing workers' compensation policy. In the event that I have any workers not subject to the employee leasing arrangement, I agree to obtain a separate workers' compensation policy to cover these workers. I further agree to provide the County with a certificate of insurance providing proof of workers' compensation coverage prior to these workers entering any County jobsite.

I further agree to notify the County if my employee leasing arrangement terminates with the employee leasing company and I understand that I am required to furnish proof of replacement workers' compensation coverage prior to the termination of the employee leasing arrangement.

I certify that I have workers' compensation coverage for all of my workers through the employee leasing arrangement specified below:

Name of Employee Leasing Company: _____

Workers' Compensation Carrier: _____

A.M. Best Rating of Carrier: _____

Inception Date of Leasing Arrangement: _____

I further agree to notify the County in the event that I switch employee-leasing companies. I recognize that I have an obligation to supply an updated workers' compensation certificate to the County that documents the change of carrier.

Name of Contractor: _____

Signature of Owner/Officer: _____

Title: _____ Date: _____

EXHIBIT B

POLICY NUMBER:

COMMERCIAL GENERAL LIABILITY

CG 25 03 03 97

THIS ENDORSEMENT CHANGES THE POLICY. PLEASE READ IT CAREFULLY.

**DESIGNATED CONSTRUCTION PROJECT(S)
GENERAL AGGREGATE LIMIT**

This endorsement modifies insurance provided under the following:

COMMERCIAL GENERAL LIABILITY COVERAGE PART

SCHEDULE

Designated Construction Projects:

“Any person or organization on whose behalf you are required to obtain a Designated Construction Project under a written contract or agreement”

(If no entry appears above, information required to complete this endorsement will be shown in the Declarations as applicable to this endorsement.)

- A. For all sums which the insured becomes legally obligated to pay as damages caused by “occurrences” under COVERAGE A (SECTION I), and for all medical expenses caused by accidents under COVERAGE C (SECTION I), which can be attributed only to ongoing operations at a single designated construction project shown in the Schedule above:
 - 1. A separate Designated Construction Project General Aggregate Limit applies to each designated construction project, and that limit is equal to the amount of the General Aggregate Limit shown in the Declarations.
 - 2. The Designated Construction Project General Aggregate Limit is the most we will pay for the sum of all damages under COVERAGE A, except damages because of “bodily injury” or “property damage” included in the “products-completed operations hazard”, and for medical expenses under COVERAGE C regardless of the number of:
 - a. Insureds;
 - b. Claims made or “suits” brought or
 - c. Persons or organization making claims or bringing “suits”
 - 3. Any payments made under COVERAGE A for damages or under COVERAGE C for medical expenses shall reduce the Designated Construction Project General Aggregate Limit for that designated construction project. Such payments shall not reduce the General Aggregate Limit shown in the Declarations nor shall they reduce any other Designated Construction Project General Aggregate Limit for any other designated construction project shown in the Schedule above.
- 4. The limits shown in the Declarations for Each Occurrence, Fire Damage and Medical Expense continue to apply. However, instead of being subject to the General Aggregate Limit shown in the Declarations, such limits will be subject to the applicable Designated Construction Project General Aggregate Limit.
- B. For all sums which the insured becomes legally obligated to pay as damages caused by “occurrences” under COVERAGE A (SECTION I), and for all medical expenses caused by accidents under COVERAGE C (SECTION I), which cannot be attributed only to ongoing operations at a single designated construction project shown in the Schedule above:
 - 1. Any payments made under COVERAGE A for damages or under COVERAGE C for medical expenses shall reduce the amount available under the General Aggregate Limit or the Products-Completed Operations Aggregate Limit, whichever is applicable; and
 - 2. Such payments shall not reduce any Designated Construction Project General Aggregate Limit.
- C. When coverage for liability arising out of the “products- completed operations hazard” is provided, any payments for damages because of “bodily injury” or “property damage” included in

the “products-completed operations hazard” will reduce the Products-Completed Operations Aggregate Limit, and not reduce the General Aggregate Limit nor the Designated Construction Project General Aggregate Limit.

- D.** If the applicable designated construction project has been abandoned, delayed, or abandoned and then restarted, or if the authorized contracting parties deviate from plans, blueprints, designs,

specifications or timetables, the project will still be deemed to be the same construction project.

- E.** The provisions of Limits of Insurance (SECTION **III**) not otherwise modified by this endorsement shall continue to apply as stipulated.

EXHIBIT B

BUILDERS RISK COVERAGE FORM

Various provisions in this policy restrict coverage. Read the entire policy carefully to determine rights, duties and what is and is not covered.

Throughout this policy the words “you” and “your” refer to the Named Insured shown in the Declarations. The words “we”, “us” and “our” refer to the Company providing this insurance.

Other words and phrases that appear in quotation marks have special meaning. Refer to Section G., Definitions.

A. Coverage

We will pay for direct physical loss of or damage to Covered Property at the premises described in the Declarations caused by or resulting from any Covered Cause Loss.

1. Covered Property

Covered Property as used in this Coverage Part, means the type of property described in this section, **A.1.**, and limited in **A.2.**, Property Not Covered, If a Limit of Insurance is shown in the Declarations for that type of property.

Building Under Construction, meaning the building or structure described in the Declarations while in the course of construction, including:

a. Foundations;

b. The following property:

- (1) Fixtures and machinery;
- (2) Equipment used to service the building; and
- (3) Your building materials and supplies used for construction;

Provided such property is intended to be permanently located in or on the building or structure described in the Declarations or within 100 feet of its premises;

c. If not covered by other insurance, temporary structures built or assembled on site, including cribbing, scaffolding and construction forms.

2. Property Not Covered

Covered Property does not include:

a. Land (including land on which the property is located) or water;

(b) Subject to **(a)** above, the amount we will pay for debris removal expense is limited to 25% of the sum of the deductible plus

b. The following property when outside of buildings:

- (1) Lawns, trees, shrubs or plants;
- (2) Radio or television antennas (including satellite dishes) and their lead-in wiring, master or towers; or
- (3) Signs (other than signs attached to buildings)

3. Covered Causes of Loss

See applicable Causes Of Loss Form as shown in the Declarations.

4. Additional Coverages

a. Debris Removal

(1) Subject to Paragraphs (3) and (4), we will pay your expense to remove debris of Covered Property caused by or resulting from a Covered Cause of Loss that occurs during the policy period. The expenses will be paid only if they are reported to us in writing within 180 days of the date of direct physical loss or damage.

(2) Debris Removal does not apply to costs to:

- (a)** Extract “pollutants” from land or water; or
- (b)** Remove, restore or replace polluted land or water.

(3) Subject to the exceptions in paragraph (4), the following provisions apply:

(a) The most we will pay for the total of direct physical loss or damage plus debris removal expense is the Limit of Insurance applicable to the Covered Property that has sustained loss or damage.

the amount that we pay for direct physical loss or damage to the Covered Property that has sustained loss or damage.

(4) We will pay up to an additional \$10,000 for debris removal expense, for each location, in any one occurrence of physical loss or damage to Covered Property if one or both of the following circumstances apply:

(a) The total of the actual debris removal expense plus the amount we pay for direct physical loss or damage exceeds the Limit of Insurance on the Covered Property that has sustained loss or damage.

(b) The actual debris removal expense exceeds 25% of the sum of the deductible plus the amount that we pay for direct physical loss or damage to the Covered Property that has sustained loss or damage.

Therefore if (4)(a) and/or (4)(b) apply, our total payment for direct physical loss or damage and debris removal expense may reach but will never exceed the Limit of Insurance on the Covered Property that has sustained loss or damage, plus \$10,000.

(5) Examples

The following examples assume that there is no Coinsurance penalty.

Example #1

Limit or Insurance:	\$90,000
Amount of Deductible:	\$ 500
Amount of Loss:	\$50,000
Amount of Loss Payable:	\$49,500
	(\$50,000 - \$500)
Debris Removal Expense:	\$10,000
Debris Removal Expense Payable:	\$10,000
	(\$10,000 is 20% of \$50,000.)

The debris removal expense is less than 25% of the sum of the loss payable plus the deductible. The sum of the loss payable and the debris removal expense (\$49,500 + \$10,000 = \$59,500.) is less than the Limit of Insurance. Therefore, the full amount of debris removal expense is payable in accordance with the terms of Paragraph (3).

Example #2

Limit of Insurance:	\$90,000
Amount of Deductible:	\$ 500
Amount of Loss:	\$80,000
Amount of Los Payable:	\$79,500
	(\$80,000 - \$500)
Debris Removal Expense:	\$30,000
Debris Removal Expense Payable	
Basic Amount:	\$10,500
Additional Amount:	\$10,000

The basic amount payable for debris removal expense under the terms of Paragraph (3) is calculated as follows: \$80,000 (\$79,500 + \$500) x .25 = \$20,000; capped at \$10,500. The cap applies because the sum of the loss payable (\$79,500) and the basic amount payable for debris

removal expense (\$10,500) cannot exceed the Limit of Insurance (\$90,000).

The additional amount payable for debris removal expense is provided in accordance with the terms of Paragraph (4), because the debris removal expense (\$30,000) exceeds 25% of the loss payable plus the deductible (\$30,000 is 37.5% of \$80,000), and because the sum of loss payable and debris removal expense (\$79,500 + \$30,00 = \$109,500) would exceed the Limit of Insurance (\$90,000). The additional amount of covered debris removal expense is \$10,000, the maximum payable under Paragraph (4). Thus the total payable for debris removal expense in this example is \$20,500; \$9,500 of the debris removal expense is not covered.

b. Preservation Of Property

If it is necessary to move Covered Property from the described premises to preserve it from loss or damage by a Covered Cause of Loss, we will pay for any direct physical loss or damage to that property:

- (1) While it is being moved or while temporarily stored at another location; and
- (2) Only if the loss or damage occurs within 30 days after the property is first moved.

c. Fire Department Service Charge

When the fire department is called to save or protect Covered Property from a Covered Cause of Loss, we will pay up to \$1,000, unless a higher limit is shown in the Declarations, for your liability for fire department service charges:

- (1) Assumed by contract or agreement prior to loss; or
- (2) Required by local ordinance.

No Deductible applies to this Additional Coverage.

d. Pollutant Clean-up And Removal

We will pay your expense to extract "pollutants" from land or water at the described premises if the discharge, dispersal, seepage, migration, release or escape of the "pollutants" is caused by or results from a Covered Cause of Loss that occurs during the policy period. The expense will be paid only if they are reported to us in writing within 180 days of the date on which the Covered Cause of Loss occurs.

This Additional Coverage does not apply to costs to test for, monitor or assess the existence, concentration or effects of "pollutants". But we will pay for testing which is performed in the course of extracting the "pollutants" from the land or water.

The most we will pay under this Additional Coverage for each described premises is \$10,000 for the sum of all covered expenses arising out of Covered Causes of

Loss occurring during each separate 12 month period of this policy.

5. Coverage Extensions

a. Building Materials And Supplies Of Others

- (1) You may extend the insurance provided by this Coverage Form to apply to building materials and supplies that are:
 - (a) Owned by others;
 - (b) In your care, custody or control;
 - (c) Located in or on the building described in the Declarations, or within 100 feet of its premises; and
 - (d) Intended to become a permanent part of the building.
- (2) The most we will pay for loss or damage under this Extension is \$5,000 at each described premises, unless a higher Limit of Insurance is specified in the Declarations. Our payment for loss of or damage to property of others will only be for the account of the owner of the property.

b. Sod, Trees, Shrubs And Plants

You may extend the insurance provided by this Coverage Form to apply to loss or damage to sod, trees, shrubs and plants outside of buildings on the described premises, if the loss or damage is caused by or results from any of the following causes of loss:

- (1) Fire;
- (2) Lightning;
- (3) Explosion;
- (4) Riot or Civil Commotion; or
- (5) Aircraft.

The most we will pay for loss or damage under this Extension is \$1,000, but not more than \$250 for any one tree, shrub or plant. These limits apply to any one occurrence, regardless of the types or number of items lost or damaged in that occurrence.

B. Exclusions And Limitations

See applicable Causes Of Loss From as shown in the Declarations.

C. Limits Of Insurance

The most we will pay for loss or damage in any one occurrence is the applicable Limit of Insurance shown in the Declarations.

The most we will pay for the loss or damage to outdoor signs attached to buildings is \$2,500 per sign in any one occurrence.

The limits applicable to the Coverage Extensions and the Fire Department Service Charge and Pollutant Clean-up And Removal Additional Coverage are in addition to the Limit of insurance.

Payments under the Preservation Of Property Additional Coverage will not increase the applicable Limit of insurance.

D. Deductible

In any one occurrence of loss or damage (hereinafter referred to as loss), we will first reduce the amount of

loss if required by Additional Condition – Need For Adequate Insurance. If the adjusted amount of loss is less than or equal to the Deductible, we will not pay for that loss. If the adjusted amount of loss exceeds the Deductible, we will then subtract the Deductible from the adjusted amount of loss, and will pay the resulting amount or the Limit of Insurance, whichever is less.

When the occurrence involves loss to more than one item of Covered Property and separate Limits of Insurance apply, the losses will not be combined in determining application of the Deductible But the Deductible will be applied only once per occurrence.

Example #1

(This example assumes there is no penalty for underinsurance.)

Deductible:	\$ 1,000
Limit of Insurance – Building #1:	\$ 60,000
Limit of Insurance – Building #2:	\$ 80,000
Loss to Building #1:	\$ 60,100
Loss to Building #2:	\$ 90,000

The amount of loss to Building #1 (\$60,100) is less than the sum (\$61,000) of the Limit of Insurance applicable to Building #1 plus the Deductible.

The Deductible will be subtracted from the amount of loss in calculating the loss payable for Building #1:

\$60,100
<u>- 1,000</u>
\$59,100 Loss Payable – Building #1

The Deductible applies once per occurrence and therefore is not subtracted in determining the amount of loss payable for Building #2. Loss payable for Building #2 is the Limit of Insurance of \$80,000.

Total amount of loss payable: \$59,100 + \$80,000 = \$139,100.

Example #2

(This example, too, assumes there is no penalty for underinsurance.)

The Deductible and Limits of Insurance are the same as those in Example #1

Loss to Building #1:	\$ 70,000
(Exceeds Limit of Insurance plus Deductible)	
Loss to Building # 2	\$ 90,000
(Exceeds Limit of Insurance plus Deductible)	
Loss Payable - Building #1:	\$ 60,000
(Limit of Insurance)	
Loss Payable – Building #2	\$ 80,000
(Limit of Insurance)	
Total amount of loss payable:	\$140,000

E. Loss Conditions

The following conditions apply in addition to the Common Policy Conditions and the Commercial Property Conditions.

1. Abandonment

There can be no abandonment of any property to us.

2. Appraisal

If we and you disagree on the value of the property or the amount of loss, either may make written demand for an appraisal of the loss. In this event, each party will select a competent and impartial appraiser. The two appraisers will select and umpire. If they cannot agree, either may request that selection be made by a judge of a court having jurisdiction. The appraiser will state separately the value of the property and amount of loss. If they fail to agree, they will submit their differences to the umpire. A decision agreed to by any two will be binding. Each party will:

- a. Pay its chosen appraiser; and
- b. Bear the other expenses of the appraisal and umpire equally.

If there is an appraisal, we will still retain our right to deny claim.

3. Duties In The Event Of Loss Or Damage

a. You must see that the following are done in the event of loss or damage to Covered Property:

- (1) Notify the police if a law may have been broken.
- (2) Give us prompt notice of the loss or damage. Include a description of the property involved.
- (3) As soon as possible, give us a description of how, when and where the loss or damage occurred.
- (4) Take all reasonable steps to protect the Covered Property from further damage, and keep a record of your expenses necessary to protect the Covered Property, for consideration in the settlement of the claim. This will not increase the Limit of Insurance. However, we will not pay for any subsequent loss or damage resulting from cause of loss that is not a Covered Cause of Loss. Also if feasible, set the damaged property aside and in the best possible order for examination.
- (5) At our request, give us complete inventories of the damaged and undamaged property. Include quantities, costs, values and amount of loss claimed.
- (6) As often as may be reasonably required, permit us to inspect the property proving the loss or damage and examine your books and records. Also permit us to take samples of damaged and undamaged property for inspection, testing and analysis, and permit us to make copies from your books and records
- (7) Send us a signed, sworn proof of loss containing the information we request to investigate the claim. You must do this within 60 days after our request. We will supply you with the necessary forms.
- (8) Cooperate with us in the investigation or settlement of the claim.

b. we may examine any insured under oath while not in the presence of any other insured and at such times as may be reasonably required, about any

matter relating to this insurance or the claim, including an insured's books and records. In the event of an examination, an insured's answer must be signed.

4. Loss Payment

a. In the event of loss or damage covered by this Coverage Form, at our option, we will either:

- (1) Pay the value of lost or damaged property;
- (2) pay the cost of repairing or replacing the lost or damaged property, subject to b. below;
- (3) Take all or any part of property at an agreed or appraised value; or
- (4) Repair, rebuild or replace the property with other property of like kind and quality, subject to b. below.

We will determine the value of lost or damaged property, or the cost of its repair or replacement, in accordance with the applicable terms of the Valuation Condition in this Coverage Form or any applicable provision which amends or supersedes the Valuation Condition.

b. The cost to repair, rebuild or replace does not include the increased cost attributable to enforcement of any ordinance or law regulating the construction, use or repair of any property.

c. We will give notice of our intentions within 30 days after we receive the sworn proof of loss.

d. We will not pay you more than your financial interest in the Covered Property.

e. We may adjust losses with the owners of lost or damaged property if other than you. If we pay the owners, such payments will satisfy your claims against us for the owners' property. We will not pay the owners more than their financial interest in the Covered Property.

f. We may elect to defend you against suits arising from claims of owners of property. We will do this at our expense.

g. We will pay for covered loss or damage within 30 days after we receive the sworn proof of loss, if you have complied with all of the terms of this Coverage Part and:

- (1) We have reached agreement with you on the amount of loss; or
- (2) An appraisal award has been made.

h. A party wall is a wall that separates and is common to adjoining buildings that are owned by different parties. In settling covered losses involving a party wall, we will pay a portion of the loss to the party wall based on your interest in the wall in proportion to the interest of the owner of the adjoining building. However, if you elect to repair or replace your building and the owner of the adjoining building elects not to repair or replace the building, we will pay you the full value of the loss to the party wall, subject to all applicable policy

provisions including Limits of Insurance, the Valuation and Coinsurance Conditions and all other provisions of this Loss Payment Condition. Our payment under the provision of this paragraph does not alter any right of subrogation we may have against any entity, including the owner or insurer of the adjoining building, and does not alter the terms of the Transfer Of Rights Of Recovery Against Others To Us Condition in this policy.

5. Recovery Property

If either you or we recover any property after loss settlement, that party must give the other prompt notice. At your option, the property will be returned to you. You must then return to us the amount we paid to you for the property. We will pay recovery expenses and the expenses to repair the recovered property, subject to the Limit of Insurance.

6. Valuation

We will determine the value of Covered Property at actual cash value as of the time of loss or damage.

F. Additional Conditions

The following conditions apply in addition to the Common Policy Conditions and the Commercial Property Conditions.

1. Mortgageholders

- a. The term mortgageholder includes trustee.
- b. We will pay for covered loss of or damage to buildings or structures to each mortgageholder shown in the Declarations in their order of precedence, as interests may appear.
- c. The mortgageholder has the right to receive loss payment even if the mortgageholder has started foreclosure or similar action on the building or structure.
- d. If we deny your claim because of your acts or because you have failed to comply with the terms of this Coverage Part, the mortgageholder will still have the right to receive loss payment if the mortgageholder:
 - (1) Pays any premium due under this Coverage Part at our request if you have failed to do so;
 - (2) Submits a signed, sworn proof of loss within 60 days after receiving notice from us of your failure to do so; and
 - (3) Has notified us of any change in ownership, occupancy or substantial change in risk known to the mortgageholder.

All of the terms of this Coverage Part will then apply directly to the mortgageholder.

- e. If we pay the mortgageholder for any loss or damage and deny payment to you because of your acts or because you have failed to comply with the terms of this Coverage Part:
 - (1) The mortgageholder's rights under the mortgage will be transferred to us to the extent of the amount we pay; and

- (2) The mortgageholder's right to recover the full amount of the mortgageholder's claim will not be impaired.

At our option, we may pay to the mortgageholder the whole principal on the mortgage plus any accrued interest. In this event, your mortgage and note will be transferred to us and you will pay your remaining mortgage debt to us.

- f. If we cancel this policy, we will give written notice to the mortgageholder at least:
 - (1) 10 days before the effective date of cancellation if we cancel for your nonpayment of premium; or
 - (2) 30 days before the effective date of cancellation if we cancel for any other reason.
- g. If we elect not to renew this policy, we will give written notice to the mortgageholder at least 10 days before the expiration date of this policy.

2. Need for Adequate Insurance

We will not pay a greater share of any loss than the portion that the Limit of Insurance bears to the value on the date of completion of the building described in the Declarations.

EXAMPLE #1 (UNDERINSURANCE)

When: The value of the building on the date of completion is: \$200,000
The Limit of Insurance for it is: \$100,000
The Deductible is: \$ 500 The amount of loss is: \$ 80,000

Step (1): $\$100,000 \div \$200,000 = .50$

Step (2): $\$80,000 \times .50 = \$40,000$

Step (3): $\$40,000 - \$500 = \$39,500$.

We will pay no more than \$39,500. The remaining \$40,500 is not covered.

EXAMPLE #2 (ADEQUATE INSURANCE)

When: The value of the building on the date of completion is: \$200,000
The Limit of Insurance for it is: \$200,000
The Deductible is: \$ 1,000
The amount of loss is: \$ 80,000

The limit of Insurance in the example is adequate and therefore no penalty applies. We will pay no more than \$79,000 (\$80,000 amount of loss minus the deductible of \$1,000).

3. Restriction Of Additional Coverage – Collapse

If the Causes Of Loss – Broad Form is applicable to this Coverage Form, Paragraph C.2.f. of the Additional Coverage – Collapse does not apply to this Coverage Form.

If the Cause Of Loss – Special Form is applicable to this Coverage Form, Paragraphs D.2.c. and D.2.d of the Additional Coverage Collapse do not apply to this Coverage Form.

4. When Coverage Ceases

The insurance provided by this Coverage Form will end when one of the following first occurs:

- a. This policy expires or is cancelled.
- b. The property is accepted by the purchaser;
- c. Your interest in the property ceases;
- d. You abandon the construction with no intention to complete it;
- e. Unless we specify otherwise in writing.
 - (1) 90 days after construction is complete or;
 - (2) 60 days after any building described in the Declarations is:
 - (a) Occupied in whole or in part; or
 - (b) Put to its intended use.

G. Definitions

“Pollutants” means any solid, liquid, gaseous or thermal irritant or contaminant, including smoke, vapor, soot, fumes, acids, alkalis, chemicals and waste. Waste includes materials to be recycled, reconditioned or reclaimed.

CAUSES OF LOSS – SPECIAL FORM

Words and phrases that appear in quotation marks have special meaning. Refer to Section G., Definitions.

A. Covered Causes Of Loss

When Special is shown in the Declarations, Covered Causes of Loss means Risk of Direct Physical Loss unless the loss is:

1. Excluded in Section B., Exclusions; or
2. Limited in Section C., limitations; that follow.

B. Exclusions

1. We will not pay for loss or damage caused directly or indirectly by any of the following. Such loss or damage is excluded regardless of any other cause or event that contributes concurrently or in any sequence to the loss.

a. Ordinance or Law

The enforcement of any ordinance or law:

- (1) Regulating the construction, use or repair of any property; or
- (2) Requiring the tearing down of any property, including the cost of removing its debris.

This exclusion, Ordinance Or Law applies whether the loss results from:

- (a) An ordinance or law that is enforced even if the property has not been damaged; or
- (b) The increased costs incurred to comply with an ordinance or law in the course of construction, repair, renovation, remodeling or demolition of property, or removal of its debris, following a physical loss to that property.

b. Earth movement

- (1) Earthquake, including any earth sinking, rising or shifting related to such event;
- (2) Landslide including any earth sinking, rising or shifting related to such event.
- (3) Mine subsidence, meaning subsidence of a man-made mine, whether or not mining activity has ceased;
- (4) Earth sinking (other than sinkhole collapse), rising or shifting including soil conditions which cause settling, cracking or other disarrangement of foundations or other parts

or realty. Soil conditions include contraction, expansion, freezing, thawing, erosion, improperly compacted soil and the action of water under the ground surface.

But if Earth Movement, as described in b.(1) through (4) above, results in fire or explosion, we will pay for the loss or damage caused by that fire or explosion.

- (5) Volcanic eruption, explosion or effusion. But if volcanic eruption, explosion or effusion results in fire, building glass breakage or Volcanic Action, we will pay for the loss or damage caused by that fire, building glass breakage or Volcanic Action.

Volcanic Action means direct loss or damage resulting from the eruption of a volcano when the loss or damage is caused by:

- (a) Airborne volcanic blast or airborne shock waves;
- (b) Ash, dust or particulate matter; or
- (c) Lava flow.

All volcanic eruptions that occur within any 168-hour period will constitute a single occurrence.

Volcanic Action does not include the cost to remove ash, dust or particulate matter that does not cause direct physical loss or damage to the described property.

c. Governmental Action

Seizure or destruction of property by order of governmental authority.

But we will pay for loss or damage caused by or resulting from acts of destruction ordered by governmental authority and taken at the time of a fire to prevent its spread, if the fire would be covered under this Coverage Part.

d. Nuclear Hazard

Nuclear reaction or radiation, or radioactive contamination, however caused.

But if nuclear reaction or radiation, or radioactive contamination, results in fire, we

will pay for the loss or damage caused by that fire.

e. Utility Services

The failure of power, communication, water or other utility service supplied to the described premises, however caused, if the failure:

- (1) Originates away from the described premises; or
- (2) Originates at the described premises but only if such failure involves equipment used to supply the utility service to the described premises from a source away from the described premises.

Failure of any utility service includes lack of sufficient capacity and reduction in supply. Loss or damage caused by a surge of power is also excluded, if the surge would not have occurred but for an event causing failure of power.

But if the failure or surge of power, or the failure of communication, water or other utility service, results in Covered Cause of loss, we will pay for the loss or damage caused by that Covered Cause of Loss.

Communication services include but are not limited to service relating to Internet access or access to any electronic, cellular or satellite network.

f. War And Military Action

- (1) War, including undeclared or civil war;
- (2) Warlike action by military force, including action in hindering or defending against an actual or expected attack, by any government, sovereign or other authority using military personnel or other agents; or
- (3) Insurrection, rebellion, revolution, usurped power, or action taken by governmental authority in hindering or defending against any of these.

g. Water

- (1) Flood, surface water, waves, tides, tidal waves, overflow of any body of water or their spray, all whether driven by wind or not;
- (2) Mudslide or mudflow;
- (3) Water that backs up or overflows from a sewer, drain or sump; or
- (4) Water under the ground surface pressing on, or flowing or seeping through:

- (a) Foundations, walls, floors or paved surfaces;

- (b) Basements, whether paved or not; or

- (c) Doors, windows or other openings.

But if Water, as described in **g.(1)**. Through **g.(4)**. above, results in fire, explosion or sprinkler leakage, we will pay for the loss or damage caused by that fire explosion or sprinkler leakage.

h. "Fungus", Wet Rot, Dry Rot And Bacteria

Presence, growth, proliferation, spread or any activity of "fungus", wet or dry rot or bacteria.

But if "fungus", wet or dry rot or bacteria results in a "specified cause of loss", we will pay for the loss or damage caused by that "specified cause of loss".

This exclusion does not apply:

- 1. When "fungus", wet or dry rot or bacteria results from fire or lightning; or
- 2. To the extent that coverage is provided in the Additional Coverage – Limited Coverage For "Fungus", Wet Rot, Dry Rot And Bacteria with respect to loss or damage by a cause of loss other than fire or lightning.

Exclusions **B.1.a.** through **B.1h.** apply whether or not the loss event results in widespread damage or affects a substantial area.

2. We will not pay for loss or damage caused by or resulting from any of the following:

- a. Artificially generated electrical, magnetic or electromagnetic energy that damages, disturbs, disrupts or otherwise interferes with any:

- (1) Electrical or electronic wire, device, appliance, system or network; or
- (2) Device, appliance, system or network utilizing cellular or satellite technology.

For the purpose of this exclusion, electrical, magnetic or electromagnetic energy includes but is not limited to:

- (a) Electrical current, including arcing;
- (b) Electrical charge produced or conducted by a magnetic or electromagnetic field;
- (c) Pulse of electromagnetic energy; or
- (d) Electromagnetic waves or microwaves.

But if fire results, we will pay for the loss or damage caused by the fire.

b. Delay, loss of use or loss of market.

c. Smoke, vapor or gas from agricultural smudging or industrial operations

- d. (1) Wear and tear;**
- (2) Rust or other corrosion, decay, deterioration, hidden or latent defect or any quality in property that causes it to damage or destroy itself;**
- (3) Smog;**
- (4) Setting, cracking, shrinking or expansion;**
- (5) Nesting or infestation, or discharge or release of waste products or secretions, by insects, birds, rodents or other animals.**
- (6) Mechanical breakdown, including rupture or bursting caused by centrifugal force. But if mechanical breakdown results in elevator collision, we will pay for the loss or damage caused by the elevator collision.**
- (7) The following causes of loss to personal property:**
 - (a) Dampness or dryness of atmosphere;**
 - (b) Changes in or extremes of temperature; or**
 - (c) Marring or scratching.**

But if an excluded cause of loss that is listed in **2.d.(1).** through **(7)** results in a “specified cause of loss” or building glass breakage, we will pay for the loss or damage caused by that “specified cause of loss” or building glass breakage.

- e. Explosion of steam boilers, steam pipes, steam engines or steam turbines owned or leased by you, or operated under your control. But if explosion of steam boilers, steam pipes, steam engines or steam turbines result in fire or combustion explosion, we will pay for the loss or damage caused by that fire or combustion explosion. We will also pay for loss or damage caused by or resulting from explosion of gases or fuel within the furnace of any fired vessel or within the flues or passages through which the gases of combustion pass.**
- f. Continuous or repeated seepage or leakage of water, or the presence or condensation of humidity, moisture or vapor, that occurs over period of 14 days or more.**
- g. Water, other liquids, powder or molten material that leaks or flows from plumbing, heating, air conditioning or other equipment (except fire protective systems) caused by or resulting from freezing, unless:**
 - (1) You do your best to maintain heat in the building or structure; or**
 - (2) You drain the equipment and shut off the supply if the heat is not maintained.**

- h. Dishonest or criminal act by you, any of your partners, members, officers, managers, employees (including leased employees), directors, trustees, authorized representatives or anyone to whom you entrust the property for any purpose.**

- (1) Acting alone or in collusion with others; or**
- (2) You drain the equipment and shut off the supply if the heat is not maintained.**

This exclusion does not apply to acts of destruction by your employees (including leased employees); but theft by employees (including leased employees) is not covered.

- i. Voluntary parting with any property by you or anyone else to whom you have entrusted the property if induced to do so by any fraudulent scheme, trick, device or false pretense.**
- j. rain, snow, ice or sleet to personal property in the open.**
- k. Collapse, including any of the following conditions of property or any part of the property:**
 - (1) An abrupt falling down or caving in;**
 - (2) Loss of structural integrity, including separation of parts of the property or property in danger of falling down or caving in; or**
 - (3) Any cracking, bulging, sagging, bending, leaning, setting, shrinkage or expansion as such condition relates to (1) or (2) above.**

But if collapse results in a Covered Cause of Loss at the described premises, we will pay for the loss or damage caused by that Covered Cause of Loss.

The exclusion, **k.**, does not apply:

 - (a) To the extent that coverage is provided under the Additional Coverage – Collapse; or**
 - (b) To collapse caused by one or more of the following:**
 - (i) The “specified cause of loss”;**
 - (ii) Breakage of building glass;**
 - (iii) Weight of rain that collects on a roof; or**
 - (iv) Weight of people or personal property.**

- l. Discharge, dispersal, seepage, migration, release or escape of “pollutants” unless the discharge, dispersal, seepage, migration, release or escape is itself caused by any of the “specified causes of loss”. But if the discharge, dispersal, seepage, migration, release or escape of “pollutants” results in “specified cause of loss”, we will pay**

for the loss or damage caused by that “specified cause of loss”.

The exclusion, **L.**, does not apply to damage to glass caused by chemicals applied to glass.

m. Neglect of an insured to use all reasonable means to save and preserve property from further damage at and after the time loss.

3. We will not pay for loss or damage caused by or resulting from any of the following, **3.a.** through **3.c.** But if an excluded cause of loss that is listed in **3.a.** through **3.c.** results in a Covered Cause of Loss, we will pay for the loss or damage caused by that Covered Cause of Loss.

a. Weather conditions. But this exclusion only applies if weather conditions contribute in any way with a cause or event excluded in Paragraph **1.** above to produce the loss or damage.

b. Acts or decisions, including the failure to act or decide, of any person, group, organization or governmental body.

c. Faulty, inadequate or defective:

(1) Planning, zoning, development, surveying, siting;

(2) Design, specifications, workmanship, repair, construction, renovation, remodeling, grading, compaction;

(3) Materials used in repair, construction renovation or remodeling; or

(4) Maintenance;

of part or all of any property on or off the described premises.

4. Special Exclusions

The following provisions apply only to the specified Coverage Forms.

a. Business Income (And Extra Expense) Coverage Form, Business Income (Without Extra Expense) Coverage Form, Or Extra Expense Coverage Form

We will not pay for:

(1) Any loss caused by or resulting from:

(a) Damage or destruction of “finished stock”;
or

(b) The time required to reproduce “finished stock”.

This exclusion does not apply to Extra Expense.

(2) Any loss caused by or resulting from direct physical loss or damage to radio or television antennas (including satellite dishes) and their lead in-wiring, masts or towers.

(3) Any increase of loss caused by or resulting from:

(a) Delay in rebuilding, repairing or replacing the property or resuming “operations”, due to interference at the location of the rebuilding, repair or replacement by strikers or other persons; or

(b) Suspension, lapse or cancellation of any license, lease or contract. But if the suspension, lapse or cancellation is directly caused by the “suspension” of “operations”, we will cover such loss that affects your Business Income during the “period of restoration” and any extension of the “period of restoration” in accordance with the terms of the Extended business Income Additional Coverage and the Extended Periods Of Indemnity Optional Coverage or any variation of these.

(4) Any Extra Expense caused by or resulting from suspension, lapse or cancellation of any license, lease or contract beyond the “period of restoration”.

(5) Any other consequential loss.

b. Leasehold interest Coverage Form

(1) Paragraph **B.1.a.**, Ordinance Or Law, does not apply to insurance under this Coverage Form.

(2) We will not pay for any loss caused by:

(a) Your cancelling the lease;

(b) The suspension lapse or cancellation of any license; or

(c) Any other consequential loss.

c. Legal liability Coverage Form

(1) The following exclusions do not apply to insurance under this Coverage Form:

(a) Paragraph **B.1.a.**, Ordinance Or Law;

(b) Paragraph **B.1.c.**, Governmental Action

(c) Paragraph **B.1.d.**, Nuclear Hazard;

(d) Paragraph **B.1.e.**, Utility Services; and

(e) Paragraph **B.1.f.**, War And Military Action

(2) The following additional exclusions apply to insurance under this Coverage Form:

(a) **Contractual Liability**

We will not defend any claim or “suit”, or pay damages that you are legally liable to pay solely by reason of your assumption of liability in a contract or

agreement. But this exclusion does not apply to a written lease agreement in which you have assumed liability for building damage resulting from an actual or attempted burglary or robbery, provided that:

- (i) Your assumption of liability was executed prior to accident; and
- (ii) The building is Covered Property under this Coverage Form.

(b) Nuclear Hazard

We will not defend any claim or “suit”, or pay any damages, loss, expense or obligation, resulting from nuclear reaction or radiation, or radioactive contamination, however caused.

5. Additional Exclusion

The following provisions apply only to the specified property.

LOSS OR DAMAGE TO PRODUCTS

We will not pay for loss or damage to any merchandise, goods or other product caused by or resulting from error or omission by any person or entity (including those having possession under an arrangement where work or a portion of the work is outsourced) in any stage of the development, production or use of the product, including planning, testing, processing, packaging, installation, maintenance or repair. This exclusion applies to any effect that compromises the form, substance or quality of the product. But if such error or omission results in a Covered Cause loss, we will pay for the loss or damage caused by that Covered Cause of Loss.

C. Limitations

The following limitations apply to all policy forms and endorsements, unless otherwise stated.

- 1. We will not pay for loss of or damage to property, as described and limited in the section. In addition, we will not pay for any loss that is a consequence of loss or damage as described and limited in this section.
 - a. Steam boilers, steam pipes steam engines or steam turbines caused by or resulting from any condition or event inside such equipment. But we will pay for loss of or damage to such equipment caused by or resulting from an explosion of gases or fuel within the furnace of any fired vessel or

within the flues or passages through which the gases of combustion pass.

- b. Hot water boilers or other water heating equipment caused by ore resulting from any condition or event inside such boilers or equipment, other than an explosion.
- c. The interior of any building or structure or to personal property in the building or structure, caused by or resulting from rain, snow, sleet, ice, sand or dust, whether driven by wind or not, unless:
 - (1) The building or structure first sustains damage by a Covered Cause of Loss to its roof or walls through which the rain, snow, sleet, ice, sand or dust enters; or
 - (2) The loss or damage is caused by or results from thawing of snow, sleet or ice on the building or structure.

- d. Building materials and supplies not attached as part of the building or structure caused by or resulting from theft.

However, this limitation does not apply to:

- (1) Building materials and supplies held for sale by you, unless they are insured under the Builders Risk Coverage Form; or
- (2) Business Income Coverage or Extra Expense Coverage.

- e. Property that is missing, where the only evidence of the loss or damage is a shortage disclosed on taking inventory, or other instances where there is no physical evidence to show what happened to the property.

- f. Property that has been transferred to a person or to a place outside the described premises on the basis of unauthorized instructions.

- 2. We will not pay for loss of or damage to the following types of property unless caused by the “specified causes of loss” or building glass breakage:
 - a. Animals, and then only if they are killed or their destruction is made necessary.
 - b. Fragile articles such as statuary, marbles, chinaware and porcelains, if broken. This restriction does not apply to:
 - (1) Glass; or
 - (2) Containers of property held for sale.

c. Builders' machinery, tools and equipment owned by you or entrusted to you, provided such property is Covered Property.

- (1) If the property is located on or within 100 feet of the described premises, unless the premises is insured under the Builders Risk Coverage Form; or
- (2) To Business Income Coverage or to Extra Expense Coverage.

3. The special limit shown for each category, a. through d., is the total limit for loss of or damage to all property in that category. The special limit applies to any one occurrence of theft, regardless of the types or number of articles that are lost or damaged in that occurrence. The special limits are:

- a. \$2,500 for furs, fur garments and garments trimmed with fur.
- b. \$2,500 for jewelry, watches, watch movements, jewels, pearls, precious and semiprecious stones, bullion, gold, silver, platinum, and other precious alloys or metals. This limit does not apply to jewelry and watches worth \$100 or less per item.
- c. \$2,500 for patterns, dies, molds and forms.
- d. \$250 for stamps, tickets, including lottery tickets held for sale, and letters for credit.

These special limits are part of, not in addition to, the Limit of Insurance applicable to the Covered Property.

This limitation, C.3., does not apply to Business Income Coverage or Extra Expense Coverage.

4. We will not pay the cost to repair any defect to a system or appliance from which water, other liquid, powder or molten material escapes. But we will pay the cost to repair or replace damaged parts of fire-extinguishing equipment if the damage:

- a. Results in discharge of any substance from an automatic fire protection system; or
- b. Is directly caused by freezing.

However, this limitation does not apply to Business Income Coverage or to Extra Expense Coverage.

D. Additional Coverage – Collapse

The coverage provided under this Additional Coverage – Collapse applies only to an abrupt collapse as described and limited in D.1., through D.7.,

1. For the purpose of this Additional Coverage – Collapse, abrupt collapse means an abrupt falling down or caving in of a building or any part of a building with the result that building or part of

the building cannot be occupied for its intended purpose.

2. We will pay for direct physical loss or damage to Covered Property, caused by abrupt collapse of building or any part of a building that is insured under this Coverage Form or that contains Covered Property insured under this Coverage Form, if such collapse is caused by one or more of the following.

- a. Building decay that is hidden from view unless the presence of such decay is known to an insured prior to collapse;
- b. Insect or vermin damage that is hidden from view, unless the presence of such damage is known to an insured prior to collapse;
- c. Use of defective material or methods in construction, remodeling or renovation if the abrupt collapse occurs during the course of the construction, remodeling or renovation.
- d. Use of defective material or methods in construction, remodeling or renovation if the abrupt collapse occurs after the construction, remodeling or renovation is complete but only if the collapse is caused in part by:
 - (1) A cause of loss listed in 2.a. or 2.b.;
 - (2) One or more of the “specified causes of loss”;
 - (3) Breakage of building glass;
 - (4) Weight of people or personal property; or
 - (5) Weight of rain that collects on a roof.

3. This **Additional Coverage – Collapse** does **not** apply to:

- a. A building or any part of a building that is in danger of falling down or caving in;
- b. A part of a building that is standing, even if it has a separated from another part of the building; or
- c. A building that is standing or any part of a building that is standing even if it shows evidence of cracking, bulging, sagging, bending, leaning, setting, shrinkage or expansion.

4. With respect to the following property:

- a. Outdoor radio or television antennas (including satellite dishes) and their lead-in wiring, masts or towers;
- b. Awnings, gutters and downspouts;
- c. Yard fixtures;
- d. Outdoor swimming pools;
- e. Fences;

- f. Piers, wharves and docks;
 - g. Beach or diving platforms or appurtenances;
 - h. Retaining walls; and
 - i. Walks, roadways and other paved surfaces;
- if an abrupt collapse is caused by cause of loss listed in **2.a.** through **2.d.**, we will pay for loss or damage to that property only if:

- (1) Such loss or damage is a direct result of the abrupt collapse of a building insured under this Coverage Form.
- (2) The property is Covered Property under this Coverage Form.

- 5.** If personal property abruptly falls down or caves in and such collapse is **not** the result of abrupt collapse of a building, we will pay for loss or damage to Covered property caused by such collapse of personal property only if:
- a. The collapse of personal property was caused by a cause of loss listed in **2.a.** through **2.d.**;
 - b. The personal property which collapses is inside a building; and
 - c. The property which collapses is not of a kind listed in **4.**, regardless of whether that kind of property is considered to be personal property or real property.

The coverage stated in the Paragraph **5.** does not apply to personal property if marring and/or scratching is the only damage to that personal property caused by the collapse.

- 6.** This Additional Coverage – Collapse does not apply to a personal property that has not abruptly fallen down or caved in, even if the personal property shows evidence of cracking, bulging, sagging, bending, leaning, settling, shrinkage or expansion.
- 7.** This Additional Coverage – Collapse will not increase the Limits of Insurance provided in this Coverage Part.
- 8.** The term Covered Cause of Loss includes the Additional Coverage – Collapse as described and limited in **D.1.** through **D.7.**

E. Additional Coverage – Limited Coverage For “Fungus”, Wet Rot, Dry Rot And Bacteria

- 1.** The coverage described in **E.2.** and **E.6.** only applies when the “fungus”, wet or dry rot or bacteria is the result of one or more of the following causes that occurs during the policy period and only if all reasonable means were used to save and preserve the property from further damage at the time of and after that occurrence.

- a. A “specified cause of loss” other than fire or lightning; or
 - b. Flood, if Flood Coverage Endorsement applies to the affected premises.
- 2.** We will pay for loss or damage by “fungus” wet or dry rot or bacteria. As used in this Limited Coverage, the term loss or damage means:
- a. Direct physical loss or damage to Covered Property caused by “fungus”, wet or dry rot or bacteria including the cost of removal of the “fungus”, wet or dry rot or bacteria;
 - b. The cost to tear out and replace any part of the building or other property as needed to gain access to the “fungus”, wet or dry rot or bacteria; and
 - c. The cost of testing performed after removal, repair, replacement or restoration of the damaged property is completed, provided there is a reason to believe that “fungus”, wet or dry rot or bacteria are present.
- 3.** The coverage described under **E.2.** of this Limited Coverage is limited to \$15,000. Regardless of the number of claims, this limit is the most we will pay for the total of all loss or damage arising out of all occurrences of “specified cause of loss” (other than fire or lightning) and Flood which take place in a 12 month period (starting with the beginning of the present annual policy period). With respect to a particular occurrence of loss which results in “fungus”, wet or dry rot or bacteria, we will not pay more than a total of \$15,000 even if the “fungus”, wet or dry rot or bacteria continues to be present or active, or recurs, in a later policy period.
- 4.** The coverage provided under this Limited Coverage does not increase the applicable Limit of Insurance on any Covered Property. If a particular occurrence results in loss or damage by “fungus”, wet or dry rot or bacteria, and other loss or damage, we will not pay more, for the total of all loss or damage, than the applicable Limit of Insurance on the affected Covered Property.
- If there is covered loss or damage to Covered Property, not caused by “fungus”, wet or dry rot or bacteria, loss payment will not be limited by the terms of this Limited Coverage, except to the extent that “fungus”, wet or dry rot or bacteria causes an increase in the loss. Any such increase

in the loss will be subject to the terms of this Limited Coverage.

5. The terms of this Limited Coverage do not increase or reduce the coverage provided under Paragraph F.2. (Water Damage, Other Liquids, Powder Or Molten Material Damage) of this Causes Of Loss Form or under the Additional Coverage – Collapse.

6. The following, 6.a or 6.b., applies only if Business Income and/or Extra Expense Coverage applies to the described premises and only if the “suspension” of “operations” satisfies all terms and conditions of the applicable Business Income and/or Extra Expense Coverage Form.

a. If the loss which resulted in “fungus”, wet rot or dry rot or bacteria does not in itself necessitate a “suspension” of “operations”, but such “suspension” is necessary due to loss or damage to property caused by “fungus” wet or dry rot or bacteria, then our payment under Business Income and/or Extra Expense is limited to the amount of loss and/or expense sustained in a period of not more than 30 days. The days need not be consecutive.

b. If a covered “suspension” of “operations” was caused by loss or damage other than “fungus”, wet or dry rot or bacteria but remediation of “fungus”, wet or dry rot or bacteria but remediation of “fungus”, wet or dry rot or bacteria prolongs the “period of restoration”, we will pay for loss and/or expense sustained during the delay (regardless of when such delay occurs during the “period of restoration”), but such coverage is limited to 30 days. The days need not be consecutive.

F. Additional Coverage Extensions

1. Property In Transit

This Extension applies only to your personal property to which this form applies.

a. You may extend the insurance provided by this Coverage Part to apply to your personal property (other than property in the care, custody or control of your salespersons) in transit more than 100 feet from the described premises. Property must be in or on a motor vehicle you own, lease or operate while between points in the coverage territory.

b. Loss or damage must be caused by or result from one of the following causes of loss:

(1) Fire, lightning, explosion, windstorm or hail riot or civil commotion, or vandalism.

(2) Vehicle collision, upset or overturn. Collision means accidental contact of your vehicle with another vehicle or object. It does not mean your vehicle’s contact with the roadbed.

(3) Theft of an entire bale, case or package by forced entry into a securely locked body or compartment of the vehicle. There must be visible marks of the forced entry.

c. The most we will pay for loss or damage under this Extension is \$5,000.

This Coverage Extension is additional insurance. The Additional Condition, Coinsurance, does not apply to this Extension.

2. Water Damage, Other Liquids, Powder Or Molten Material Damage

If loss or damage caused by or resulting from covered water or other liquid, powder or molten material damage loss occurs, we will also pay the cost to tear out and replace any part of the building or structure to repair damage to the system or appliance from which the water or other substance escapes. This Coverage Extension does not increase the Limit of Insurance.

3. Glass

a. We will pay for expenses incurred to put up temporary plates or board up openings if repair or replacement of damaged glass is delayed.

b. We will pay for expenses incurred to remove or replace obstructions when repairing or replacing glass that is part of a building. This does not include removing or replacing window displays.

The Coverage Extension, F.3., does not increase the Limit of Insurance.

G. Definitions

1. “Fungus” means type or form of fungus, including mold or mildew, and any mycotoxins, spores, scents or by-products produced or released by fungi.

2. “Specified cause of loss” means the following: fire; lightning; explosion; windstorm or hail; smoke; aircraft or vehicles; riot or civil commotion; vandalism; leakage from fire-extinguishing equipment; sinkhole collapse; volcanic action; falling objects; weight of snow, ice or sleet; water damage.

a. Sinkhole collapse means sudden sinking or collapse of land into underground empty spaces

created by the action of water on limestone or dolomite. This cause of loss does not include:

- (1) The cost of filling sinkholes; or
- (2) Sinking or collapse of land into manmade underground cavities.

b. Falling objects does not include loss or damage to:

- (1) Personal property in the open; or
- (2) The interior of a building or structure, or property inside a building or structure, unless the roof or an outside wall of the

building or structure is first damaged by a falling object.

c. Water damage means accidental discharge or leakage of water or steam as the direct result of the breaking apart or cracking of a plumbing, heating, air conditioning or other system or appliance (other than a sump system including its related equipment and system including its related equipment and parts), that is located on the described premises and contains water or steam.

EXHIBIT E
SAMPLE ONLY

POLICY NUMBER:

COMMERCIAL GENERAL LIABILITY
CG 20 37 04 13

THIS ENDORSEMENT CHANGES THE POLICY. PLEASE READ IT CAREFULLY.

**ADDITIONAL INSURED – OWNERS, LESSEES OR CONTRACTORS
SCHEDULED PERSON – COMPLETED OPERATIONS**

This endorsement modifies insurance provided under the following:

COMMERCIAL GENERAL LIABILITY COVERAGE PART
PRODUCTS/COMPLETED OPERATIONS LIABILITY COVERAGE PART

SCHEDULE

Name Of Additional Insured Person(s) Or Organization(s):	Location(s) and Description Of Completed Operations
Orange County Board of County Commissioners Procurement Division 400 E. South Street Orlando, FL 32801	
Information required to complete this Schedule, if not shown above, will be shown in the Declarations.	

A. Section II – Who Is An Insured is amended to include as an additional insured the person(s) or organization(s) shown in the Schedule but only with respect to liability for “bodily injury”, or “property damage” caused, in whole or in part by “your work” at the location designated and described in the Schedule of this endorsement performed for that additional insured and included in the “products-completed operations hazard”.

However:

1. The insurance afforded to such additional insured only applies to the extent permitted by laws; and
2. If coverage provided to the additional insured is required by a contract or agreement, the insurance afforded to such additional insured will not be broader than that which you are required

by the contract or agreement to provide for such additional insured.

B. With respect to the insurance afforded to these additional insureds, the following is added to Section III-Limits of Insurance:

If coverage provided to the additional insured is required by a contract or agreement, the most we will pay on behalf of the additional insured is the amount of insurance:

1. Required by the contract or agreement; or
2. Available under the applicable Limits of Insurance shown in the Declarations; Whichever is less.

This endorsement shall not increase the applicable Limits of Insurance shown in the Declarations.

EXHIBIT F
SAMPLE ONLY

POLICY NUMBER:

COMMERCIAL GENERAL LIABILITY
CG 20 10 04 13

THIS ENDORSEMENT CHANGES THE POLICY. PLEASE READ IT CAREFULLY.

**ADDITIONAL INSURED – OWNERS, LESSEES OR CONTRACTORS-
SCHEDULE PERSON OR ORGANIZATION**

This endorsement modifies insurance provided under the following:

COMMERCIAL GENERAL LIABILITY COVERAGE PART

SCHEDULE

Name Of Additional Insured Person(s) Or Organization(s):	Location(s) Of Covered Operations
Orange County Board of County Commissioners Procurement Division 400 E. South Street Orlando, FL 32801	
Information required to complete this Schedule, if not shown above, will be shown in the Declarations.	
<p>A. Section II – Who is An Insured is amended to include as an additional insured the person(s) or organizations(s) shown in the Schedule, but only with respect to liability for “bodily injury”, “property damage” or “personal and advertising injury” caused, in whole or in part, by:</p> <ol style="list-style-type: none">1. Your acts omissions; or2. The acts or omissions of those acting on your behalf; <p>In the performance of your ongoing operations for the additional insured(s) at the location(s) designated above.</p> <p>However:</p> <ol style="list-style-type: none">1. The insurance afforded to such additional insured only applies to the extent permitted by law; and2. If coverage provided to the additional insured is required by a contract or agreement, the insurance afforded to such additional insured will not be broader than that which you are required by the contract or agreement to provide for such additional insured.	<p>B. With respect to the insurance afforded to these additional insureds, the following additional exclusions apply:</p> <p>This insurance does not apply to “bodily injury” or property damage occurring after::</p> <ol style="list-style-type: none">2. All work , including materials, parts or equipment furnished in connection with such work, on the project (other than service, maintenance or repairs) to be performed by or on behalf of the additional insured (s) at the location of the covered operations has been completed; or2. That portion of “your work” out of which the injury or damage arises has been put to its intended use by any person or organization other than another contractor or subcontractor engaged in performing operations for a principal as a part of the same project. <p>C. With respect to the insurance afforded to these additional insureds, the following is added to Section III- Limits of Insurance:</p> <p>If coverage provided to the additional insured is required by a contract or agreement, the most we will pay on behalf of the additional insured is the amount of insurance:</p> <ol style="list-style-type: none">1. Required by the contract or agreement; or2. Available under the applicable Limits of Insurance shown in the Declarations; whichever is less. <p>This endorsement shall not increase the applicable Limits of Insurance shown in the Declarations.</p>

EXHIBIT G
SAMPLE ONLY

WORKERS COMPENSATION AND EMPLOYERS LIABILITY INSURANCE POLICY WC 00 03 13
(Ed. 4-84)

WAIVER OF OUR RIGHT TO RECOVER FROM OTHERS ENDORSEMENT

We have the right to recover our payments from anyone liable for an injury covered by this policy. We will not enforce our right against the person or organization named in the Schedule. (This agreement applies only to the extent that you perform work under a written contract that requires you to obtain this agreement from us.)

This agreement shall not operate directly or indirectly to benefit anyone not named in the Schedule.

Schedule

Name of Person or Organization:

ORANGE COUNTY BOARD OF COUNTY COMMISSIONERS
PROCUREMENT DIVISION
400 E. SOUTH STREET
ORLANDO, FL 32801

This endorsement changes the policy to which it is attached and is effective on the date issued unless otherwise stated.

(The information below is required only when this endorsement is issued subsequent to preparation of the policy.)

Endorsement

Effective Policy No.

Endorsement No.

Insured

Insurance Company

Countersigned by _____

WC 00 03 13

EXHIBIT H
SAMPLE ONLY

POLICY NUMBER: _____

COMMERCIAL GENERAL LIABILITY
CG 24 04 0509

THIS ENDORSEMENT CHANGES THE POLICY. PLEASE READ IT CAREFULLY

**WAIVER OF TRANSFER OF RIGHTS OF RECOVERY AGAINST
OTHERS TO US**

This endorsement modifies Insurance provided under the following:

COMMERCIAL GENERAL LIABILITY COVERAGE PART
PRODUCTS/COMPLETED OPERATIONS LIABILITY COVERAGE PART

SCHEDULE

Name of Person or Organization:

ORANGE COUNTY BOARD OF COUNTY COMMISSIONERS
PROCUREMENT DIVISION
400 E. SOUTH STREET
ORLANDO, FL 32801

(Information required to complete this Schedule, if not shown above, will be shown in the Declarations.)

The following is added to Paragraph 8, Transfer of rights of Recovery Against Others To Us of Section IV – Conditions:

We waive any right to recovery we may have against the person or organization shown in the Schedule above because of payments we make for injury or damage arising out of your ongoing operations or “your work” done under a contract with that person or organization and included in the “Products-completed operations hazard”. This waiver applies only to the person or organization shown in the Schedule above.

**ORANGE COUNTY
OWNER DIRECT PURCHASE PROVISION**

1. OBJECTIVE:

To provide guidelines for Owner Direct Purchases (ODP) in order to realize the benefits of owner tax exempt status for the procurement of materials for incorporation into a public works project.

2. AUTHORITY:

Pursuant to *Florida Statutes*, Section 212.08(6), and *Florida Administrative Code*, Number 12A-1.094, Orange County Florida is exempt from Florida Sales Tax for the purchase of construction materials, supplies and/or equipment incorporated into a construction project. Under this program, the Florida Sales Tax rate of 6% shall apply to purchases of \$5000.01 and above. For purchases of \$5000 or less 6.5% shall apply. For example on a \$100,000 purchase 6% sales tax would apply to the total purchase and the .5% would apply to the first \$5000 only. Total sales tax saved on a \$100,000 purchase would be \$6025.

3. DIRECTION:

The Owner has elected to exercise this right to direct purchase selected materials on all construction projects and such direct purchase shall be without any additional cost to the Owner. **All bids are to be submitted with all applicable taxes included.**

The Contractor shall be fully responsible for all matters relating to the receipt of materials, equipment, supplies and furnishings, including but not limited to providing and obtaining all warranties and guarantees in favor of and for the benefit of the County for all materials, equipment, supplies and furnishings as required by the Contract. At the time of and subsequent to the delivery of such materials, equipment, supplies and furnishings, the County shall be liable for all loss or damage to materials, equipment, supplies and furnishings purchased pursuant to the owner direct purchase provisions. Notwithstanding the foregoing, the County shall be responsible for payment of the invoices issued by the supplier, vendor or subcontractor. The County shall retain the risk of loss of and damage to County furnished materials, equipment, supplies and furnishings for the purpose of receiving a tax exemption under Section 212.08(6), Fla. Stat, which meets the criteria in Rule 12A 1.094(4)(b)(1-4), Fla. Admin. Code, to determine if the County is the purchaser for the purposes of the tax exemption under Section 212.08(6), Fla. Stat.

The procedures outlined here may change at any time without prior notice to Contractor.

4. TERMS - For the purpose of this document, the following terms are defined as:

- a. **Change Order (CO):** A written order authorizing a change in the scope of work, contract amount or contract time. (Attachment F)
- b. **Contractor:** A General Contractor (GC), Construction Manager (CM) or Design Builder.
- c. **Orange County Board of County Commissioners, Orange County, Florida:** OC or Owner.

**ORANGE COUNTY
OWNER DIRECT PURCHASE PROVISION**

- d. **Owner Direct Purchase Order (ODP):** A purchase order issued by the Owner directly to the Contractor's vendor for the purchase of materials exempt from sales tax.
- e. **Owner Direct Purchase Procedures:** Guidelines outlined in this document.
- f. **Material:** Any material, supplies, or equipment incorporated into an OC construction project.
- g. **Letter of Indemnification:** Agreement between Contractor and Owner that will undertake to indemnify Contractor from any and all liability for unpaid sales tax due to DPO. (Attachment E)
- h. **Letter of Understanding:** Agreement between Contractor and Owner that Contractor contractual duties remain the same insofar as the inspection, handling, storage, protection and installation of the direct purchase item into the work. (Attachment D)
- i. **Purchase Requisition (PR):** A request to purchase stated material or services for a quoted price. (Attachment A)
- j. **Purchase Order (PO):** A written authorization issued by the Owner for a vendor to delivery material or services at a specified price, which becomes a legally binding contract upon acceptance by the vendor.
- k. **Vendor:** A company supplying material to the Project, whether such provision includes installation or not.
- l. **Vendor List:** A list provided by the Contractor of the vendors the Owner will direct purchase material from.

5. FUNCTIONS:

The County reserves the right to require the Contractor to assign some or all of its subcontracts or other agreements with material suppliers directly to the County. This process will be referred to as ODP and is a method that may be utilized to create savings for the County.

A. Initial Requirements.

A purchase order may be awarded for supplies or materials without competition where such supplies or materials are being procured by the County as an ODP for incorporation into a public works project (as defined in Section 12A-1.094, 4c. of the Florida Department of Revenue, Florida Administrative Code), the contract for which was previously awarded by the County and which prior award included the cost of such supplies or materials. In such event, the County may procure the supplies or materials in compliance with the requirements of the Florida Department of Revenue, Florida Administrative Code Section 12A-1.094, as amended; for the direct purchase of materials and/or other tangible personal property that is incorporated into or becomes a part of a public facility pursuant to a public works contract, and that will not be used to furnish or equip the project in accordance with Section 12A-1.038(4) of the Florida Administrative Code, as amended. *Under no circumstances shall any materials which will not be incorporated into the public works project be purchased by the County as ODP materials, including but not limited to, any consumables such as fuel or any equipment related to the public works project which will not be affixed or otherwise incorporated into the public works project such as reusable construction equipment.*

**ORANGE COUNTY
OWNER DIRECT PURCHASE PROVISION**

B. Procedural Requirements.

The following steps are to be followed unless modified by the Manager of the Procurement Division, or designee, and may be enhanced based on individual project circumstances or at the discretion of the Manager of the Procurement Division:

- i. The price for all construction materials will be provided in the Contractor's bid. The Contractor's bid shall also include all Florida State Sales and other taxes normally applicable to such material. The County may consider purchasing any approved materials.
- ii. At any time upon the request of the County, the Contractor shall provide County with a list of all intended suppliers for such materials as specified by County for consideration for procurement by the County as ODP materials. The list shall include price quotes from the suppliers, as well as a description of the materials to be supplied, estimated quantities and prices. The Owner will purchase the material from Vendors selected by the Contractor for the price originally negotiated by the Contractor.
- iii. The Contractor shall be responsible for maintaining the project schedule and the execution of the terms and conditions of the ODP purchase order, including expediting the suppliers' delivery schedules. The Contractor shall assume all risk and remain fully responsible for all material incorporated into any project, directly purchased by the Owner or not. This will include, but not be limited to, insurance, theft, storage, damage during installation, coordination, quantities ordered, submittals, protection, scheduling, shipping, security, expediting, receiving, installation, cleaning and all applicable warranties, etc.
- iv. After receipt of the Purchase Requisition Form and all required documents, the County shall prepare a purchase order for all items of material which County chooses to purchase directly. The purchase order shall include the County's Consumer's Certificate of Exemption number and a copy of the Consumer's Certificate of Exemption, and a Certificate of Entitlement (See Attachment "B"). The County's purchase order shall be sent directly to the supplier by the County with a copy sent to the Contractor, including a copy of the Certificate of Entitlement. Pursuant to the purchase order, the supplier will provide the required quantities of material at the price established in the supplier's quote to the Contractor or subcontractor.
- v. In conjunction with the PR the Contractor shall submit the Letter of Understanding and a Letter of Indemnification.

**ORANGE COUNTY
OWNER DIRECT PURCHASE PROVISION**

- vi. In conjunction with the issuance by the County of Purchase Orders for ODP materials to suppliers, Owner shall submit a deductive change order to Contractor who shall execute and deliver to County deductive change orders, with a complete description referencing the full value of all ODP materials to be provided by each supplier from whom the County elected to purchase materials directly, plus all sales taxes associated with such materials in Contractor's bid to the County.
- vii. The Contractor shall be required to obtain consent from their Surety acknowledging that Surety's obligation under our Payment and Performance. Bond remains unmodified and in full force and effect, notwithstanding that Orange County has entered into a separate Purchase Order with (Supplier) for the direct purchase of the Materials that will be deducted and deleted from the Contract by the Deductive Change Order. This must accompany the deductive change order.
- viii. Notwithstanding the transfer of ODP materials by the County to the Contractor's possession, the County shall retain legal and equitable title to any and all ODP materials. The transfer of possession of ODP materials from the County to the Contractor shall constitute a bailment for the mutual benefit of the County and the Contractor. The County shall be considered the bailor and the Contractor the bailee of the ODP materials. Transfer of possession shall be deemed to occur immediately and automatically upon delivery of ODP materials to the County without notice from County to Contractor. ODP materials shall be considered returned to the County for purposes of their bailment at such time as they are incorporated into the project. While in Contractor's possession, Contractor shall handle and store all ODP materials in a manner consistent with the supplier's or manufacturer's instructions regarding handling and storage to ensure later installation of ODP materials in a sound and undamaged condition.
- ix. The County will make payment directly to the suppliers of the ODP materials.
- x. The Contractor shall purchase and maintain builders risk insurance sufficient to protect against any loss of or damage to ODP materials. Such insurance shall cover the full value of any ODP materials not yet incorporated into the work during the period between the time the County first takes title to any of such ODP materials and the time when the last of such is incorporated into the work. The Contractor shall purchase and maintain builders risk, "all-risk" insurance based on the completed value of the Project. The Contractor must name the County as additional insured on its policy with respect to all ODP materials and County shall be solely entitled to all proceeds related to the loss or damage of ODP materials.
- xi. The Contractor shall be required to review all invoices submitted to the County by suppliers of ODP materials and either concur or object to the County's issuance of payment to the suppliers, based upon Contractor's records of materials and any defects detected in such materials.

**ORANGE COUNTY
OWNER DIRECT PURCHASE PROVISION**

The County shall directly pay all suppliers with respect to ODP materials purchased by the County.

- xii. The Contractor shall ensure that ODP materials conform to all specifications contained in the contract documents.

Contractor shall determine prior to incorporation into the work if such materials are patently defective, and whether such materials are identical to the materials ordered and match the description on the bill of lading.

If the Contractor discovers defective or non-conformities in ODP materials upon such visual inspection, the Contractor shall not utilize such nonconforming or defective materials in the work and instead shall promptly notify the County of the defective or nonconforming condition so that repair or replacement of those materials can occur without any undue delay or interruption to the work.

If the Contractor fails to perform such inspection and otherwise incorporates into the work such defective or nonconforming ODP materials, the condition of which it either knew or should have known by performance of an inspection, Contractor shall be responsible for all damages to County resulting from Contractor's incorporation of such materials into the work, including liquidated or delay damages.

- xiii. In order to arrange for timely payment to the suppliers of ODP materials, Contractor shall promptly submit to County within five (5) days of County's receipt of an invoice from a supplier (i) a copy of the applicable purchase order as receiving report, (ii) copies of the delivery tickets, (iii) written acceptance of the delivered items by the Contractor, and (iv) such other documentation as may be reasonably required by the COUNTY. Upon receipt of the appropriate documentation, the County shall prepare a check drawn to the supplier based upon the data provided by Contractor. This check will be made payable and remitted directly to the supplier. The Contractor agrees to assist the County to immediately obtain partial or final release of waivers as appropriate.

- xiv. The Contractor shall maintain records of all ODP materials it incorporates into the work. The Contractor shall account monthly to the County for any ODP materials delivered into the Contractor's possession, indicating portions of all such materials which have been incorporated into the work

- xv. The Contractor shall be responsible for obtaining and managing all warranties and guarantees for all ODP materials in the same manner and on the same terms as materials obtained by the Contractor as required by the contract documents. All repair, maintenance or damage-repair calls shall be forwarded to the Contractor for resolution with the appropriate supplier or subcontractor.

**ORANGE COUNTY
OWNER DIRECT PURCHASE PROVISION**

The Contractor agrees and understands that it shall undertake all warranty enforcement and other related duties of the County for all ODP materials. Additionally, all ODP materials shall be warranted and guaranteed by the Contractor as part of the Contractor's warranty and guarantee of the work to the same extent and degree as other materials procured and provided to the work by Contractor. Contractor's warranty and guarantee duties shall be governed by and carried out pursuant to the terms of the contract documents. To that end, the Contractor expressly agrees it shall make no distinction in discharging such warranty and guarantee duties and obligations between ODP materials and equipment and materials otherwise supplied by the Contractor.

- xvi. The County shall in no way be liable for any interruption or delay in the public works project, for any defects or other problems with the public works project, or for any extra costs resulting from any delay in the delivery of, or defects in ODP materials. Contractor's sole or exclusive remedy shall be an extension of the time of completion of the public works project for such reasonable time as determined by County.

6. REQUIREMENTS FOR PURCHASE ORDER ISSUANCE:

The Procurement Division will issue a Purchase Order to the intended supplier and a deductive change order will be prepared by the County's Project Manager to reduce the amount of the contract with the Contractor by the cost of materials purchased through ODP (including tax savings).

Upon request from the County and in a timely manner, Contractor shall prepare a Purchasing Requisition Request Form which shall, in form and detail acceptable to County, specifically identify the materials which County, in its discretion, has identified and elected to purchase directly as ODP materials. The Purchasing Requisition Request Form shall include:

- a. the name, address, telephone number and a contact person for the material supplier;
- b. the manufacturer or brand, model or specification number of the item;
- c. quantity needed as estimated by Contractor;
- d. the price quoted by the supplier for the materials identified;
- e. any sales tax associated with such quote;
- f. delivery dates as established by Contractor;
- g. the PR and the quote must indicate FOB Destination or Job Site.
The Owner will not pay shipping and handling charges.

Upon receipt of a Purchase Order Request Form, the PM will initiate a requisition specifying price, quantity, delivery, material/equipment description, etc. and provide a copy of the Purchase Order Request form and all backup to the Procurement Division. Upon receipt of the electronic requisition, the Procurement Division will review all submittals and issue the purchase order.

**ORANGE COUNTY
OWNER DIRECT PURCHASE PROVISION**

The original ODP purchase order, along with a copy of the County's Tax Exemption Certificate and the signed Certificate of Entitlement, will be either e-mailed or faxed and mailed to the material supplier; and a copy will be sent to the Contractor including a copy of the Certificate of Entitlement.

7. REQUIREMENTS FOR PURCHASE ORDER PAYMENT:

- a. Upon delivery of ODP materials to such locations as the County may designate, the Contractor shall visually inspect all shipments from suppliers, and sign off on all receiving reports for ODP material delivered or received. The Contractor shall assure that each delivery of ODP materials is accompanied by delivery tickets or such other documentation as is adequate to identify the purchase order against which the purchase is made. This documentation may consist of a delivery ticket and a copy of the invoice from the supplier conforming to the purchase order together with such additional information as the County may require. The Contractor will then forward the delivery tickets to the County to match up with the invoice for payment. The County shall be directly invoiced by the suppliers for all ODP materials. In the event that Contractor receives any invoices (other than copies of invoices the originals of which have been sent directly by the supplier to the County), Contractor shall not pay such invoice and shall immediately notify the supplier that the County must be directly invoiced on all ODP materials.
- b. Invoices for payment will be submitted by the materials supplier to the County. The purchase order number must be noted on all invoices.
- c. Except as expressly stated herein, Contractor shall be fully responsible for all matters relating to the procurement of ODP materials furnished by and incorporated into the public works project including, but not limited to, assuring the correct quantities, verifying documents and the placement of all orders in a timely manner, assuring coordination of purchases, providing and obtaining all warranties and guarantees required by the contract documents, and inspection and acceptance of the materials at the time of delivery. The Contractor shall coordinate delivery locations and schedules, sequence of delivery, loading orientation, and other arrangements normally required by the Contractor for the particular materials furnished. The Contractor shall provide all services required for the unloading, handling and storage of materials through installation. **The County assumes the risk of loss of ODP materials from the time title to such material passes from the supplier at purchase, or upon delivery if allowed by Laws and Regulations.**

8. REFERENCES:

Attachment "A" - Owner Direct Purchase Requisition Form
Attachment "B" - Certificate of Entitlement
Attachment "C" - Consumers Certificate of Exemption
Attachment "D" - Letter of Understanding
Attachment "E" - Letter of Indemnification
Attachment "F" - Change Order Form
Attachment "G" - Example Consent of Surety

DIRECT PURCHASE REQUISITION

Project Name: _____ Request No: _____

It is requested that Orange County make arrangements for Direct Purchase by the County of the following item which is included in the work to be done by the Contractor pursuant to the requirements set forth in Contract #Y16-736-EB

ITEM (Brief Description):

COST (Value) of item to be purchased:

Total Cost (Value) including taxes and freight charges	\$
Amount of Florida State Sales Tax	\$
Direct Purchase Cost Less Florida State Sales Tax	\$

PURCHASE Directly from (Vendor):

Vendor's Complete Company Name:
Federal Employee Identification No.:

Mailing Address:

Contact Person:
Position/Title:

Telephone No.:
Email Address:

Purchase Deletion:

This Direct Purchase is to be deleted by Change Order to the contract which has been executed between the Contractor and:

Company/Trade/Sub Contractor Name
Trade/Sub Contract Execution Date

REQUEST MADE BY:

Construction Manager/General Contractor/Design Builder

By:

Title:

Date:

CERTIFICATE OF ENTITLEMENT

(For direct purchase of construction materials by a governmental entity pursuant to 212.08(6), F.S. and Rule 12A-1.094, F.A.C.)

The undersigned authorized representative of Orange County Board of County Commissioners (hereinafter "Governmental Entity"), Florida Consumer's Certificate of Exemption Number 85-8012622266C-O, affirms that the tangible personal property purchased pursuant to Purchase Order Number _____ from _____ (Vendor) on or after _____ (date) will be incorporated into or become a part of a public facility as part of a public works Contract # Y _____ with _____ (Name of Contractor) for the construction of _____.

Governmental Entity affirms that the purchase of the tangible personal property contained in the attached Purchase Order meets the following exemption requirements contained in Section 212.08(6), F.S., and Rule 12A-1.094, F.A.C.:

Initial each of the following requirements.

- _____ 1. The attached Purchase Order is issued directly to the vendor supplying the tangible personal property the Contractor will use in the identified public works.
- _____ 2. The vendor's invoice will be issued directly to Governmental Entity.
- _____ 3. Payment of the vendor's invoice will be made directly by Governmental Entity to the vendor from public funds.
- _____ 4. Governmental Entity will take title to the tangible personal property from the vendor at the time of purchase or of delivery by the vendor.
- _____ 5. Governmental Entity assumes the risk of damage or loss at the time of purchase or delivery by the vendor.

Governmental Entity affirms that if the tangible personal property identified in the attached Purchase Order does not qualify for the exemption provided in Section 212.08(6), F.S. and Rule 12A-1.094, F.A.C., Governmental Entity will be subject to the tax, interest, and penalties due on the tangible personal property purchased. If the Florida Department of Revenue determines that the tangible personal property purchased tax-exempt by issuing this Certificate does not qualify for the exemption, Governmental Entity will be liable for any tax, penalty, and interest determined to be due.

I understand that if I fraudulently issue this certificate to evade the payment of sales tax I will be liable for payment of the sales tax plus a penalty of 200% of the tax and may be subject to conviction of a third degree felony.

Under penalties of perjury, I declare that I have read the foregoing Certificate of Entitlement and the facts stated in it are true.

Johnny M. Richardson, CPPO, CACM
Manager, Procurement Division

Date

Federal Employer Identification Number: _____

Telephone Number: _____

You must attach a copy of the Purchase Order to this Certificate of Entitlement.

Do not send to the Florida Department of Revenue.

This Certificate of Entitlement must be retained in the vendor's and the contractor's books and records.



Consumer's Certificate of Exemption

DR-14
R. 04/11

Issued Pursuant to Chapter 212, Florida Statutes

85-8012622266C-0	10/31/2012	10/31/2017	COUNTY GOVERNMENT
Certificate Number	Effective Date	Expiration Date	Exemption Category

This certifies that

ORANGE COUNTY BOARD OF COUNTY
COMMISSIONERS
201 S ROSALIND AVE 4TH FL
ORLANDO FL 32801-3527

is exempt from the payment of Florida sales and use tax on real property rented, transient rental property rented, tangible personal property purchased or rented, or services purchased.



Important Information for Exempt Organizations

DR-14
R. 04/11

1. You must provide all vendors and suppliers with an exemption certificate before making tax-exempt purchases. See Rule 12A-1.038, Florida Administrative Code (F.A.C.).
2. Your *Consumer's Certificate of Exemption* is to be used solely by your organization for your organization's customary nonprofit activities.
3. Purchases made by an individual on behalf of the organization are taxable, even if the individual will be reimbursed by the organization.
4. This exemption applies only to purchases your organization makes. The sale or lease to others of tangible personal property, sleeping accommodations, or other real property is taxable. Your organization must register, and collect and remit sales and use tax on such taxable transactions. Note: Churches are exempt from this requirement except when they are the lessor of real property (Rule 12A-1.070, F.A.C.).
5. It is a criminal offense to fraudulently present this certificate to evade the payment of sales tax. Under no circumstances should this certificate be used for the personal benefit of any individual. Violators will be liable for payment of the sales tax plus a penalty of 200% of the tax, and may be subject to conviction of a third-degree felony. Any violation will require the revocation of this certificate.
6. If you have questions regarding your exemption certificate, please contact the Exemption Unit of Account Management at 800-352-3671. From the available options, select "Registration of Taxes," then "Registration Information," and finally "Exemption Certificates and Nonprofit Entities." The mailing address is PO Box 6480, Tallahassee, FL 32314-6480.

LETTER OF UNDERSTANDING

CM/DB/GC _____, in its capacity as Construction Manager/Design Builder/General Contractor, agrees that the direct purchase of _____ by Orange County, Owner, from _____, as Supplier/Vendor, does not in any way or manner diminish or modify the contractual duties of the Construction Manager/Design-Builder/General Contractor to the Owner insofar as the inspection, handling, storage, protection, and installation of the aforementioned direct purchase item into the Work is concerned and that such duties pertinent thereto as are set forth in the contract between CM/DB/GC, as Construction Manager/Design-Builder/General Contractor, and Orange County, as Owner, remain unchanged.

ORANGE COUNTY
BOARD OF COUNTY COMMISSIONERS

CM/DB/GC

By: _____
Johnny M. Richardson, CPPO, CACM
Manager, Procurement Division

By: _____

Name Typed

Date: _____

Title

LETTER OF INDEMNIFICATION

The County does hereby undertake to indemnify _____ (CM/DB/GC) from any and all liability for unpaid sales tax which the CM/DB/GC may suffer as a result of claims, demands, costs or judgments against the CM/DB/GC, made by or in favor of the State of Florida on occasion by any claim on account of failure of the CM/DB/GC to pay Florida State taxes on materials purchased by County under this Purchase Order. The County agrees to defend against any such claims or actions brought against the CM/DB/GC whether rightfully or wrongfully brought or filed. The CM/DB/GC agrees that it will promptly notify the County in writing of any such claim, demand or action.

ORANGE COUNTY
BOARD OF COUNTY COMMISSIONERS CM/DB/GC

By: _____
Johnny M. Richardson, CPPO, CFCM,
Procurement Division

By: _____

Name Printed

Date: _____

Title:

**ORANGE COUNTY PROCUREMENT DIVISION
CHANGE ORDER REQUEST FORM**

DATE	DEPARTMENT/DIVISION	CONTACT NAME	CONTACT PHONE

CHANGE ORDER NO.	VENDOR	DOCUMENT NO.	DOOC	POOC	CONTRACT NUMBER	ORIGINAL DOCUMENT APPROVAL BUYER/PA/CA NAME

INCREASE, DECREASE OR DELETE COMMODITY LINE

CMDTY. LINE NO.	ACTION		PREVIOUS LINE DOLLAR AMOUNT	NEW LINE DOLLAR AMOUNT	COMMODITY LINE DESCRIPTION/COMMENTS	NET DOLLAR CHANGE
	FROM	TO				

ADD COMMODITY LINE

CMDTY. LINE NO.	CMDTY. CODE	DESCRIPTION		QTY.	UNIT OF MEAS.	UNIT COST	ACCOUNTING LINE	NET DOLLAR CHANGE
		FOR D.O. YOU MUST SPECIFY AN MA LINE	MA LINE					

ACCOUNTING LINE CHANGE

CMDTY. LINE NO.	ACCTG. LINE NO.	FROM AMOUNT	FROM ACCOUNTING LINE		TO ACCOUNTING LINE	

OTHER CHANGES

DESCRIBE

ENCUMBERED/DE-ENCUMBERED (REQUIRED FOR ALL TRANSACTIONS)

ORIGINAL PO/DO AMT.	NET DOLLARS PREVIOUS C/O	NET DOLLARS FOR THIS C/O	DOCUMENT TOTAL AFTER THIS C/O
	<input type="checkbox"/> ADD <input type="checkbox"/> SUBTRACT	<input type="checkbox"/> ADD <input type="checkbox"/> SUBTRACT	

CONTRACT AMOUNT

AWARD AMOUNT	NET DOLLARS PREVIOUS C/O	NET DOLLARS FOR THIS C/O	CONTRACT TOTAL AFTER THIS C/O
	<input type="checkbox"/> ADD <input type="checkbox"/> SUBTRACT	<input type="checkbox"/> ADD <input type="checkbox"/> SUBTRACT	

- CANCEL ENTIRE PO/DO
- DO NOT MAIL VENDOR COPY

JUSTIFICATION (REQUIRED FOR ALL TRANSACTIONS)

--

By signing this agreement, the Contractor hereby releases the County, its agents and employees from any and all liabilities under this contract for further equitable adjustments and/or claims associated with this change order.

VENDOR/ CONTRACTOR AUTHORIZATION _____ DATE: _____

DEPARTMENT APPROVAL SIGNATURE _____ DATE: _____

OFFICIAL PROCUREMENT DIVISION USE ONLY

PROCUREMENT DIVISION APPROVAL: _____	DATE: _____
ADD THE FOLLOWING TEXT TO PO/DO: TRACK CHANGES: <input type="checkbox"/> YES <input type="checkbox"/> NO	CHANGE AWARD AMOUNT TO : _____

Date

Contractor/Trade Contractor/Subcontractors Name

Point of Contact

Address

Re:Orange County Project Name and Contract Number

Please be advised that we have reviewed a copy of Deductive Change Order No. _____ issued to (CM/DB/GC) and we acknowledge that its obligation under our Payment and Performance Bond remains unmodified and in full force and effect, notwithstanding that Orange County has entered into a separate Purchase Order with (Supplier) for the direct purchase of the Materials deducted and deleted from the Contract by the Deductive Change Order.

Sincerely,

(Name of Attorney in Fact for Surety)

Attorney in Fact

(Name of Surety)

NOTE: Must be accompanied by effectively dated Power of Attorney

PART G

SUPPLEMENTAL CONDITIONS / SPECIAL PROVISIONS

Lake Anderson Stormwater Treatment System

SUPPLEMENTAL CONDITIONS

ARTICLE 1 – CONTRACT

GENERAL CONDITION, PART F, ARTICLE 1, CONTRACT, is appended as follows:

All specifications, drawings and copies thereof furnished by the COUNTY shall remain the property of the COUNTY. They shall not be used on another project and, with the exception of those sets, which have been signed in connection with execution of the Agreement, shall be returned to the COUNTY upon completion of the project.

Duties and obligations imposed by these General Conditions and the rights and remedies available hereunder, and, in particular but without limitation, the warrants, guarantees and obligations imposed upon the CONTRACTOR and the rights and remedies available to the COUNTY thereunder shall be in addition to and not a limitation of any otherwise imposed or available by law, by special guarantee or other provisions of Contract Documents.

This is a Unit Price Contract, and the base bid is the sum of all pay item totals. The COUNTY reserves the right to correct errors in the pay item totals arising from incorrect extensions. See Part C, Paragraph 4, "Bid Errors".

ARTICLE 2 - DEFINITIONS

GENERAL CONDITION, PART F, ARTICLE 2, DEFINITIONS, "**Specifications**", is appended as follows:

"**Specifications**" or "**Standard Specifications**" shall mean the 2010 edition of the Florida Department of Transportation (FDOT) Standard Specifications for Road and Bridge Construction, and supplements thereto (unless otherwise noted), and the Orange County Road Construction Specifications latest edition as specified in the contract and/or contract documents and modified herein. In the event of a conflict between the FDOT Standard Specifications and the General Conditions or Supplemental Conditions provided in the Contract Documents, the Contract Documents shall prevail.

When reference is made to a Division, Section, or Article, it shall mean a Division, Section, or Article of said "**Specifications**" or "**Orange County Road Construction Specifications**", but shall not be construed to include the Division, Section or Article in its entirety unless so directed by the ENGINEER.

Each reference to Basis of Payment in said "**Specifications**" is superseded by the conditions contained in the Technical Provisions and all other conditions related to Basis of Payment contained in these specifications, unless otherwise directed by the Engineer.

PART G

SUPPLEMENTAL CONDITIONS / SPECIAL PROVISIONS

Lake Anderson Stormwater Treatment System

SUPPLEMENTAL CONDITIONS

GENERAL CONDITION, PART F, ARTICLE 2, DEFINITIONS, "**Project Manager**", is appended as follows:

When references are made to PROJECT MANAGER, other terms that may be substituted / used are PROJECT ENGINEER, ENGINEER, PROJECT ADMINISTRATOR, and RESIDENT PROJECT REPRESENTATIVE.

ARTICLE 3 – NO ASSIGNMENT OF CONTRACT

No changes. See PART F GENERAL CONDITIONS.

ARTICLE 4 – QUALIFICATIONS OF SUBCONTRACTORS AND SUPPLIERS

No changes. See PART F GENERAL CONDITIONS.

ARTICLE 5 – STARTING THE WORK

No changes. See PART F GENERAL CONDITIONS.

ARTICLE 6 – INTERPRETATION AND INTENT OF THE CONTRACT DOCUMENTS

GENERAL CONDITION, PART F, ARTICLE 6, INTERPRETATION AND INTENT OF THE CONSTRUCTION DOCUMENTS, is appended as follows:

The project shall be constructed in accordance with these Supplemental Conditions, Special Provisions and the Florida Department of Transportation (FDOT) "Standard Specifications for Road and Bridge Construction," 2010 edition, the "Supplemental Specifications for Road and Bridge Construction," 2010 edition, and the "Orange County Road Construction Specifications," latest edition, hereafter referred to as the "Specifications".

Wherever the terms "APPROVE", "APPROVED", "APPROVAL", "ACCEPT", "ACCEPTED", "ACCEPTANCE" or other derivations of these terms are used within these specification or references therein in the context of actions to be taken by the COUNTY or its representatives with respect to submittals made by, or work performed by the CONTRACTOR, they shall mean that the COUNTY or its representative finds no exception with the submittal or the work provided/performed by the CONTRACTOR. Acceptance or approval by the COUNTY or its representative shall NOT relieve the CONTRACTOR of any responsibility for conformance to the intent of the plans and specifications, for the accuracy of dimensions and details, for conformity of dimensions and details, or for adherence to generally accepted engineering and construction practices.

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SUPPLEMENTAL CONDITIONS / SPECIAL PROVISIONS

Lake Anderson Stormwater Treatment System

SUPPLEMENTAL CONDITIONS

ARTICLE 7 – REFERENCE POINTS

GENERAL CONDITION, PART F, ARTICLE 7, REFERENCE POINTS, “**Reference Points**” is appended as follows:

General: The CONTRACTOR shall employ a Professional Surveyor and Mapper (PSM), registered in the State of Florida and satisfactory to the COUNTY, to lay out the work for bench marks, points and lines noted on the Contract Documents, established at the site, or supplied by the COUNTY. The CONTRACTOR shall provide to the COUNTY at the pre-construction conference, the name of the Professional Surveyor and Mapper to perform Project survey work. All work of every description shall be laid out and checked by the CONTRACTOR who will be held solely responsible for its correctness.

Work may be checked by the PROJECT MANAGER and, in the event of a discrepancy, the PROJECT MANAGER'S decision shall be final.

No special compensation will be made to the CONTRACTOR to defray costs of surveys and measurements, but such costs shall be considered as having been included in the price stipulated for all items of work to be done under this contract.

Prior to the beginning of any construction the CONTRACTOR shall submit to the COUNTY a set of field notes verifying that the existing benchmark elevations are relative to at least two reference benchmarks shown on the construction plans. The CONTRACTOR shall also verify ties from project control points to reference points as shown on the construction plans. A set of field notes for all additional benchmark and reference point ties shall be submitted to the PROJECT MANAGER. All submittals shall be signed and sealed by a Professional Surveyor and Mapper registered in the State of Florida.

Within twenty-one (21) calendar days after receiving the Notice to Proceed, the CONTRACTOR shall have a licensed Professional Surveyor and Mapper establish in the field the proposed roadway centerline, right-of-way and construction easements using wooden 1" X 4" X 4'0" stakes at a maximum spacing of 100 feet. Stations shall be marked on each stake and shall be of sufficient size and clarity that they can be easily read by the unaided eye at a distance of 150 feet. Right-of-way and construction easement staking shall be maintained by the CONTRACTOR throughout construction. No invoice for payment will be processed until the right-of-way has been staked to the satisfaction of the ENGINEER. Payment is included in the price for bid item number 101-1 “Mobilization”. The CONTRACTOR shall pay all expenses in connection with this work.

All survey work shall comply with Chapter 5J-17 Standards of Practice, Florida Administrative Code (F.A.C.), regarding minimum technical standards for land surveying in the

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SUPPLEMENTAL CONDITIONS / SPECIAL PROVISIONS

Lake Anderson Stormwater Treatment System

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State of Florida.

The CONTRACTOR shall perform all calculations required, and set all stakes needed such as grade stakes, offset stakes, reference point stakes, slope stakes, and other reference marks or points necessary to provide lines and grades for construction of all roadway, bridge, and miscellaneous items.

When performing utility construction as part of the project, the CONTRACTOR will establish all horizontal and vertical controls necessary to carry out such work.

Specific Staking Requirements: When performing new base construction as part of the project, the CONTRACTOR shall set stakes to establish lines and grades for subgrade, base, curb, and related items at intervals along the line of the work no greater than 50 feet on tangents and 25 feet on curves. The CONTRACTOR shall set grade stakes at locations that the Engineer directs to facilitate checking of subgrade, base, and pavement elevations in crossovers, intersections, and irregular shaped areas.

For bridge construction stakes and other control, the CONTRACTOR shall set references at sufficiently frequent intervals to ensure construction of all components of a structure in accordance with the lines and grades shown in the plans.

For projects where the plans do not show a centerline or other survey control line for construction of the work (resurfacing, safety modifications, etc.), the CONTRACTOR shall provide only such stakes as necessary for horizontal and vertical control of work items.

For resurfacing and resurfacing-widening type projects, the CONTRACTOR shall establish horizontal controls adequate to ensure that the asphalt mix added matches with the existing pavement. In tangent sections, set horizontal control points at 100 foot intervals by an instrument survey. In curve sections, set horizontal control points at 25 foot intervals by locating and referencing the centerline of the existing pavement.

The CONTRACTOR shall establish by an instrument survey, and mark on the surface of the finished pavement at 25 foot intervals, the points necessary for striping of the finished roadway. As an exception, for resurfacing and resurfacing/widening projects, the CONTRACTOR shall establish these points in the same manner as used for horizontal control of paving operations. The CONTRACTOR shall mark the pavement with white paint. If performing striping, the PROJECT MANAGER may approve an alternate method for layout of striping provided that the CONTRACTOR achieves an alignment equal to or better than the alignment that would be achieved using an instrument survey.

For projects that include temporary or permanent striping of "no passing zones", the CONTRACTOR shall provide the location and length of these zones as shown in the plans, except projects where the vertical or horizontal alignment is new or altered from the preconstruction alignment. For projects that consist of new or altered vertical or horizontal alignment, the COUNTY will provide the location and length of the "no passing zones" during

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construction. For these projects, the CONTRACTOR shall notify the PROJECT MANAGER not less than 21 calendar days prior to beginning striping.

Benchmarks: During construction the CONTRACTOR shall provide a Control Point Metal Disk set in concrete (e.g. in headwalls, back of sidewalks, back of inlets, etc.) at the beginning and end of the project and at a maximum of 1100 feet between existing or established benchmarks along the project alignment – (see attached disc requirements). The CONTRACTOR’S Professional Surveyor and Mapper (PSM) shall conduct a three wire leveling run (closed loop) through the benchmarks based on Orange County Datum NAVD88 (or other datum as specified on the Engineering plans). The level work will be performed to Second Order, Class II standards (or better) and the maximum allowable error will be no more than 8 mm times the square root of “K”, where “K” is the total distance in kilometers. This is also approximately equivalent to 0.035 feet times the square root of “K”, where “K” is the total distance in miles. The level run will be performed with a geodetic automatic level or better whose three wires will be read to 0.001 meters or 0.001 feet. Invar rods are preferred but not required. Digital automatic levels with associated bar code rods are also acceptable. Prior to the issuance of final completion, the CONTRACTOR shall submit a copy of the field notes certified by the PSM to the PROJECT MANAGER. Benchmark elevations shall be expressed in English units.

Orange County survey monuments shall be aluminum or brass stamped as shown on the attached sketch. The contractor shall procure the monuments from any commercial supplier of survey monuments. The contractor is advised that the County obtains its monuments from Berntsen International, Inc.; www.berntsen.com Berntsen disc no. C35D-(3-1/2" domed) Logo no. B9119 (800-356-7388).



Control Points: At the end of construction, all permanent control points as shown on the construction plans survey control sheet shall be set along the centerline of construction. Permanent control points that fall on a hard surface such as pavement or concrete shall be set as p.k. nails and discs or other form of monumentation that is both durable and identifiable and must be approved by the County Surveyor or authorized agent. All others shall be 4” x 4”

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concrete monuments having a minimum of 24” in length. All points shall be marked with a cap or disk bearing the surveyor’s registration number or licensed business number.

Property Corners: Property corners shall be set at intersections of right-of-way lines and property lines (at all corners that have been destroyed during construction for all Orange County construction projects). Monumentation meeting the requirements described above under “Control Points” shall be set at all breaks in right-of-way lines, P.C.’s, P.T.’s, curve intersections and at least every 1,000 feet along the right-of-way line and shall bear the registration number of the surveyor or licensed business number.

Public Land Corners: All public land corners within the limits of construction shall be protected. If a corner monument is in danger of being destroyed or disturbed, the CONTRACTOR shall notify the PROJECT MANAGER, and the COUNTY SURVEYOR, without delay, by telephone. The CONTRACTOR shall provide written follow-up confirmation within forty-eight (48) hours of telephone notification. In the event that a land corner is disturbed or damaged it will be reset with a 4” x 4” concrete monument, which shall be protected in a cast iron valve box, if in pavement.

Prior to the issuance of final completion, the CONTRACTOR shall submit certified corner records, prepared by a Professional Surveyor and Mapper, for all altered, reset and/or relocated public land corners to the Florida Department of Environmental Protection, Bureau of Survey and Mapping, in accordance with the requirements of Chapter 177.507 of the Florida Statutes. A certified copy shall also be provided to the PROJECT MANAGER. Furthermore, the Professional Surveyor and Mapper will note on the AS-BUILT PLANS the location of all corners set or found and submit copies of all field notes to the County Surveyor or his/her agent.

National Geodetic Survey (N.G.S.) / United States Coast & Geodetic Survey (U.S.C. & G.S.) Monuments: The CONTRACTOR shall immediately notify the PROJECT MANAGER of any N.G.S. / U.S.C. & G.S. monuments which may be in danger of being disturbed. For instructions on how to relocate any N.G.S. monuments the CONTRACTOR shall notify in writing:

State Geodetic Advisor
Bureau of Surveying and Mapping
3900 Commonwealth Blvd., Suite 105
Tallahassee, FL 32399-3000
Phone: (850) 245-2606
Fax: (850) 245-2645

Orange County Surveyor
Engineering Division, Public Works Dept
4200 S. John Young Parkway
Orlando, FL 32839-9205
Phone: (407) 836-7941
Fax: (407) 836-8024

The CONTRACTOR shall bear all costs of establishing, relocating or re-establishing all

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disturbed N.G.S. monuments, public land corners, property corners, or right-of-way monuments. Survey field book(s) shall be used throughout the course of the project by the contractors PSM. The complete survey field book(s) shall be submitted to the County Surveyor concurrently with the submission of the CONTRACTOR'S requisition for final payment. When a data collector is used, the CONTRACTOR shall also submit a paper copy of the raw data files bound in a book, together with the electronic copy on a disk.

ARTICLE 8 – BONDS, INSURANCE AND INDEMNIFICATION

No changes. See PART F GENERAL CONDITIONS.

ARTICLE 9 – CONTRACTOR'S RESPONSIBILITIES

GENERAL CONDITION, PART F, ARTICLE 9, CONTRACTOR'S RESPONSIBILITIES, "**Supervision and Superintendence**", second paragraph, is appended as follows:

The CONTRACTOR shall provide a competent superintendent at the site at all times while work is in progress to act as the CONTRACTOR'S agent. The superintendent shall be capable of properly interpreting the Contract Documents, have sufficient experience in highway/street construction, and be able to speak and understand English. The superintendent shall have full authority to receive instructions from the PROJECT MANAGER and to execute the orders or directions of the PROJECT MANAGER, including promptly supplying any materials, tools, equipment, labor, and incidentals that may be required. The CONTRACTOR shall furnish the qualifications of the proposed superintendent to the PROJECT MANAGER at the preconstruction conference. The COUNTY shall be the sole determiner of whether or not the experience of the superintendent is sufficient for the purposes of this paragraph. At least one other responsible person who speaks and understands English shall be on the project during all working hours.

GENERAL CONDITION, PART F, ARTICLE 9, CONTRACTOR'S RESPONSIBILITIES, "**Supervision and Superintendence**", is appended as follows:

Supervision for Emergencies: A responsible person, who speaks and understands English, shall be available at or reasonably near the worksite on a 24 hour basis, seven days a week. This person shall be designated as the point of contact for emergencies and in cases that require immediate action to maintain traffic or to resolve any other problem that might arise. A list of the phone numbers and names of personnel designated to be contacted in cases of emergency, along with a description of the project location, shall be submitted, by certified mail, to the Florida Highway Patrol and all other local law enforcement agencies.

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GENERAL CONDITION, PART F, ARTICLE 9, CONTRACTOR'S RESPONSIBILITIES, "Permits", is appended as follows:

Certifications/Permit Compliance: The CONTRACTOR shall prepare and submit all certifications required by regulatory agencies having jurisdiction over the project, including engineer's certifications and as-built drawings required by the Water Management District(s). The final 5 percent retainage shall not be released, and/or the final pay request shall not be accepted until all required certifications have been submitted and accepted by the regulatory agencies.

GENERAL CONDITION, PART F, ARTICLE 9, CONTRACTOR'S RESPONSIBILITIES, "Record Drawings", is appended as follows:

As-Built Plans: AS-BUILT PLANS shall be used for no other purpose than recording changes, shall be updated at least once weekly, and stored separate and apart from plans used on a routine basis. They shall show locations and elevations of paving, swales, ditches, pipes and structures constructed and all relocated or reset property corners, section corners and ¼ section corners. The AS-BUILT PLANS shall be available to the PROJECT MANAGER upon request. Upon the completion of the project the CONTRACTOR shall submit to the PROJECT MANAGER one set of signed and sealed AS-BUILT PLANS and PDF file on CD. These AS-BUILT PLANS shall delineate all revised information in bold notation and include the As-Built Survey Requirements as stated below.

Qualifications of Surveyor and Mapper or Engineer

The Florida Licensed Professional Engineer(s) or Florida Registered Professional Surveyor and Mapper(s) who are proposed by the CONTRACTOR to provide services for the Project, are subject to the approval of the Engineer and the County Surveyor. Prior to any services being performed, the CONTRACTOR shall submit the name and address of any proposed registered professional and a written acknowledgement from the Professional Surveyor and Mapper stating that he has the hardware, software and adequate scope of services in his agreement with the CONTRACTOR to fully comply with the requirements of his scope of services. These submittals shall be provided to the PROJECT MANAGER prior to the Notice to Proceed. It is recommended that the Professional Surveyor and Mapper attend the Preconstruction meeting. It is mandatory that any Surveyor who has not previously performed work for the County in the past attend the Preconstruction meeting.

As-Built Survey Requirements

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- a. The Contractor shall require the Professional Surveyor and Mapper to locate all improvements for the As-Built Survey using State Plane Coordinates and the vertical datum referenced on the Construction drawings. The CONTRACTOR shall obtain an electronic copy of the Construction Drawings from the COUNTY for use as a base for the As-Built Survey. The As-Built Survey shall clearly show the designed and constructed locations and elevations for ease of comparison. This shall be accomplished by adding the As-Built information on a separate CAD layer, while keeping all the design call-outs and construct requirements visible. The As-Built information shall be labeled as such and be shown with a bolder text weight in order to be easily identifiable. The As-Built Survey shall include all storm and sanitary sewers and structures, clean-outs, potable and reclaimed water mains, meters, valves, force mains, gas mains, irrigation lines (2- inch and larger), process piping, electric and communication duct banks, traffic and pedestrian signals, pull boxes, cabinets, transformers, structures, drainage conveyance systems, retention ponds, fences, pavement, curbs, sidewalks, driveways, relocated utilities, appurtenances and buildings. All planned improvements referenced by station and offset on the Plans, shall also be referenced on the As-Built Survey in the same manner. All constructed improvements that have location and/or elevation information called-out on the Plans, shall have the same information identified on the As-Built Survey. If a structure information table was provided on the Plans, then the As-Built information shall be shown in the table in bold print. Design call-outs shall have a strike through line through the design call-out and all As-Built information must be labeled (or abbreviated "AB") and be shown in a bolder text that is completely legible. As-Built Survey shots shall be taken at the same locations as shown on the Plans for ease of comparison. Any variations from required material sizes shall also be noted.
- b. If survey points are disturbed, it is the responsibility of the Contractor's Surveyor and Mapper to reset the points at the Contractor's expense and show on the As-Built Survey. Copies of the Surveyor and Mappers field notes and/or electronic files for point replacement shall be provided to the County Surveyor through the Project Manager, hard-copies signed and sealed by the Professional Surveyor and Mapper.
- c. The Professional Surveyor and Mapper shall locate all improvements for the Project As-Built using State Plane Coordinates as the horizontal datum and the benchmark(s) referenced on the Plans as the vertical datum. The Project Manager, or County Surveyor will provide electronic files of the Plans to be used by the Surveyor and Mapper in complying with these specifications.
- d. The construction layout shall be established from the reference points shown or listed on the Plans CONTROL SHEET and will either be recovered or re-set by the Professional Surveyor and Mapper and identified on the As-Built Survey. The Professional Surveyor and Mapper shall identify on the As-Built Survey and replace any Project control points, boundary corners, benchmarks, section corners that may be lost or destroyed, at no

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additional cost to Orange County. A certified copy of a completed Certified Corner Record that the Professional Surveyor and Mapper has done will also be submitted to the County Surveyor through the Project Manager.

DELIVERABLES AS FOLLOWS:

- A paper copy of the plans available at all times at the job site during the entire duration of the project marked up in red by the CONTRACTOR, and showing all deviations from the design locations and elevations.
- The CONTRACTOR shall submit an updated copy (paper or pdf file on CD) of the red line As-Built Plan concurrent with each application for progress payment. The update red line As-Built Plan shall focus on the period from the last red line As-Built Plan to the current red line As-Built Plan submitted with the application for progress payment. The updated red line As-Built Plan shall be reviewed and approved by the Orange County Inspector prior to the CONTRACTOR'S submittal. The CONTRACTOR'S failure to submit an updated copy (paper or pdf file on CD) of the red line As-Built Plan as described herein with an application for progress payment shall be sufficient reason for rejection of the progress payment request. Should the Project Manager reject the updated red line As-Built Plan submitted, the entire progress payment request shall be rejected and must be resubmitted.
- A PDF file of the final "As-Built Plans" **as described in the previous As-Built Survey Requirements (G-8 of the Supplemental Conditions)**, be prepared by an appropriately licensed PSM on a CD of the construction drawings showing the design horizontal location and elevation of all facilities constructed or incorporated into the project with changed values struck through with a single line to maintain legibility and the new value added. Facilities constructed in a modified fashion from that shown on the construction plans shall be shown and identified in their originally designed and final as-constructed configurations. Facilities added shall be shown and identified.
- One (1) paper copies of the final "As-Built Plans", as described below, signed and sealed by the appropriately licensed PSM that prepared them.
- Signed and Sealed Field Book(s), Copies of Adjusted Benchrun, Raw Data files-(horiz.).

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- Signed and Sealed Certification Letter per Highway Construction's Project Completion List – **Substantial Completion**.

Upon the completion of the project the CONTRACTOR shall submit the AS-BUILT PLANS as an electronic file in PDF format and (1) One, (see above) - 24"x36" paper Full Size Drawings which shall have Statements of Certification certifying that the project was constructed according to the Construction Plans and Specifications, and that the AS-BUILT PLANS are a correct representation of what was constructed. The CONTRACTOR shall include the Statement of Certification on either the cover sheets of the AS-BUILT PLANS certifying all of the sheets or certify each individual sheet. The Statements of Certification shall be signed and sealed by a Professional Engineer and/or a Professional Surveyor and Mapper, both registered in the State of Florida.

The CONTRACTOR'S failure to maintain current and accurate AS-BUILT PLANS may result in withholding payments to cover costs of obtaining and recording information sufficient to fully document construction varying from the bid documents. The COUNTY'S cost, including consultant fees, of obtaining as-built information will be deducted from the contract amount. The CONTRACTOR'S request for final payment shall be accompanied by one complete, legible set of final signed and sealed AS-BUILT PLANS and PDF file on disc from a licensed PSM. The cost of the AS-BUILT PLANS and pdf file shall be included in the pay item 900-1, This cost covers roadway bid items only and does not cover the Orange County Utilities or other third party AS-BUILT PLANS.

GENERAL CONDITION, PART F, ARTICLE 9, CONTRACTOR'S RESPONSIBILITIES, "**Safety And Protection**", is appended as follows:

Protection of Property: The CONTRACTOR shall be responsible for any damage whatsoever whether occurring within or outside of the boundaries of the PROJECT including any property adjacent to the PROJECT when such damage is caused in whole or in part by any act of the CONTRACTOR or any employee, agent or subcontractor working under, with or in privity to the CONTRACTOR. The CONTRACTOR and all the aforementioned parties shall stay off private property adjacent to the PROJECT unless the CONTRACTOR receives from the affected property owner a written release, which specifically releases the COUNTY from any liability for any damage to such property caused by any acts other than those of the COUNTY. This written release must be acceptable in form to the PROJECT MANAGER and delivered to and accepted by the PROJECT MANAGER before the CONTRACTOR makes any entry upon such private property. The CONTRACTOR shall also obtain all necessary permits and approvals from all regulatory agencies for all activities to be conducted by the CONTRACTOR on the private property. Necessary approvals may include, but are not limited to the United States Army Corps of Engineers, the United States Environmental Protection Agency, the

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Florida Department of Environmental Protection, the Florida Department of Transportation, the applicable Water Management District, the Orange County Environment Protection Division (EPD), and applicable municipal agencies for properties located within incorporated areas. The CONTRACTOR shall provide written documentation to the PROJECT MANAGER of the necessary approvals and permits having been obtained.

At the preconstruction conference, CONTRACTOR shall submit to the PROJECT MANAGER a current aerial map (11" x 17" minimum size) depicting at a minimum the temporary staging area including property lines, easement lines, and right-of-way lines. The PROJECT MANAGER will submit the aerial map to the Manager of the Orange County Environmental Protection Division (EPD) with a request to perform a cursory review of the CONTRACTOR'S proposed temporary staging area. Within 30 calendar days of receipt of the request, EPD will provide a summary to the PROJECT MANAGER of any natural resource issues or concerns that occur on the site for the CONTRACTOR'S consideration. CONTRACTOR is hereby notified that the proposed temporary staging area shall not be utilized until such time as EPD completes their cursory review and all other items within the contract documents pertaining to the temporary staging area are satisfied. No additional time or special compensation will be made to the CONTRACTOR to defray costs of any of the work or delays for complying with the requirements of the above.

GENERAL CONDITION, PART F, ARTICLE 9, CONTRACTOR'S RESPONSIBILITIES, is appended as follows:

Site Investigation: The CONTRACTOR shall be responsible for satisfactorily determining, prior to the submission of a bid, the nature and location of the work, the conformation of the ground, the character and quality of the substrata, the types and quantity of materials to be encountered, the nature of the groundwater conditions and all other matters which can in any way affect the work under this contract. The prices established for the work to be done will reflect all costs pertaining to the work. Any claims for extras based on substrata or groundwater table conditions will not be allowed.

Information available to the COUNTY on subsoil conditions is available to bidders as information only and solely for the convenience of bidders. The COUNTY does not warrant or guarantee the accuracy or correctness of this information with respect to actual subsurface conditions. The CONTRACTOR agrees that he will make no claims against the COUNTY if, in carrying out the work, he finds that actual conditions encountered do not conform to those indicated.

Information shown on the plans as to the location of existing utilities has been prepared from the most reliable data available to the Engineer. This information is not guaranteed, however, and it shall be the CONTRACTOR'S responsibility to determine the location, character and depth of any existing utilities and to assist the utility companies, by every means possible, to

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determine said locations. Extreme caution shall be exercised to eliminate any possibility of any damage to utilities resulting from the CONTRACTOR'S activities.

Unless otherwise noted, the CONTRACTOR will take ownership of all materials encountered which are designated to be removed or not incorporated into the Work, such as paving materials, paving brick, asphalt block, RAP/Milled material, concrete slab, sidewalk, curb and gutter, pipe materials, etc., excavated in the removal of existing pavements, and dispose of them outside of the right-of-way. Payment for this item shall be included in Pay Item No. 110-1 Clearing and Grubbing.

GENERAL CONDITION, PART F, ARTICLE 9, CONTRACTOR'S RESPONSIBILITIES, "**Use of Public Roads and Streets**", is added as follows:

Use of Public Roads and Streets: Use of public streets shall be such as to provide a minimum of inconvenience to the public and to traffic. Any earth or excavated material spilled from trucks shall be removed by the CONTRACTOR and streets cleaned to the satisfaction of the PROJECT MANAGER. Cleaning may include street sweeping and/or washing, if so directed by the PROJECT MANAGER.

The CONTRACTOR shall provide vehicular access to each residence, subdivision and other public roads at all times.

GENERAL CONDITION, PART F, ARTICLE 9, CONTRACTOR'S RESPONSIBILITIES, "**Care of trees, Shrubs and Grass**", is added as follows:

Care of trees, Shrubs and Grass: The CONTRACTOR shall be fully responsible for maintaining in good condition all cultivated grass plots, trees and shrubs beyond the grading limits of this Contract. After completion of the work, the CONTRACTOR shall replace or restore to the original condition all destroyed or damaged shrubbery or grass areas. Tree limbs, which interfere with equipment operation and are approved for pruning, shall be neatly trimmed and the tree cut coated with tree paint.

GENERAL CONDITION, PART F, ARTICLE 9, CONTRACTOR'S RESPONSIBILITIES, "**Use of Explosives**", is added as follows:

Use of Explosives: No blasting shall be done except upon approval by the COUNTY and the governmental agency or political subdivision having jurisdiction. When the use of explosives is approved by the COUNTY as necessary for the execution of the work, the CONTRACTOR shall use the utmost care so as not to endanger life or property, and assume responsibility for any such damage resulting from his blasting operations, and whenever directed, the number and size of the charges shall be reduced.

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All explosives shall be stored in a secure manner and all such storage places shall be clearly marked, "**DANGER EXPLOSIVES**" and shall be in care of competent watchmen. All permits required for the use of explosives shall be obtained by the CONTRACTOR at his expense. All requirements of the governmental agency issuing permit shall be observed.

GENERAL CONDITION, PART F, ARTICLE 9, CONTRACTOR'S RESPONSIBILITIES, "**Damage to Existing Structures and Utilities**", is added as follows:

Damage to Existing Structures and Utilities: The CONTRACTOR shall be responsible for and make good all damage resulting from his activities, both within and beyond the limits of this contract, to buildings, telephone, power or other cables, water pipes, storm sewer facilities, sanitary pipes, gas lines, traffic signalization, or other utilities or structures, which may be encountered, whether or not shown on the plans.

GENERAL CONDITION, PART F, ARTICLE 9, CONTRACTOR'S RESPONSIBILITIES, "**Cleaning Up**", is appended as follows:

Final Clean Up: The entire street shall be cleaned by sweeping or washing, as determined by the PROJECT MANAGER, prior to final acceptance.

ARTICLE 10 – WORK BY OTHERS AND UTILITY COORDINATION

GENERAL CONDITION, PART F, ARTICLE 10, WORK BY OTHERS, is appended as follows:

The CONTRACTOR shall cooperate with owners of any underground or overhead utilities in their removal and relocation operations, in order that these operations may progress in a timely, reasonable and orderly manner and that service rendered by these parties will not be interrupted.

Excavators shall comply with Florida Statutes, Chapter 553.851, regarding notification of existing gas and oil pipeline company owners prior to excavating. **Evidence of such notice shall be furnished to the PROJECT MANAGER prior to excavating.** During the period of this contract the CONTRACTOR shall coordinate all utility relocations and adjustments necessary for the project. The CONTRACTOR shall conduct meetings weekly or at a frequency approved by the Engineer with all affected Utility Owners, and the minutes of those meetings shall be distributed to each Utility owner, the PROJECT MANAGER, and any other affected entity. The CONTRACTOR shall incorporate the durations listed in the Utility Relocation Schedules into his Contract Schedule, and transmit copies of that schedule to each Utility owner. The CONTRACTOR shall constantly communicate the status of the progress of the project to the Utility Owners, and advise them of any potential impacts to the progress due to the presence of

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the utilities. The CONTRACTOR shall keep the COUNTY and the County's PROJECT MANAGER apprised of all developments related to Utility Relocation and job progress. The CONTRACTOR shall coordinate during the period of this contract with the applicable lighting facility owners for the installation of roadway lighting facilities for the project. CONTRACTOR shall not be entitled to additional compensation from COUNTY as a result of failure of any utility to remove, relocate, or install their facilities within any particular time frame.

ARTICLE 11 – PROJECT OWNER STATUS DURING CONSTRUCTION

No changes. See PART F GENERAL CONDITIONS.

ARTICLE 12 – CHANGES IN THE WORK

No changes. See PART F GENERAL CONDITIONS.

ARTICLE 13 – CHANGE OF CONTRACT AMOUNT AND CONTRACT TIME

GENERAL CONDITION, PART F, ARTICLE 13, CHANGE OF CONTRACT AMOUNT AND CONTRACT TIME, is appended as follows:

The number of days of any change to the contract time incorporated by Change Order shall be applied to both the Substantial Completion time and the Final Completion time, unless otherwise established by the COUNTY in these specifications.

ARTICLE 14 – CONDITION OF MATERIALS AND PACKAGING

No changes. See PART F GENERAL CONDITIONS.

ARTICLE 15 – ASBESTOS FREE MATERIALS

No changes. See PART F GENERAL CONDITIONS.

ARTICLE 16 – WARRANTY AND GUARANTEE, ACCEPTANCE OF DEFECTIVE WORK

GENERAL CONDITION, PART F, ARTICLE 16, WARRANTY AND GUARANTEE, ACCEPTANCE OF DEFECTIVE WORK, "Tests and Inspections", is appended as follows:

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The cost of laboratory testing routinely performed on the job site or subsequent to samples typically retrieved from the job site, shall be borne by the COUNTY, except for testing called for in the Technical Provisions to be provided by the CONTRACTOR. Concrete and Soil-Cement mix design, and groundwater testing costs shall be borne by the CONTRACTOR.

All testing, except Soil-Cement testing, shall be in accordance with the applicable portions of Division I, Section 6 of the STANDARD SPECIFICATIONS. Soil-Cement testing shall be in accordance with Part H, Technical Provision 270 (TP-270).

The Record Laboratory is the testing laboratory contracted by the COUNTY. Only results of testing by the Record Laboratory shall be considered in evaluating the CONTRACTOR'S compliance with contract requirements.

The CONTRACTOR may be required to reimburse the COUNTY for the cost of all failed tests, including consultant fees, when the percentage of failed tests exceeds 15% of all tests taken. At the COUNTY'S discretion these costs may be deducted from the contract amount.

ARTICLE 17 – DELAYS AND EXTENSION OF TIME

No changes. See PART F GENERAL CONDITIONS.

ARTICLE 18 – PAYMENT AND COMPLETION

No changes. See PART F GENERAL CONDITIONS.

ARTICLE 19 – SUSPENSION OF WORK AND TERMINATION

No changes. See PART F GENERAL CONDITIONS.

ARTICLE 20 – MAINTENANCE AND EXAMINATION OF RECORDS

No changes. See PART F GENERAL CONDITIONS.

ARTICLE 21 – MINORITY/WOMEN OWNED BUSINESS ENTERPRISE REQUIREMENTS AND SMALL BUSINESS PROVISIONS

No changes. See PART F GENERAL CONDITIONS.

ARTICLE 22 – FEDERAL REQUIREMENTS

No changes. See PART F GENERAL CONDITIONS.

ARTICLE 23 – VERBAL ORDERS

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No changes. See PART F GENERAL CONDITIONS.

ARTICLE 24 – MISCELLANEOUS

GENERAL CONDITION, PART F, ARTICLE 24, MISCELLANEOUS, is appended as follows:

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

ARTICLE 25 – CONTRACT CLAIMS

No changes. See PART F GENERAL CONDITIONS.

ARTICLE 26 – VALUE ENGINEERING

No changes. See PART F GENERAL CONDITIONS.

ARTICLE 27 – PATENTS AND ROYALTIES

No changes. See PART F GENERAL CONDITIONS.

ARTICLE 28, PROSECUTION AND PROGRESS OF WORK, is added as follows:

ARTICLE 28 - PROSECUTION AND PROGRESS OF WORK

Submission of Working Schedule: The CONTRACTOR shall provide a schedule that shows the various activities of work in sufficient detail to demonstrate a reasonable and workable plan to complete the project within the established Contract Time. The order and interdependence of activities and the sequence for accomplishing the work shall be shown. All activities shall be described in sufficient detail so that the COUNTY can readily identify the planned work and measure the progress of each activity. Each activity will be shown with a beginning work date, duration, and monetary value.

Activities for the procurement, fabrication, and/or delivery of materials, batch plants, and equipment shall be included.

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Activities for the review of shop drawings and submittals shall be included.

Activities indicating coordination with utility owners that have facilities within the limits of construction requiring adjustment or relocation shall be included.

Milestone activities, when required by the Contract Documents, shall be included.

In a project with more than one phase, each phase and its completion date shall be adequately identified. Activities will not be allowed to span more than one phase.

The CONTRACTOR shall submit a narrative with the schedule, consisting of a concise written description of the construction plan.

An updated Work Progress Schedule shall be submitted monthly to the COUNTY. All changes in the planned order start or finish dates, or duration of an activity will be applied.

A revised Work Progress Schedule shall be submitted to the COUNTY for acceptance when significant changes are made to the logic or durations of the activities. The COUNTY will review the corrected schedule and respond within 7 calendar days of receipt.

The COUNTY will return inadequate schedules to the CONTRACTOR for corrections. A corrected schedule will be resubmitted within 15 calendar days from the date of the COUNTY's return transmittal. By acceptance of the schedule, the COUNTY does not endorse or otherwise certify the validity or accuracy of the activity durations or sequencing of activities.

The COUNTY will use the initially accepted schedule as the baseline against which to measure progress and identify critical activities that are controlling items of work.

If the CONTRACTOR fails to finalize either the initial or a revised schedule in the time specified, the COUNTY will withhold all Contract payments until the schedule is accepted.

Work Hours: Project work hours shall be between 7:00 AM and 6:00 PM Monday through Friday, exclusive of normal Orange County holidays, unless approved otherwise by the PROJECT MANAGER. The CONTRACTOR shall request approval from the PROJECT MANAGER at least 72 hours in advance for work outside those hours. Work before 7:00AM or after 3:30PM, or on days other than the above described normal work days, and requiring the presence of the COUNTY'S RESIDENT PROJECT REPRESENTATIVE shall require that the CONTRACTOR reimburse the COUNTY for the salary and overtime cost of the RESIDENT PROJECT REPRESENTATIVE. Reimbursement shall be made by the CONTRACTOR at the rate of \$44.00 per hour by check payable to the Board of County Commissioners accompanying each monthly pay request. Each pay request shall include a tabulation of the overtime dates, times, hours and costs for the preceding month. The amount of the check must agree with the tabulated total. In the event the CONTRACTOR chooses to not submit a pay request when normally due for work he has completed, the CONTRACTOR shall submit a pay request showing that no payment is due to him, and shall include the tabulation of the overtime worked during the preceding month. Payment must be made for overtime work performed to address emergencies outside the above described normal working hours, unless the RESIDENT

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PROJECT REPRESENTATIVE determines, at his or her sole discretion that the emergency is the result of actions by third parties.

Compliance with Time Requirements: The CONTRACTOR shall commence work in accordance with the accepted Work Progress Schedule and provide sufficient labor, materials and equipment to complete the work within the time limit(s) set forth. Should the CONTRACTOR fail to furnish sufficient and suitable equipment, forces, and materials, as necessary to prosecute the work in accordance with the accepted schedule, the COUNTY may withhold all estimates that are, or may become due, and/or suspend the work until the CONTRACTOR corrects such deficiencies.

Video Survey: The CONTRACTOR shall submit a quality video documenting before and after construction field conditions for the entire project. The PROJECT MANAGER will approve all views.

Payment for this item will be included in other items of work.

Project Progress Aerial Photographs: The CONTRACTOR shall submit aerial photographic prints monthly with progress payment requests. The first set of aerial photographic prints must be taken prior to any clearing and grubbing. The aerial photographs shall be in color and at least 11" x 14" (280 mm x 356 mm) in size. Exposures shall be made at 10 per mile (10 per 1.6 km) minimum plus one exposure for each offsite construction area. The PROJECT MANAGER will approve all views.

Payment for this item will be included in other items of work.

ARTICLE 29, METHOD OF MEASUREMENT, is added as follows:

ARTICLE 29 - METHOD OF MEASUREMENT

All measurements for payment shall be based on the completed work performed in strict accordance with Contract Documents. All work completed under this contract shall be measured by the CONTRACTOR or his representatives in the presence of the PROJECT MANAGER.

THIS ENDS THE SUPPLEMENTAL CONDITIONS

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SPECIAL PROVISIONS

- 1. PROJECT DESCRIPTION:** This project consists of constructing an alum addition system to remove nutrients from an existing 1.77-acre wet detention pond which discharges into the north side of Lake Anderson in Orange County, Florida. The project site consists of a 3.84-acre parcel located on the north side of Lake Anderson on the southeast corner of Anderson Road and Conway Gardens Road. Water from the pond will be pumped to a 19'2" x 13'2" covered shelter where the pH will be monitored and alum added. The treated pond water will pass through a venturi system where air will be added and the aerated mixture will be injected into the middle of the pond. The alum treated water and aerated floc will disperse throughout the pond, and the precipitate will accumulate in the pond. The treated pond water will discharge to Lake Anderson through the existing outflow structure. Controls for the system will be contained in a 252-ft open pavilion.
- 2. CONSTRUCTION SCHEDULE / LIQUIDATED DAMAGES:** This work requires Substantial Completion in 180 days from the date of the Delivery Order with Final Completion in 240 days. If substantial and final completion is not met by the required time, liquidated damages will be applied at the rate of \$1,000.00 per day as per the provisions in the Contract governing liquidated damages.
- 3. UTILITY COORDINATION:** The CONTRACTOR is to coordinate any utility improvements and / or relocations for this project. The CONTRACTOR shall not use utility delays as a basis for additional compensation. Contractor shall be responsible for all coordination with utilities and shall cooperate fully with utility companies in the relocation of their facilities.
- 4. RIGHT-OF-WAY / PARCEL CONSIDERATIONS:** The CONTRACTOR is notified that at the time of this bid, the COUNTY has acquired all of the right-of-way to complete the project. All work efforts must be conducted within the available right-of-way areas.
- 5. MAINTENANCE OF TRAFFIC:** At the pre-construction conference the CONTRACTOR shall submit a detailed Maintenance of Traffic plan approved by Orange County, Traffic Engineering to the Orange County Highway Construction Division. The Maintenance of Traffic plan shall address the maintenance of vehicular and pedestrian traffic between the limits of construction, as well providing business signage for all business along the corridor, and must be signed and sealed by a Professional Engineer registered in the State of Florida. The cost of preparing this plan, including a Permit Fee by Orange County Traffic Engineering Division in the amount of \$128 shall be included in Pay Item 102-1, Maintenance of Traffic. The attached Maintenance of Traffic plans provided by the COUNTY is for reference and guidance only. CONTRACTOR shall not be entitled to any additional compensation as a result of the Maintenance of Traffic plan he/she chooses to use, whether or not he/she prepared such plan.

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The CONTRACTOR shall provide uniformed off-duty law enforcement officer(s) for all night time lane closures. The Cost shall be included in pay item number 102-1, Maintenance of Traffic.

6. DEWATERING.

A. General: The CONTRACTOR is responsible to obtain or modify, as necessary, any and all dewatering permits required by the STATE and COUNTY agencies. No special compensation will be made to the CONTRACTOR to defray the cost of dewatering; to obtain a permit to treat and discharge the contaminated ground water; to provide water quality treatment or to abide by any dewatering permits, as such costs shall be considered to have been included in the price stipulated for the several items of work to be done under this contract. During construction, the CONTRACTOR is responsible to take corrective action and to make necessary schedule adjustments without additional compensation, to adequately address dewatering activities, regardless of storm or rain event so that the project is not delayed and dewatering water is disposed of in accordance with the permit. The CONTRACTOR is responsible to comply with the conditions of the dewatering permit, and submit any required reports to the appropriate agencies.

B. Florida Department of Environmental Protection: The CONTRACTOR shall be responsible for compliance with the FDEP Generic Permit for the Discharge of Produced Ground Water from Any Non-Contaminated Site Activity, including its testing and monitoring requirements. The following is a link to the above permit: [http://www.dep.state.fl.us/legal/Rules/shared/62-621\(2\).doc](http://www.dep.state.fl.us/legal/Rules/shared/62-621(2).doc). If it is determined that the disposal or discharge of the dewatering effluent is not authorized by this generic permit, the CONTRACTOR shall diligently pursue further required permit(s) from FDEP or other agencies.

Prior to submitting their bid, each prospective CONTRACTOR has the opportunity to perform his/her own water sampling to determine the extent, if any, of groundwater exceedances beyond the allowable levels listed in FDEP's Generic Permit for the Discharge of Produced Ground Water from Any Non-Contaminated Site Activity within the PROJECT boundaries. All sampling shall be performed under COUNTY supervision, and in conformance with applicable Best Management Practices (BMP) and any and all applicable STATE and COUNTY permits. It is the intent of this paragraph to provide each prospective CONTRACTOR with an opportunity to investigate the water quality in the vicinity of the PROJECT in order to base his/her bid on means and methods of dewatering.

If, prior to or during the dewatering, it is determined that the disposal or discharge of the dewatering effluent is not authorized by the FDEP's Generic Permit for the

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Discharge of Produced Ground Water from Any Non-Contaminated Site Activity, the CONTRACTOR shall diligently pursue further required permit(s) from FDEP or other agencies without resort to delay claims or recompense from the COUNTY for either permit application activities or the time required to obtain such permits.

The CONTRACTOR shall be responsible for all costs for water quality monitoring, treatment, storage, and disposal of the groundwater in a manner acceptable to the COUNTY and to all applicable regulatory agencies to reduce the concentration of parameters with exceedances to acceptable levels. The CONTRACTOR will be responsible for obtaining any additional permits required by regulatory agencies to implement the CONTRACTOR's chosen method of disposal and discharge of the groundwater. No additional compensation will be made to CONTRACTOR for permitting. The CONTRACTOR shall comply with Water Quality Requirements of the Special Provisions, Special Project Consideration item 5.

The CONTRACTOR is responsible for meeting all general conditions of all FDEP permits and for submitting any required reports to the appropriate agencies. Treatment, disposal and monitoring for water quality compliance shall be paid under Pay Item TP-900-3. No other separate payment shall be made to the CONTRACTOR to cover any costs related to dewatering.

Because the CONTRACTOR'S means and methods of dewatering could lead to potential liability to third parties for damages resulting from the means and methods of dewatering, at the COUNTY'S discretion the means and methods for the dewatering plans are subject to a prior cursory review by the COUNTY where issues and concerns may be submitted for the CONTRACTOR'S consideration.

The CONTRACTOR shall be deemed fully responsible for the means and method of the dewatering. Should the CONTRACTOR decide to modify or revise the means and method for the dewatering plan, another cursory review will have to be conducted by the COUNTY. Please note that containment on site of dewatering effluent is not considered treatment and disposal for purposes of payment under the above described pay item.

CONTRACTOR is responsible to include in his bid all cost for treatment and disposal of dewatering effluent. Should it become necessary for the CONTRACTOR to treat and dispose off site of dewatering effluent Orange County will only compensate the CONTRACTOR for those activities at the unit price bid. No additional compensation will be paid to the CONTRACTOR for treatment and disposal of dewatering effluent, regardless of the actual cost incurred by the CONTRACTOR.

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- C. **St. Johns River Water Management District (SJRWMD)**: The CONTRACTOR shall be responsible for compliance with all applicable requirements of Rule 40C-2 (Permitting of Consumptive Uses of Water), Florida Administrative Code (FAC). Rule 40C-2.051 provides an exemption for short-term dewatering conducted for maintenance or construction in existing stormwater management systems provided the withdrawal is 300,000 gallons/day or less, and the withdrawal does not exceed 30 days in duration, provided that discharges occur through the permitted outfall structure. However, the CONTRACTOR is still responsible for maintaining applicable water quality criteria in the discharges to the receiving water, particularly turbidity. If the CONTRACTOR'S proposed work is expected to exceed 30 days in duration, or does not meet any of the other requirements listed with the requirements of Rule 40C-2.051, the CONTRACTOR must apply for and obtain the appropriate Consumptive Use Permit, or such other Water Use Permit that may be required by the Water Management District, at no cost to the COUNTY.

The CONTRACTOR is responsible for all surface water flowing through the site and shall be responsible for all costs associated with such activities at no additional cost to the COUNTY. During construction, the CONTRACTOR is responsible to take corrective action and to make necessary schedule adjustments without additional compensation, to adequately address dewatering activities, regardless of storm or rain event so that the project is not delayed and dewatering water is disposed of in accordance with guidelines established in Rule 40C-2.051.

7. **PAY ITEMS**: The cost of all equipment, materials and labor for temporary or permanent facilities necessary to construct the improvements identified in the plans, specifications, or other Contract Documents shall be deemed to be included in the various items making up the Contract Price. No separate payment shall be made to the CONTRACTOR for any such equipment, materials and labor for which a separate Pay Item has not been provided. No adjustments shall be made on this contract to the bid price of any product or material, including gasoline, diesel or other fuels, and bituminous materials, including asphalt, due to fluctuations in market prices, changes in suppliers, or any other reasons.
8. **ENVIRONMENTAL CONCERNS**:
- A. **Threatened and Endangered Species**: No threatened or endangered species are known to exist on the project site. No additional compensation will be provided in the event the CONTRACTOR is required to modify his means and methods or construction schedule in order to comply with the requirements of any regulatory agency with regard to any endangered species which may be encountered within or in proximity to the project limits during construction. The CONTRACTOR may be granted non-compensable days to the

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extent the critical path of the project is impacted by temporary work stoppages that may be required to address the presence of endangered species as mentioned above.

9. **REQUEST FOR ADDITIONAL INFORMATION (RAI):** The COUNTY will require a reasonable amount of time, at least 15 business days, to respond to any RAI submitted by the CONTRACTOR. Any delay in responding to the RAI cannot be used as a reason to reimburse for any additional compensation, including delay claims.
10. **EARTHWORK:** The CONTRACTOR is notified that the soil survey shown in the plans is based on limited geotechnical investigation. The CONTRACTOR is to field verify and test all excavated earthwork material to determine if the soil is suitable for intended purposes. In the event that any excavated earthwork material is not suitable for the intended purposes, the CONTRACTOR shall replace the unsuitable material with Select soil, as necessary, to complete the project, as designed and intended, at no additional cost to the COUNTY. The CONTRACTOR shall be responsible for the disposal of the unsuitable material at a COUNTY approved site at no additional cost to the COUNTY.
11. The Contractor will be responsible for obtaining the approved Building Permits (B15901628) for this project from the Orange County Building Department (call 407-836-5760 or email at PlansCoordination@ocfl.net). The permit fees of \$1,500 shall be paid by the Contractor, and this cost shall be included under the pay item 101-1.

PERMITS

1. St. Johns River Water Management District Permit

The CONTRACTOR shall be responsible for all applicable conditions (as determined by the COUNTY) of the St. Johns River Water Management District Permit No. 64864-5, issued on 12/04/2015, including, but not limited to the following: 1-4, 6, 8-20 and 22 (Exhibit-A). Specifically, the CONTRACTOR is responsible for such aforementioned obligations of the permits. No special compensation will be made to the CONTRACTOR to defray costs of any of the work or delays for complying with the requirements of St. Johns River Water Management District Permit No. 64864-5, but such costs shall be considered as having been included in the price stipulated for the several items of work to be done under this contract.

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2. National Pollutant Discharge Elimination System (NPDES) Stormwater Construction Permit

The Contractor shall be responsible to prepare and submit the Notices of Intent (NOI) and the Notice of Termination (NOT) to the Florida Department of Environmental Protection (FDEP). The Contractor shall be responsible to adhere to the construction plan sheet documents addressing the Stormwater Pollution Prevention Plan (SWPPP) and shall identify and incorporate any and all additional needs to prevent, control and reduce erosion and water pollution, meeting the requirements or special conditions of all permits authorizing project construction. The SWPPP, NOI and NOT forms, attached to this document, must be completed and submitted by the CONTRACTOR to the COUNTY prior to the preconstruction meeting.

- The NOI should be submitted at least two days prior to commencement of construction (permit fees are the responsibility of the CONTRACTOR).
- The NOT should be submitted within 14 days of final completion of the project (permit fees, if any, are the responsibility of the CONTRACTOR).

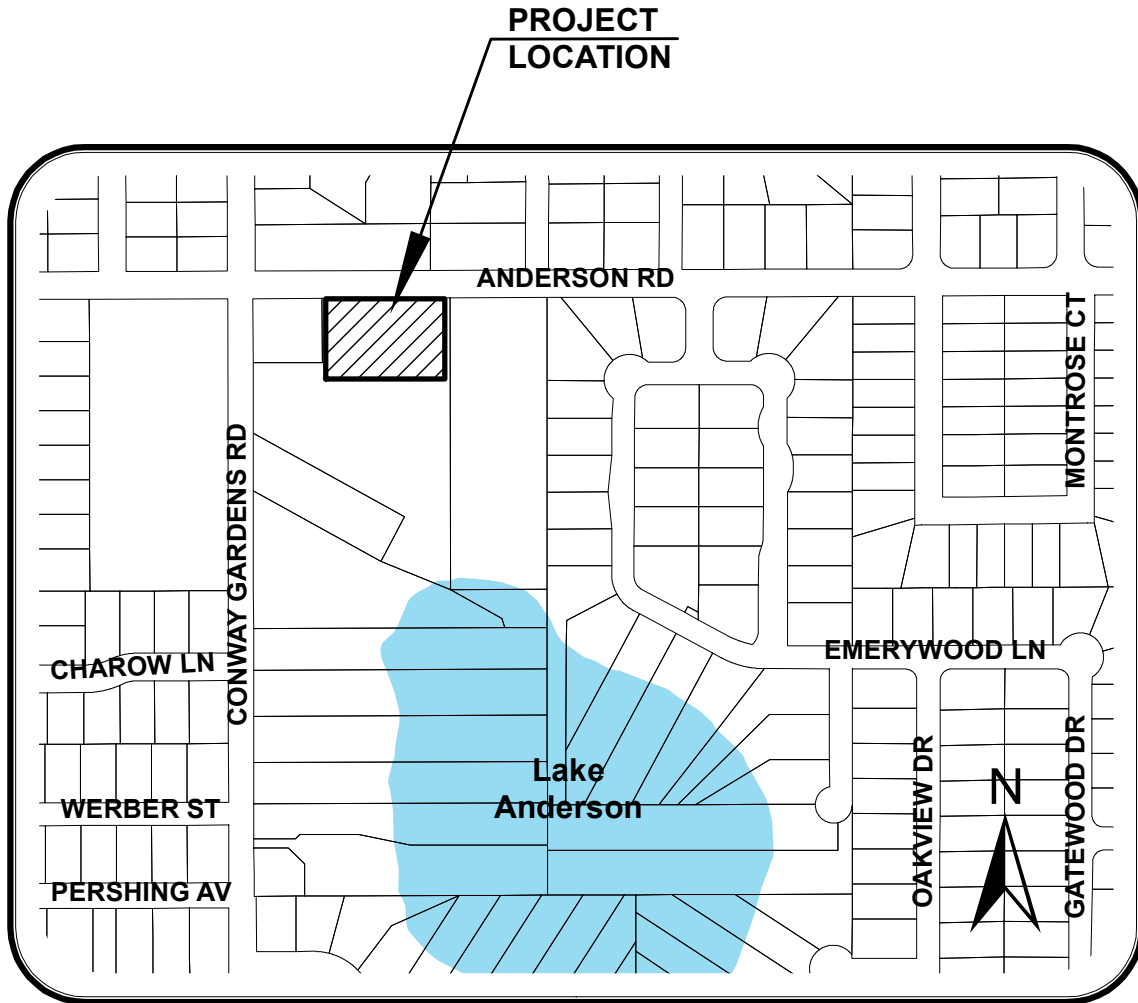
The CONTRACTOR shall be responsible for compliance with the EPA's NPDES Stormwater Construction permit, the Stormwater Pollution Prevention Plan and the FDEP Generic Permit for Stormwater Discharge from Construction Activities that Disturb One or More Acres of Land. Copies of the Generic Permit Conditions and the Final Modification of the National Pollutant Discharge Elimination System (NPDES) General Permit for Stormwater Discharges from Construction Activities are attached. Furthermore, the Contractor shall also comply with the FDEP Generic Permit for the discharge of produced ground water from any non-contaminated site activity due to the dewatering operation. The Contractor shall comply with the testing and monitoring requirements indicated in the above reference document.

The cost of this work will be included under pay item No 104-14 - Prevention, Control and Abatement of Erosion and Water Pollution.

THIS ENDS THE SPECIAL PROVISIONS

LAKE ANDERSON POND ALUM TREATMENT PROJECT

LOCATION MAP



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TP 101-1 MOBILIZATION

Scope of Work

Mobilization shall include all preparatory work and operations in mobilizing for beginning work on the project, including, but not limited to, those operations necessary for the movement of personnel, equipment, supplies, and incidentals to the project site and for the establishment of temporary offices, buildings, safety equipment and first aid supplies, and sanitary and other facilities.

Include the costs of bonds and any required insurance and any other pre-construction expense necessary for the start of the work, excluding the cost of construction materials.

Mobilization shall include all items detailed in Article 101 of the Standard Specifications, the Special Provisions and on the plans, except as directed by the Engineer.

Preservation of Property Corners including all items detailed in Section 7-11 of the Standard Specifications shall be included in the contract price for mobilization.

Basis of Payment

The work and incidental costs covered under Mobilization will be paid for at the contract lump sum price and will be paid in partial payments in accordance with the following:

Percent of Original Contract Amount Earned	Allowable Percent of the Lump Sum Price for the Items*
5	25
10	50
25	75
50	100

*Partial payments as detailed above will be limited to 10% of the original Contract amount for the roadway pay items. Any amount of mobilization in excess of 10% of the roadway pay items will be paid upon completion of all work.

Payment shall be made under:

Item No. 101-1 Mobilization - Lump Sum

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TP 102-1: MAINTENANCE OF TRAFFIC

Scope of Work

All Maintenance of Traffic work shall conform to the requirements of Section 102 of the Standard Specifications, Index 600 of the FDOT Design Standards, the plans, and/or as herein modified, except as directed by the Engineer.

The road shall be kept open to two-way traffic on a paved surface during construction except when full closures are allowed by the plans or by the Engineer. The Contractor shall not be permitted to isolate residences or places of business. Access shall be provided to all residences and all places of business whenever construction interferes with the existing means of access.

The Contractor shall furnish, erect and maintain all necessary traffic control devices, including flagmen and pilot cars, in accordance with the Manual of Uniform Traffic Control Devices for Streets and Highways, published by the U.S. Department of Transportation, Federal Highway Administration. The Contractor shall provide and maintain in a safe condition the entire project limits included, but not limited to pre-existing conditions, driving lanes, temporary approaches, crossings, and intersections with trails, roads, streets, business parking lots, residences, garages and completed work. The Contractor shall take all necessary precautions for the protection of the work and the safety of the public in accordance with Section 102.

The Contractor shall present his signed and sealed Maintenance of Traffic Plan that is approved by Orange County Traffic Engineering to the Engineer at the preconstruction conference, and shall be fully and solely responsible for the adequacy of the Maintenance of Traffic plan regardless of the source. The plan shall be signed and sealed by a professional engineer licensed in the State of Florida.

The Contractor shall be responsible for installation of signs for all business along the project corridor. Signs should be manufactured and installed in accordance with FDOT design standards. No special compensation will be made to the contractor to defray costs of any of the work or delays for complying with the requirements of installing business signs, but such costs shall be considered as having been included in the price stipulated for the Maintenance of Traffic pay item.

Basis of Payment

All materials, work and incidental costs related to Maintenance of Traffic will be paid for at the contract lump sum price. All material, labor and equipment necessary for the construction of roadway & muck surcharge system, and maintenance of the entire project limits included, but not limited to pre-existing conditions, driving lanes, temporary approaches, crossings, intersections with trails, roads, streets, business parking lots, residences, garages, temporary driving lanes, side streets, and driveway connections, and completed work, as may be directed by the Engineer shall be included in the contract price.

Payment will be made under:

Item No. 102-1	Maintenance of Traffic	- Lump Sum
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**TP 104-14: PREVENTION, CONTROL, AND ABATEMENT
OF EROSION AND WATER POLLUTION**

Scope of Work

Prevention, control and abatement of erosion and water pollution shall conform to the requirements of Section 104 of the Standard Specifications, National Pollution Discharge Elimination System (NPDES) requirements, except as modified by these Technical Provisions or as directed by the Engineer.

The Contractor shall present at the Preconstruction Conference its Storm Water Pollution Prevention Plan (SWPPP) and a separate schedule to manage erosion and water pollution. This schedule shall include a complete outline of the proposed construction of all erosion and pollution control and abatement items required.

The Contractor shall be responsible for the preparation and submittal of the Notice of Intent (NOI) and Notice of Termination (NOT) to the Florida Department of Environmental Protection (FDEP) and shall obtain the FDEP Generic Permit for Stormwater Discharge from Large and Small Construction Activities.

Basis of Payment

All work and incidental costs required to comply with the articles of this specification will be paid at the contract lump sum price for Prevention, Control and Abatement of Erosion and Water Pollution.

Payment will be made under:

Item No. 104-14 Prevention, Control, and Abatement of Erosion and Water Pollution

- Lump Sum

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TP 400-7-77: CONCRETE POND (INCLUDING REINFORCEMENT)

A. CONCRETE FORMWORK

PART 1 - GENERAL

1.01 DESCRIPTION

- A. The work included in this section consists of providing all labor, materials and equipment necessary for providing and installing formwork for concrete.

1.02 QUALITY ASSURANCE

- A. Qualifications: Formwork shall be constructed in accordance with the specified standards, as well as all pertinent codes and regulations. Where provisions of pertinent codes conflict with the requirements of this section of these specifications, the more stringent provisions shall govern.
- B. Standards: Unless otherwise indicated, all materials, workmanship and practices shall conform to the following standards:
1. Standard Building Code
 2. ACI 347 "Recommended Practice for Concrete Formwork"
 3. Local Codes and Regulations
- C. Pre-placement Checklist: The Contractor, as part of his Quality Control Plan, shall develop and submit for approval a Pre-placement Checklist form to cover the following items:
1. Reference Drawings covering the placement for all trades and disciplines.
 2. Date and time scheduled for placement and the actual date and time of placement.
 3. Foreman name, placement number, number of truckloads and number of cylinders.
 4. Checklist items such as embeds (list each), subgrade, rebar, forms, alignment, plumbness, etc.
 5. Sign-offs for foreman, Contractor's Quality Control representative, each subcontractor foreman (major subs, mechanical, electrical, plumbing, etc.) and Construction Manager.
- D. No concrete may be placed until the checklist is properly and completely signed off. Failure to comply with this provision can be grounds for rejecting the work. The checklist shall be weather protected and located with the foreman or at the foreman's station.

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1.03 SUBMITTALS

- A. Materials: Submit manufacturer's literature on form ties, spreaders, corner formers, form coatings and bond breakers.

PART 2 - PRODUCTS

2.01 MATERIALS

- A. Form Lumber: Use form lumber when in contact with exposed concrete, conforming to one of the following, a combination thereof, or equivalent as approved by the Engineer.
1. Lumber: Douglas Fir-Larch No. 2 grade, seasoned, surfaced on four sides.
 2. Plywood: "Plyform", Class I or II, bearing the label of the Douglas Plywood Association. (Minimum 3/4-inch thickness).
- B. Form Ties: Use form ties which do not leave an open hole through the concrete and which permit neat and solid patching at every hole. Use embedded rods with integral waterstops and cones to provide a 1-inch breakback. Wire ties and wood spreaders will not be permitted.
- C. Form Coatings: Form release coating shall be a paraffin base oil or mineral oil coating which effectively prevents absorption of moisture, prevents bonding with concrete, is non-staining to concrete and leaves the concrete with a paintable surface.
- D. Chamfer Strips: Chamfer strips shall be polyvinyl strips or approved equal, designed to be nailed in the forms to provide a 3/4-inch chamfer (unless indicated otherwise) at exposed edges of concrete members.

PART 3 - EXECUTION

3.01 INSTALLATION

- A. Construction of Formwork: Forms shall be sufficiently strong to withstand the pressure resulting from the placement and vibration of concrete and shall be sufficiently rigid to maintain specified tolerances. Forms shall be sufficiently tight to prevent loss of mortar, and shall be adequately braced against lateral, upward or downward movement.
- B. Coating of Forms: Apply form coating to board forms prior to placing steel reinforcing. Keep form coatings off steel reinforcing, items to be embedded and previously placed concrete.
- C. Form Erection:
1. Provide a means of holding adjacent edges and ends of panels and sections tightly together and in accurate alignment so as to prevent the formation of ridges, fins, offsets, or similar surface defects of the finished concrete. Insure that forms may be removed without injury to the surface of the finished concrete.

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2. Provide a positive means of adjustment of shores and struts. Insure that all settlement is taken up during concrete placing.
3. Temporary openings shall be provided in wall forms to limit the free-fall of concrete to a maximum of 6 feet unless an elephant truck is used. Such openings shall be located to facilitate placing and consolidation and shall be spaced no more than 8 feet apart. Temporary openings shall also be provided in the bottom of wall and column forms and elsewhere as necessary to facilitate cleaning and observation immediately prior to placing.
4. Do not embed any form-tying device or part thereof other than metal in concrete.
5. Form surfaces of concrete members except where placement of the concrete against the ground is shown on the drawings. The dimensions of concrete members shown on the drawings apply to formed surfaces, except where otherwise indicated.

D. Removal of Forms:

1. Remove forms when concrete compressive strength, as determined by test cylinders, reaches specified 28-day compressive strength.
2. Do not remove forms from concrete which have been placed with outside air temperature below 50EF without first determining if the concrete has properly set without regard for time. Do not apply heavy loading on green concrete. Immediately after forms are removed, the surface of the concrete shall be carefully examined and any irregularities in the surface shall be repaired and finished as specified.

E. Formed Openings: Openings shall be of sufficient size to permit final alignment of the items within it without deflection or offsets of any kind and to allow space for packing where the items pass through the wall to ensure water tightness around openings so formed. Provide openings with continuous keyways with waterstops where required, and provide a slight flare to facilitate grouting and the escape of entrained air during grouting. Provide formed openings with reinforcement as indicated and specified. Reinforcing steel shall be at least 2 inches clear from the opening.

F. Embedded Items: Set anchor bolts and other embedded items accurately and hold securely in position in the forms until the concrete is placed and set. Check all special castings, channels, or other metal parts that are to be embedded in the concrete prior to and again after concreting. Check all nailing, blocks, plugs and strips necessary for the attachment of trim, finish and similar work prior to concreting.

G. Pipes and Wall Spools Cast in Concrete:

1. Install wall spools, wall flanges and wall anchors before placing concrete. Do not weld, tie or otherwise connect the wall spools in the reinforcing steel.
2. Support pipe and fabricated fittings to be encased in concrete on concrete piers or pedestals. Carry concrete supports to firm foundations so that no settlement will be possible during construction.

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H. Form Tolerances:

1. Failure of the forms to produce the specified concrete surface tolerance shall be grounds for rejection of the concrete work. Rejected work shall be repaired or replaced at no cost to the Owner.
2. The following table indicates tolerances or allowable variations from dimensions or positions of structural concrete work:

	<u>Maximum Tolerance</u>
Sleeves and Inserts	$\pm 1/3"$ to $-1/4"$
Projected Ends of Anchors	$\pm 1/4"$ to $-0.0"$
Anchor Bolt Setting	$\pm 1/4"$ to $-1/4"$
Finished Concrete, All Locations	$\pm 1/4"$ to $-1/4"$ in 10 ft of length

The plane or axes from which the above tolerances are to be measured shall be as follows:

Sleeves and Inserts	Centerline of sleeve or insert
Projected Ends of Anchors	Plane perpendicular to the end of the anchor as located on the drawings.
Anchor Bolt Setting	Centerline of anchor bolt
Finish Concrete	The concrete surface as located on the drawings.

3. Where equipment is to be installed, comply with manufacturer's tolerances if more severe than above.

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B. CONCRETE REINFORCEMENT

PART 1 - GENERAL

1.01 DESCRIPTION

- A. Scope of Work: This section consists of providing all labor, materials, equipment and incidentals required to install all steel bars, steel wire and wire fabric required for the reinforcement of concrete, as shown on the Drawings, and as specified herein.

1.02 QUALITY ASSURANCE

- A. Standards: Unless otherwise indicated, all material, workmanship and practices shall conform to the following standards:
1. Standard Building Code
 2. ACI 315 "Details and Detailing of Concrete Reinforcement", latest edition
 3. CRSI Manual of Standard Practices
 4. Local codes and regulations

1.03 SUBMITTALS

- A. Materials and Shop Drawings:
1. Submit mill test certificates identifying chemical and physical analyses for each load of reinforcing steel delivered, if requested by Engineer.
 2. Submit reinforcing bending lists and placing drawings for all reinforcing. Placing drawings shall indicate all openings (mechanical, electrical, equipment), including additional reinforcing at openings and intersecting wall, beam and footing arrangements as indicated on the structural drawings and specified herein. Placing drawings shall be coordinated with the concrete placing schedule. Each bending list and placing drawing submitted shall be complete for each major element of a structure (grade slabs, footings, walls, floor or beams), including all dowels and other bars as required. Furnishing such lists shall not be construed that the list will be reviewed for accuracy. The contractor shall be wholly and completely responsible for the accuracy of the list and for furnishing and placing reinforcing steel in accordance with the details shown on the plans and as specified.

1.04 PRODUCT DELIVERY, STORAGE AND HANDLING

- A. Reinforcement shall be shipped to the work with bars of the same size and shape fastened in bundles with metal identification tags giving size and mark securely wired on. The identification tags shall be labeled with the same designation as shown on the submitted bar lists and shop drawings.
- B. All bars shall be stored off the ground and shall be protected from moisture and be kept free from dirt, oil or injurious contaminants.

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PART 2 - PRODUCTS

2.01 MATERIALS

- A. Concrete reinforcement in sizes No. 3 (3/8") and larger shall be deformed steel bars of the same sizes and shapes indicated on the Drawings. The steel shall be newly rolled stock of domestic manufacturer, substantially free from mill scale, rust, dirt, grease or other foreign matter. Bars shall be of intermediate grade, deformed billet steel conforming to ASTM Specification A615, Grade 60, including all supplementary requirements.
- B. Rail-steel bars will not be allowed in the work.
- C. Reinforcement shall be accurately fabricated to the dimensions indicated on the Drawings. Particular care shall be exercised not to have stirrups oversized in order to maintain proper coverage of concrete. Stirrups and tie bars shall be made around a pin having a diameter not less than 2 times the maximum thickness of the bar. Bends for other bars shall be made around a pin having a diameter not less than 5 times the minimum thickness of the bar except for bars larger than 1", in which case the bends shall be made around a pin of 8-bar diameters. All bars shall be bent cold. Bars reduced in section or with kinks or bends not shown on the Drawings will not be accepted.
- D. Wire fabric shall conform to ASTM Specification A185 for Welded Steel Wire Fabric for Concrete Reinforcement.
- E. Wire tie shall be 16-gauge minimum, zinc coated annealed.
- F. Bar supports in beams and slabs exposed to view after stripping shall be galvanized or plastic coated. Use concrete supports for reinforcing in concrete placed on grade.

PART 3 - EXECUTION

3.01 INSTALLATION

- A. No reinforcing bars shall be welded either during fabrication or erection without prior written approval from the Engineer. All bars that have been welded, including tack welds, without such approval shall be immediately removed from the work.
- B. Unless otherwise shown on the Drawings, splices in reinforcement shall be lapped not less than 36 bar diameters. Splice all horizontal bars in circular structures with Class "C" tension splices. All bar splices shall be staggered wherever possible. When splicing bars of different diameters, the length of lap is based on the larger bar.
- C. Before being placed in position, reinforcement shall be thoroughly cleaned of loose mill and rust scale, dirt and other coatings that reduce or destroy bond. Where there is delay in depositing concrete after reinforcement is in place, bars shall be reinspected and cleaned when necessary.
- D. Reinforcement shall be accurately positioned as indicated on the Drawings, and secured against displacement by using zinc coated annealed iron wire ties of not less than 16-gauge, or suitable clips at intersections.

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- E. All accessories such as chairs, chair bars, and the like are an integral part of the reinforcement and shall be furnished and installed in sufficient quantity to satisfactorily position all steel, in accordance with the latest (ACI 315) Manual of Standard Practice for Detailing Reinforced Concrete Structures.
- F. Except as otherwise indicated on the Drawings, bars in slabs, beams and girders shall be spliced as per requirements in ACI 315. Splices and laps in columns, piers and struts shall be sufficient to transfer full stress by bond. Splices in adjacent bars shall be staggered if required.
- G. Except as otherwise indicated on the Drawings, reinforcement shall be installed with clearance for concrete coverage as follows (Refer to General Notes on structural drawings):
- | | |
|--|------------|
| Footing Bottoms: | 3-inch |
| Formed surfaces in contact with soil, water, wastewater,
or exposed to the weather: | 2-inch |
| Columns, beams and walls: | 1-1.5 inch |
| Slabs or grade: | 2-inch |
- H. All slab reinforcing shall be supported on concrete cubes or wafers of the correct height. Wafers shall contain soft steel wires embedded therein for fastening to reinforcing. Wafers shall have a minimum compressive strength of 3,500 psi and shall have been cured as specified for concrete. Masonry units will not be permitted for supporting steel in bottom mats or elsewhere. For supporting the top steel in slabs, the Contractor shall furnish extra steel supports, such as channels if required, and shall construct blocks of concrete having the same quality as specified for the structure for use in supporting both top and bottom mat steel. Wood blocks, stones, brick chips, etc., cinder blocks, or concrete building blocks will not be allowed. Alternative methods for supporting top steel in slabs, such as vertical reinforcing fastened to bottom and top mats, may be used if approved by the Engineer.
- I. Alternate methods of supporting bottom reinforcement for slabs and beams not exposed to the weather (such as plastic chairs, but not plastic-tipped bolsters) may be used only if specifically approved by the Engineer.
- J. Reinforcement for vertical surfaces (beams, columns, walls) shall be properly and firmly positioned from the forms at all points by means of stainless steel (tipped) bolsters or equal, subject to Engineer's approval.
- K. Reinforcement which is to be exposed for a considerable length of time after being placed shall be painted with a heavy coat of neat cement slurry.
- L. In no case shall any reinforcing steel be covered with concrete until the amount and position of the reinforcement has been checked by the Construction Manager and has permission given to proceed with the concreting. The Construction Manager shall be given a minimum of 24 hours notice of the availability of set reinforcement for checking.
- M. Do not straighten or rebend reinforcing steel in a manner that will injure the material. Do not use bars with bends not shown on the Drawings.

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- N. Place reinforcement a minimum of 2 inches clear of any metal pipe or fittings.
- O. Secure reinforcing dowels in place prior to placing concrete. Do not press dowels into the concrete after the concrete has been placed.
- P. Roll wire mesh used for reinforcement flat before placing concrete. Support and tie mesh to prevent movement during concrete placement. Extend fabric to within 2 inches of the edges of the slab and lap splices at least 12 courses of the fabric and a minimum of 6 inches. Tie laps and splices securely at ends and at least every 24 inches with 16-gauge annealed steel wire. Pull the fabric into position as the concrete is placed by means of hooks, and work concrete under the steel to ensure that it is placed at the proper distance above the bottom of the slab.

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C. CAST-IN-PLACE CONCRETE

PART 1 – GENERAL

1.01 DESCRIPTION OF WORK

- A. Scope of Work: The Contractor shall furnish all labor and materials required and install cast-in-place concrete complete as shown on the Drawings and as specified in the Section.
- B. Section Includes: Cast-in-place concrete, including formwork, reinforcing, mix design, placement procedures, and finishes.
- C. Related Sections: Refer to the following sections for related work:
 - 1. Concrete Formwork: Section 03100
 - 2. Concrete Reinforcement: Section 03200

1.02 REFERENCES

- A. American Concrete Institute (ACI)
 - 1. 116R Cement and Concrete Terminology
 - 2. 117 Standard Specification for Tolerances for Concrete Construction and Materials
 - 3. 301 Standard Specifications for Concrete
 - 4. 302.1R Guide for Concrete Floor and Slab Construction
 - 5. 303.1 Standard Specification for Cast-in-Place Architectural Concrete
 - 6. 304R Guide for Measuring, Mixing, Transporting and Placing Concrete
 - 7. 304.2R Placing Concrete by Pumping Methods
 - 8. 305R Hot Weather Concreting
 - 9. 306.1 Standard Specification for Cold Weather Concreting
 - 10. 308 Standard Practice for Curing Concrete
 - 11. 309R Guide for Consolidation of Concrete
 - 12. 318 Building Code Requirements for Structural Steel
 - 13. 350R Environmental Engineering Concrete Structures
 - 14. 503.2 Standard Specification for Bonding Plastic Concrete to Hardening Concrete with Multi-Component Epoxy Adhesive

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- B. American Society for Testing and Materials (ASTM)
1. A82 Specification for Cold-Drawn Steel Wire for Concrete Reinforcement
 2. A185 Specification for Steel Welded Wire Fabric, Plain for Concrete Reinforcement
 3. A615 Specification for Deformed and Plain Billet-Steel Bars for Concrete Reinforcement
 4. A820 Standard Specification for Steel Fibers for Fiber-Reinforced Concrete
 5. C31 Practice for Making and Curing Concrete Test Specimens in the Field
 6. C33 Specification for Concrete Aggregates
 7. C39 Test Method for Compressive Strength of Cylindrical Concrete Specimens
 8. C42 Test Method for Obtaining and Testing Drilled Cores and Sawed Beams of Concrete
 9. C94 Specification for Ready-Mixed Concrete
 10. C138 Standard Test Method for Density (Unit Weight), Yield, and Air Content (Gravimetric) of Concrete
 11. C143 Test Method for Slump of Hydraulic Cement Concrete
 12. C150 Specification for Portland Cement
 13. C171 Standard Specification for Sheet Materials for Curing Concrete
 14. C172 Practice for Sampling Freshly Mixed Concrete
 15. C173 Standard Test Method for Air Content of Freshly Mixed Concrete by the Volumetric Method
 16. C231 Standard Test Method for Air Content of Freshly Mixed Concrete by the Pressure Method
 17. C260 Specification for Air-Entraining Admixtures for Concrete
 18. C309 Specification for Liquid Membrane-Forming Compounds for Curing Concrete
 19. C494 Specification for Chemical Admixtures for Concrete
 20. C618 Specification for Fly Ash and Raw or Calcined Natural Pozzolan for Use as a Mineral Admixture in Portland Cement Concrete

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21. C881 Specification for Epoxy-Resin-Base Bonding Systems for Concrete
 22. C989 Standard Specification for Ground Granulated Blast-Furnace Slag for Use in Concrete and Mortars
 23. C1017 Standard Specification for Chemical Admixtures for Use in Producing Flowing Concrete
 24. C1064 Standard Test Method for Temperature of Freshly Mixed Hydraulic-Cement Concrete
 25. C1107 Specification for Packaged Dry, Hydraulic-Cement Grout (non-shrink)
 26. C1116 Specification for Fiber-Reinforced Concrete and Shotcrete
 27. C1240 Standard Specification for Silica Fume Used in Cementitious Mixture
 28. C1582 Standard Specification for Admixtures to Inhibit Chloride-Induced Corrosion of Reinforcing Steel in Concrete
 29. C1602 Standard Specification for Mixing Water Used in the Production of Hydraulic Cement Concrete
 30. D994 Specification for Preformed Expansion Joint Filler for Concrete
 31. D1751 Specification for Preformed Expansion Joint Filler for Concrete Paving and Structural Construction
 32. D1752 Specification for Preformed Sponge Rubber and Cork Expansion Joint Fillers for Concrete Paving and Structural Construction
 33. E329 Standard Specification for Agencies Engaged in Construction Inspection and/or Testing
- C. Concrete Reinforcing Steel Institute (CRSI)
- D. Corps of Engineers (CE): CRD C621 Specification for Non-Shrink Grout
- E. Plant Qualification: Plant equipment and facilities shall meet all requirements of the Check List for Certification of Ready-Mixed Concrete Production Facilities of the National Ready-Mixed Concrete Association and ASTM C94.
- F. Evaluation and Acceptance of Concrete: Evaluation and acceptance of concrete will be in accordance with ACI-318, Chapter 4, if requested by the Engineer.

1.03 SUBMITTALS

- A. General: Submit the following items in accordance with the Conditions of Contract and Section 01341, "Shop Drawing Procedures."

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- B. Product Data: Submit product data for the following materials and items.
1. Sources of cement, pozzolan, and aggregates.
 2. Material Safety Data Sheets (MSDS) for all concrete components and admixtures.
 3. Air entraining admixture. Product data including catalogue cut, technical data, storage requirements, product life, recommended dosage, temperature considerations, and conformity to ASTM standards.
 4. Water-reducing admixture. Product data including catalogue cut, technical data, storage requirements, product life, recommended dosage, temperature considerations, and conformity to ASTM standards.
 5. High-range water-reducing admixture (plasticizer). Product data including catalogue cut, technical data, storage requirements, product life, recommended dosage, temperature considerations, retarding effect, slump range, and conformity to ASTM standards. Identify proposed locations of use.
 6. Concrete mix for each formulation of concrete proposed for use, including constituent quantities per cubic yard, water-cementitious materials ratio, concrete slump, type, and manufacturer of cement. Provide either a. or b. below for each mix proposed.
 - a. Standard deviation data for each proposed concrete mix based on statistical records.
 - b. The curve of water-cementitious materials ratio versus concrete cylinder strength for each formulation of concrete proposed based on laboratory tests. The cylinder strength shall be the average of the 28 day cylinder strength test results for each mix. Provide results of 7- and 14-day tests if available.
 7. Sheet curing material. Product data, including catalogue cut, technical data, and conformity to ASTM standard.
 8. Liquid curing compound. Product data including catalogue cut, technical data, storage requirements, product life, application rate, and conformity to ASTM standards. Identify proposed locations of use.
 9. Other items, such as:
 - a. Reinforcement materials
 - b. Forming accessories
 - c. Patching compound(s)
 - d. Hardener(s)
 - e. Joint System(s)
 - f. Sealant(s)

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- C. Shop Drawings: Submit shop drawings, when indicated, for fabrication, bending and placement of concrete reinforcement. Show bar schedules, stirrup spacing, diagrams of bent bars, and arrangement of reinforcement including bar overlap. Include any special reinforcement required for openings through concrete structures.
- D. Laboratory Test Reports / Certifications: Submit concrete materials test reports and mix design reports certifying that each material or item complies with or exceeds the specified requirements. Test reports shall also include the following, as applicable:
 - 1. Fine aggregates—sieve analysis, physical properties, and deleterious substance.
 - 2. Coarse aggregates—sieve analysis, physical properties, and deleterious substances.
 - 3. Cements—chemical analysis and physical properties for each type.
 - 4. Pozzolans—chemical analysis and physical properties.
 - 5. Proposed concrete mixes—compressive strength, slump, and air content.
- E. Ready-mixed concrete delivery tickets

1.04 QUALITY ASSURANCE

- A. Codes and Standards: Comply with provisions of the latest edition or revisions of the following, except as otherwise indicated:
 - 1. ACI 301 “Specifications for Structural Concrete for Buildings”
 - 2. ACI 302 “Guide for Concrete Floor and Slab Construction”
 - 3. ACI 304 “Guide for Measuring, Mixing, Transporting and Placing Concrete”
 - 4. ACI 305 “Hot Weather Concreting”
 - 5. ACI 306 “Cold Weather Concreting”
 - 6. ACI 308 “Standard Practice for Curing Concrete”
 - 7. ACI 309 “Standard Practice for Consolidation of Concrete”
 - 8. ACI 315 “Details and Detailing of Concrete Reinforcement”
 - 9. ACI 318 “Building Code Requirements for Reinforced Concrete”
 - 10. ACI 347 “Recommended Practice for Concrete Formwork”
 - 11. CRSI “Manual of Standard Practice”
 - 12. SP-66 “ACI Detailing Manual”

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B. Testing

1. A testing laboratory employed by the Contractor will make such tests required.
2. Standard laboratory compressive test cylinders will be obtained by the laboratory when concrete is discharged at the point of placing (i.e., discharge end of pumping equipment), and cylinders will be made and cured in accordance with the requirements of ASTM Designation C31. A set of six (6) cylinders will be obtained for each 50 cubic yards, or fraction thereof, placed each day, for each type of concrete. The cylinders will be cured under laboratory conditions and will be tested in two groups of two (2) at 7 and 28 days of age, with 2 held until released by the Engineer in accordance with the requirements of ASTM Designation C39.
3. The laboratory will conduct tests of concrete as it is discharged from the mixer at the point of placing. Slump tests will be made for each truckload of concrete. Slump tests may be made on any batch, and failure to meet specific slump requirements will be sufficient cause for rejection of the batch. If water is added after initial test, then the "load" shall be retested.
4. Air content of the concrete mixture will be tested on every other truck in accordance with AASHTO T199.
5. Historical strength/break data may be submitted with mix design and may be used in the approval process provided the mix design is otherwise acceptable. If the mix design requires modifications, a test batch may still be required.

PART 2 - PRODUCTS

2.01 FORM MATERIALS FOR STRUCTURAL COMPONENTS

- A. Forms: Forms shall be of metal, wood, or fiberglass with sufficient thickness to withstand pressure of newly-placed concrete without bow or deflection. Forms for exposed surfaces shall be free of holes, splits, surface voids, and other defects which can affect finished concrete surface.
- B. Cylindrical Columns and Supports: Form round-section members with paper or fiber tubes, constructed of laminated plies using water-resistant adhesive with wax-impregnated exterior for weather and moisture protection. Provide units with sufficient wall thickness to resist loads imposed by wet concrete without deformation.
- C. Form Coatings: Provide commercial formulation form-coating compounds that will not bond with, stain, nor adversely affect concrete surfaces, and will not impair subsequent treatments of concrete surfaces.
- D. Form Ties: Provide factory-fabricated, adjustable-length, removable or snap-off metal form ties, designed to prevent form deflection, and to prevent spalling concrete surfaces upon removal.
 1. Unless otherwise indicated, provide ties so portion remaining within concrete after removal is at least $\frac{1}{2}$ inch (12.7 mm) inside concrete for steel ties and $\frac{1}{4}$ inch (6.35 mm) for wire ties.

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2. Unless otherwise shown, provide form ties which will not leave holes larger than 1-inch (25 mm) diameter in concrete surface.

2.02 REINFORCING MATERIALS

- A. Reinforcing Bars: ASTM A615, deformed.
 1. Provide Grade 40 bars No. 3 and 4 for stirrups and ties, except as otherwise noted.
 2. Provide Grade 60 bars No. 3 to 18, except as otherwise noted.
- B. Welded steel wire fabric: ASTM A185.
- C. Supports for Reinforcement: Provide supports for reinforcement including bolsters, chairs, spacers and other devices for spacing, supporting and fastening reinforcing bars and welded wire fabric in place.
 1. Use wire bar type supports complying with CRSI recommendations, unless otherwise indicated. Do not use wood, brick, stone, broken block or pieces of concrete.
 2. For concrete-on-grade, use supports with sand plates or horizontal runners if base material will not adequately support chair legs.
 3. For exposed-to-view concrete surfaces, where legs of supports are in contact with forms, provide supports with legs which are plastic protected, stainless steel protected, or special stainless complying with CRSI Classes, C, D, or E respectively.
- D. Fibrous Reinforcement: ASTM C1116.
- E. Shop fabricate reinforcing bars to conform to required shapes and dimensions, with fabrication tolerances complying with ACI 315. In case of fabricating errors, do not rebend or straighten reinforcement in manner that will injure or weaken material.
- F. Unacceptable Materials: Defective reinforcement shall not be permitted in work:
 1. Bar lengths, depths and bends exceeding specified fabrication tolerances.
 2. Bends or kinks not indicated on Contract Drawings or final shop drawings.
 3. Bars with reduced cross section due to excessive rusting or other cause.
 4. Bars bent in the field and bars bent by heating.

2.03 CONCRETE MATERIALS - Materials utilized shall comply with the following specifications:

- A. Portland Cement: Shall conform to ASTM C 150, Type I, II, I/II, III, and/or V.
 1. Type I Cement – utilize for buildings.

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2. Type II Cement – utilize for sidewalks, driveways, storm sewer manholes, wet wells, pumping stations and structures exposed to wastewater.
 3. Type I/II, III, and/or V – utilize as specified.
 4. Only one (1) brand of cement shall be used in any individual structure unless approved by the Engineer. Cement which has become damaged, partially set, lumpy or caked shall not be used and the entire contents of the sack or container which contains such cement will be rejected. No salvaged or reclaimed cement shall be used.
- B. Aggregates: Fine and coarse aggregates shall conform to ASTM C 33. Provide aggregates from single source for exposed concrete. Do not use sandstone aggregates.
1. Fine aggregates – utilize washed inert natural sand.
 2. Course aggregates – utilize well-graded crushed stone or washed gravel.
 - a. Typical size No. 57.
 - b. Block cell fill shall be size No. 8.
 - c. Aggregate size requirements may be modified for “pumped” concrete mixes. The Engineer maintains sole discretion for approval of “pumped” concrete mixes, which shall be conducted on a case-specific basis.
- C. Water: Shall conform to ASTM C 1602.
- D. Admixtures: Furnish from one manufacturer.
1. Characteristics: Compatible with each other and free of intentionally-added chlorides.
 2. Air-Entraining Admixture:
 - a. Shall conform to ASTM C 260.
 - b. Products and Manufacturers: “MB-AE™ 90”, “MB-VR™” or “Micro Air®” by BASF Construction Chemicals, or other approved equal.
 3. Water-Reducing Admixture:
 - a. Shall conform to ASTM C 494/C 494M Type A.
 - b. Products and Manufacturers: “Pozzolith®” Series by BASF Construction Chemicals, or other approved equal.
 4. Mid-Range Water-Reducing Admixture:
 - a. Shall conform to ASTM C 494/C 494M Type A.

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- b. Products and Manufacturers: “PolyHeed®” Series by BASF Construction Chemicals, or other as approved by the Engineer.
5. High-Range Water-Reducing Admixture:
- a. Shall conform to ASTM C 494/C 494M Type F [or ASTM C 1017/ C 1017M Type I].
 - b. Products and Manufacturers: “Rheobuild® 1000”, “Glenium®” Series or “PS 1466” by BASF Construction Chemicals, or other approved equal.
6. Accelerating Admixture:
- a. Shall conform to ASTM C 494/C 494M Type C or E.
 - b. Products and Manufacturers: Pozzolith NC 534” or “Pozzutec® 20+” by BASF Construction Chemicals, or other as approved by the Engineer.
7. Retarding Admixture:
- a. Shall conform to ASTM C 494/C 494M Type B or D.
 - b. Products and Manufacturers: Pozzolith” Series or “DELVO®” Series by BASF Construction Chemicals, or other approved equal.
8. Hydration Control Admixture:
- a. Shall conform to ASTM C 494/C 494M Type B or D.
 - b. Products and Manufacturers: “DELVO” Series by BASF Construction Chemicals, or other approved equal.
9. Corrosion-Inhibiting Admixture:
- a. Shall conform to ASTM C 1582/C 1582M.
 - b. Products and Manufacturers: “Rheocrete® CNI” or “Rheocrete 222+” by BASF Construction Chemicals, or other approved equal.
10. Shrinkage-Reducing Admixture:
- a. Products and Manufacturers: “Tetraguard® AS20” by BASF Construction Chemicals, or other approved equal.
11. Alkali-Silica Reaction Inhibiting Admixture:
- a. Shall contain a minimum of 30 percent lithium nitrate.
 - b. Products and Manufacturers: “ASRx™ 30 LN” by BASF Construction Chemicals, or other approved equal.

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12. Coloring Admixture:

- a. Products and Manufacturers: "RHEOCOLOR® L" by BASF Construction Chemicals, or other approved equal.

13. Other admixtures shall be approved by the Engineer.

B. Supplementary Cementitious Materials (SCM):

1. The substitution of supplementary cementitious materials for cement shall be made on the basis of weight.
2. Fly Ash: Shall conform to ASTM C 618.
3. Slag Cement: Shall conform to ASTM C 989.
4. Silica Fume: Shall conform to ASTM C 1240.
 - a. Products and Manufacturers: "Rheomac® SF 100" by BASF Construction Chemicals, or other approved equal..

C. Fibers:

1. Micro-Synthetic Fibers:
 - a. Shall conform to ASTM C 1116/C 1116M.
 - b. Products and Manufacturers: "MasterFiber™ F or M" Series by BASF Construction Chemicals, or other approved equal.
2. Macro-Synthetic Fibers:
 - a. Shall conform to ASTM C 1116/C 1116M.
 - b. Products and Manufacturers: "MasterFiber MAC" Series by BASF Construction Chemicals, or other approved equal.
3. Steel Fibers:
 - a. Shall conform to ASTM A 820/A 820M.
 - b. Products and Manufacturers: "MasterFiber FF or FS" Series by BASF Construction Chemicals, or other approved equal.

D. Evaporation Reducer:

1. Shall be a monomolecular film-forming liquid for application to fresh concrete to prevent rapid drying of the surface.
Products and Manufacturers: "Confilm®" by BASF Construction Chemicals, or other approved equal.

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2. Evaporation reducer shall not be used as a finishing aid.
- E. Epoxies:
1. Epoxy Bonding Agent: Sikastix 370, Sikadur Hi Mod, Concrecive 1001-LPL, or approved equal.
 2. Epoxy Resin Coating: Sikagard 62, as manufactured by Sika Corp., or approved equal.

2.04 RELATED MATERIALS

- A. Expansion Joint Materials
1. Typical Building and Concrete Paved Roadway Joints: ASTM D994, preformed strips of a bituminous mastic composition.
 2. Slabs-in-Ground, Sidewalks, and Curb and Gutter Joints: ASTM D1751, preformed expansion joint filler having relatively little extrusion and substantial recovery after release from compression.
 3. Hydraulic Structure Joints: ASTM D1752, preformed expansion joint fillers as specified on the Contract Documents.
- B. Non-Shrink Grout: In accordance with FDOT Specification Section 934.
- C. Liquid Membrane-Forming Curing Compound: ASTM C309, Type I or I-D, Class A.
- D. Chemical Hardener: Hardener shall be a colorless, aqueous solution of zinc or magnesium fluosilicate. Approved proprietary hardeners shall be delivered ready for use in the manufacturer's original containers.
- E. Joint Sealant: In accordance with FDOT Specification Section 932.

2.05 CONCRETE MIX DESIGN

- A. An independent testing laboratory acceptable to the Engineer engaged by and at the expense of the Contractor shall develop mix designs and testing.
- B. Select proportions of ingredients to meet the design strength and materials limits specified in Table 1 and to produce concrete having proper placability, durability, strength, appearance, and other required properties. Proportion ingredients to produce a homogenous mixture, which will readily work into corners and angles of forms and around reinforcement without permitting materials to segregate or allowing excessive free water to collect on the surface.

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- C. The design mix shall be based on standard deviation data of prior mixes with essentially the same proportions of the same constituents or, if such data are not available, be developed by a testing laboratory acceptable to the Engineer and engaged by and at the expense of the Contractor. Mixes based on standard deviation shall be accepted based on the modification factors for standard deviation tests contained in ACI 318. The water content of the concrete mix, determined by laboratory testing, shall be based on a curve showing the relation between water cementitious ratio and 7- and 28-day compressive strengths of concrete made using the proposed materials. The curves shall be determined by four or more points, each representing an average value of at least three test specimens at each age. The curves shall have a range of values sufficient to yield the desired data, including the specified design strengths as modified below, without extrapolation. The water content of the concrete mixes to be used, as determined from the curve, shall correspond to strengths 16% greater than the specified design strengths. The resulting mix shall not conflict with the limiting values for maximum water cementitious ratio and net minimum cementitious content as specified in Table 1.
- D. Compression Tests: Provide testing of the proposed concrete mix or mixes to demonstrate compliance with the specified design strength requirements in conformity with the paragraph above.
- E. Entrained air, as measured by ASTM C231, shall be as shown in Table 1. If the air-entraining agent proposed for use in the mix requires testing methods other than ASTM C231 to accurately determine air content, make special note of this requirement in the admixture submittal.
- F. Slump of the concrete as measured by ASTM C143 shall be as shown in Table 1. If a high-range water-reducer (plasticizer) is used, the slump indicated shall be that measured before plasticizer is added. Plasticized concrete shall have a slump ranging from 7 to 10 inches.
- G. Proportion admixtures according to the manufacturer's recommendations. Two or more admixtures specified may be used in the same mix provided that the admixtures in combination retain full efficiency and have no deleterious effect on the concrete or on the properties of each other.
- H. Pursuant to FDOT Specification 346-2.5.4: Corrosion Inhibitor Admixture: Use only with concrete containing Type II cement, Class F fly ash or slag, and a water reducing retardant admixture, Type D, or High Range Water Reducer admixture, Type G, to normalize the setting time of concrete. Ensure that all admixtures are compatible with the corrosion inhibitor admixture.

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TABLE 1: CONCRETE MIX REQUIREMENTS

Class	Design Strength (1)	Cement (2)	Fine Aggregate (2)	Course Aggregate (3)	Cementitious Content (4)
A	2,500	C150 Type I or II	C33	57 Typ.	440 min.
B	3,000	C150 Type I or II	C33	57 Typ.	480 min.
C	4,000	C150 Type I or II	C33	57 Typ.	560 min.
D	5,000	C150 Type I or II	C33	57 Typ.	600 min.

Class	W/C Ratio (5)	Maximum Fly Ash	AE Range (6)	WR (7)	Slump Range (inches)
A	0.62 max.	25%	3.5 to 5	Yes	1 to 4
B	0.54 max.	25%	3.5 to 5	Y Yes	1 to 3
C	0.44 max.	25%	3.5 to 5	Yes	3 to 5
D	0.40 max.	25%	3.5 to 5	Yes	3 to 5

- NOTES: (1) Minimum compressive strength in psi at 28 days
(2) ASTM designation
(3) Size Number in ASTM C33
(4) Cementitious content in lbs/cu yd
(5) W/C is Water-Cementitious ratio by weight
(6) AE is percent air-entrainment
(7) WR is water-reducer admixture
(8) HRWR is high-range water-reducer admixture
* HRWR used at the Contractor's option

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PART 3 - EXECUTION

3.01 FORM SETTING FOR STRUCTURAL COMPONENTS

- A. Design, erect, support, brace and maintain formwork to support vertical and lateral loads that might be applied until such loads can be supported by concrete structure.
- B. Construct formwork so concrete members and structures are of correct size, shape, alignment, elevation and position.
- C. Provide for openings, keyways, chamfers, inserts and other features required in work.
- D. Maintain formwork construction tolerances, unless otherwise indicated:
 - 1. Variation from Plumb:
 - a. In the lines and surfaces of columns, piers, walls, and in arrises:

In any 10 feet (3 m) of length.....	1/4 inch (6.35 mm)
Maximum for the entire length.....	1 inch (25 mm)
 - b. For exposed corner columns, control-joint grooves, and other conspicuous lines:

In any 20 foot (6 m) length.....	1/4 inch (6.35 mm)
Maximum for the entire length.....	1/2 inch (12.7 mm)
 - 2. Variation from level or from grades specified in Contract Drawings:
 - a. In slab soffits, ceilings, beam soffits and in arrises, measured before removal of supporting shores:

In any 10 feet (3 m) of length.....	1/4 inch (6.35 mm)
In any bay or in any 20 foot (6 m) length.....	3/8 inch (9.53 mm)
Maximum for the entire length.....	3/4 inch (19.1 mm)
 - b. In exposed lintels, sills, parapets, horizontal grooves, and other conspicuous lines:

In any bay or in 20 foot (6 m) length.....	1/4 inch (6.35 mm)
Maximum for the entire length.....	1/2 inch (12.7 mm)
 - 3. Variation of the linear building lines from established position in plan and related position of columns, walls, and partitions:

In any bay	1/2 inch (12.7 mm)
In any 20 foot (6 m) of length.....	1/2 inch (12.7 mm)
Maximum for the entire length.....	1 inch (25 mm)
 - 4. Variation in the sizes and location of sleeves, floor openings, and wall openings 1/4 inch (6.35 mm)

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- 5. Variation in cross-sectional dimensions of columns and beams and in the thickness of slabs and walls:
 - Minus 1/4 inch (6.35 mm)
 - Plus 1/2 inch (12.7 mm)

- 6. Footings: (Tolerances apply to concrete dimensions only)
 - a. Variations in dimensions in plan:
 - Minus 1/2 inch (12.7 mm)
 - Plus 2 inches (51 mm)

 - b. Misplacement or eccentricity:
 - 2% of the footing width in direction of misplacement but not more than 2 inches (51 mm)

 - c. Thickness:
 - Decrease in specified thickness 5%
 - Increase in specified thickness No limit

- 7. Variation in Steps:
 - a. In a flight of stairs:
 - Rise +1/8 inch (+3.18 mm)
 - Tread +1/4 inch (+6.35 mm)

 - b. In consecutive steps:
 - Rise +1/16 inch (+1.588 mm)
 - Tread +1/8 inch (+3.18 mm)

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

- F. Chamfer all exposed corners and edges to produce uniform smooth lines and tight edge joints, unless otherwise indicated in the Contract Drawings.

- G. Provisions for Other Trades: Provide openings in concrete formwork to accommodate work of other trades.
 - 1. Determine size and location of openings, recesses and chases from trades providing such items.
 - 2. Accurately place and securely support items built into forms.

3.02 FORM SETTING FOR SIDEWALKS, CURBS AND GUTTERS

- A. General: Set forms to the indicated alignment, grade and dimensions.
 - 1. Provide minimum of three (3) stakes per form placed at intervals not to exceed 4 feet (1.2 m) to hold forms rigidly in place.

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2. Provide additional stakes and braces for corners, deep sections, and radius bends, as required.
 3. Provide clamps, spreaders, and braces where required to insure rigidity in forms.
 4. Clean and coat forms with form oil each time before concrete is placed.
 5. Wood forms may be thoroughly wetted with water before concrete is placed, except when probable freezing temperatures may occur, oiling is mandatory.
- B. Divide curb, and combined curb and gutter into blocks or stones in lengths not to exceed 6 feet (2 m) long.
1. Use metal templates not less than 1/16 inch (1.588 mm) thick cut to the same cross section as the curb or curb and gutter being constructed.
 2. Securely attach templates to forms to prevent movement during concrete placement.
- C. Sidewalks, Curbs and Gutters: Set forms for sidewalks, curbs and gutters with the upper edge true to line and grade with an allowable tolerance of 1/8 inch (3 mm) in any 10 foot (3 m) long section.
1. After forms are set, check grade and alignment with 10-foot (3 m) straightedge.
 2. Provide transverse slope of 1/4 inch per foot (6.35 mm per meter) with low side adjacent to the roadway.

3.03 PLACING REINFORCEMENT

- A. Comply with CRSI's recommended practice for "Placing Reinforcing Bars", for details and methods of reinforcement placement and supports, and as herein specified. Field bending of grade 60 bars is not permitted.
- B. Clean reinforcement of loose rust and mill scale, earth, ice, oil, concrete splatter from previous pours, and other materials which reduce or destroy bond with concrete.
- C. Accurately position, support and secure reinforcement against displacement by formwork, construction, or concrete placement operations. Locate and support reinforcing by metal chairs, runners, bolsters, spacers, and hangers, as required.
- D. Install welded wire fabric of same gage in as long of lengths as practicable. Lap adjoining pieces at least one full mesh and lace splices with wire. Offset end laps of adjacent widths to prevent continuous laps in either direction.
- E. Provide minimum cover for reinforcement of cast-in-place concrete, unless otherwise indicated.

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Concrete cast against and permanently exposed to earth.....	3 inches (76 mm)
Concrete exposed to earth or weather	
#6 and larger.....	2 inches (51 mm)
#5 and smaller	1-1/2 inches (38 mm)
Concrete not exposed to weather or in contact with earth	
Slabs, walls, joists.....	3/4 inch (19 mm)
Beams, columns	1-1/2 inches (38 mm)

3.04 JOINTS

- A. Construction Joints: Locate construction joints on slab floor, which are not shown on Contract Drawings, and notify the Engineer for approval.
 - 1. Provide keyways at least 1-1/2 inches (38.1 mm) deep in construction joints in walls and between walls and footings; accepted preformed keyways designed for this purpose may be used for slabs.
 - 2. Place construction joints perpendicular to main reinforcement. Continue reinforcement across construction joints.

- B. Isolation Joints: Construct isolation joints in slabs-on-ground at points of contact between slabs on ground and foundations as shown on Contract Drawings. Unless otherwise indicated, install 90# felt paper between slab and vertical surface.

- C. Contraction (Control) Joints
 - 1. Contraction Joints in Slabs-on-Grade: Construct contraction joints in slabs-on-grade to form panels of patterns as shown. Use saw cuts 1/8 inch (3.18 mm) wide by one-fourth of slab depth, or inserts 1/4 inch (6.32 mm) wide by one-fourth of slab depth, unless otherwise indicated.
 - a. Form contraction joints by inserting premolded plastic, hardboard, or fiberboard strip into fresh concrete until top surface of strip is flush with slab surface. Tool slab edges round on each side of insert. Remove inserts and clean groove of loose debris after concrete has cured.
 - b. Form contraction joints in unexposed floor slabs by saw cuts as soon as possible after slab finishing as may be safely done without dislodging aggregate. Contraction joints formed by soft-cut saw shall be made no greater than eight hours after placement of concrete.
 - c. If joint pattern is not indicated in Contract Drawings, provide joints at intervals not exceeding 30 times the slab thickness in either direction, and located to conform to bay spacing wherever possible (at column centerlines, half bays, third bays).

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2. Sidewalks: Construct joints to divide surface into rectangular areas.
 - a. Space transverse contraction joints at distance equal to sidewalk width or 5 feet (1.5 m) on center, whichever is less, and continuous across slab.
 - b. Construct longitudinal contraction joints along centerline of sidewalks 10 feet (3 m) or more in width.
 - c. Form contraction joints in fresh concrete by cutting groove in top portion of slab to depth of at least one-fourth of sidewalk slab thickness.
 - (1) Use jointer to cut groove, or saw groove in hardened concrete with power-driven saw, unless otherwise approved.
 - (2) Construct sawed joints by sawing groove in concrete with 1/8 inch (3.18 mm) blade to the depth indicated on Contract Documents.
 3. Curb and Gutter: Construct joints at right angles to line of curb and gutter.
 - a. Construct contraction joints directly opposite contraction joints in abutting Portland cement concrete pavements.
 - b. Space joints so that monolithic sections between curb returns will not be less than 5 feet (1.5 m) nor greater than 15 feet (4.5 m) in length.
 - c. Form contraction joints with 1/8 inch (3.18 mm) thick separators, with section conforming to curb and gutter cross section.
 - d. Remove separators as soon as practicable after concrete has set sufficiently to preserve width and shape of joint and prior to finishing.
- D. Expansion Joints
1. Slabs-on-Ground: Expansion joint material shall be placed around utility access openings within the slab, including clean outs and utility valves, and between new concrete slab and adjacent masonry.
 - a. Provide pre-molded, asphalt impregnated joint material 1/2 inch (12.7 mm) thick
 - b. Extend joint material to full depth of concrete.
 2. Sidewalks: Place joints in sidewalks at point of tangency (PT) and point of curvature (PC) of sidewalk returns, between sidewalk and building or structure, in sidewalk returns, between sidewalk and back of curb returns and around utility poles.
 - a. Provide joint material 1/2 inch (12.7 mm) thick.
 - b. Extend joint filler strips to full depth of concrete being placed at PT, PC, and around utility poles,

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- c. Provide joint filler strips between sidewalk and curb to full depth of sidewalk with top of filler strip set flush with top of curb.
 - d. Provide transverse sidewalk joints at spacing not to exceed 30 feet (9 m).
3. Curbs and Gutters: Form expansion joints with preformed expansion joint filler material 1/2 inch (12.7 mm) wide. Cut and shape to curb and gutter cross section.
- a. Provide expansion joints in curb and gutter at end of returns except where cross gutters are being constructed.
 - b. Provide expansion joints at ends of cross gutter transitions and along line of work at regular intervals, not to exceed 36 feet (11 m).
 - c. Provide joints in gutter continuous with those in adjacent curb.

3.05 PREPARATIONS FOR PLACING CONCRETE

- A. Remove water from excavations. Before placement of concrete, remove wood chips, shavings, and hardened concrete from forms.
 - 1. Clean all equipment.
 - 2. Wet forms, except in freezing weather, or oil forms.
- B. Earth shall be uniformly moist when concrete is placed. Sprinkling method shall not be such as to form mud or pools of water. Watering subgrade immediately prior to placing concrete is not sufficient to make the soil uniformly moist.
- C. Notify other crafts to permit installation of their work. Coordinate installation of joint materials and moisture barriers with placement of forms and reinforcing steel.

3.06 PLACING CONCRETE

- A. Notify the Engineer 24 hours in advance prior to concrete placement.
- B. Field Inspection: Do not place concrete until forms and reinforcing steel have been inspected and approved.
 - 1. Place Ready-Mix concrete within specified time after batching.

Below 40 degrees F (4 degrees C)	See Cold Weather Placing
40 - 85 degrees F (4 - 29 degrees C)	90 minutes
86 - 90 degrees F (30 - 32 degrees C)	75 minutes
Above 90 degrees F (32 degrees C)	60 minutes

Concrete exceeding delivery time may be rejected by the Engineer.

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2. Adding Water: Do not add water after initial introduction of mixing water for batch except when slump of concrete is less than that specified upon arrival at job site, and maximum water/cement ratio for mix has not been exceeded.
 - a. Notify the Engineer before adding any water.
 - b. Add water to bring slump within specified limits. Turn drum at least 30 additional revolutions at mixing speed. Do not add water to batch at any later time.
 - c. Insure that concrete strength meets specified requirements, and water does not exceed maximum amount specified in CONCRETE MIX DESIGN.

- C. General: Comply with ACI 304, and as specified herein.
 1. Deposit concrete continuously or in layers of such thickness that concrete will not be placed on concrete which has hardened sufficiently to cause formation of seams or planes of weakness.
 2. If section cannot be placed continuously, provide construction joints as specified herein. Deposit concrete as nearly as practicable to its final location to avoid segregation.

- D. Conveying:
 1. General: Concrete shall be handled from the truck to the place of final deposit as rapidly as practicable by methods which will prevent segregation or loss of ingredients to maintain the quality of the concrete. No concrete shall be placed more than 90 minutes after mixing has begun for that particular batch.
 2. Buckets and Hoppers: Buckets and hoppers shall have discharge gates with a clear opening equal to no less than one-third of the maximum interior horizontal area, or five times the maximum aggregate size being used. Side slopes shall be no less than 60 degrees. Controls on gates shall permit opening and closing during the discharge cycle.
 3. Runways: Extreme care shall be exercised to avoid displacement of reinforcing during the placing of concrete.
 4. Elephant Trunks: Hoppers and elephant trunks shall be used to prevent the free fall of concrete for more than 6 feet.
 5. Chutes: Chutes shall be metal or metal lined, and shall have a slope not exceeding one vertical to two horizontal, and not less than one vertical to three horizontal. Chutes more than 20 feet long and chutes not meeting the slope requirements may be used only if they discharge into a hopper before distribution.
 6. Pumping Equipment: Pumping equipment and procedures, if used, shall conform to the recommendations contained in the report of ACI Committee 304 on "Placing Concrete by Pumping Methods", ACI 304.2R-71. The specified slump shall be measured at the point of discharge. The loss of slump in pumping shall not exceed 1¹/₂ inches.

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7. Conveying Equipment Construction: Aluminum or aluminum alloy pipe for tremies or pump lines and chutes, except for short lengths at the truck mixer, shall not be permitted.
 8. Cleaning: Conveying equipment shall be cleaned at the end of each concrete operation.
- E. Placing Concrete in Forms: Deposit concrete in forms in horizontal layers not deeper than 24 inches (610 mm) and in a manner to avoid inclined construction joints.
1. Where placement consists of several layers, place each layer while preceding layer is still plastic to avoid cold joints.
 2. Consolidate placed concrete by high frequency mechanical vibrating equipment, supplemented as necessary by hand-spading, rodding or tamping. Use equipment and procedures for consolidation of concrete in accordance with ACI 309.
 - a. Do not use vibrators to transport concrete inside forms.
 - b. Insert and withdraw vibrators vertically at uniformly spaced locations not farther than visible effectiveness of machine.
 - c. Place vibrators to rapidly penetrate placed layer and at least 6 inches (152 mm) into preceding layer.
 - d. Do not insert vibrators into lower layers of concrete that have begun to set.
 - e. At each insertion, limit duration of vibration to time necessary to consolidate concrete, and complete embedment of reinforcement and other embedded items without causing segregation of mix.
 3. Concrete shall not be allowed to free fall more than 5 feet (1.5 m) unless confined by a closed chute. Concrete placed in walls 10 inches (254 mm) or less in thickness may free fall maximum of 8 feet (2.4 m).
- F. Placing Concrete Slabs: Deposit and consolidate concrete slabs in continuous operation, within limits of construction joints, until placement of panel or section is completed.
1. Bring slab surfaces to correct level as above, and use bull floats or darbies to smooth surface, free of humps or hollows. Do not use tools such as jitterbugs that force the aggregate away from surface.
 2. Maintain reinforcing in proper position during concrete placement operations.
- G. Placing Concrete Sidewalks: Place concrete in forms in one (1) layer of such thickness that when consolidated and finished, sidewalks will be of thickness indicated.
1. Use strike-off guided by side forms to bring surface to proper section to be compacted.

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2. Consolidate concrete with approved vibrator, and finish surface to grade with wood float, bull float, or darby, edged and broom finished.
 3. Surface Tolerance: Maximum 5/16 inch (7.9 mm) from the testing edge of 10 foot (3 m) straightedge.
 4. Section Thickness Tolerance: Maximum 1/4 inch (6.35 mm).
- H. Placing Concrete Curb and Gutter: Place concrete to section required in single lift. Consolidate by using approved mechanical vibrators.
1. Surface Tolerance: Maximum 1/4 inch (6.35 mm) from the testing edge of 10 foot (3 m) straightedge.
 2. Section Thickness Tolerance: Maximum 1/4 inch (6.35 mm).
- I. Cold Weather Placing: Protect concrete work from physical damage or reduced strength which could be caused by frost, freezing actions, or low temperatures; comply with ACI 306 and these specifications.
1. Mix and place concrete only when temperature is at least 40 degrees F (4 degrees C) and rising, unless permission to pour is obtained from the Engineer.
 2. Do not use frozen materials or materials containing ice or snow. Do not place concrete on frozen subgrade or on subgrade containing frozen materials.
 3. Do not use calcium chloride, salt and other materials containing antifreeze agents or chemical accelerators.
 4. When approval is obtained to place concrete at or below an atmospheric temperature of 40 degrees F (4 degrees C), heat water or aggregates, or both. Provide suitable enclosures and heating devices.
 - a. Temperature of mixed concrete shall be not less than 50 degrees F (10 degrees C) and not more than 90 degrees F (32 degrees C) at time of placement.
 - b. Record temperature of concrete for each truck as delivered and after placement in forms.
 - c. Provide heating equipment or methods capable of heating water and aggregates uniformly. Heat materials to temperature not greater than 150 degrees F (66 degrees C).
 5. After concrete placement, provide suitable measures to maintain concrete surface temperature at 40 degrees F (4 degrees C) or above for period not less than seven (7) days.
- J. Hot Weather Placing: When hot weather conditions exist that would seriously impair quality and strength of concrete, place concrete in compliance with ACI 305 and as herein specified.

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1. Cool ingredients before mixing to maintain concrete temperature at time of placement below 90 degrees F (32 degrees C).
2. Cover reinforcing steel with water-soaked burlap when required to ensure that steel temperature will not exceed the ambient air temperature immediately before embedment in concrete.
3. Wet forms thoroughly before placing concrete.
4. Use water-reducing retarding admixture (Type D) when required by high temperatures, low humidity, or other adverse placing conditions.
5. Record temperature of concrete for each truck as delivered and after placing in forms. Record air content and slump for each truck.

3.07 CONCRETE FINISHING

- A. General: Do not use tools such as jitterbugs that force the aggregate away from surface.
1. Do not spray or sprinkle water onto concrete surface to aid in finishing.
 2. Avoid bringing more water than necessary to surface and avoid working surface any more than necessary to obtain required finish.
- B. Monolithic Slab Finishes
1. Float Finish: Apply float finish to slabs for driveways, exterior slabs, and interior floor slabs receiving additional coverings.
 - a. After screeding and consolidating concrete slabs, do not work surface until ready for floating.
 - b. Begin floating when surface water has disappeared or when concrete has stiffened sufficiently to permit operation of power-driven floats or by hand floating if area is small or inaccessible to power units.
 - c. Check and level surface plane to tolerance not exceeding 1/4 inch (6.35 mm) in 10 feet (3 m) when tested with 10 foot (3 m) straightedge. Cut down high spots and fill low spots. Uniformly slope surfaces to drains.
 - d. Immediately after leveling, refloat surface to a uniform, smooth, granular texture.
 2. Trowel Finish: Apply trowel finish to slab surfaces to be exposed-to-view, and slab surfaces to be covered with resilient flooring, paint or other thin film finish coating system.
 - a. After floating, begin first trowel finish operation. Begin final troweling when surface produces ringing sound as trowel is moved over surface.

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- b. Consolidate concrete surface by final hand-troweling operation, free of trowel marks, uniform in texture and appearance, and with surface plane tolerance not exceeding 1/8 inch (3.18 mm) in 10 feet (3 m) when tested with a 10 foot (3 m) straightedge.
 - c. Grind smooth surface defects which would telegraph through applied floor covering system.
 3. Nonslip Broom Finish: Apply nonslip boom finish to exterior concrete platforms, steps and ramps, and elsewhere as indicated.
 - a. Immediately after trowel finishing, slightly roughen concrete surface by brooming with fiber bristle broom perpendicular to main traffic route.
 - b. Coordinate required final finish with the Engineer before application.
 4. Liquid Chemical Hardener Finish: Apply chemical hardener finish to interior concrete floors where indicated after complete curing and drying of the concrete surface.
 - a. Dilute liquid hardener with water, and apply in three (3) coats; first coat, 1/3 strength; second coat, 1/2 strength; third coat, 2/3 strength. Evenly apply each coat, and allow 24 hours for drying between coats.
 - b. Apply proprietary chemical hardeners, in accordance with manufacturer's printed instructions.
 - c. After final coat of chemical hardener solution is applied and dried, remove surplus hardener by scrubbing and mopping with water.
 - d. Nonslip Aggregate Finish: Apply nonslip aggregate finish to concrete stair
 5. Epoxy Coating of Floor Slab: Apply to all floor slabs, if and where indicated.
 - a. Surface Preparation:
 - (1) Substrate must be clean and sound. It may be dry or damp, but free of standing water and frost. Remove dust, laitance, grease, curing compounds, waxes, impregnations, foreign particles, coatings, and disintegrated material from the surface by mechanical means (i.e., sandblasting, high-pressure waterblasting, etc.) as approved by the Engineer.
 - (2) Cracks in the substrate and other repairs required to achieve a level surface in the area of the overlay work must be treated as directed by the Engineer.
 - (3) Extend all existing control and expansion joints through the overlay. Install new joints as directed by the Engineer. Fill all joints as directed by the Engineer.

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- (4) Any porous substrate must be tested for moisture vapor transmission prior to the application of an epoxy resin adhesive. Should the test indicate the presence of moisture vapor transmission, consult the Engineer before starting the application.
- b. Application:
- (1) Mixing the epoxy resin adhesive binder:
 - (a) To minimize color differences, blend two complete Component B's together. Use only one of the blended Component B's to mix with a Component A. After the first Component B has been used, blend the second Component B with a new Component B and repeat the above procedure for the entire application.
 - (b) Premix each component. Proportion equal parts by volume of Component A and Component B into a clean, dry mixing pail. Mix thoroughly for 3 minutes minimum with a jiffy paddle on a low-speed (400-600 rpm) drill. Mix only that quantity of material that can be used within its pot life (25-40 minutes at 73°F).
 - (2) Placement Procedure: Prime the prepared substrate with the mixed epoxy resin adhesive binder with brushes, rollers, or brooms. Do not over-prime or puddle. Coverage should be 300 square feet/gallon minimum. Use Broadcast System. Do not apply to surfaces during moisture vapor transmission period.
 - (3) Apply the epoxy resin adhesive with a 3/16 inch x 3/16 inch notched squeegee while the primer is still tacky. Allow the binder to self-level, and then slowly broadcast an oven-dried sand in such a manner that the sand drops vertically into the binder. Broadcast lightly, making several passes, allowing the binder to bleed through the sand before the next pass. Cover completely with sand before the binder becomes tack-free. Estimate oven-dried sand quantity required to broadcast to excess at 2 pounds/square foot. Remove excess aggregate when the broadcast overlay has reached sufficient cure as to not be damaged.
 - (4) Seal coat the surface with the epoxy resin adhesive using a roller. Do not apply the seal coat too heavy as to loosen the slip resistant surface texture. Coverage will typically be 160 square feet/gallon. When applying seal coat, never stop the application until the entire surface has been sealed, if possible. If impossible, always discontinue at an edge, corner or joint. Never let a previously coated film dry, always seal coat into a wet film. Always apply the seal coat at a 45° angle to an edge, corner or joint.
 - (5) Adhere to all limitations and cautions for the epoxy resin adhesive binder in the manufacturer's current printed literature.
- c. Protection: Rainwater shall not be allowed to increase the mixing water, nor to damage the surface finish. Concrete shall be protected from construction overloads. Design loads shall not be applied until the specified strength has been attained.

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C. Finish of Formed Surfaces

1. Rough Form Finish: For formed concrete surfaces not exposed-to-view in finish work or by other construction, unless otherwise indicated.
 - a. Texture for concrete surface is imparted by form facing material used.
 - b. Repair and patch tie holes and defective areas, with fins and other projections exceeding 1/4 inch (6.35 mm) in height rubbed down or chipped off.
2. Smooth Form Finish: For formed concrete surfaces exposed-to-view, or that are to be covered with coating material applied directly to concrete, or covering material applied directly to concrete, such as waterproofing, dampproofing, painting or other similar system.
 - a. As-cast concrete surface is obtained with selected form facing material, arranged orderly and symmetrically with minimum of seams.
 - b. Repair and patch defective areas with fins or other projections completely removed and smoothed.
 - c. Smooth Rubbed Finish: Provide smooth rubbed finish to scheduled concrete surfaces, which have received smooth form finish treatment, not later than 24 hours after form removal.
 - (1) Moisten concrete surfaces and rub with carborundum brick or other abrasive until uniform color and texture is produced.
 - (2) Do not apply cement grout other than that created by rubbing process.
 - d. Grout-Cleaned Finish: Provide grout cleaned finish, in color and texture, to scheduled concrete surfaces which have received smooth form finish treatment.
 - (1) Combine one part gray Portland cement to 1¹/₂ parts fine sand by volume, and mix with water to consistency of thick paint. Blend standard gray Portland cement and white Portland cement, amounts determined by trial patches, so that final color of dry grout will closely match adjacent surfaces.
 - (2) Thoroughly wet concrete surfaces and apply grout to coat surfaces and fill small holes. Remove excess grout by scraping and rubbing with clean burlap. Keep damp by fog spray for at least 36 hours after rubbing.
1. Related Unformed Surfaces: At tops of walls, horizontal offsets, and similar unformed surfaces occurring adjacent to formed surfaces, strike off smooth and finish with texture matching adjacent formed surfaces. Continue final surface treatment of formed surfaces uniformly across adjacent unformed surfaces, unless otherwise indicated.

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- D. Sidewalk Finishes: After straightedging, when most of water sheen has disappeared, and just before concrete hardens, finish surface to smooth and uniformly fine granular or sandy texture free of waves, irregularities, or tool marks.
1. Provide scored surface by brooming with fiber-bristle brush in direction transverse to that of traffic.
 2. Finish slab edges carefully, including those at formed joints, with edger having radius of 1/8 inch (3.18 mm).
 - a. Edge transverse joint before brooming, and broom to eliminate flat surface left by surface face of edger.
 - b. Clean corners and edges which have crumbled and areas which lack sufficient mortar for proper finishing. Fill solidly with properly proportioned mortar mixture, and finish.
- E. Curb and Gutter Finishes: Float and finish exposed with smooth wood float until true to grade and section, and uniform in texture.
1. Brush floated surfaces with fine-hair brush with longitudinal strokes. Round edges of gutter and top of curb to radius of 1/2 inch (127 mm) with edging tool.
 2. Immediately after removal of front curb form, rub face of curb with wood or concrete rubbing block and water until blemishes, form marks, and tool marks have been removed.
 3. While still wet, brush front curb surface in same manner as gutter and curb top.
 4. Finish top surface of gutter and entrance to grade with wood float.
 5. Finish curb edges at formed joints as indicated.

3.08 CONCRETE CURING

- A. General: Immediately after placing or finishing, and as soon as operation will not mar finish, concrete surfaces not covered by forms shall be protected against moisture loss.
1. Maintain protection for period of at least 7 days.
 2. Where formed surfaces are cured in forms, forms shall be kept continually wet.
 3. If forms are removed before end of curing period, continue curing as on unformed surfaces, using curing materials specified herein.
 4. Keep surfaces free of foot and vehicular traffic during curing period.
- B. Curing Methods: Provide curing of concrete by methods specified or by combinations thereof, as approved:

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1. Polyethylene Coated Burlap Mats: Cover surfaces with specified mat lapped 12 inches (305 mm). Mat shall be weighted to prevent displacement. Immediately repair tears or holes by patching.
2. Membrane Forming Curing Compound: Apply in two coat continuous operation, using not less than manufacturer's recommended rate of application. If unknown, apply at rate of 1 gallon (3.8 liters) per 200 square feet (18.6 square meters) for each coat.
 - a. Respray surfaces damaged by construction operations during curing.
 - b. Do not use membrane curing compounds on surfaces which are to be covered with coating material applied directly to concrete or with covering material bonded to concrete, such as other concrete, liquid floor hardener, waterproofing, dampproofing, membrane roofing, flooring, painting and other coatings and finish materials, unless otherwise acceptable to the Engineer.
3. Water Curing: Water cure surfaces indicated to receive additional concrete or concrete fill, dustproofing and hardening treatments, stucco, plaster, or painting.

3.09 REMOVAL OF FORMS

- A. General: Do not remove forms for any portion of the structure until concrete is strong enough not to be damaged when forms are removed.
 1. Remove forms without damage to concrete.
 2. Do not use bars or heavy tools against concrete in form removal.
 3. Promptly repair concrete found defective after form removal.
- B. If field operations are not controlled by cylinder tests, the following periods, exclusive of days when the temperature is below 40 degrees F (4 degrees C), may be used as a guide for removal of forms and supports:

Guide for Removal of Forms and Supports

Centering under beams	14 days
Elevated floor slabs	7-14 days*
Walls	12-24 hours*
Columns	1-7 days*
Sides of beams and all other parts	12-24 hours*

*Longer time dictates unless the Engineer approves lesser time.

- C. If field operations are controlled by beam or cylinder tests, forms may be removed from centering under beams and floor slabs when 2500 psi (17.2 MPa) compressive strength is attained, and approved by the Engineer.

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- D. Do not place superimposed loads on or against load carrying members until 2500 psi (17.2 MPa) compressive strength has been attained, and approved by the Engineer.
- E. Sidewalk Forms: Do not remove side forms for twelve (12) hours after completion of finishing.
- F. Curb and Gutter Forms: Remove forms of curb front not less than two (2) hours nor more than six (6) hours after placement of concrete.
 - 1. Forms of curb back shall remain in place until face and top of curb have been finished as specified for concrete finishing.
 - 2. Do not remove gutter forms while concrete is sufficiently plastic to slump in any direction.

3.10 REUSE OF FORMS

- A. Clean and repair surfaces of forms to be reused in work.
- B. Maintain shape, strength, rigidity, water-tightness, and surface smoothness of reused forms at all times.
- C. Re-size warped or bulged lumber before use.
- D. Do not use unsatisfactory forms.

3.11 CONCRETE SURFACE REPAIRS

- A. Patching Defective Areas: Immediately after form removal, cut out honeycomb, rock pockets, voids over 1/4 inch (6.35 mm) in any dimension, and holes left by tie rods and bolts, down to solid concrete but, in no case to a depth of less than one (1) inch (25 mm).
 - 1. Cut edges perpendicular to concrete surface.
 - 2. Thoroughly clean, dampen with water, and brush coat area to be patched with neat cement grout or proprietary bonding agent before placing cement mortar or proprietary patching compound.
- B. Exposed-To-View Surfaces: Blend white Portland cement and standard Portland cement so that patching mortar will match surrounding color when dry.
 - 1. Provide test areas at inconspicuous location to verify mixture and color match before proceeding with patching.
 - 2. Compact mortar in place and strikeoff slightly higher than surrounding surface.
- C. Repair of Formed Surfaces: Remove and replace concrete with defective surfaces if defects cannot be repaired to satisfaction of the Engineer.

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1. Surface defects include color and texture irregularities, cracks, spalls, air bubbles, honeycomb, rock pockets, fins and other projections on surface, and stains and other discolorations that cannot be removed by cleaning.
 2. Flush out form tie holes, fill with dry pack mortar, or precast cement cone plugs secured in place with bonding agent.
 3. Where possible, repair concealed formed surfaces that contain defects that affect concrete durability. If defects cannot be repaired, remove and replace concrete.
- D. Repair of Unformed Surfaces: Test unformed surfaces, such as monolithic slabs, for smoothness and verify surface plane to tolerances specified for each surface and finish. For unformed surfaces sloped to drain, use template having required slope to test for trueness.
1. Surface defects include crazing, cracks greater than 0.01 inch (0.25 mm) wide or which penetrate to reinforcement or completely through non-reinforced sections regardless of width, spalling, popouts, honeycomb, rock pockets, and other objectionable conditions.
 2. Repair finished unformed surfaces that contain defects which affect concrete durability.
 3. Correct high areas in unformed surfaces by grinding after concrete has cured at least 14 days.
 4. Correct low areas in unformed surfaces during, or immediately after completion of surface finishing operations by cutting out low areas and replacing with fresh concrete. Finish to blend into adjacent concrete. Use only approved proprietary patching compounds.
 5. Repair defective areas, except random cracks and single holes not exceeding 1 inch (25 mm) diameter, by cutting out and replacing with fresh concrete.
 - a. Remove defective areas to sound concrete with clean, square cuts and expose reinforcing steel with at least 3/4 inch (19.1 mm) clearance all around.
 - b. Dampen concrete surfaces in contact with patching concrete and brush with neat cement grout, or apply concrete bonding agent.
 - c. Mix patching concrete of same materials to provide concrete of same type of class as original concrete.
 - d. Place, compact and finish to blend with adjacent finished concrete. Cure in the same manner as adjacent concrete.

3.12 CONCRETE TRUCK DISCHARGE

- A. Excess Concrete: Discharge excess concrete in mixer trucks that cannot be immediately used to area where it will not create an obstruction or hazard during construction. Remove excess concrete from site in a timely manner to site approved by the Engineer.

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- B. Wash Water Discharge: Discharge wash water from mixer trucks to ground surface in manner and at location where discharge cannot escape construction site, or be washed away to arroyos, storm sewers, or sanitary sewers by precipitation or other surface flows.
1. Prior to project completion, remove wash water residue from site to location approved by the Engineer.
 2. Clean wash water discharge site to be free of debris.

END OF SECTION

Payment shall be made under:

Item No. TP 400-7-77 Concrete Foundations/Structures

- Cubic Yards

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TP 425: INLETS, MANHOLES, AND JUNCTION BOXES

Construction of Inlets, Manholes and Junction Boxes shall conform to the requirements of Section 425 of the "Standard Specifications" and applicable FDOT Design Standards and Details contained in the plans, except as directed by the Engineer. Precast inlet tops shall not be used for any type of inlet.

Method of Measurement

The quantities measured for payment under this Section shall be the number of inlets, manholes, junction boxes, yard drains, special end walls, and shallow ditch drains satisfactorily completed and accepted, including drainage structure under drains where required.

Basis of Payment

Structures included in this Section will be paid for at the contract unit price each, completed and accepted. Payments shall constitute full compensation for furnishing all materials and completing all work described herein or shown on the plans, including all excavation; dewatering; subsoil excavation and replacement material; backfilling and compacting around structures; disposal of surplus material; and furnishing and placing of all concrete; reinforcing steel; gratings; frames; covers, and any other necessary fittings as shown in the plans, required for acceptable construction, or as directed by the Engineer. Where required, drainage structure underdrains shall be included in the unit price for inlets and manholes. Any alteration of pipe grades up to one (1) foot to clear utilities shall be made and connections to structures made at no additional cost to the County or utility.

Payment shall be made under:

Item No. 425-1521	Water Intake Structure – Type C with Fiberglass Top Grate	-Each
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TP 430: PIPE CULVERTS AND STORM SEWERS

Construction of Pipe Culverts, Storm Sewers and Mitered End Sections shall conform to the requirements of Section 430 of the Standard Specifications, except as modified herein or as directed by the Engineer. All round and elliptical pipes shall be steel reinforced concrete pipe (SRCP).

Lifting holes in reinforced concrete pipe are prohibited.

Proposed storm sewer pipe to be connected to existing structures shall have openings cut into the existing structure without permanently damaging the structure. All structure openings shall be grouted watertight, with non-shrink grout, after pipe installation, and the structure shall be restored as approved by the Engineer.

The cost of connections to existing structures shall be included in the price bid for the pipe.

Final pipe inspection requirements shall conform to Section 430-4.8 of the Standard Specifications. All culverts and storm sewer pipes shall be videoed by the contractor and inspected and approved by the Engineer prior to final paving.

The only acceptable repair method shall be remove and relay / replace, or as otherwise directed by the Engineer. The repair cost shall be borne solely and completely by the Contractor.

Concrete Pipe Joints

Each joint in a concrete pipe culvert or storm sewer shall be wrapped on the exterior of the pipe with a band of filter fabric measuring 3 feet wide centered on the joint and lapped a minimum of 2 feet. The filter fabric shall meet the requirements of Section 985 of the Standard Specifications and shall be secured against the outside of the pipe by stainless metal or plastic strapping or by other methods approved by the Engineer. These costs shall be included in the per linear foot price for the pipe.

Method of Measurement

Quantities measured for payment under this Section shall be the length in linear feet of pipe culvert or storm sewer measured in place, completed and accepted. Measurements shall be from the inside face of structure wall to inside face of structure wall.

For mitered end sections the quantity measured for payment shall be the number completed and accepted.

Basis of Payment

Pipe Culverts and Storm Sewers will be paid for at the contract unit price completed and accepted. The unit price shall include connection of proposed pipes to existing structures and the replacement of the backfill, base course, and pavement removed for pipe trenching. Payment shall be full compensation for all work and materials described herein, including excavation (in whatever material is encountered), dewatering, removing unsuitable material and replacing with select bedding material, backfilling, compaction, furnishing and installing all pipe, disposing of surplus materials, and other work as may be required for an acceptable installation.

Payment shall be made under:

Item No. 430-174-115	HDPE Pipe, SDR 21, 15" Round	- Linear Foot
Item No. 430-984-105	Mitered End Section, Round, 4" ID	- Each
Item No. 430-984-123	Mitered End Section, Round, 15" HDPE with Skimmer	- Each

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TP 550: FENCING

Installation of metal fence shall conform to the requirements of Section 550 of the "Standard Specifications" and Florida Department of Transportation Index No. 801 and 802, except as directed by the Engineer.

Method of Measurement

Quantities measured for payment under this Section shall be the length in feet of fence, as measured along the bottom of the fabric and out-to-out of end posts, and the number of fence gates each.

Basis of Payment

Fencing and gates will be paid for at the contract unit prices, completed and accepted. Electrical grounds, corner post assemblies, and pull and end post assemblies shall be included in the unit price. Payment shall be full compensation for work specified, including all materials, labor and appurtenances.

Payment shall be made under:

Item No. 550-102-42	Fencing Type "B", 8' Vinyl-coated with vinyl slats	- Linear Foot
Item No. 550-60201-1	Fence Gate, Type B, 8' Vinyl-coated with vinyl slats (3' Wide)	- Each
Item No. 550-60221	Fence Gate, Type B, Double 10-ft Vinyl-coated with vinyl slats	-Each

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TP 570-1-2: PERFORMANCE TURF (SOD)

PART 1 - GENERAL

1.01 SCOPE OF WORK: The work consists of the establishment of a stand of grass on slopes, shoulders and those areas disturbed by the construction effort as shown or reasonably implied in the Drawings. Work shall include ground preparation, fertilization, application of lime, grass installation by seeding and mulching or sodding and watering and maintaining. A stand of grass shall not be established in those areas where new sod and/or vegetation is proposed in accordance with the project landscape plan. All landscaping shown on the project landscape plan is specifically excluded from this work.

PART 2 - MATERIALS

2.01 SEED: Bahia and quick growing types per FDOT 981-1

2.02 MULCH: FDOT 981-4.1 & 981-5.

2.03 SOD: Use FDOT 981-3, Bahia sod unless otherwise directed by Project specifications or Engineer. All sod used on this project must be certified invasive- or exotic weed-free. For certain restoration areas, native *Paspalum vaginatum* (seashore paspalum) sod must be used as indicated on Project plans.

2.04 FERTILIZER AND LIMESTONE: FDOT 982, except fertilizer chemical designation shall be 8-8-8 (not for seashore paspalum sod).

2.05 WATER: FDOT 983. Water other than City water shall have the prior approval of the Engineer.

PART 3 - EXECUTION

3.01 GENERAL: Grassing shall be incorporated into the work at the earliest possible time as required to provide slope stabilization. Fertilizing, seeding and mulching operations shall not be permitted when wind velocities exceed 15 miles per hour.

3.02 SEQUENCE OF OPERATIONS: The work shall proceed in the following sequence: preparation and fertilization; mulching, seeding and cutting in, or sodding; rolling; watering and maintaining.

3.03 FERTILIZATION AND LIMESTONE: Spread 8-8-8 fertilizer with mechanical equipment at the uniform rate of 265 lbs per acre and immediately mix with the soil to a depth of 4". On steep slopes (machine spreading not practicable) hand spreading and mixing to a depth of 2" will be acceptable. Limestone shall be added as required to establish proper pH conditions for the grassing work.

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- 3.04 MULCHING:** Apply approximately 2", loose thickness, of mulch material uniformly over area to be seeded. On steep slopes, anchor mulch by a layer of soil or net. After seeding, cut into the soil, so as to provide a loose mulched thickness of 3" - 4".
- 3.05 SEEDING:** Spreading seed over prepared, fertilized and mulched area with mechanical equipment while the soil is loose and moist and proper to induce growth. Seed of quick-growing species of grass, such as rye, Italian rye, millet or other cereal grass, shall be spread in conjunction with the permanent type seed mixture. The type of quick-growing seed used shall be appropriate to provide an early ground cover during the particular season when planting is done. Unless otherwise specified in the Drawings, the rates of spread shall be 100 pounds per acre for permanent seed and 30 pounds per acre for quick-seed. Germination rate of grass seed must be at least 60 percent, resulting in at least 85% ground cover of the area seeded.
- 3.06 SODDING:** Place sod on the prepared and (as appropriate) fertilized moist soil surface with edges in close contact. The setting of the pieces shall be staggered. Firmly and smoothly imbed by length, tamping with appropriate tools. Sod shall be watered as early as possible on the day of laying (not applicable for intertidal sod areas). The edges of the grassed area shall be straight with rows aligned to within six inches and with edges tamped to provide a feather edge effect. Where the sod may slide, due to height and slope, peg the sod with pegs or wire staples (\geq 6" lengths) driven through the sod blocks into firm earth at suitable intervals. Remove any pieces of sod which, after placing, show an appearance of extreme dryness. Open joints shall be fitted.
- 3.07 ROLLING:** Thoroughly roll the entire area immediately after completion of the seeding or sodding.
- 3.08 WATERING:** Water the grassed areas so as to provide optimum growth conditions for the establishment of the grass. Contractor shall coordinate the use of water with the appropriate utility company.
- 3.09 MAINTENANCE:** Maintain the planted areas in a satisfactory condition until final acceptance of the project. Such maintenance shall include watering, mowing and filling, leveling and repairing of any washed or eroded areas, as may be necessary. Replant any areas in which the establishment of the grass stand is not developing satisfactorily.

Payment shall be made under:

Item No. TP 570-1-2 Performance Turf (Sod) (Bahia or Match Existing) - Square Yard

END OF SECTION

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TP 900-1: AS-BUILT PLANS

The As-Built Plans (Black-Line) shall incorporate all the changes made to the red line As-Built plans. They shall show locations and elevations of paving, swales, ditches, pipe inverts and structures constructed and all relocated or reset property corners, section corners and 1/4 section corners. Upon the completion of the project, the Contractor shall submit to the County a set of black-line mylars. These plans shall delineate all red line information contained on the As-Built Plans.

Contractor's request for final payment shall be accompanied by one complete, legible set of black-line As-Built plans.

The County will provide the Contractor with a set of full size original (24" x 36").

Basis of Payment

As-Built Plans (Black-Line) will be paid for at the contract lump sum price, completed and accepted.

Payment shall be made under:

Item No. 900-1	As-Built Plans	- Lump Sum
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TP 900-2: INDEMNIFICATION

The Contractor shall indemnify, defend, and hold harmless the COUNTY and all its officers, agents, and employees, from all claims, losses, damages, costs, charges, or expenses arising out of any acts, action, neglect, or omission by the Contractor during the performance of the Contract, whether direct or indirect, and whether to any person or property to which the COUNTY or said parties may be subject, except that neither the Contractor nor any of its subcontractors are liable under this Section for damages arising out of the injury or damage to persons or property directly caused or resulting from the sole negligence of the COUNTY or any of its officers, agents, or employees.

Payment shall be made under:

Item No. 900-2	Indemnification (\$100)	– Lump Sum
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TP 900-3: GROUNDWATER TREATMENT AND DISPOSAL

General

If concentrations of tested groundwater quality parameters exceed those allowable in the Florida Department of Environmental Protection (FDEP) **Generic Permit for the Discharge of Produced Groundwater from any Non-Contaminated Site Activity (62-621.300(2), F.A.C.)**, treatment may be required under this technical provision.

The term treatment as used in this technical provision means the application of all FDEP approved techniques and/or methods available to remove the exceedances out of dewatering effluent except impounding. Impounding is not considered a treatment method for purposes of compensation under this technical provision.

The CONTRACTOR shall include in his bid all applicable costs, including monitoring, resulting from treatment and disposal of contaminated groundwater with concentration levels that exceed the allowable limits of the FDEP generic permit, and shall not be entitled to any adjustment in the Contract Price as a result of any change in the permit fees or unanticipated treatment and disposal costs.

Prior to any work commencing, and for the duration of the work, the CONTRACTOR is responsible for meeting all the conditions of the applicable permits and submitting any required reports to the appropriate agencies.

The CONTRACTOR shall dewater only in relation to the location and relocation of facilities owned by the COUNTY. No compensation shall be provided for dewatering performed for facilities that are not owned by the COUNTY.

Permitting

If exceedances are found in the dewatering effluent, the CONTRACTOR will be required to:

1. Immediately notify the COUNTY and report the exceedances that are encountered.
2. Meet with the FDEP to determine any and all alternatives that are acceptable.
3. Obtain prior COUNTY approval of treatment and disposal alternatives.
4. Obtain prior written COUNTY authorization to use pay item TP 900-3-1.
5. Apply and obtain any and all permits and/or treatment approvals that FDEP requires including, **but not limited to:**
 - a. **Generic Permit for Discharges from Petroleum Contaminated Sites (62-621.300(1), F.A.C.)**. Allows discharges from sites with automotive gasoline, aviation gasoline, jet fuel, or diesel fuel contamination.

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- b. **Permit for all Other Contaminated Sites (62-04; 62-302; 62-620 & 62-660, F.A.C.).** The coverage is available only through the individual NPDES permit issued by FDEP. Allows discharges from sites with general contaminant issues, i.e. ground water and/or soil contamination other than petroleum fuel contamination.
 - c. **Generic Permit for the Discharge of Produced Ground Water from Any Non-Contaminated Site Activity (62-621.300(2), F.A.C.).**
 - d. **Generic Permit for Stormwater Discharge from Large or Small Construction Activities (62-621.300(4)(a), F.A.C.).**
6. Apply and obtain any and all permits and/or treatment approvals that the Water Management District requires including, **but not limited to:**

Consumptive Uses of Water (40C-2.051, F.A.C.) If the CONTRACTOR'S proposed work is expected to exceed 30 days in duration, or does not meet any of the other requirements listed with the requirements of Rule 40C-2.051, the CONTRACTOR must apply for and obtain a **Consumptive Use Permit (40C-2, F.A.C.)**

The CONTRACTOR shall not be entitled to file, or recover under, any delay claim based on preparation of permit applications and the time required for obtaining the applicable permits. If, prior to or during the dewatering, it is determined that the disposal or discharge of the dewatering effluent is not authorized by the FDEP's Generic Permit for the Discharge of Produced Ground Water from Any Non-Contaminated Site Activity, the CONTRACTOR shall diligently pursue further required permit(s) from FDEP or other agencies without resort to delay claims or recompense from the COUNTY for either permit application activities or the time required to obtain such permits.

The CONTRACTOR shall consider and anticipate the potential need to obtain the herein discussed permits in developing his schedule, and shall make every effort to avoid or minimize potential impacts to his critical path that might result from delays in dewatering activities due to the time necessary for the CONTRACTOR to obtain the necessary permits. The CONTRACTOR shall make every effort to schedule activities requiring dewatering as late as possible during his schedule, and shall schedule activities not impacted by dewatering as early as possible. For each day, up to a maximum of one hundred eighty (180) days that the CONTRACTOR diligently pursues such permit(s) and is unable to avoid adversely impacting his critical path, a day will be added to the time allotted to the CONTRACTOR to complete performance of the Project.

Treatment

The CONTRACTOR shall implement the appropriate treatment that is acceptable to FDEP, COUNTY, and, if necessary, the Water Management District to attain compliance for all exceedances encountered during dewatering activities. Treatments may include, but are not limited to: chemical treatment, ion exchange treatment, filtration, and disposal of discharged groundwater in a properly permitted facility.

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The CONTRACTOR shall:

1. Make every effort to minimize the spread of contamination into uncontaminated areas;
2. Provide for the health and safety of all workers at the job site and make provisions necessary for the health and safety of the public that may be exposed to any potentially hazardous conditions;
3. Ensure such provisions adhere to all applicable laws, rules or regulations covering hazardous conditions in a manner commensurate with the level of severity of the conditions;
4. If necessary, provide contamination assessment and remediation personnel to handle site assessment, determine the course of action necessary for site security, and perform the necessary steps under applicable laws, rules, and regulations for additional assessment and/or remediation work to resolve the contamination issue;
5. Delineate the contamination area(s), any staging or holding area required, and develop a work plan that will provide the schedule of projected completion dates for the final resolution of the contamination issue;
6. Maintain jurisdiction over activities inside any delineated contamination areas and any associated staging or holding areas;
7. Be responsible for the health and safety of workers within the delineated areas; and
8. Provide continuous access to representatives of regulatory or enforcement agencies having jurisdiction.

Method of Measurement

Quantities to be paid for under this Section shall be the actual number of calendar days, when Groundwater Treatment & Disposal occurs. This does not include preparation of permit application(s) or time to obtain the permit(s).

Basis of Payment

Groundwater Treatment & Disposal will be paid for at the contract unit price per day. The price and payment for groundwater treatment and disposal shall constitute full compensation for cost of permitting and providing all labor, materials, tools, equipments, monitoring, reporting, treating and disposing of groundwater produced from dewatering systems.

Item No: 900-3 Groundwater - Treatment and Disposal - Per Day

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TP 999: POTABLE WATER SERVICE AND PLUMBING

Scope of Work

The Contractor shall furnish and install a potable water service and associated plumbing and fixtures as indicated on the Construction Drawings.

Description

Installation of potable water service and building plumbing shall conform to the requirements of the local utility (Orange County Utilities) providing the service connection and to the Construction Drawings. If a conflict exists between requirements of the local utility and the Construction Drawings, the local utility requirements will govern the installation. The local utility will be responsible for providing a service connection from the main service line into the project site and setting a meter and meter box. The Contractor shall be responsible for extending the service from the meter to the building including any required backflow or other control devices using materials and sizes acceptable to the water provider. Contractor shall also furnish and install all associated plumbing and fixtures as indicated on the Construction Drawings.

Basis of Payment

Water service will be paid for at the contract unit price, completed and accepted. Payment shall be full compensation for work specified, including all materials, labor, appurtenances, and any required testing.

Payment shall be made under:

Item No. 999	Water Service	- Lump Sum
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TP ATS-01: ALUM TREATMENT AND INSTRUMENTATION SYSTEM COMPONENTS

SCOPE OF WORK:

The Contractor shall furnish and install a complete and operable alum feed system(s) capable of delivering to one or more injection point(s), as specified in the design plans, alum in controlled amounts proportional to the signal received from the control panel.

A. ALUM FEED SYSTEM

PART 1 – GENERAL

1.01 DESCRIPTION

A. General

1. As specified in the design plans, the system may or may not include one or more pH monitoring/control system to continuously monitor pond pH and may have the option to automatically shut-down the alum system if the water pH drops below a set value.
2. It is the intent of these Specifications that the all the parts and components required for a complete and operable alum treatment system are furnished by applicable manufacturer(s) with overall coordination provided by the instrumentation specialist. The Contractor shall be responsible for procurement, installation success, and comprehensive of management of the alum treatment system.
3. The alum feed system(s) shall be capable of operating in a completely automatic mode.
4. The Contractor shall ensure that the manufacturer(s) works in conjunction with the Instrumentation supplier to assure proper interface on proportional control based on 4-20 ma DC signal or other method, as shown on the design plans.
5. The systems shall include, but are not limited to, the following:
 - a. Alum pump and control system
 - b. Sensing devices
 - c. Shutoff and control valves
 - d. Alum carrier pumping system (as applicable to design)
 - e. pH monitoring/control system (as applicable to design)

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6. All components that are subjected to corrosion shall be constructed of chemical and corrosion resistant materials and/or epoxy coatings.
7. The systems shall comply with all applicable OSHA and NEC rules and regulations.

B. Related Work

1. Alum Feed System Control Panel
2. Piping, Valves and Appurtenances
3. Electrical

C. General Design

1. The pump supplied shall have the following functions.

The alum pump shall be paced off the signal received from the control panel or by local potentiometer control.

2. Operations:

- a. The discharge of the alum pump shall be tied into the line for delivering carrier water to the point of application.
- b. The pump motor shall be equipped with a motor over-temp alarm switch with indication on the control panel.
- c. The suction line feeding the alum pump shall be equipped with a sensor to automatically shut down the alum pump if the suction line is not full of liquid.
- d. The pump control system shall be equipped with a pH monitoring/control system to automatically shut-down the alum pump if the pond water pH drops below a predetermined and adjustable value.

1.02 QUALIFICATIONS

- A. The equipment shall be products of manufacturer(s) who are fully experienced, reputable, and qualified in the manufacture of the equipment to be furnished. The system(s) components shall be designed, constructed, delivered, and installed in accordance with the best practices and methods.

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B. The system(s) shall be furnished by a single supplier who shall coordinate the system design for the proper operation of each system. The alum feed system(s) shall be supplied and assembled by Technical Solutions Inc., 117 Morningside Drive, Lakeland, FL, 33803, (863) 683-5371; or approved equal. Approved equal shall have demonstrated experience with a minimum of 10 previous projects, each of which include stormwater flow sensing, alum pumping systems for stormwater treatment, and related instrumentation. Experience with potable or wastewater systems will not be considered equivalent. The EOR shall have sole determination on the acceptability of the approved equal.

1.03 SUBMITTALS

A. Materials and Shop Drawings

Copies of all materials required to establish compliance with these Specifications shall be submitted in accordance with the provisions of the Contract and General Conditions. Notwithstanding this fact, submittals shall include at least the following:

1. Certified shop and erection drawings showing all important details of construction, dimensions, and anchor bolt locations. Special conditions shall be fully explained by notes or details.
2. Descriptive literature, bulletins, and/or catalogs of each item of equipment.
3. The empty weight and the maximum operating weight of each major item of equipment.
4. A complete total bill of materials for all equipment.
5. A list of the manufacturers recommended spare parts. Include gaskets, packing, etc., on the list.
6. The recommended summer and winter grades of lubricants along with alternative references to equal products of other manufacturers, if applicable.
7. Complete motor data.
8. Data on the characteristics and performance of all pumps.
9. Manufacturer's installation requirements.
10. Narrative description of controls.

B. Additional Information

1. In the event that it is impossible to conform with certain details of the Specifications, describe completely all non-conforming aspects.

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2. Provide equipment warranty.
- C. Operating Instructions
1. Five (5) copies of operating and maintenance instructions shall be furnished to the Owner's Representative. The instructions shall be prepared specifically for this installation and shall include all required cuts, drawings, equipment lists, descriptions, etc., that are required to instruct operating and maintenance personnel unfamiliar with such equipment.
 2. A factory representative or approved equal, who has a complete knowledge of the proper operating and maintenance, shall be provided to instruct representatives of the Owner and the Owner's Representative on proper operation and maintenance of the equipment. This work may be conducted in conjunction with the inspection of installation and test run as provided under sub-section 3. If there are difficulties in operation of the equipment due to the manufacturer's design or fabrication, additional service shall be provided at no cost to the Owner.

1.04 WARRANTY

All materials and workmanship outlined in this Provision shall have a 1-year warranty, beginning at formal written acceptance of the Work by the EOR, and will include all parts, labor, and return shipping (if necessary). All warranties shall list the Owner as the warranty holder.

PART 2 - PRODUCTS

2.01 GENERAL

- A. The Specifications are intended to give a general description of what is required, but do not cover all details which may vary in accordance with the exact requirements of the equipment as offered. They are, however, intended to cover the furnishing, delivery, installation, and field testing of all materials, equipment, and apparatus as required. Any additional auxiliary equipment necessary for the proper operation of the proposed installation not mentioned in these Specifications, or shown on the Design Plans shall be furnished and installed.
- B. The material covered by these Specifications is intended to be standard equipment of proven ability and as manufactured by reputable concerns having experience in the production of such equipment. The equipment furnished shall be designed, constructed, and installed in accordance with best practice and methods and shall operate satisfactorily when installed as shown on the Design Plans.
- C. All equipment shall be designed and proportioned to have liberal strength, stability, and stiffness and to be specially adapted for the intended service.

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- D. All equipment and piping shall be rigidly and accurately anchored into position and all necessary foundation bolts, plates, nuts, and washers shall be furnished and installed. All bolts, nuts, and washers shall be of stainless steel.
- E. All electrical materials and equipment shall be Underwriters Laboratories, Inc. listed.
- F. All motors included under this Section shall conform to NEMA Standards, with Class B insulation and temperature rise and designed for operation in a 40°C ambient environment. Motors 1 hp and larger shall have a 1.15 service factor. The service factor shall not be used when the equipment is operating under any normal operating condition. Motor horsepower and speed shall be as determined by the system supplier and approved by the Owner's Representative.
- G. Removable, all metal guards in complete conformance with OSHA shall be provided for all motor couplings, V-belt drives and similar exposed rotating elements.
- H. Each system, when completed, shall be completely dust tight. Equipment installed outdoors shall be weathertight, suitable for outdoor operation.
- I. All bolts, nuts, washers, clamps, etc., used to interconnect system components shall be manufacturers standard for this service.
- J. Electrical connections to each item of equipment subject to vibration shall be made with flexible liquid tight plastic conduit.

2.02 MATERIALS AND EQUIPMENT

- A. Alum feed system components to be factory assembled, with the control panel shipped separately.
- B. Alum Metering:
 - 1. The feed pump shall be a diaphragm metering pump with adjustment to attain the minimum and maximum capacities required. The specific make and model of the alum pump, as correlated to the maximum and minimum stormwater treatment flow rates, shall be provided on the design plans
 - a. Minimum alum addition rate = 0.05 gph
 - b. Maximum alum addition rate = 10 gph
 - 2. The alum feed pump shall be of suitable materials for pumping the respective chemical solutions. The pump shall be a diaphragm metering pump.
 - 3. Pump flow span shall be adjustable over a 0.5% to 100% range in 0.1% increments based on a 4-20 mA input.
 - 4. The chemical feed pump shall have the following specifications:

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- a. Maximum working pressure: 175 psig
 - b. Maximum fluid temperature: 130°F
 - c. Maximum fluid viscosity: 1,000 centipoise
 - d. Motor: Brushed DC, 1/8-HP
 - e. Duty cycle: Continuous
 - f. Display: Backlit LCD, UV resistant
 - g. Keypad: Positive action tactile switch keypad
 - h. Enclosure: NEMA 4X
5. Pump head, injection/back-flow check valve, and foot valve strainer materials shall be compatible with continued exposure to alum.
6. The feed pump shall be a Chem-Pro MC-2 diaphragm metering pump (Model MC-2241XV3) or approved equal.
- C. Backpressure and Pressure Relief Valves
1. The valves shall be designed to operate with the chemical solutions being pumped.
 2. The valve diaphragm shall be made of an elastomer (Hypalon) bonded to a TFE facing.
 3. The valve shall operate in the following manner: Line pressure on the diaphragm is opposed by spring compression. When line pressure reaches the valve set in the spring, the diaphragm moves off its seat to dissipate the excess pressure by permitting flow. Pressure range shall be 0-100 psi.
- D. pH Monitoring / Control System: These specifications are applicable only for those projects which designate this assembly on the plans.
1. The pH monitor/controller shall be a Walchem WPH Series pH controller or approved equal with adjustable set points, amplifier (if required), and a PVC flow-through sensor.
- E. Centrifugal Water Pump
1. The water pump shall be a self-priming centrifugal pump capable of pumping pond water from the pond to the equipment building and returning the water to the pond.
 2. The pump shall be suitable for continuous operation and capable of pumping a minimum of 110 gpm at 50 ft TH.
 3. The pump shall be Munro Model LP 3005B with 5-HP, 230 VAC single-phase motor.

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- F. System Control Panels: These specifications are documented within a separate section, herein.

- G. Alum / Air Injection Venturi
 - 1. The venture shall be constructed of fiberglass, plastic, stainless steel, or other material compatible with continued exposure to alum.
 - 2. Venturi shall be a classical flanged venturi, 3-inch x 1½-inch with 1-inch threaded connection in low-pressure area.
 - 3. Venturi to be provided by Imperial Flange and Fitting Company, Los Angeles, CA, or approved equal.

2.03 TOOLS AND SPARE PARTS

- A. All special tools required for normal operation and maintenance of the equipment shall be furnished with the equipment by the manufacturer.
- B. Spare Parts: Provide two complete spare pump stator, rotor and seals. Additional spare parts shall be furnished to assure normal running and maintenance for a period of one year as recommended by the manufacturer of equipment under this Section.
- C. All tools and spare parts shall be furnished in containers clearly identified with indelible markings as to their contents. Each container shall be placed with its contents protected for storage. All tools shall be furnished in steel tool boxes.
- D. Provide one liter of pH solutions 4.0 and 7.0 to calibrate the pH controller and one spare pH sensor.

PART 3 - EXECUTION

3.01 INSTALLATION

Installation shall be in strict accordance with the manufacturer's instructions and recommendations, in the location shown on the Design plans. Installation shall include furnishing the required lubricants for initial operation. The grades of oil and grease shall be in accordance with the manufacturer's recommendations.

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3.02 INSPECTION AND TESTING

- A. Contractor is responsible for assuring services, labor and equipment of a manufacturer as specified herein. The equipment manufacturer shall furnish the services of a competent and experienced representative who has complete knowledge of proper operation and maintenance of the equipment to inspect the installed equipment, supervise the initial test run, and to provide instructions to the plant personnel. The first visit will be for checking and inspecting the equipment after it is installed. The second visit will be to operate and supervise the initial field test and to instruct the plant personnel in the operation and maintenance of the equipment. The final copies of operation and maintenance manuals must have been delivered to the Owner's Representative prior to scheduling the instruction period with the Owner. These services may be combined with those provided under sub-section 1.03C, OPERATING INSTRUCTIONS.

- B. Upon completion of installation, the manufacturer, in the presence of the Owner's Representative, shall perform a preliminary test over the full range of each system to ensure the functioning of all component parts to the satisfaction of the Owner's Representative. The test shall be over the full range of capacity. The manufacturer shall furnish all labor and equipment. Air and power shall be supplied by the Contractor. Approval of the preliminary test by the Owner's Representative shall not constitute final acceptance of the equipment furnished.

- C. After the project is in operation, a full operating test shall be performed in the presence of the Owner's Representative and a qualified manufacturer's representative on the system. The manufacturer shall furnish all labor, materials and equipment required for such tests and shall correct any deficiencies noted by repairing or replacing the defective component and retesting as required until the equipment meets the specifications and the satisfaction of the Owner's Representative. A performance check shall be made on each metering pump with alum. Pumps shall be tested at 10 percent, 20 percent, 50 percent, 75 percent and 100 percent of scale, as required. The total error based on the field determined instrument errors, shall not exceed plus or minus two percent of the actual flow for the pumps. If, during running of the tests, one or more points appear to be out by more than the specified amount, the manufacturer's field engineer shall make such adjustments or alternations as are necessary to bring equipment up to specification performance. Following such adjustment, the tests shall be repeated for all specified points to ensure compliance. Thirty days will be allowed for any changes necessary to meet the specifications. Otherwise, the Owner reserves the right to have the rejected equipment removed from the site and replaced by satisfactory equipment that operates in accordance with the specifications. Alum for the full operating test will be furnished by the Owner.

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B. ALUM FEED SYSTEM CONTROL PANEL

PART 1 - GENERAL

1.01 DESCRIPTION

A. General

1. This part of the Contract Documents covers the general requirements for the furnishing and installation of the Alum System.
2. The intent of this specification is to require that the Control System Supplier including all Sections of this Specification, i.e., primary elements, panel mounted and miscellaneous field instruments, etc., shall be furnished by a single Supplier to assure system uniformity, subsystem compatibility and coordination of all secondary system interfaces. Where specific manufacturers are designated, substitutions will not be accepted. Deviations may be considered in special circumstances but must be approved by the EOR and Owner. The Contractor shall include in his bid the name of the Control System Supplier that will be used to furnish the system as described herein.

B. Scope of Work:

1. Furnish and install all instrumentation and control systems hereinafter specified to perform the intended function. Work shall include all labor, materials and equipment, performance of all work necessary to complete the manufacture, to make factory tests, to prepare and load for shipment, to deliver to the site, to provide programming, calibration, installation supervision, system start-up, services and incidentals required to completely furnish and install a programmable controller based control system with field instruments and control devices for the automation of the Alum Feed Control Panel "and including all work necessary during the Warranty Period.
2. Furnish all tools, equipment, materials, and supplies and perform all labor required to complete the furnishing, installation, validation, start-up and operational testing of a complete control system as specified herein.
3. Auxiliary and accessory devices necessary for system operation or performance, such as transducers or relays to interface with equipment provided under other Sections of this Specification, shall be included whether specified or not.
4. Equipment shall be fabricated, assembled, installed, and placed in proper operating condition in full conformity with detail drawings, specifications, engineering data, instructions and recommendations of the equipment Manufacturer as approved by the EOR.

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1.02 QUALITY ASSURANCE

- A. The Control System Supplier as specified in this Specification is an integrated system and therefore shall be provided by a competent, qualified instrumentation and control system supplier who shall have total responsibility for the work of this Specification. Entire system installation including process parameter verification, calibration, validation, start-up, testing, and training shall be performed by qualified personnel, possessing all the necessary equipment and who have had a minimum experience of 10 previous projects in engineering, programming and installing of similar instrumentation, control and monitoring systems. The system shall be integrated using the latest, most modern and proven design and shall, as far as practical, be of one supplier.
- B. The Control System Supplier shall be responsible for the correct selection of all instrumentation and installation of all hardware and secondary systems specified in this Specification.
- C. Prior to the selection of any device, coming in contact with the process, actual on-site process conditions and the suitability of the device and materials of construction for the stated application shall be verified with the original equipment manufacturer by the Control Panel Supplier. Unless notified in writing all devices and component part numbers, when provided, shall be assumed to have been verified as having been selected based on actual process parameters and application. Ultimately, the Contractor shall be responsible for all cost associated with replacements and delays due to improper equipment selection.
- D. The Control System Supplier shall be responsible to see that all components of the control system including measuring, indicating, transmitting, receiving, totaling, controlling, alarming devices and all appurtenances are completely compatible, correctly sized for actual process conditions, and properly interface to each other and shall function as outlined. The Control System Supplier shall furnish and install such additional equipment, accessories, etc. as are necessary to meet these objectives at no additional cost to the Owner.
- E. The Control System Supplier shall be a recognized supplier of pumping, instrumentation, control panels, and systems, etc., of the general type and complexity of the system specified herein and shall have been regularly engaged in providing and engineering instrumentation, control, and monitoring systems on a single system responsibility basis for a minimum of 5 consecutive years. The personnel employed for system engineering, supervision, start-up, operational testing and training shall have been regularly employed and factory trained by the Control System Supplier for a minimum of 2 years.
- F. The Control System Supplier shall retain an electrical engineer specializing in the selection and implementation of instrumentation, control, and monitoring systems of the type specified herein for the past 5 consecutive years. References shall be provided for all projects successfully completed by each engineer or software programmer assigned to this project.

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- G. Actual installation may or may not be performed by the control system supplier, but the control system supplier shall be responsible for the technical supervision of the installation to insure that it is proper in all respects.

- H. The Control Panel Supplier shall be as follows:
 - 1. Technical Solutions – Lakeland, FL
 - 2. Byrd Automation - Tampa, FL
 - 3. HTS Control - Tampa, FL

1.03 RESPONSIBILITY

- A. The Contractor shall be ultimately responsible and shall provide for the verification of process conditions, supply, installation, certification, adjustment, and start-up, of complete, coordinated systems which shall reliably perform the specified functions.

- B. All interconnecting conduit and wiring, between elements of a single secondary control system shall be furnished, installed and connected under the same section as is the secondary control system unless the electrical design plans specifically indicate otherwise.

1.04 SUBMITTALS

- A. Before proceeding with any manufacturing, submit the following for approval in complete bound sets indexed by specification number. Describe and verify all component part numbers for the items being submitted. Submit only complete systems, not pieces of equipment from various systems. Show dimensions, physical configurations, methods of connecting instruments together, mounting details, and wiring schematics. Schematics shall be complete with all components identified by a unique tag reference in accordance with ISA-S5.1 Instrumentation Symbols and Identification. Terminal number identification associated with relays, lights, electrical devices, etc., shall be clearly identified on all drawings. Submit fabrication drawings, nameplate legends, and control panel internal wiring and piping schematic drawings clearly showing all equipment and tag numbers for all components. Submit panel graphic drawings when applicable. Include material specifications listed where applicable.

- B. Include a draft of the theory of operation for all relay circuits including software logic implemented via programmable controllers, that will eventually be included in the operation and maintenance instruction manuals required below.

- C. Each submittal shall be bound in a white, standard three ring, clear view type, hard cover binder which indicates the system name, submittal content, project reference, revision date and purpose of the submittal on the spine as well as the cover which shall also include the owner's name, location, and supplier's name. Binders shall not exceed three inches in thickness.

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- D. Provide the required number of copies of each of the following submittals to the EOR for review and approval:
1. Hardware Submittal
 - a. Index and Comments
 - (1) Provide a detailed index identifying each tabbed section and its content.
 - (2) If there are any deviations or clarifications to the specifications, they shall be documented in writing in this section. If there are no comments or concerns identified in the submittal, it will be presumed that there are no deviations from the Contract Documents for the system being furnished.
 - b. Component Data Sheets
 - (1) Component Data Sheets shall be specifically prepared for all components being furnished under these Specifications. The purpose of this material is to supplement the generalized catalog information by providing the specifics of each component (e.g., individual component tag ID reference, service, quantity supplied, part number, breakdown and descriptions for all options, scales, ranges, materials of construction, component location reference, and reference to associated drawings).
 - (2) Include such other necessary data as would provide a complete and adequate specification for re-ordering an exact duplicate of the original item from the manufacturer at some future date. More than one tag numbered item with the same part number may be included on a sheet.
 - c. Catalog Cuts
 - (1) Manufacturer's standard specification or data sheets shall be clearly marked to delineate the options or styles to be furnished. Standard manufacturer catalog information, descriptive literature, wiring diagrams, and shop drawings shall be provided for all devices, whether electrical or mechanical, furnished under these Specifications. This includes, but is not limited to, pressure switches, gauges, solenoid valves, controllers, indicators, power supplies, switches, lights, relays, timers, circuit breakers, fuses, etc.

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2. System Control Panel(s) Drawing Submittal

All drawings shall be provided on letter-size (8.5-inch x 11-inch) paper and shall be laser generated with a minimum 300 DPI resolution, tabbed, and bound as directed above. Drawing submittal may be combined with the Hardware submittal providing the binder capacity is not exceeded.

a. Index and Comments

- (1) Provide a detailed index identifying each tabbed section and its content.
- (2) If there are any deviations or clarifications to the specifications, they shall be documented in writing in this section. If there are no comments or concerns identified in the submittal, it will be presumed that there are no deviations from the contract documents for the system being furnished.

b. Panel Layout Drawings

- (1) Provide detailed shop drawings for all panels and enclosures. Drawings shall show the location of all exterior and internal panel mounted devices to scale and shall include a panel legend and bill of materials. Layout drawings shall show all major dimensions, front, back, side, and mounting details, as well as all elevations, in inches from the base up, of all rows of components.
- (2) The panel legend shall list and identify all front of panel devices by the components unique tag identifier, all nameplate inscriptions, service legends, and annunciator inscriptions when applicable. Service legends, and nameplate inscriptions shall show size, engraving per line, character height and color. Information may be included on the layout drawing if spacing permits.
- (3) The bill of materials shall include all components mounted within or on the panel that are not listed in the panel legend, and shall include the component identification tag, description, manufacturer, and complete part number for re-ordering. Information may be included on the layout drawing if spacing permits.
- (4) Fabrication drawings shall be submitted for review and shall show all cut-out dimensions, support details, brackets, materials of construction, finish, etc. to be used for fabrication of each panel. Fabrication drawings may be submitted separately after the layout drawings have been approved. Construction of panels shall not be started until the approval of the fabrication drawings is received.

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c. Detailed Panel Wiring Diagrams

- (1) Wiring diagrams shall be provided in the form of ladder type schematics with line numbers for all devices. All components shall be identified by a unique identification tag, terminal block numbers, wire sizes and color codes clearly identified, and external interconnections noted. Drawings shall be drawn in "landscape" mode.
- (2) Provide complete terminal identification of all internal and external elements, panels, and junction boxes.
- (3) Polarity of all analog signals shall be shown at each terminal as well as all shielded cable connections and grounding requirements.
- (4) All external panel wiring that must be provided and installed shall be clearly identified as a dashed line.
- (5) All special cables that are provided with purchased equipment external to panels shall be identified as being supplied by the Supplier.
- (6) Wiring diagrams shall show all circuits individually; no common diagrams will be allowed.
- (7) Provide panel power wiring diagrams for all panels. The diagrams shall include all grounding requirements.

d. Control Panel Submittal Format

- (1) Tab 1. Index and Comments
- (2) Tab "N" through "NN" as required:
 - (a) Heat Dissipation and Power Calculations Summary.
 - (b) Panel "A" Layout Drawing (one tab per panel).
 - (c) Panel "A" with Fabrication Drawing Legend/Engravings/Bill of Materials.
 - (d) Panel "A" Power Wiring.
 - (e) Panel "A" Wiring Diagrams.
- (3) Tab "X". Loop Drawings (when applicable)
- (4) Tab "Y". Installation Details (when applicable)

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e. Analog Loop Drawing Submittal

Provide an individual loop wiring diagram for each analog loop showing all terminal numbers, the location of the DC power source, the location of any dropping resistors, polarity, etc. The loop diagrams shall meet the minimum requirements of ISA standard S5.4 approved October 9, 1981, plus the following requirements:

- (1) Loop diagrams shall be on 11-inch by 17-inch paper. Only one loop shall be shown on each drawing.
- (2) Reference to supplementary records and drawings, such as installation details, P&IDs, location drawings, wiring diagrams or drawings, and instrument specifications shall be included. Drawings may be included in the Control Panel Drawing Submittal when only a few drawings are required.

f. Instrument Installation Details Submittal

The Control System Supplier shall develop and submit for review, complete installation details for each field mounted device and panel furnished prior to shipment and installation. Common details may be referenced by an index showing the complete instrument tag number, service, location, and device description. Installation details shall be provided as required to adequately define the installation of the components. Drawings may be included in the Control Panel Submittal when only a few are required.

E. Power Requirement and Heat Dissipation Summary

Provide a summary of the power requirements and heat dissipation for all control panels furnished. Power requirements shall state required voltages, currents, and phase(s). Heat dissipation shall be maximums and shall be given in BTU/Hr. Summary shall be supplemented with calculations and show expected temperatures to be maintained for proper control equipment operation.

F. PLC Subsystem Submittal

In addition to the detailed hardware submittal requirements noted herein, the following shall also be provided:

1. Theory of Operation and Logic Descriptions.
2. System block diagram and cabling requirements.
3. Annotated software program listing and I/O address mapping.
4. I/O arrangement and wiring drawings.
5. PLC shall be Vision OPLC Model V1040-T20B or approved equal.

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G. Operation and Maintenance Manuals Submittal

1. Submit two (2) complete sets of Operation and Maintenance Instruction Manuals and Part Lists to the Owner for all equipment provided. Manuals shall be delivered no later than the equipment shipment date. After installation is complete, update the manuals to reflect any changes which occurred during installation and deliver the balance of the six (6) required manuals to the Owner.
2. All manuals shall be original manufacturers literature provided as noted herein above.
3. Include in the manuals not less than the following applicable information for each instrument, component, subsystem and/or control loop.
 - a. Index and Comments
 - (1) Provide a detailed index identifying each tabbed section and its content.
 - (2) If there are any deviations or clarifications to the specifications, they shall be documented in writing in this section. If there are not comments or concerns identified in the submittal, it will be presumed that there are no deviations from the contract documents for the system being furnished.
 - b. Bill of Materials
 - (1) A listing of all the panels, racks, instruments, components, and devices furnished. All components shall be grouped by component type, i.e., pressure switches, pressure gauges, indicators, etc. The list shall contain, as a minimum:
 - (a) Instrument, panel, rack or device tag number
 - (b) Description
 - (c) Quantity supplied
 - (d) Reference to component data sheet and/or catalog cut
 - (e) Component type
 - c. Component Data Sheets
 - d. Catalog Cuts

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e. Operation and Maintenance Manuals

Operation and Maintenance manuals shall be submitted for all instruments and devices supplied. The O&M manuals shall contain, as a minimum:

- (1) Operation procedures
- (2) Installation procedures
- (3) Maintenance procedures
- (4) Troubleshooting procedures
- (5) Calibration procedures
- (6) Internal device schematics and wiring diagrams
- (7) Shut-down procedures
- (8) Component parts list
- (9) Detailed circuit operational description including programmable controller ladder diagrams
- (10) Listing of Manufacturers with local telephone numbers and contacts for all instrumentation hardware furnished.

f. Spare Parts and Expendable List

A spare parts and expendable list shall be submitted to include not only those items being supplied, but also any additional items recommended for successful long term operation.

g. Operation and Maintenance Manual Format

- (1) Volume I (or as required) - Hardware
 - (a) Tab 1. Component Index and Comments
 - (b) Tab 2. Theory of Operation
 - (c) Tab "N" through "NN" as required:
 1. Component "X" Data Sheet(s) (one tab per component type as required).
 2. Standard Manufacturer Catalog Information, and Manufacturers O&M Manual

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- (d) Tab "X" Recommended Spare Parts and Expendable Listing
 - (e) Tab "Y" Current Manufacturers/Local Representatives Telephone/address listing for all major components.
 - (2) Volume II
 - (a) Tab 1. Index and Comments
 - (b) Tab "N" through "NN" as required:
 - 1. Panel "X" Layout Drawing
 - 2. Panel "X" Fabrication Drawing
 - 3. Panel "X" Legend/Engravings/Bill of Materials
 - 4. Panel "X" Power Wiring
 - 5. Panel "X" Wiring Diagrams
 - (c) Tab "X" Loop Drawings (when applicable)
 - (d) Tab "Y" Installation Details (when applicable)
- H. System Calibration and Test Documentation Submittal
 - 1. The Control System Supplier shall submit an example of each type of Instrument Calibration Report and Loop Functional Test Report that will be used to verify that all preliminary calibration and testing has been performed and the system is considered, by the Control Panel Supplier, to be ready for the Owner's acceptance testing.
 - 2. After approval of the examples, the Control System Supplier shall prepare Loop Functional Test Report(s) for each loop and an Instrument Calibration Sheet for each active element (except simple hand switches, lights, etc.). These sheets shall be completed and submitted to the Owner after completion of the operational availability field tests.
 - a. Instrument Calibration Reports - An Instrument Calibration report shall be used to certify that each instrument requiring calibration has been calibrated to its published specified accuracy shall be submitted to the Owner. This report shall include all applicable data as listed below plus an area to identify any defects noted, corrective action required, and corrections made.
 - (1) Facility identification (Name, location, etc.)

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- (2) Loop identification (Name or function)
 - (3) Equipment tag and serial numbers
 - (4) Scale ranges and units
 - (5) Test mode or type of test
 - (6) Input values or settings
 - (7) Expected outputs and tolerances
 - (8) Actual readings at 0, 10, 25, 50, 75, 90 and 100 percent of span
 - (9) Percent of error for each reading
 - (10) Explanations or special notes as applicable
 - (11) Date, time, and weather conditions
 - (12) Tester's certification with name and signature
- b. Loop and Functional Test Reports - Submit a sample of each type of Loop and Functional Test Report form that will be used in verifying all control system functions as follows:
- (1) Loop Status Report - For each function that can be demonstrated on a loop-by-loop basis:
 - (a) Each form shall include:
 1. Project name
 2. Loop number
 3. Loop description
 4. Test procedure description, with a space after each specific test to facilitate sign off on completion of each test.
 5. For each component: tag number, description, manufacturer, and data sheet number.
 6. Space for sign off and date by the Control Panel Supplier

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- (2) Functional Acceptance Test Report - For those functions that cannot be demonstrated on a loop-by-loop basis.

Each form shall include a listing of the specific tests to be conducted. With each test description, the following information shall be included:

- (a) Specification page and paragraph of function to be demonstrated
 - (b) Description of function
 - (c) Test procedure description
 - (d) Space after each specific test to facilitate sign off on completion of each test
- (3) Control Panel Supplier's Installation Certification Reports

Upon completion of all preliminary calibration and functional testing, the Control Panel Supplier, shall submit a certified report for each control Panel "and its associated field instruments certifying that the equipment (1) had been properly installed under his or her supervision, (2) is in accurate calibration, (3) was placed in operation, (4) has been checked, inspected, calibrated, and adjusted as necessary, (5) has been operated under maximum power variation conditions and operated satisfactorily, and (6) is fully covered under the terms of the guarantee.

I. Functional Acceptance Test Procedures Submittal

- 1. Submit for approval not later than 30 days prior to the functional acceptance test demonstration, a written plan for demonstrating that each device and function of the equipment provided under these specifications meets the specified operational requirements.
- 2. The plan shall detail procedures to be used in the functional acceptance testing of all systems. The plan shall include a description of test methods and materials that will be utilized for testing each system.
- 3. Immediately correct defects and malfunctions with approved methods and materials in each case and repeat the testing.

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1.05 SYSTEM TESTING AND ACCEPTANCE

A. Factory Tests

1. Factory Testing

Prior to delivery, each panel shall have been completely tested by the manufacturer's personnel. Provide a report certifying the control panel(s) are fully operable and meet the Specifications. If upon arrival of the Owner, the panel tests have not been performed, the Control System Supplier may be liable for back charges for all costs associated with the visit by the Owner. The necessary panel tests shall be repeated in the presence of the Owner. The Owner shall have the right to check all test observations. The Control System Supplier shall demonstrate that the results of the Factory Tests are accurate. As a minimum, tests shall verify the following:

- a. Accuracy of panel instruments for 4-20 mA inputs and outputs
- b. Location of interface wires on terminal blocks
- c. Function of discrete panel components
- d. Control logic

2. Witnessed Factory Testing

- a. Inspection and test of materials and equipment shall be made by the EOR (or representative) at the place of manufacturer prior to shipment, to verify that the completed control panel(s) meet the requirements of the specifications. Shipment shall not be made until receipt of written approval from the EOR after satisfactory completion of shop tests.
- b. The manufacturer furnishing materials, equipment and labor for the fabrication of the panel(s) shall afford the necessary facilities for such shop inspection and tests. The Control System Supplier shall give the EOR written notice ten (10) working days prior to the estimated date when the equipment will be ready for the inspection and witnessed shop test.
- c. Sufficient time, ample space, and necessary assistance shall be provided by the manufacturer to assure inspection and testing to the satisfaction of the EOR.
- d. The Control System Supplier shall furnish all power, labor, materials, and properly calibrated instruments required for the shop tests.
- e. The EOR reserves the right to reject defective materials, poor workmanship and items that are not in accordance with the requirements of the specifications.

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B. Installation Supervision

Furnish the services of authorized factory personnel specially trained and experienced in the installation of the equipment to: (1) supervise the installation in accordance with the approved Instruction Manuals; (2) be present when the instruments and equipment are first delivered, installed, and put into operation; (3) inspect, check, adjust as necessary, and approve the installation; (4) calibrate the instruments, in accordance with the Specifications herein, until all trouble or defects are corrected and the installation and operation are acceptable.

C. Preliminary Calibration and Functional Testing

1. After approval of the Loop Status Report and Calibration Worksheets described herein, the Control System Supplier shall prepare Loop Status Report(s) for each loop and an Instrument Calibration Worksheet for each active element (except simple hand switches, lights, etc.). These sheets shall be completed, signed, and submitted to the Owner after the Preliminary Calibration and Functional Testing is completed.
2. Although the Preliminary Calibration and Functional Testing does not require witnessing, the equipment Control System Supplier shall maintain the reports and calibration worksheets at the job-site and make them available for the Owner's review at any time.
 - a. Preliminary Calibration: Provide the services of factory trained instrumentation technician, tools and equipment to field calibrate each instrument to its specified accuracy in accordance with the manufacturer's specifications and instructions for calibration.
 - b. Functional Testing: Provide Loop Status Report(s) for verifying all control system functions as follows:
 - (1) Provide the services of factory trained and field experienced instrumentation engineer(s) to validate each system to verify that each system is operational and performing its intended function within system tolerance. System tolerance is defined as the root-mean-square sum of the system components specified accuracies from input to output.
 - (2) Validate calibration of each system by simulating inputs at the first element in the loop (i.e., sensor) of zero, 10, 25, 50, 75, 90 and 100 percent of span, or on/off and verify loop output devices (i.e., recorder, indicator, alarm, etc. except controllers). During system validation, make provisional settings on levels, alarms, etc. Verify that all logic sequences operate in accordance with the specifications.

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- (3) Cause malfunctions to sound alarms or switch to standby to check system operation. Check all systems thoroughly for correct operation.
- (4) Immediately correct all defects and malfunctions disclosed by tests. Use new parts and materials as required and approved and retest.

- c. Control Panel Supplier's Certified Reports: Upon completion of the Preliminary Calibration and Functional Testing, the Control System Supplier shall submit a certified report for each control Panel and associated field instruments certifying that the equipment (1) had been properly installed under his supervision, (2) is in accurate calibration, (3) was placed in operation, (4) has been checked, inspected, calibrated, and adjusted as necessary, (5) has been operated under maximum power variation conditions and operated satisfactory.

D. Functional Demonstration Testing

Upon completion of the Preliminary Calibration and Functional Testing, re-test all systems in the presence of the EOR (or representative). The intent of this test is to demonstrate and verify the operational interrelationship of all instrumentation systems. This testing shall include, but not be limited to, all specified operational modes, taking process variables to their limits (simulated or actual) to verify all alarms, failure interlocks, and operational interlocks between systems and/or mechanical equipment. Notify the Owner in writing a minimum of 48 hours prior to the proposed date for commencing the test. Upon successful completion of this test the Control System Supplier shall begin the Operational Acceptance Test Demonstration.

E. Operational Acceptance Test Demonstration

Upon completion of the Functional Demonstration Testing, re-test all systems under actual process conditions in the presence of the EOR and the Owner's Operators. The intent of this test is to demonstrate and verify the operational interrelationship of all instrumentation systems to the Owner's Operators. This testing shall include, but not be limited to, all specified operational modes, taking process variables to their limits (simulated or actual) to verify all alarms, failure interlocks, operational interlocks between systems and/or mechanical equipment, and making final adjustments. Notify the Owner in writing a minimum of 48 hours prior to the proposed date for commencing the test. Upon successful completion of this test, the Control System Supplier shall begin the 60-Day Availability Test.

F. 60-Day Availability Test

- 1. After completion of the Operational Acceptance Test Demonstration, the System Control System Supplier shall be responsible for the operation of the supplied system for a period of 60 consecutive days, under conditions of full process operation, without a single non-field repairable malfunction.

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2. During this test, plant operating and Control System Supplier personnel shall be present as required. While the test is proceeding, the Owner shall have full use of the system.
3. If any failures should occur that cannot be corrected by the Contractor within 24 hours, or more than two similar failures of any duration, the failure will be considered as a non-field-repairable malfunction. The system shall be repaired and the 60-day test period shall be re-started. Owner reserves the right to set the schedule.
4. Down times due to power outages or other factors outside the normal protection devices or back-up power supplies provided, shall not contribute to the availability test times above.
5. Upon successful completion of the system availability testing, submit a certified report, with substantiating data sheets, indicating that the equipment furnished meets all the functional requirements specified herein. The Owners will countersign this report and it shall constitute acceptance of the control system hardware.

1.06 FINAL DOCUMENTATION

A. Reproducible Drawings

The control system supplier shall submit a digital version of complete schematics, wiring diagrams and installation drawings to include all installed field and panel instruments, mounting details, point-to-point diagrams with cable, wire, and termination numbers. Drawings shall be a record of work as actually constructed and shall be labeled "As-Installed".

1. Loop Diagrams
2. Panel Construction Drawings and Wiring Diagrams
3. Interconnecting Wiring Diagrams
4. Instrument Installation Details

B. Software

Provide digital copies of all programming software, application programs, and source code utilized to generate, annotate, and debug all software provided. Programming software, detailed programming instructions, software keys, cables, and licenses shall be provided for all programmable devices, i.e., PLC, SCADA, controllers, and smart transmitters. Special devices used in programming supplied hardware shall be provided. It is the intent that the Owner shall have the full capability to re-program and modify any application on-site without the need to purchase additional software or hardware.

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C. Operation and Maintenance Manuals

Documentation for equipment provided under these specifications shall be provided within the Operation and Maintenance Manuals. The Operation and Maintenance Manuals shall be provided as stipulated in the contract documents.

1.07 TRAINING REQUIREMENTS

A. General

Provide the services of a factory trained and field experienced control systems specialist to participate in conduct group training of Owner's designated personnel in the operation of all Instrumentation, Control and Monitoring equipment furnished. Include instruction covering basic system theory, operating principles and adjustments, routine maintenance and repair, and "hands-on" operation.

Training specific to the system hardware shall be provided as stipulated in the contract documents between the Owner and EOR.

B. Operator Training

Operator training shall include instruction in the use of all control system hardware and software furnished. A detailed description of the system furnished and all equipment start-up, shut-down, and maintenance procedures shall also be provided to the Owner in the Operations and Maintenance Manual. As a minimum, the format for the training material shall be as follows:

1. General system description and overview
2. Process and Instrumentation Diagrams
3. Sequence of Operation
 - a. Panel Layout Drawing
 - b. Legend
 - c. Alarm Handling
 - d. System Start-Up
 - e. System Shut-Down
 - f. Operator Adjustment and Setpoints
4. General Troubleshooting Techniques
5. Recommended Maintenance Procedures
6. Recommended Spare Parts

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- C. Maintenance Training
 - 1. Maintenance training shall include instruction in the calibration, maintenance, programming, and repair for all systems furnished.
 - 2. Maintenance training shall include instruction in the maintenance of all control system hardware and software furnished. A detailed written description of the system furnished and all equipment start-up, shut-down, troubleshooting, and maintenance procedures shall be provided to each person attending the training sessions. As a minimum, the format for the training material shall be as follows:
 - a. General system description and overview
 - b. Process and Instrumentation Diagrams
 - c. Sequence of Operation
 - (1) Panel Layout Drawing
 - (2) Legend
 - (3) Alarm Handling
 - (4) System Start-Up
 - (5) System Shut-Down
 - (6) Operator Adjustment and Setpoints
 - d. Detailed review of all schematic diagrams
 - e. Detailed review of all software functions using actual software listings
 - f. Detailed programming instruction of hardware furnished unless otherwise noted
 - g. Detailed calibration procedures for all furnished
 - h. Recommended Maintenance Procedures
 - i. Recommended Spare Parts
- D. Training shall not be performed concurrently with start-up or trouble shooting.
- E. Final Acceptance

Final Owner acceptance is defined as a point in time when (1) all training has been performed, (2) final "As Installed" documentation and software (when applicable) have been received and approved, (3) the system has successfully passed the 60-day availability test period, and (4) all punch list items have been resolved. Only at this time, will final payment be released.

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F. Guarantee and Warranties

All work outlined in these Specifications shall be warranted for a period of one (1) year or the duration of the manufacturer's warranty, whichever is greater, from the date of final acceptance by the Owner. The warranty shall include all materials, labor, and shipping (if necessary). With respect to instruments and equipment, the warranty shall cover: (a) improper assembly or erection; (b) defective workmanship or materials; and (c) leakage, breakage, or other failure not caused by Owner misuse. All warranties shall be provided by the Contractor to the Owner, with the Owner named as beneficiary.

PART 2 - PRODUCTS

2.01 JOB CONDITIONS

Exercise care (1) to secure neat arrangement of all piping, valves, conduit, and like items, and (2) to overcome structural interference. Verify dimensions and conditions at the place of work, and install materials and equipment in the available spaces.

2.02 MATERIALS AND STANDARD SPECIFICATIONS

Provide instruments, equipment and materials suitable for service conditions and meeting standard specifications such as Instrument Society of America (ISA). The intent of this Specification is to secure instruments and equipment of a uniform quality and manufacture throughout the facilities; i.e., all instruments furnished by the Control System Supplier of the same type of function shall be by the same manufacturer. This allows the stocking of the minimum number of spare parts.

2.03 PRODUCT DELIVERY, STORAGE, AND HANDLING

Box, crate or otherwise enclose and protect instruments and equipment during shipment, handling and storage. Keep all equipment dry and covered from exposure to weather, moisture, corrosive liquids, and gases or any element which could degrade the equipment. Protect painted surfaces against impact, abrasion, discoloration, and other damage. Repair any damage as directed and approved.

2.04 COMPONENT TAG NUMBERING SCHEME

All control equipment shall be identified by unique alphanumeric code or tag number based on the latest Instrument Society of America standards S5.1.

Tag Numbering Scheme: a-b-c-d

Equipment tagging shall be based on the following scheme:

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DESCRIPTION	TAG	EXPLANATION
a. ISA Functional Identification	HS	Hand Switch
b. Loop Number	23	Loop 23
c. Component Number	2	Second HS in Loop
d. Unit	3 (When Required)	Third Identical Process Control System

Example 1: HS-23-2-3

Tag number identifies a Hand Selector Switch. It is part of Loop 23 and the second hand selector switch in the loop. This is the third identical process unit (i.e., three identical pump controls). It is also the only hand selector switch in the loop.

Example 2: HS-23

Tag number identifies a Hand Selector Switch in Loop 23. It is also the only hand selector switch in the loop.

2.05 INSTRUMENT IDENTIFICATION

- A. All components provided, both field and panel mounted, shall be provided with permanently mounted name tags bearing the entire tag number of the component. Panel mounted tags shall be white with black lettering lamicoïd plastic; field mounted tags shall be stamped stainless steel.
- B. Nameplates for panels and panel mounted equipment shall be as indicated on the Drawings.
- C. Field mounted tags shall be 16-gauge, 304 stainless steel with 1/2 inch high characters.
- D. Tags shall be attached to equipment with a commercial tag holder using a stainless steel band with a worm screw clamping device or by a holder fabricated with standard stainless steel hose clamps and meeting the same description. In some cases where this would be impractical, use 20 gauge stainless steel wire.
- E. For field panels or large equipment cases use stainless steel screws, however, such permanent attachment shall not be on an ordinarily replaceable part. In all cases, the tag shall be plainly visible to a standing observer and not obscure adjustment ports or impair the function of the instrument. Field mounted control stations, recorders or indicators shall have a nameplate indicating their function and the variable controlled or displayed. Nameplate shall be attached by one of the above methods.

2.06 STANDARD LIGHT COLORS AND INSCRIPTIONS

Unless otherwise noted, the following color code and inscriptions shall be followed:

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TAG FUNCTION	INSCRIPTION(s)	COLOR
ON	ON	RED
OFF	OFF	GREEN
OPEN	OPEN	RED
CLOSED	CLOSED	GREEN
LOW	LOW	GREEN
FAIL	FAIL	AMBER
HIGH	HIGH	AMBER
AUTO	AUTO	WHITE
MANUAL	MANUAL	YELLOW
LOCAL	LOCAL	WHITE
REMOTE	REMOTE	AMBER

Lettering shall be black on white with amber, red, white and green lenses.

2.07 STANDARD PUSHBUTTON COLORS AND INSCRIPTIONS

TAG FUNCTION	INSCRIPTION(s)	COLOR
OO	ON	RED
	OFF	GREEN
OC	OPEN	RED
	CLOSED	GREEN
OCA	OPEN	RED
	CLOSED	GREEN
	AUTO	WHITE
OOA	ON	RED
	OFF	GREEN
	AUTO	WHITE
MA	MANUAL	YELLOW
	AUTO	WHITE
SS	START	RED
	STOP	GREEN
RESET	RESET	RED

All unused or non inscribed buttons shall be black. Lettering shall be black on white with yellow, red, green and white buttons.

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2.08 ELECTRONIC EQUIPMENT

If the equipment is electronic in nature, provide industrial duty, solid state equipment to the greatest extent practicable. Select components of construction for their suitability and reliability. Employ adequate component derating to preclude failures because of transients and momentary overloads reasonably expected in normal operation. Where conduit connection is provided for mounting a surge/lightning suppressor directly to the instrument, the arrestor shall be so mounted.

2.09 EQUIPMENT OPERATING CONDITIONS

All equipment shall be rated for normal operating performance with varying operating conditions over the following ranges:

- A. Power: 120 V AC \pm 10%, 60 Hz \pm 1 Hz except where specifically stated otherwise on the drawings or in the specifications.
- B. Environmental Conditions: Equipment rated NEMA 3R or NEMA 4X shall be suitable for the following environmental conditions:
 - 1. Temperature: 20-130°F.
 - 2. Relative Humidity: 10-110 percent.
 - 3. Classification: Non-hazardous.

2.10 SIGNAL ISOLATORS, CONVERTERS AND CONDITIONERS

Insure that input-output of all instruments and control devices (whether furnished by the Control System Supplier or not) are compatible. Analog signals between field and panels shall be 4 to 20 mA dc unless specifically approved otherwise. Granting such approval does not relieve the Control System Supplier from the compatibility requirement above. Provide signal isolators and converters as necessary to obtain the required system performance. Mount the devices behind control panels or in the field at point of application, as required for accurate signal acquisition.

2.11 AUXILIARY CONTACTS BY OTHERS

Provide instruments and equipment to connect to auxiliary contacts provided by others for alarms, status of equipment, interlocking, and other functions as indicated and as specified herein.

2.12 ELECTRICAL

- A. The construction work shall include all power supply wiring, instrumentation wiring, interconnecting wiring and equipment grounding as indicated, specified, and required.

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- B. Wiring installations shall include cables, conductors, terminals, connectors, heat shrunk wire markers on all terminations, conduits, conduit fittings, supports, hardware, and all other required materials.
- C. Provide the materials and complete all the required installations for equipment grounding.
- D. Incidental items not specifically included in the Contract Documents that can legitimately and reasonably be inferred to belong in the instrumentation work shall be provided and installed by the Control System Supplier at no additional cost to the Owner.
- E. Ring out all existing and proposed signal wiring prior to termination. Provide wire number tags marked in indelible waterproof form of slip-on type and heat shrunk for each existing and proposed wire termination point in the Panel and field. Wire tagging shall identify the destination point of the wire and when applicable, shall include the signal polarity for analog signals. Each destination point shall be coded as follows:

Destination ID - Terminal Block ID - Terminal Number - (Polarity)

2.13. ELECTRICAL TRANSIENT PROTECTION

- A. All instrument and control equipment mounted outside of protective structures (field mounted equipment) shall be equipped with suitable surge-arresting devices to protect the equipment from damage due to electrical transients induced in the interconnecting lines from lightning discharges or nearby electrical devices. Both power and signal circuits shall be protected with surge and transient protectors installed at the source and destination ends of the circuits. Protective devices used on 120 V AC inputs to field mounted equipment shall be secondary valve surge protectors conforming to the requirements of IEEE Standard 28-1972 (ANSI C62.1-1971).
- B. Surge and transient protectors shall be normally connected to the electrical system ground. When an electrical system ground is not available near the device, the protectors shall be connected to a ground rod 20 ft. in length by 3/4 inch in diameter and located within 10 feet of the device.
- C. Protectors for signal circuits at the field transmitter shall be EDCO SS64 Series 06, 1669-02, and PC 642 in panels. Protectors for 120 volt power circuits shall be UL listed EDCO HSP Series secondary arrestor.

2.14 PROCESS CONNECTIONS

Provide instrument piping, tubing, and capillary tubing to meet the intended process service and ambient environmental condition for corrosion resistance, etc. All instrument pneumatic tubing shall be stainless steel with stainless steel fittings. Slope lines according to service to promote self draining or venting back to the process. Terminate connection to process lines or vessels in a service rated block valve that will permit closing off the sense line or removal of the element without requiring shut down of the process. Include drip legs and blow-down valves for terminations of sense lines at the instruments when mounted such that condensation can accumulate.

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2.15 PAINTING

- A. Provide factory paint for all instruments and equipment. Provide paint as required for non-stainless steel structural supports, brackets, etc.

2.16 CORROSION PROTECTION

- A. All control panels, enclosures, and other equipment containing electrical or instrumentation and control devices, including spare parts, shall be protected from corrosion through the use of corrosion-inhibiting vapor capsules. Prior to shipment, the capsules shall be provided within the shipping containers and equipment as recommended by the capsule manufacturer's recommendations. All capsules shall be replaced by the Contractor just prior to Owner's final acceptance of the equipment. The corrosion-inhibiting vapor capsules shall be Northern Instruments Model Zerust VC or Hoffman Model A-HCl. NEMA 4X and NEMA 3R panels shall be provided with breather/drains, Crouse-Hinds Model ECD18; or approved equal.

2.17 SPARES AND MAINTENANCE MATERIALS

- A. Deliver to Owner, as directed, the following items as specified herein. Include an itemized list in a letter of transmittal with each shipment.
- B. Materials shall be delivered in the manufacturer's original containers labeled to completely describe contents and equipment for which it is furnished.
 - 1. One fuse of each size and type for every five used but no less than five of each type.
 - 2. One circuit breaker of each size and type for every five used but no less than one of each type.
 - 3. One relay of each type for every five used but no less than one of each type.
 - 4. One status light bulb for every five used but no less than five of each type.
 - 5. One indicating lamp assembly for every five panel mounted lamp assemblies used but no less than one of each type.
 - 6. One switch assembly for every five used but no less than one of each type.
 - 7. One transient protector for every five used but no less than one of each type.
 - 8. All other spare parts as recommended by Manufacturer.

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2.18 WORKMANSHIP

A. General

1. Install materials and equipment in a workmanlike manner utilizing craftsman skilled in the particular trade. Provide work which has a neat and finished appearance.
2. Coordinate work with the Owner, and work of other trades to avoid conflicts, errors, delays, and unnecessary interference with operation of the facilities during construction.

B. Protection During Construction

Throughout this Contract, the Contractor shall provide protection for materials and equipment against loss or damage and the effects of weather. Prior to installation, store items in indoor, dry locations. Provide heating in storage areas for items subject to corrosion under damp conditions. Specific storage requirements shall be in accordance with the Owner reviewed Contractor recommendations.

C. Material and Equipment Installation

Follow manufacturer's installation instructions explicitly, unless otherwise indicated. Wherever any conflict arises between manufacturer's instructions, and these Contract Documents, follow the Owners decision, at no additional cost to the Owner. Keep copy of manufacturer's installation instructions on the job site available for review at all times.

D. Removal or Relocation of Materials and Equipment

Where existing materials and equipment are removed or relocated, remove and deliver to the Owner all materials no longer used unless otherwise directed by the Owner. Repair affected surfaces to conform to the type, quality, and finish of the surrounding surface in a neat and workmanlike manner. Follow any specific instructions by the Owner.

E. Cleaning and Touch-up Painting

Keep the premises free from accumulation of waste material or rubbish. Upon completion of work, remove materials, scraps, and debris from premises and from interior and exterior of all devices and equipment. Touch-up scratches, scrapes, or chips in interior and exterior surfaces of panels and equipment with finishes matching as nearly as possible the type, color, consistency, and type of surface of the original finish.

F. Panels and Panel-Mounted Equipment

Panels and panel-mounted equipment shall be assembled as far as possible at the factory. No work, other than correction of minor defects or minor transit damage, shall be done on the panels at the job site.

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G. Electrical

1. Arrange wiring neatly, cut to proper length, and remove surplus wire. Provide abrasion protection for any wire bundles which pass through holes or across edges of sheet metal.
2. Wiring shall not be spliced or taped except at the device terminals or terminal blocks.
3. Use manufacturer's recommended tool with the proper sized anvil, for all crimp terminations. No more than one wire may be terminated in a single crimp lug and no more than two lugs may be installed on a single screw terminal.

H. Inspections

1. All materials, equipment, and workmanship shall be subject to inspection at any time by the Owner. Correct any work, materials, or equipment not in accordance with these Contract Documents or found to be deficient or defective in a manner satisfactory to the Owner at no additional cost to the Owner.

PART 3 - EXECUTION

3.01 ALUM FEED PUMP STATION CONTROL PANEL

A. General Design

1. The alum feed pump shall have the following functions.

The motor speed and resulting output from the alum pump shall be controlled automatically by the signal from the control panel or in manual mode by potentiometer control.

2. Control Parameter Configuration

- a. The operator selects the mode of control from the function keypad. (i.e., F1 initiates normal operating parameter control, F2 initiates storm event simulation)
- b. The operator shall set the time delay parameters for automatic operation. The control shall allow the operator to set the on-delay time after a storm event is detected and an off-delay time after the storm event is not detected.
- c. The operator shall set the time between pumping cycles.
- d. The operator shall set the dosage rate proportional to storm water flow

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3. Automatic Operation
 - a. The operator selects the normal mode of control from the function keypad.
 - b. The operator rotates the HAND / OFF / AUTO switch to the AUTO position.
 - c. The operator is prompted to start the automatic operation.
 - d. Once prompted, the control system shall monitor storm water flow. Upon detection of flow in the storm water pipe, the control system shall start timing. When the timing value is set, the control system shall start the alum metering pump and vary speed as a function of storm water flow and the dosage rate. The metering pump shall stop after the storm water flow is not detected and a time delay. The next pumping shall not occur until the timing value between pumping cycles is met. The on flow rate shall be adjustable in 0.1 cfs increments.

4. Manual Operation
 - a. The operator rotates the HAND/OFF/AUTO switch to the Manual position.
 - b. The metering pump shall start and speed varied based upon the potentiometer. The PLC shall be completely by-passed in the manual mode.

5. Storm Event Simulation
 - a. The operator selects the simulation mode of control from the function keypad.
 - b. The operator selects the stormwater flow (in ft³/sec) from the numerical keypad.
 - c. The operator rotates the HAND/OFF/AUTO switch to the AUTO position.
 - d. The operator is prompted to start the simulated operation.
 - e. Once prompted, the control system shall start the timing set by the normal timing parameters. When the timing values are set, the control system shall start the alum metering pump and vary speed as a function of simulated storm water flow and the dosage rate using the function keypad and arrow keys. Both the simulated storm water flow and dosage rates shall be dynamically configurable during the simulation mode. The metering pump shall stop after the simulated storm water flow is not detected and a time delay.

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6. All control setpoints shall be adjustable via key on the operator interface display or input keys on the programmable controller. Adjustments shall be menu driven for ease of operation. The use of hand held programming units or programming language will not be accepted.
 7. All set point shall be input and read in direct engineering units.
 8. Programming Specifics
 - a. The PLC shall be programmed to communicate with a man machine interface (MMI) consisting of a CRT and keypads.
 - b. Provide the following screens on the MMI
 - (1) Graphic depicting piping and process flows and status.
 - (2) Stormwater and alum flow data logging and trending for 30-days.
 - (3) Stormwater simulation screen to allow the operator to simulate stormwater flow.
 - (4) Time delay and pumping cycle screen.
- B. System Start-up
1. Initial system power up.

Prior to turning on power to the system, verify that all pump selector switches are in the "Off" positions. When power is applied to the control panel for the first time, the Programmable Logic Controller (PLC) shall consider this application as if a power failure condition occurred and has now returned to normal.
 2. Reset any alarms that may be present.

If any alarms are flashing, the alarms can be reset by pressing first the "Alarm Silence" and then the "First Out Reset" pushbuttons. Any conditions that must be manually reset can be accomplished by the "System Reset" pushbutton.
- C. System Shutdown
1. Power Failures
 - a. Brief Power Interruptions:
 - (1) When a brief power failure occurs and then is restored the pumps shall be automatically restarted in an operator adjustable, time staggered sequence to avoid system overload. The system shall not require operator assistance to restart the pumps.

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b. Sustained Power Interruptions:

- (1) If power is lost for a sustained period of time all pumps in, "Auto" control will automatically be restarted when the normal power has been restored.

c. Programmable Logic Controller Failure

- (1) If the Programmable Logic Controller stops operating and power is available, the pumps will remain in last state. When the PLC is restarted, the pumps will automatically switch back to PLC control.

D. Shutdown Alarm Logic

PLC Alarm logic shall be per standard I.S.A. Sequence. Failures are identified by the following logic table:

FIRST ALARM WITH MANUAL RESET SEQUENCE

CONDITION		FIELD CONTACT	ALARM LIGHTS
Normal		Normal	Off
Alarm	First	Abnormal	Fast Flashing
Alarm	All Subsequent	Abnormal	Slow Flashing
Silence	First	Abnormal	Fast Flashing
Silence	All Subsequent	Abnormal	Slow Flashing
Acknowledge	First	Abnormal	Slow Flashing
Acknowledge	All Subsequent	Abnormal	Steady On
Alarm Reset		Normal	Off
Lamp Test		Normal	On

E. System Shutdown Conditions

WARNING: To ensure proper operation and safety of the pumps, all interlocks must be enabled at all times.

F. Shutdown Recovery Procedure

Annunciation

- 1. A fast flashing light indicates the first condition that caused the failure.
- 2. Subsequent alarms are indicated by a slow flashing light only.

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G. System Resets

Alarm Acknowledge: The ALARM ACKNOWLEDGE push-button is used to acknowledge any alarm. The first alert alarm will change from the intermittent fast flashing indication to a slow flashing indication. All subsequent alarms will go from fast flashing to steady on indication.

1. Alarm Reset

The ALARM RESET pushbutton is used after an alarm problem is repaired to reset all alarm indications back to normal.

H. Local Control Panel Device Descriptions

1. Uninterruptable Power Supply Operating Mode Selector Switch "By-passed" - "On-line"

The UPS unit shall provide uninterrupted power to the PLC and DC power supplies. When the selector switch is placed in the "By-passed" mode, the UPS may be removed from the Panel and allow the control system to continue to operate on the normal incoming AC service. Status of the position of the switch shall be monitored by the PLC.

2. Pump "Hand" - "Off" - "Auto" Selector Switch

Each pump shall be provided with a HOA selector switch. In the Hand position, the associated pump shall be started independent of the PLC controls. In the "Off" position, the pump shall be considered Out-Of service and shall not be capable of being started from the control panel. In the "Auto" mode of operation the pump shall be controlled automatically by the PLC, as required. Status of each position of the switch shall be monitored by the PLC.

I. Circuit Protection

1. Main Circuit Breakers - MCB

This breaker shall control the supplied 115 V AC primary power to all branch circuits within the panel except for the service outlet, internal lighting, and air conditioning.

2. Utilities Circuit Breakers - UCB

This breaker shall control the supplied 115 V AC power to the service outlet, internal lamp and light switch.

3. UPS Power Supply Branch Circuit Breaker CB-1

This breaker shall control the supplied 115 V AC power to the UPS power supply.

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4. SCR Circuit Breaker - CB-2

This breaker shall control the supplied 115 volt AC power to the alum pump SCR.

J. PLC Connections:

The following data shall be available in the PLC image tables:

1. Analog Signals:

- a. Analog input: 4-20 mA DC stormwater flow
- b. Analog input: 4-20 mA DC Pump No.1 speed
- c. Analog output: 4-20 mA DC Pump No.1 speed control
- d. Analog input: 4-20 mA tank level

2. Discrete Signals

- a. PLC Failure
- b. Alum pump in AUTO, OFF, MANUAL
- c. Alum pump start/stop control
- d. Alum pump SCR failure
- e. UPS failure
- f. Pump run
- g. Utility failure
- h. Reset
- i. Acknowledge

K. Control Panel Components

1. General:

- a. Unless otherwise approved by the EOR, all panels shall be constructed of painted NEMA 3R 316 stainless steel. Instrument arrangement shall be as shown, with minor modifications as may be required for the particular equipment furnished. Modifications shall be subject to the approval of the EOR.
- b. All panels shall be completely fabricated, instruments installed, wired, and plumbed at the factory.
- c. Panels shall be of sufficient size to adequately enclose all instruments plus 25 percent ample interior clearance to allow for installation, general servicing, future additions, and maintenance of the instruments. Weight of instruments shall be supported by channel supports where required.

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2. Panel Mounting

a. Panel Component Arrangements

- (1) Panel face mounted equipment shall consist of pilot-lights, pushbuttons, selector switches, meters, indicating timers, etc. Spacing between horizontal rows of components shall be 1-1/2 inches center to center minimum; spacing between vertical columns of components shall be 1-7/8 inches center to center minimum.
- (2) The distance from the bottom row of components to the floor shall be not less than 36-inches. The top row of recording and indicating instruments shall be centered approximately 60 inches above the floor. The maximum height for annunciator windows shall be 85 inches above the floor. In general, all indicating lights, pushbuttons, etc. shall be mounted in accordance with the sequence of operation from left to right and top to bottom.

b. Rear of Panel Component Arrangements

- (1) All relays, timers, etc. installed on each panel subplate, shall be provided with a minimum spacing between the component and the wire duct of 1-1/2 inches above and one inch below. Minimum spacing between adjacent components shall be 1/4-inch.
- (2) A minimum of 2-inches shall be provided between terminal strips and wire ducts or terminal strips and terminal strips. In general, terminal strips shall be mounted vertically near the outer edges of the subplate.
- (3) Subplates shall have a minimum of 25% spare mounting space, and terminal strips shall have a minimum of 20% installed spare terminal blocks.

3. Panel Construction:

- a. Panels shall be provided with adequate internal bracing to support the weight of all instruments and wiring. Internal bracing shall permit panel lifting without racking or distortion. Panel shall be NEMA 3R 316 brushed stainless steel rated and shall provide protection against dust, rain, and corrosion. Panels shall have a smooth brushed finish. Panels shall have steel mounting brackets and hinges. Panels shall be provided with a drip shield and rolled lip around all sides of the enclosure door opening. All doors shall be rubber-gasketed.

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- b. Removable lifting rings designed to facilitate simple, safe rigging and lifting of the panel during installation shall be provided. Plugs shall be provided to fill the lifting ring holes after installation and shall match the panel color.
- c. Panels shall not require any additional external supports or bracing to maintain freestanding integrity.
- d. All installation details shall be verified by the Contractor/Control Panel Supplier. Unless otherwise noted, all panels shall be properly sized to fit in the allotted spaces as noted or shown in the Contract Drawings.
- e. Fabricate each panel from stainless steel with a minimum thickness of 10-gauge. Panel fronts shall be fabricated from a single piece of stainless steel. The panels shall be so constructed that no seams or bolt heads are visible when viewed from the front. Panel cutouts for instruments and other devices (e.g., lights and switches) shall be punched, or drilled and smoothly finished with rounded edges.
- f. Provide angle and/or plate stiffeners on the back of the panel face to prevent panel deflection under instrument loading or operation. Internally, the panels shall be supplied with a structural steel framework for instrument support purposes and panel bracing. The internal framework shall permit panel lifting without racking or distortion. Provide removable lifting rings designed to facilitate simple, safe rigging and lifting of the panel during installation. Where two or more panels are shown mounted immediately adjacent to one another, they shall be securely bolted together with their front faces parallel. All internal components shall be mounted on removable subpans and not directly to the enclosures. Subpans shall be painted with a white enamel. Print storage pockets shall be provided on the inside of each panel. Its size shall be sufficient to hold all of the prints required to service the equipment. All control operations and overload reset shall be accessible without opening panel.
- g. Each panel shall be provided with full height, fully gasketed access doors where shown. Doors shall be provided with three-point latches. Handles shall be "D" ring, foldable type. All Panel "access doors shall be provided with full length, continuous, piano type, painted steel hinges with steel pins.
- h. Panels shall be internally lighted by 13 watt PL lamps, provided with protective metal shields and a switch box mounted control switch. One light shall be provided for every 4 feet of panel width.
- i. Each panel shall be provided with one 15 amp ground fault protected, duplex service outlet. One outlet shall be provided for every 4 feet of panel width and mounted to the panel subplates.

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- j. Service lights and/or receptacles shall be wired to a separate main disconnect circuit breaker and connected to the incoming 110-volt, 60-hertz, single phase supply. Receptacles shall be labeled as "Service Outlet"
 - k. Panels shall be manufactured by Hoffman or Hammond.
4. Selector Switch, Watertight:
- a. Units shall be heavy duty, watertight, industrial type selector switches with contacts rated for 120 V AC service at 10 amperes continuous. The switches shall be rated for NEMA 4X watertight, corrosion-resistant service. Units shall have standard size, black field, legend plates with white markings, as indicated. Operators shall be black knob type. Units shall have the number of positions and contact arrangements as shown. Units shall be single hole mounting, accommodating panel thickness from 1/16-inch minimum to 1/4-inch maximum.
 - b. Units shall be Square D Class 9001, Type SK; Allen-Bradley Type 800H; or equal.
5. Push-button, Momentary, Watertight:
- a. Units shall be heavy duty, watertight, industrial push to test type pushbuttons with momentary contacts rated for 120 V AC service at 10 amperes continuous. The pushbuttons shall be rated for NEMA 4X watertight, corrosion-resistant service. Units shall have standard size, black field, legend plates with white markings as indicated. Contact arrangements shall be as shown.
 - b. Units shall be Square D Type 9001, type K; Allen-Bradley Type 800H; or equal.
6. Uninterruptable Power Source
- a. The control panel shall operate from an Uninterruptable Power Source (UPS). Battery-supplied power shall be provided to operate the system for at least 45 minutes. The UPS shall utilize low maintenance, rechargeable, sealed batteries, maintained at a float charge during normal power conditions. The UPS shall output a synchronized 60 Hz sine-wave output, in phase with the commercial line power sine-wave. The sine-wave output shall be synchronized during switching from commercial AC power source to battery source and during switching from battery source back to commercial AC power source. The UPS shall switch to and from battery in less than 1 milliseconds. The UPS shall visually indicate its current mode of operation. The UPS shall provide silencing audible and visible alarms indicating commercial AC line power failure and low battery. The UPS shall support a serial port interface to communicate with the central site computer. This interface shall provide information to programmable controller to alert the utility staff in case of a power failure.

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- b. The UPS shall be manufactured by American Power Conversion, Inc. or equal.
7. Control Panel Interior Components:
- a. General
 - (1) All components and circuits used shall be subject to review and approval by the Owner. All switching circuits shall be checked and verified for specified performance by testing before shipment. All wiring shall comply with the latest applicable local and N.E.C. codes. Non-conforming circuits shall be corrected and re-tested.
 - (2) Each device requiring power shall be wired so that when wires are removed from any one device, power will not be disrupted to any other device.
 - (3) One isolated, N.O. spare contact shall be provided on each relay.
 - (4) Control device contacts going to high voltage equipment for motor control shall be rated 240 V AC/125 V DC at 10 amps. The contacts shall handle 50 amps inrush on "make" at 120 V AC and one amp on "break" at 125 V DC.
 - (5) Fuses shall not be allowed where protection by circuit breakers will not void the warranty of the device.
 - b. Power Distribution Within Panels:
 - (1) A 120 V AC, 1 phase breakers shall be provided within the control panel. A service description for each breaker shall be clearly identified inside the distribution panelboard.
 - (2) Additional branch breakers shall be added as required. No more than 20 devices shall be feed from any one branch breaker. Fuse protection shall not be permitted unless provided as an integral part of a device or where breaker protection cannot be provided. Where fuse blocks are provided, they shall be the fusible disconnect switch type with blown fuse indicators. Branch circuit breakers rated for services of 0.1 to 15 amps shall be panel mounted as manufactured by Square "D" type GCB or equal.
 - (3) A summary of the power requirements for each control panel furnished shall be submitted and indicated within each panel. Power requirements shall state required voltages, currents, and phase(s). Summary shall be supplemented with calculations.

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- c. Signal Distribution within Panels:
- (1) All signals shall be 24 V AC/DC 4-20 mA signals.
 - (2) Signals distributed outside panels shall be isolated 4 to 20 mA signals.
 - (3) All signal wiring shall be twisted, shielded pairs.
 - (4) All field 4-20 mA DC signals shall be isolated with an isolator AGM model AWD 1161 or equal.
- d. Signal Switching:
- (1) Signals shall be switched by dry circuit type relays or switches.
 - (2) 4 to 20 mA loops shall not be interrupted during switching.
 - (3) Switching transients in any associated signal circuit shall not exceed ± 0.2 mA or ± 0.05 V depending on the signal type.
- e. Relays:
- (1) Relays shall be provided as necessary to perform switching functions required of control panels and other control circuits. All relays shall have screw type terminal interface. Terminals shall have a permanent, legible identification. Relays shall be mounted such that the terminal identifications are clearly visible and all terminals are readily accessible.
 - (2) General purpose relays shall be used for logic and switching power to external loads and shall be DIN rail mounted, general purpose, medium power, industrial type. Minimum mechanical life expectancy shall be 10,000,000 operations and electrical life expectancy of 100,000 operations at rated load. They shall be of the dust cover enclosed, plug-in type, with 8 or 11 pin, screw terminal, snap-on sockets. Relays shall have a maximum of three form C contacts rated for 10 amperes at 120 V AC and be equipped with coil status indicator lamps and hold down springs. Relays shall be by Potter-Brumfield series KRPA, KUP, or approved equal.
- f. Power Supplies:
- (1) Provide dc power supplies as required to power instruments requiring external dc power, including two-wire transmitters and dc relays.

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- (2) Power supplies shall convert 120 V AC, 60-Hz power to dc power of the appropriate voltage(s) with sufficient voltage regulation and ripple control to assure that the instruments being supplied can operate within their required tolerances.
 - (3) Output over-voltage and over-current protective devices shall be provided with the power supply to protect the instruments from damage due to power supply failure and to protect the power supply from damage due to external failure. Provide NEMA 1 enclosure for all power supplies. Power supplies shall be mounted such that dissipated heat does not adversely affect other components.
- g. Internal Panel Lights and Service Outlets:
- (1) Panels shall be provided with switched 13-watt PL back-of-panel lights. One light shall be provided for every 4 feet of panel width and shall be mounted inside and in the top of the back-of-Panel area. Lights shall be provided with a protective metal shield.
 - (2) Panels shall be provided with a 15-amp, 120-volt, service outlet circuit within the back-of-Panel area. The circuit shall be provided with three-wire, 120-volt, 15-ampere, duplex receptacles, one for every 4 feet of panel width (two minimum per panel) and spaced evenly along the back-of-Panel area.
- h. Wiring: Wiring within panels, consoles, racks, and cabinets shall meet the following requirements:
- (1) AC power wiring shall be 12 AWG unless otherwise noted.
 - (2) Wiring internal to control panels shall be insulated with not less than 600 volts, 19 strand No.14 AWG, 90°C MTW, Class C stranded or THHN/THWN approved as 90°C MTW for power circuits connecting to field devices i.e., pushbuttons and relay contacts.
 - (3) No. 16 AWG wiring shall be used for inter-connecting relay coils, contacts, indicator lights etc. within the panels.
 - (4) Wires for analog signal circuits shall be 300-volt stranded copper and shall be twisted shielded pairs not smaller than No. 18 AWG and be separated at least 6 inches from any power wiring.

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- (5) Wiring shall be numbered and tagged at each termination. Heat shrunk wire markers shall be provided at each wire termination point internal and external to each panel(s). Wire tags shall be marked with legible machine printed markings and numbers. Adhesive or taped on tags will not be accepted. Each wire shall have a unique tag number assigned and be clearly identified on the approved shop drawings. Tagging scheme shall identify the designated component tag and terminal number destination.
- (6) Wiring for special signals such as communications, digital data, and multiplexed signals shall use manufacturer's standard cables.
- (7) All wires to internal components shall be connected to the "inside" of the field interface terminal strip. All wires to external components shall be connected to the "outside" of the field interface terminal strip. No more than two wires shall be connected to any one terminal point.
- (8) All panel wiring not run in wire ducts shall be bundled and tied.
- (9) Wiring shall not be spliced or tapped except at device terminals or terminal blocks.
- (10) Control and signal wiring shall be restrained by plastic ties or ducts. Hinge wiring shall be secured at each end so that any bending or twisting will be around the longitudinal axis of the wire and the bend area shall be protected with a sleeve.
- (11) Where panel components are provided for future equipment, wiring from the components to the panel terminal blocks shall be provided.
- (12) Wire Color Coding
 - (a) Power Wiring: Phase A shall be black with brown phasing tape, Phase B black with orange tape, and Phase C black with yellow tape.
 - (b) Internally powered AC Control Wiring: Control panel wiring associated with control circuits that are de-energized when the main panel disconnect is opened shall be color coded "Red".
 - (c) Externally powered AC Control Wiring: Control panel wiring associated with control circuits that remain "Hot" when the main panel disconnect is opened shall be color coded "Yellow".

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- (d) All yellow wiring leaving panels shall be brought to an isolated set of terminal blocks.
- (e) Low voltage, DC Wiring: Blue (B+); Blue with-tracer (B-).
- (f) DC Control Wiring: Orange
- (g) Neutral: White

Exception: Where prefabricated wire bundles are used, it is permissible to identify the neutral at every termination with a white shrink tube at least 12 inches long.
- (h) Ground: Green
- (i) Field interface wiring shall be black and white pairs unless otherwise noted or required by the National Electrical Code.
- (j) Intrinsically safe Light Blue
- (k) 24 V AC power wire shall be orange and brown.

(13) Wire Duct

- (a) Panel wire duct shall be provided between each row of components and adjacent to each terminal strip. Wire ducts shall be a minimum of one inch wide and three inches deep with removable snap-on covers and perforated walls for easy wire entrance. Wire ducts shall be constructed of non-metallic materials with a voltage insulation in excess of the maximum voltage carried therein.
 - (b) Empty panel wire duct shall be provided for all field connections to the terminal blocks.
 - (c) A minimum of two inches shall be provided between wire duct and terminal block assemblies
 - (d) Wiring duct shall not be filled to more than 60% visible fill.
- i. Wiring Interface: Wiring entering or leaving each panel, console, rack or cabinet shall be terminated and identified as follows:
- (1) Analog and discrete signal wiring shall be terminated at numbered terminal blocks with wire tagged equal to the PLC address.

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(2) Wiring for special signals such as communications, digital data, and multiplexed signals may be terminated at manufacturer's standard connectors.

j. Terminal Blocks: Terminal blocks for panels, consoles, racks, and cabinets shall meet the following requirements:

(1) All terminal blocks shall be 600-volt rated and shall be provided for termination of all circuits entering or leaving all panels. Terminal blocks shall have screw clamp compression, dead front barriers with current bar providing direct contact with wire between the compression screw and yoke. Yoke, current bar, and clamping screw shall be constructed of high strength and high conductivity metal. Yoke assembly shall guide all strands of wire into the terminal. Current bar shall provide dependable vibration-proof connections. Terminals shall be constructed to allow connection of wires without any special preparation other than stripping. Individual terminals shall be rail mounted to create a complete assembly such that jumpers can be installed with no loss of space on terminal or rail.

(2) Terminal block components shall be sized to allow insertion of all necessary wire sizes and types. Legible, factory machine printed markings and numbers shall be provided for terminal block identifications on both the inside and outside tracks of the terminal block assembly. Terminal blocks shall be numbered in numerical order. Multiple row of termination blocks shall allow the removal of wire without disturbing other landed wiring.

(3) Sufficient terminal blocks shall be provided to terminate all wires routed to the panel, all spare annunciator points and spare conductors. In addition, the greater of 20 percent or four unused spare terminals shall be provided.

(4) All connections for future functions shall be wired to numbered terminal blocks, grouped separate from the terminal blocks in use. Terminal blocks shall be grouped to keep 120 V AC circuits separate from the 24 V DC circuits.

(5) Terminal blocks shall be CSA certified and UL approved.

(6) Control type terminal blocks shall be as manufactured by Phoenix type UK10 or Owner approved equal. Analog signals (4-20 mA DC) shall be connected to knife type disconnect terminal blocks and shall be Phoenix type UK5-MTK-P/P or Owner approved equal. Shields required to be grounded shall be terminated on Phoenix type USLKG10 or Owner approved equal. Signal shields shall be grounded at only point within a loop. Use UK10 blocks when passing the shields through.

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- k. Grounding: Panels, consoles, racks and cabinets shall be provided with an isolated copper grounding bus for all signal and shield ground connections. This ground bus shall be grounded at a common signal ground point. The signal grounding system shall meet National Electrical Code requirements.
 - (1) Each analog loop shall be grounded at a single point for the loop. This single point shall be at location of the dc power supply for the loop.
 - (2) Each analog loop shall have its wire shields connected to ground at a single point for the loop. Shields shall be grouped and connected to ground at the same point as the analog signal ground.

- l. Analog Signal Isolators: Instruments on different panels, cabinets, or enclosures shall not be wired in series. Provide analog signal isolators for analog signals that are sent from one panel or cabinet to another.

- m. SCR Controllers:
 - (1) Each SCR Controller shall be a completely solid state unit consisting of an electronic switching amplifier, SCR full wave rectifier and associated circuitry.
 - (2) SCR units shall be heavy duty type to handle full current rating of motor and brief acceleration currents.
 - (3) SCR's shall be mounted on heat sinks but electrically isolated therefrom; circuitry shall operate properly over a room temperature range from 50°F to 120°F. All units shall be individually fused.
 - (4) Each controller shall be furnished with a tachometer feedback speed meter.
 - (5) All SCR Controllers shall have provisions for accepting a remote 4-20 ma current control signal.
 - (6) All components used for the control of the feed pump speed shall be located within the control panel.

- n. Programmable Controller:
 - (1) The alum system shall be automatically controlled by a programmable logic controller (PLC). The input/output modules shall be mounted on the back of V570 PLC / touchscreen.

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- (2) Each discrete input module shall accept up to sixteen (16) 24 V DC input signals received from devices such as pushbuttons, selector switches, pressure switches, temperature switches, or limit switches and converts them into voltage logic levels that can be processed by the controller. Each input shall be optically isolated and protected with a red LED to indicate the presence of the 24 V DC power (circuit closed indication). A green LED shall be provided to indicate the presence of the I/O module supply voltage of each group. discrete input modules shall be Unitronics Model V200-18-E3XB DI.
- (3) Each discrete output module shall provide eight (8), relay switched, 24 V DC output signals that can drive loads up to 1 amp such as relays, starters, and solenoid valves. The outputs shall be optically isolated from the system. Output signals shall be field wired in two groups of four (4) outputs per module. Each output shall be isolated and provided with a red LED to indicate the output is turned "on". A green LED shall be provided to indicate the presence of the required 24 V DC supply voltage. External, panel mounted, 10 Amp, interposing relays shall be provided for interfacing to control devices that are external to the local control panel or to devices that exceed the rating of the output module. Where LED type status indicators are used, a loading resistor shall be installed to prevent leakage current from keeping the lamps falsely lit. Discrete output modules shall be Unitronics Model V200-18-E3XB DO.
- (4) Analog input modules shall be four channel with opto-isolation. Inputs shall accept 4-20 mA DC signals. Input shall be set for Unipolar with Offset and Extended Resolution mode to detect loss of signal or low input indication. Resolution shall be 11 bit plus sign with a 10 ms conversion time. A green LED shall be provided to indicate the presence of the required 24 V DC supply voltage. A second green LED shall be provided to indicate the module is healthy. Removal of any panel mounted devices shall not interrupt the input signals to the PLC. Analog values shall continue to function properly. Inputs shall be provided for Flow and Level. Analog input modules shall be Unitronics V200-18-E3XB AI.
- (5) The PLC memory that stores the pump control system logic, state RAM (I/O addresses), and system overhead shall be battery-backed in CMOS RAM. The executive firmware shall be provided in nonvolatile EPROM. Additionally, a copy of the station logic shall be stored on a credit card size EEPROM card. A memory protect switch shall be provided on the PLC to protect the user logic when on. When the switch is off, the logic from the EEPROM will be installed directly.

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- (6) Operation of the PLC processor shall be continuously monitored, and in the event the controller should stop functioning, or the branch circuit breaker is opened, the pumps shall automatically be shut down.
 - (7) Battery-backed memory shall be protected by a 3.6 V Lithium battery with the battery condition monitored by the processor. When the battery needs replacement, as indicated by the "low Battery" status lamp on the processor or "PM Required" lamp on the front of the local panel, a remote alarm will be initiated.
 - (8) A dedicated 24 V DC power supply shall be provided and rack mounted to provide power to the PLC CPU. Power supply shall be Omron S82K.
- o. PLC Additional Requirements: The operator interface shall include a 5.7-inch touchscreen, panel mounted, NEMA 4 complete with software for full development, built-in diagnostics, menu-driven configuration, off-line configuration. The unit shall be configured for specific operation, including graphics and tables. The operator interface shall be Unitronics Model V570.

8. Manual Alum Pump Control Panel

- a. This panel is intended to allow the operator to manually set the floc of alum being metered into the stormwater. The Panel and alum pump are turned on automatically when the stormwater pump is activated. This panel shall incorporate the following features and construction and shall meet or exceed the design criteria for other control panels on the project, as listed in this specification.
 - (1) Enclosure to be NEMA 3R 316 SS construction with handle operator approximately 30" H x 24" W x 8" deep.
 - (2) Enclosure shall contain all items, variable speed drive, relays, lights, wiring, etc. necessary to provide a fully functioning control system.
 - (3) System shall provide the following control functions:
 - (a) Power off/on switch
 - (b) Power on light
 - (c) Pump run light
 - (d) Vernier type speed control
 - (e) SCR fail light
 - (f) Low tank level shutdown and light
 - (g) High water level shutdown and light
 - (h) Motor overtemp shutdown and light
 - (i) Acknowledge/reset button
- b. Panel to be designed to remain shutdown and pump off line until any of the fault conditions are acknowledged. Alarm lights to remain on until acknowledged even if condition returns to normal.

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C. PIPING, VALVES AND APPURTENANCES

PART 1 - GENERAL

1.01 DESCRIPTION

A. Scope of Work

1. The Contractor shall furnish and install all piping, fittings, valves and related materials for all alum suction, discharge and return lines, and pH monitoring lines required for an operable alum feed system.
2. The Contractor shall coordinate the type of materials and installation procedures with the Alum Feed System equipment specified in these Technical Provisions. Connections to the Alum Feed System shall be made per manufacturer's recommendations.
3. The location of the piping, fittings, and valves shall include the alum feed building and to all remote alum feed locations.
4. Materials under this section shall include, but is not limited to, the following:
 - a. Alum suction lines
 - b. Alum discharge lines
 - c. Alum return lines
 - d. Fittings
 - e. Valves
 - f. Pressure gauges
 - g. Calibration chamber
5. All components that are subjected to corrosion shall be constructed of chemical and corrosion resistant materials and coatings.
6. The entire system shall comply with all applicable OSHA rules and regulations
7. All construction shall conform to the requirements of the Trench Safety Act, Florida Statutes 90-96.

1.02 QUALIFICATIONS

- A. The materials shall be products of a manufacturer who is fully experienced, reputable, and qualified in the manufacturer of chemical feed materials. The materials shall be designed, constructed, delivered, and installed in accordance with the best practices and methods.

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- B. The system(s) shall be furnished by a single supplier who shall coordinate the system design for the proper operation of each system. The alum feed system(s) shall be supplied and assembled by Technical Solutions Inc., 117 Morningside Drive, Lakeland, FL, 33803, (863) 683-5371; or approved equal. Approved equal shall have demonstrated experience with a minimum of 10 previous projects, each of which include stormwater flow sensing, alum pumping systems for stormwater treatment, and related instrumentation. Experience with potable or wastewater systems will not be considered equivalent. The EOR shall have sole determination on the acceptability of the approved equal.

1.03 SUBMITTALS

- A. Materials and Shop Drawings

Copies of all materials required to establish compliance with these specifications shall be submitted in accordance with the provisions of the Contract Documents. Submittals shall include at least the following:

1. Certified shop and erection drawings showing all piping, fittings, valves, and related appurtenances within the building and FRP alum storage tank area.
2. Descriptive literature bulletins and or catalog of each item to be furnished and installed.
3. A statement from the manufacturer that all supplied material is suitable for use with liquid alum, $Al_2(SO_4)_3 \cdot 14 H_2O$.

- B. Additional Information

1. In the event that it is impossible to conform with certain details of the specifications, describe completely all non-conforming aspects.
2. Provide materials warranty per specifications.
3. All operating and maintenance instructions shall be furnished to the Owner's Representative.

PART 2 - PRODUCTS

2.01 GENERAL

- A. The Specifications are intended to give a general description of what is required, but do not cover all details which may vary in accordance with the exact requirements of the installation offered. They are, however, intended to cover the furnishing, delivery, installation, and field testing of all materials, and apparatus as required. Any additional materials necessary for the proper operation of the proposed installation not mentioned in these Specifications, or shown on the Drawings shall be furnished and installed.

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- B. The material covered by these Specifications is intended to be of proven ability and as manufactured by reputable concerns having experience in the production of such materials. The materials furnished shall be designed, constructed, and installed in accordance with best practice and methods and shall operate satisfactorily when installed as shown on the Drawings.
- C. All materials shall be designed and proportioned to have liberal strength, stability, and stiffness and to be specially adapted for the intended service.
- D. All piping and appurtenances shall be rigidly and accurately anchored into position and all necessary foundation bolts, plates, nuts, and washers shall be furnished and installed. All bolts, nuts, and washers shall be of stainless steel.
- E. Engraved laminated nameplates giving the name and function of all piping, valves, and pump shall be securely attached to each in a conspicuous location.

2.02 MATERIALS

- A. Alum Discharge Line, Alum Suction Line, and Alum Return Line:
 - 1. All pipe, fittings and valves in the building and at the point of alum addition structure shall be gray (same color) solvent welded Schedule 80 polyvinyl chloride (PVC), unless otherwise noted on the drawings. Use only solvent cement and primer rated for Schedule 80 PVC.
 - 2. All piping outside the building and point of alum addition structure shall be as indicated on the Construction Drawings.
- B. Valves: Heyward or approved equal
 - 1. The valve shall be designed to operate with the chemical solutions being pumped.
 - 2. All valve bodies shall be PVC, Type 1, Grade 1, unless otherwise noted on the drawings.
 - 3. The valve diaphragm shall be made of an elastomer (Hypalon) bonded to TFE facing.
 - 4. Ball valves shall be manually operated with a Teflon seat.
 - 5. Check valves shall be spring compression operated with Hypalon disc.
- C. Pipe Hanger: Anchors and pipe hangers shall be 316 stainless steel. Hangers shall allow for a 2" wall offset.
- D. Camlock Fittings: 316 Stainless Steel

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PART 3 - EXECUTION

3.01 INSTALLATION

- A. All materials shall be installed in strict conformance with the manufacturer's instructions and recommendations.
- B. All pipe, fittings, and valves within the building shall be properly anchored and/or supported and direction of flow indicated. Also separate colors will be used to identify power lines versus alum lines.
- C. All pipes within the control building or vault will be labeled with description, i.e. alum suction line, alum discharge line, alum return line, water line, power line and direction of flow in large pre-printed labels.
- D. All piping outside the vault shall have a continuous labeled metallic locating tape placed 12" above the line.

3.02 TESTING

All lines will be hydrostatically tested by Contractor at 150 psi for two hours. No drop in pressure will be allowed.

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D. WARRANTY AND PAYMENT

1.01 WARRANTY

All work outlined in these Specifications shall be warranted for a period of one (1) year or the duration of the manufacturer's warranty, whichever is greater, from the date of final acceptance by the Owner. The warranty shall include all materials, labor, and shipping (if necessary). With respect to instruments and equipment, the warranty shall cover: (a) improper assembly or erection; (b) defective workmanship or materials; and (c) leakage, breakage, or other failure not caused by Owner misuse. All warranties shall be provided by the Contractor to the Owner, with the Owner named as beneficiary.

1.02 Basis of Payment

The unit price for this particular pay item includes, but is not limited to, all the work including alum feed system control panel, piping, valves and appurtenances, materials, equipment, labor, testing, software, equipment calibration, spare parts, and training described within this Technical Provision and shown on the construction plans, including minor materials and items not indicated on the plans but which can be reasonably anticipated to be necessary to construct the system. All applicable warranties from the manufacturers shall be transferred to the County upon completion of this project.

Payment shall be made under:

Item No. ATS-01 Alum Treatment and Instrumentation System Components – Lump Sum

END OF SECTION

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TP ATS-02: ALUMINUM ROOF COVER

PART 1 - GENERAL

1.01 SCOPE OF WORK

Provide and install the metal roof cover and aluminum support posts, as indicated on the Construction Drawings.

1.02 DESCRIPTION

The Contractor may construct the roof cover as indicated on Sheet S-1 of the Construction Drawings, or provide and install a pre-engineered and pre-fabricated equivalent structure. Alternate designs must be accompanied by Shop Drawings and engineering calculations, signed and sealed by an engineer registered in the State of Florida. The structure must be designed in accordance with the Structural General Notes indicated on Sheet S-1 of the Construction Drawings, the 2010 Edition of the Florida Building Code, and the following design loads:

Roof Live Load: 20 PSF

Wind Load Design: Ultimate design wind speed (140 mph)
 Normal design speed (110 mph)

PART 2 – WARRANTY

All materials and workmanship outlined in this Section shall be warranted for a period of five (5) years or the extent of the manufacturer's warranty, whichever is greater, from the date of final acceptance by the Owner. The warranty shall include all materials, labor, and shipping (if necessary).

Basis of Payment

The aluminum roof cover will be paid for at the contract unit price, completed and accepted. Payment shall be full compensation for work specified, including materials, labor, and appurtenances.

Payment shall be made under:

Item No. ATS-02	Aluminum Roof Cover and Supports	- Each
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END OF SECTION

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TP ATS-03: SITE AND CONTROL SYSTEM ELECTRICAL

A. BASIC ELECTRICAL REQUIREMENTS

PART 1 - GENERAL

1.01 WORK INCLUDED

- A. Work included in this section consists of furnishing all labor, materials, equipment and transportation and performing all testing and demonstration operations of all system features required to provide primary and secondary electrical service in accordance with these specifications and drawings which includes, but is not limited to the following:
1. Provide primary electric service as indicated on the construction drawings and Technical Specifications including coordination with the electric utility.
 2. Complete electrical wiring of all electrical distribution systems, lighting, including necessary feeders and connections to flow meters and other instrumentation and power loads as shown or implied on the drawings and herein specified.
 3. Mount and make all field connections to process instrument panels and other control panels furnished under other Technical Provisions.
 4. For process instrumentation furnish and install all conduit, wire, instrumentation cabling and interconnections between primary elements, transmitters, local indicators and receivers.
 5. Electrical permits, fees, tests, inspection and guarantees.
 6. Connection of all electrical equipment, including complete ground system.
 7. Submit shop drawings.
 8. Coordination of work with the Owner.
 9. Provide record drawings.

1.02 PROPRIETARY NAMES

- A. For convenience of description and as a standard for grade, type, quality, and performance characteristics, proprietary names are included with some descriptions. This does not imply preference to specific manufacturers (except where multiple choice is specified), but minimum requirements with approval to be made by the EOR.

1.03 QUALITY ASSURANCE

- A. Standards: All materials shall be new and free of defects, and shall be U.L. listed, bear the U.L. label or be labeled or listed with an approved, nationally recognized Electrical

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Testing Agency. Where no labeling or listing service is available for certain types of equipment, test data shall be submitted to prove to the EOR that equipment meets or exceeds available standards.

- B. Codes: Install in accordance with latest edition of the National Electric Code and the regulations of governing local, State, County and other applicable codes, including the Utilities Company. Pay for all required licenses, fees and inspections.
- C. Contract Documents: The drawings are generally diagrammatic; therefore, the Contractor shall make use of all the data in all of the contract documents and shall verify all information at the site. During execution of the contract, the location of electrical apparatus shall be coordinated with the owner. All questionable locations shall be approved by owner or his representative prior to installation.
- D. Inspections: During the course of construction, the work will be observed by the EOR. The Contractor shall call for inspections by the local building inspector during the normal phases of installation and, following each inspection phase, the Engineer shall be furnished with Certificates of Inspection from all authorities having jurisdiction. After the completion of the work, the Contractor shall deliver all certifications or letters of approval from such bodies to the Engineer. Following the successful completion of the final inspection, furnish the owner with a certificate of final approval.
- E. Tests: The Contractor shall provide all necessary instruments and special apparatus to conduct any test that may be required to insure system performance and that control wiring and power cables are free of all improper grounds and short circuits. These tests shall be conducted in the presence of the owner's representative prior to final acceptance.
- F. After service, feeders, and mechanical equipment feeder wires or cables are in place, but before being connected to devices and equipment, the system shall be tested for shorts, opens, intentional and unintentional grounds by means of an approved type of constant "megger". All wires in conduit that are shorted or unintentionally grounded shall be replaced.
- G. With the system energized, line-to-line voltage and line current measurements shall be made under full load conditions. Should measured values deviate ± 10 % from the nameplate rating, the condition shall be corrected. Notify the EOR immediately should deviations occur.
- H. The resistance between ground and absolute earth shall not exceed 5 ohms and shall be measured by the Electrical Contractor before equipment is placed in operation. Testing shall be performed on all ground rod installations. Testing shall be three (3) point method in accordance with IEEE recommended practice.

1.04 SUBMITTAL

- A. Shop Drawings:
 - 1. Before submittal to the EOR, all shop drawings shall be perused, corrected and verified by signature, or stamp and signature as approved by the applicable subcontractor to be in accordance with the requirements of the drawings and specification. Shop drawings that have not been signed or stamped and

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signed as approved, but have not been perused for compliance with the drawings and specifications and have not been coordinated with other

equipment and other trades, will be returned to the Contractor without being reviewed by the EOR. All component manufacturers' names shall be clearly visible on each submittal sheet. Dimensions, material lists, wiring diagrams, capacities, catalog numbers/cuts and other such pertinent data shall be submitted for approval of all equipment: disconnect switch, including circuit breakers, safety switches and controls; and all wiring and control devices. Approval of material will be based on the manufacturer's published ratings or on test results where specified. All data shall be submitted in a single package. No partial list will be reviewed.

2. If any required items are omitted from this submittal, the EOR shall select each such item indicating manufacturer, model, etc., and such decision shall be final. The term "Per Specifications" will not be acceptable. Samples shall be required as requested by the EOR to further substantiate any substitutions.
3. Any deviation from the specifications pertinent to shop drawings shall be listed separately and submitted with shop drawings. Failure to list all deviations in this manner shall be grounds for requiring removal of such items and installation of new items in exact accordance with specifications at no extra cost to the owner. No material shall be purchased or installed before written approval of any submission.
4. In addition to the shop drawings, which must be submitted for approval before ordering equipment, the Contractor shall furnish four copies of complete installation drawings, instruction books, maintenance manuals, and parts lists for each major item of electrical equipment, and similar data on minor items of equipment if requested by the EOR. This information must be submitted before the installation of the equipment

B. Permits, Fees, Inspection Certificates and Tests:

1. Permits: All required permits, fees and inspection certificates shall be obtained, paid for, and be made available by the Contractor during the progress of the work.
2. The Contractor shall perform or secure such tests as may be required, supplying all labor and instruments needed, or paying such costs as may be involved.
3. All tests required to establish the adequacy and quality of all systems shall be made by this Technical Provision in the presence of and to the satisfaction of the EOR.
4. All concealed work must remain uncovered until approved. All tests shall be made in strict accordance to code requirements. Defects disclosed by tests shall be made good and the defective materials replaced without additional cost to the owner. Tests shall be repeated after repairs or replacements have been made.

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- C. Record Drawings:
1. During the progress of the work, the job superintendent for this project shall daily record on his complete field set of electrical drawings the exact location as installed of all underground and otherwise concealed conduits which were not installed exactly as shown on the contract drawings.
 2. This work must be kept up-to-date and verified by the EOR before the payment is made. The complete marked set shall be delivered to the owner before the final acceptance of the work.

1.05 GUARANTEE

- A. All equipment materials and workmanship shall be guaranteed to conform with the specifications and accepted alternates. Parts, defective or not in accordance with the specifications or accepted alternates, shall be replaced in the system and tested free of cost to the owner; and for a period of one year after final acceptance of the completed system, shall be fully guaranteed.
- B. In the event that a repetition of any one material defect occurs, indicating the probability of repeated failures which can be traced to faulty manufacture, manufacturer's design of material or item, or Contractor's method of installation, the Contractor shall not continue to replace with the same material, part or method, but shall take steps to remedy the fault through replacement of all such defective material or revise completely the method of installation.
- C. Manufacturer's guarantees, which extend beyond the guarantee period specified, shall be transferred to the owner before request for final payment.
- D. All equipment, accessories and connections shall be guaranteed to operate without undue heating, noise or voltage drop; and the Contractor shall correct or adjust any items, should such conditions be found to exist after system has been put into operation. Whether or not a condition or noise is objectionable shall be decided by the EOR.
- E. Certification must be provided stating that all materials and equipment used on the project are new.

1.06 SUPERVISION AND WORKMANSHIP

- A. All work under this Technical Provision shall be performed under the immediate direction of fully qualified foremen. Insofar as possible and unless approved by the EOR, there shall be no change in supervision during the course of construction.
- B. All workmanship shall be of the highest quality, and the right to require immediate removal from the project of any personnel for cause is reserved to the EOR.
- C. It is the intent and of the essence of the specifications that all personnel furnished for this Technical Provision shall cooperate with all other personnel at all times to insure the furnishing of highest quality workmanship.

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PART 2 - PRODUCTS

2.01 MATERIALS AND EQUIPMENT

- A. General: All electrical materials and equipment shall be new, of recent manufacture, shall bear the manufacturer's name, date of manufacture, trademark and be approved by the Underwriters' Laboratories, Inc., except as otherwise specified herein. Material or equipment damaged in the course of installation or test shall be replaced or repaired in a manner meeting with the approval of the EOR. All equipment shall be complete and in operating condition unless otherwise specified herein. Fusible equipment shall be equipped with fuses, and 100 percent of spare fuses of each type shall be supplied. Equipment and materials shall be delivered to the site and stored in original containers, suitably sheltered from the elements, but readily accessible for inspection. **When available, all components shall be Allen Bradley or Square D.**
- B. Raceways:
1. PVC conduit and associated connectors shall be schedule 40 composed of High Impact PVC (polyvinyl) chloride (C-200 Compound), and shall conform to industry standards, and be UL listed in accordance with Article 347 of National Electrical Code for underground and exposed use. Materials must have tensile strength of 55 PSI, at 70EF, flexural strength of 11,000 PSI, compression strength of 8600 PSI. Manufacturer shall have five years' extruding PVC experience.
 2. RGS conduit shall be galvanized steel hot-dip inside and out, after threading and shall conform to Federal Specifications WW-C-581.
 3. ALUM conduit shall contain less than 0.1 percent copper and conform to Federal Specification WW-C-540C.
 4. PRGS conduit shall be PVC coated rigid steel conduit and fittings per Federal Specification WW-C-581E, ANSI Standard C80.1, UL Standard #6, 40 mils thick PVC coating and urethane interior coating as manufactured by Robroy Industries PLASTI-BOND-RED.
- C. Conductors:
1. All power conductors shall be copper Type THHW PVC, 600 volts insulation, or approved equal. No. 10 and smaller may be single strand. No. 8 through No. 2 shall be 7 strand and No. 1 through 4/0 shall be 19 strand. 250 MCM through 500 MCM shall be 37 strand.
 2. Connectors and lugs shall be Burndy series YA, YS YSV, applied with Burndy recommended tools. Taps in gutters shall be Burndy KSU, tin plated. All connectors shall be insulated with PVC tape and made watertight. Scotchlock insulated spring type connectors shall be used for fixture connections.
 3. Pull compound, if used, shall conform to the recommendations of the wire manufacturer.

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D. Panelboards:

1. Panelboards shall be in accordance with the Underwriter Laboratories, Inc. "Standard for Panelboards" and "Standard for Cabinets and Boxes" and shall be so labeled where procedures exist. Panelboards shall also comply with NEMA Standard for Panelboards and the National Electrical Code.
2. 120/240 V, single phase, 3 wire, and 120/208 V three phase, 4-wire panelboards shall be type NQOD, bolt-in branch breakers, 22.0 AIC rated NEMA 4X stainless steel enclosure as manufactured by the Square D Co. or Allen Bradley.
3. All interiors shall be completely factory assembled with circuit breakers, wire connectors, etc. All wire connectors, except screw terminals, shall be of the anti-turn solderless type and all shall be suitable for copper or aluminum wire of the sizes indicated.
4. Interiors shall be so designed that circuit breakers can be replaced without disturbing adjacent units and without removing the main bus connectors and shall be so designed that circuits may be changed without machining, drilling or tapping.
5. Branch circuits shall be arranged using double row construction except when narrow column panels are indicated. Branch circuits shall be numbered by the manufacturer.
6. A nameplate shall be provided listing panel type, number of circuit breakers, ratings and source.
7. Bus bars for the mains shall be of tin-plated copper. Full size neutral bars shall be included. Bus bar taps for panels with single pole circuit devices shall be arranged for sequence phasing of the branch circuit devices. Bussing shall be braced throughout to conform to industry standard practice governing short circuit stresses in panelboards. Phase bussing shall be full height without reduction. Cross connectors shall be copper.
8. Neutral bussing shall have a suitable lug for each outgoing feeder requiring a neutral connection.
9. Spaces for future circuit breakers shall be bussed for the maximum device that can be fitted into them.

E. Switches:

1. All wall switches shall be waterproof and be of the indicating, toggle action, flush mounting quiet type. All switches shall conform to Federal Specification W-S-896-D.
2. Wall switches shall be of the following types and manufacturer or equal. Any reference to a specific figure number of a specific manufacturer is for the purpose of establishing a type and quality of product and shall not be considered as proprietary.

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- a. Single pole - Arrow-Hart, Catalog No. 1991.
- b. Double pole - Arrow-Hart, Catalog No. 1992.
- c. Three way - Arrow-Hart, Catalog No. 1993.
- d. Four way - Arrow-Hart, Catalog No. 1994.
- e. Single pole, key operated - Arrow-Hart Catalog No.11991-L.
- f. Momentary contact, 2 circuit, center off - Arrow-Hart, Catalog No. 1895.
- g. Weatherproof cover for Arrow-Hart 2900 series tap action switches; Arrow-Hart Catalog No. 2881-G.

F. Safety Switches:

- 1. All switches shall be heavy duty and have stainless steel NEMA 4X enclosures.
- 2. All switches shall have metal nameplates, front cover mounted, that contain a permanent load, switch-type, catalog number and HP ratings, handle whose position is easily recognizable and is padlockable in the "off" position, visible blades, reinforced fuse clips, nonteasible, positive, quick make-quick break mechanism, switch assembly plus operating handle as an integral part of the enclosure base.
- 3. Switches shall have defeatable door interlocks that prevent the door from opening when the operating handle is in the "on" position. All switches shall have line terminal shields.
- 4. All current carrying parts shall be copper.
- 5. Short circuiting rating: 10,000 RMS symmetrical amperes for non-fused switches.
- 6. Line and load lugs shall be front removable and suitable for copper, 60/75EC wire through 200A sizes, 75EC wire for 400-800A sizes.

G. Receptacles:

All wall receptacles shall be waterproof and be of the following types and manufacture or equal.

- 1. Single, 20 A, 125 V, 1P, 3W; Arrow-Hart, Catalog No 5351.
- 2. Duplex, 20 A, 125 V, 2P, 3W; Arrow-Hart, Catalog No. 5352.
- 3. Weatherproof, 20 A, 125 V, 2P, 3W; Arrow-Hart, Catalog No. 5351 and WLRD-1 cover.
- 4. Corrosion-resistant, duplex, 20 A, 125 V, 2P, 3W; Arrow-Hart, Catalog No.

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5351 and WLRD-I cover.

5. 60 A, 480 V, 3P, 2W; weatherproof receptacle shall be Crouse-Hinds Catalog No. ARE6324 with Crouse-Hinds Catalog No. APJ 6385 plug.
 6. Ground fault interrupter, duplex, 20 A, 125 V, 3P, 2W; Arrow-Hart Catalog No. GF5342.
 7. Stainless steel indoor mounting plate for G.F.I. receptacle; Arrow-Hart Catalog No. 97061.
 8. Weatherproof cover for G.F.I. receptacle in FS box; Arrow-Hart Catalog No. 4501-FS.
 9. Single, 20 A, 125 V, 2P, 3W; Arrow-Hart Catalog No. 8510BL; cover: Arrow-Hart Catalog No. 9301C indoor, 7420C weatherproof.
 10. Single, 30 A, 125 V, 2P, 3W; Arrow-Hart Catalog No. 5716N; cover: Arrow-Hart Catalog No. 9301C indoor, 7420C weatherproof.
- H. Device Plates: Plates for flush mounted devices shall be of the required number of gangs for the application involved and shall be 302 (18-8) high nickel stainless steel of the same manufacturer as the device.
- I. Nameplates: The following items shall be equipped with nameplates: All safety switches, motors and control panels. Special electrical systems shall be identified at junction and pull boxes, and equipment and cable racks. Nameplates shall adequately describe the function of the particular equipment involved. Nameplates for panel shall include the panel designation, voltage and phase of the supply. For example, "Pump Control Panel, 480 V, 3-phase, 3-wire". The name of the machine on the nameplates for a particular machine shall be the same as the one used on all motor starters and for that machine branch circuit breakers. Nameplates shall be laminated phenolic plastic, black front and back with white core, with lettering etched through the outer covering. White engraved letters on black background. Attach with plated self-tapping screws or brass bolts.
- J. Boxes : All outlet and switch boxes and fittings used throughout the job, except where electric metallic tubing is permitted, shall be plastic, FRP or stainless steel. Boxes shall be minimum size as required by the National Electric Code and large enough to permit a satisfactory installation of the required conductors. Extra large boxes shall be used in accordance with the NEC where necessary to prevent undue crowding of wires. Cast type gang boxes shall be used for gang switches and to provide additional conductor space.
- K. Ground Rod: Ground rods shall be a copper clad steel rod 5/8 inch diameter by 20 feet long, approved for that use.
- L. Lightning Arrestors: Secondary lightning protection shall be provided on each phase on the line side of main service as shown on the Drawings.

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PART 3 - EXECUTION

3.01 INSTALLATIONS

- A. All work shall be executed in a neat and workmanlike manner by experienced and capable electricians so as to present a neat installation upon completion. Electrical work shall be coordinated so as not to interfere with other construction operations. All work under each section shall be laid out and installed in advance of pouring concrete floors or walls.
- B. The Contractor shall perform or be responsible for all necessary cutting, sleeving, excavating and backfilling and compacting for the installation of the equipment and the patching thereafter. Metal conduits installed underground or in concrete slabs shall be coated with two coats of asphalt paints.
- C. The Contractor shall furnish and install all inserts, and hangers required to support conduit, cables, pull boxes, etc. The Contractor shall furnish and install all sleeves or openings through floors or walls required for passage of all conduits or ducts installed. Sleeves shall be of 18 gauge galvanized sheet steel rigidly supported and suitably packed to prevent ingress of wet concrete. If sleeves, hangers, inserts, etc., are improperly installed, all necessary cutting and patching to rectify such error shall be performed.
- D. The Contractor shall permanently and effectively ground service neutral and all raceways, devices, and utilization equipment in accordance with requirements of National Electrical code, and as shown or required. All grounding electrodes shall have rigid clamp jaws.
- E. The Contractor shall install control devices furnished by equipment manufacturers with their equipment and complete the wiring in accordance with manufacturer's recommendations and approved wiring diagrams.
- F. Feeders and Branch Circuitry: Sizing of main feeders and branch feeders is fully delineated on the drawings. The Contractor shall provide all feeders in accordance with the indications of the drawings and shall connect them for correct phase sequence and the proper operation of the equipment they serve.
- G. Conductors: Conductors pulled in raceways shall be greased to reduce strains on the conductor and on the insulation. Conductors that are nicked or scarred during installation shall be removed. The raceways will be cleaned and freed from any burrs or abrasions and new conductors installed. Conductors shall be laced and trained in all panelboards, control panels and terminal cabinets. Color coding of conductors is mandatory. The phase conductors of all feeder circuits and the control conductors of all control circuits shall be grouped as such, laced and identified where installed in the pull boxes.
- H. Grounding:
 - 1. In general, all electrical equipment (metallic conduit, motor frames, panelboards, etc.) shall be bonded together with a green insulated or bare copper system grounding conductor in accordance with specific rules of Article 250 of the NEC. Bonding conductor through the raceway system shall be continuous from main panel grounding bar to branch circuit equipment and devices.

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2. Grounding conductors shall be so installed as to permit shortest and most direct path from equipment to ground, be installed in metal conduit with both conductor and conduit bonded at each end, have connections accessible for inspection and made with approved solderless connectors brazed (or bolted) to the equipment or structure to be grounded, in NO case be a current carrying conductor, have green jacket unless it is bare copper, be run in conduit with power and branch circuit conductors. The main grounding electrode conductor shall be exothermically welded to ground rods.
3. All contact surfaces shall be thoroughly cleaned before connections are made to insure good metal to metal contact.
4. Mechanical lugs or wire terminals shall be used to bond ground wires together or to junction boxes and panel cabinets and shall be manufactured by Anderson, Buchanan, Thomas and Betts Co., or Burndy.
5. All exterior grade mounted equipment shall have their enclosures grounded directly to a separate driven ground at the equipment.
6. All raceways shall have an insulated copper system ground conductor throughout the entire length of circuit installed within conduit in strict accordance with NEC. Grounding conductor shall be included in total conduit fill determining conduit sizes, even though not included or shown on drawings. Grounding conductors run with feeders shall be bare only.
7. Testing
 - a. Visual and Mechanical Inspection
 - b. Inspect ground systems for compliance with drawings and specifications.
 - c. Perform ground-impedance measurements utilizing the fall-of-potential method per ANSI/IEEE Standard 81 "IEEE Guide for Measuring Earth Resistivity, Ground Impedance, and Earth Surface Potentials of a Ground System." Instrumentation utilized shall be as Approved by NETA Standards and shall be specifically designed for ground impedance testing. Provide sufficient spacing so that plotted curves flatten.
 - e. When sufficient spacing of electrodes is impractical, perform ground-impedance measurements utilizing either the intersecting curves method or the slope method. (Ref. Nos. 40 and 41 in IEEE Std. 81.)

I. Raceways:

1. General: Conduits shall be installed to insure against the collection of trapped condensation, and all runs shall be arranged so as to be devoid of all traps wherever possible. Precautions shall be taken to prevent the lodging of dirt, plaster or trash in conduit, tubing, fittings and boxes during the course of construction. A run that has been or becomes clogged shall be entirely cleared or replaced. All metallic conduit installed in concrete or below grade shall be painted with two coats of black asphalt paint. Where conduits leave or enter a slab, a flush coupling shall be installed. All conduit installed below grade shall have magnetic locating tape placed 12 inches above the conduit along the entire length.
2. Size: Minimum size for all conduit is 3/4 inch.

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3. Rigid Steel Conduit: Rigid conduit shall be securely fastened to all enclosures, care being taken to see that the full number of threads project into the hub. All field cut threads shall be coated with a zinc compound.
4. Flexible Conduit: All vibrating equipment and motors, where indicated, shall be connected with vapor tight flexible metallic conduit of the size required for the conductors to the equipment. Bonding shall be in accordance with local codes. Flexible conduit shall be utilized to isolate vibrating equipment only.

- J. Devices: Devices shall be set plumb with the footing or floor and at locations indicated. Where devices must be moved because of conflict, approval of the EOR shall be obtained prior to relocation.
- K. Electrical Work Required for the Installation of Equipment Under These Specifications: The Contractor shall provide all conduit, conductors, boxes, safety switches, and all necessary hardware required for the installation of equipment.
- L. Electrical Service: Electrical service shall be in accordance with the rules and regulations of the local utility, and the Contractor shall provide the following:
 1. The Contractor shall furnish all labor, materials, etc. necessary for a complete approved electrical service as required for this project, including inspection and approval by the utility and local inspection departments (if any), and inform the EOR prior to energizing power lines. This Contractor shall notify the utility company in writing, with 2 copies to the EOR, not later than ten (10) days after signing contracts as to when this Contractor anticipates the service will be required.
 2. Furnish and install one (1) underground 480 volt, 1-phase, 4-wire service from power company transformers to main service equipment where shown on the plans. Seal conduits where entering hazardous areas. The underground service shall comply with all the requirements of the NEC, local utility company, and local enforcing authority.
 3. Metering: Meter base shall be furnished and installed by this Contractor. Metering base and conduit must be installed in accordance with the utility company requirements.

PART 4 – WARRANTY

All materials and workmanship outlined in this Section shall be warranted for a period of one (1) year or the extent of the manufacturer's warranty, whichever is greater, from the date of final acceptance by the Owner. The warranty shall include all materials, labor, and shipping (if necessary).

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B. LIGHTNING PROTECTION SYSTEM

PART 1 - GENERAL

1.01 DESCRIPTION

- A. Scope of Work:
1. Furnish all labor, materials, equipment and incidentals required and install a complete lightning protection system for all above ground structures. The system shall include grounding for the building, and as applicable; all fencing, gates, handrail and platform structures, and external tanks.
 2. Material requirements shall be as listed for Class I buildings.
- B. Applicable Publications: The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by the basic designation only.
1. American National Standards Inst., Inc. (ANSI):
C-135.30 Galvanized Ferrous Ground Rods.
 2. National Fire Protection Association (NFPA):
70-1987 National Electrical Code (NEC)
78-1986 Lightning Protection Code
 3. Underwriters Laboratories, Inc. (UL):
UL-96 Lightning Protection Components
UL-96A Installation Requirements for Lightning Protection Systems
UL-467 Grounding and Bonding Equipment

1.02 QUALITY ASSURANCE

- A. Equipment Manufacturer: The material furnished under this specification shall consist of the standard products of a manufacturer regularly engaged in the production of lightning protection systems.
- B. Supervision: The system shall be installed under supervision of, or by, a person specifically trained for installation of lightning protection systems.

1.03 SUBMITTALS

- A. Shop Drawings: Shop drawings shall be submitted and shall, at a minimum, consist of a complete list of materials, including manufacturer's descriptive and technical literature; catalog cuts; drawings; and installation instructions. Shop drawings shall contain details to demonstrate that the system has been coordinated and will function as a unit. Drawings shall show proposed layout and mounting and relationship to other parts of the work.
- B. Proof of Compliance: Where materials or equipment are specified to comply with requirements of the UL, proof of such compliance shall be submitted. The label of or listing in the UL Electrical Construction Materials Directory will be acceptable

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evidence. In lieu of the label or listing, a written certification may be submitted from an approved nationally recognized testing organization equipped to perform such services, stating that the items have been tested and conform to the requirements and testing methods of Underwriters' Laboratories.

PART 2 - PRODUCTS

2.01 MATERIALS AND EQUIPMENT

A. General Requirements:

1. The system furnished shall be complete with all air terminals, fittings, clamps, supports, roof conductors, down conductors, and horizontal grounds required. The system shall be interconnected with the building ground grid. All conductors, fittings, clamps, and air terminals furnished shall be of the highest quality.
2. System shall be an exposed conductor system. Care shall be taken that the materials used will not discolor roofs or walls. Down conductors shall be protected to 10 feet above grade and shall be located so that visual impact will be minimal.
3. No combination of materials shall be used that form an electrolytic couple of such nature that corrosion is accelerated in the presence of moisture unless moisture is permanently excluded from the junction of such metals. Where unusual conditions exist which would cause corrosion of conductors, conductors with protective coatings or oversize conductors shall be used. Where a mechanical hazard is involved, the conductor size shall be increased to compensate for the hazard or the conductors shall be protected by covering them with molding or tubing made of wood or non-magnetic material.

B. Copper: Copper conductors shall not be less than #6 AWG for main conductor and #8 for secondary conductor. Below grade conductors shall be #4/0 bare copper.

C. Air Terminals: Air terminals shall be 3/8 inch diameter stainless steel and a minimum 24 inches in length with shingle / tile roof base. Air terminals over 24 inches shall be supported.

D. Ground Rods: Ground rods shall be 3/4 inch by 10 feet copper-clad steel, with the top of the rod, 12 inches below grade minimum and a minimum of 2 feet from building foundation and footings.

E. Clamp-Type Connectors: Clamp-type connectors shall be of copper, bronze, or stainless steel holders or braces for shingle / tile roofs. Clamps shall be secured with at least two (2) bolts or cap screws.

F. Metal Bodies: Metal bodies of conductance shall be bonded to the system if not within the zone of protection on an air terminal. Metal bodies of inductance shall be bonded to the system at their closest point to the system if within 6 feet of the system at their

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closest point to the system if within 6 feet of the system main conductor or other bonded metal body. The main lightning conductor shall be bonded to the main potable service water pipe.

PART 3 - EXECUTION

3.01 INSTALLATION

- A. General Requirements: The lightning protection system shall consist of air terminals, roof conductors, down conductors, ground connections, and grounds, electrically interconnected to form the shortest distance to ground without passing through any non-conducting parts of the structure. All conductors on the structures shall be exposed except where conductors are in protective sleeves exposed on the outside walls. Exposed conductors shall not be allowed on the outside face of the Operation/Laboratory building. Secondary conductors shall interconnect with grounded metallic parts within the building. Interconnections made within side-flash distances shall be at or above the level of the grounded metallic parts.
- B. Air Terminals: Air terminal design and support shall be in accordance with NFPA 78. Terminals shall be rigidly connected to, and made electrically continuous with, roof conductors by means of pressure connectors or crimped joints with of T-shaped malleable metal and connected to the air terminal by a dowel or threaded fitting. Air terminals at the ends of the structure shall be set not more than 2 feet from the ends of the ridge or edges and corners of roofs. Spacing of air terminals 2 feet in height on ridges, parapets and around the perimeter of buildings with flat roofs shall not exceed 25 feet. In specific instances where it is necessary to exceed this spacing, the specified height of air terminals shall be increased not less than 2 inches for each foot of increase over 25 feet. On large, flat or gently sloping roofs, as defined in NFPA 78, air terminals shall be placed at points of the intersection of imaginary lines dividing the surface into rectangles having sides not exceeding 50 feet in length. Air terminals shall be secured against overturning either by attachment to the object to be protected or by means of a substantial tripod or other braces permanently and rigidly attached to the building or structure. Metal projections and metal parts of buildings, smokestacks, and other metal objects that do not contain hazardous materials and that may be struck but not appreciably damaged by lightning, need not be provided with air terminals. However, these metal objects shall be bonded to the lightning conductor through a metal conductor of the same unit weight per length as the main conductor. Where metal ventilators are installed, air terminals shall be mounted thereon, where practicable. Any air terminal erected by necessity adjacent to a metal ventilator shall be bonded to the ventilator near the top and bottom thereof. Where nonmetallic spires, steeples, or ventilators are present, air terminals shall be mounted thereon or to the side. In addition, where spires or steeples project more than 10 feet above the building, the conductor between the air terminal and metal roof shall be continued to the nearest down conductor and securely connected thereto.
- C. Roof Conductors: Roof conductors shall be connected directly to the roof or ridge roll. Sharp bends or turns in conductors shall be avoided. Necessary turns shall have a radius of not less than 8 inches. Conductors shall preserve a downward or horizontal course and shall be rigidly fastened every 4 feet along the roof and down the building to ground. Metal ventilators shall be rigidly connected to the roof conductor at three places. All connections shall be electrically continuous. Roof

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conductors shall be coursed along the contours of flat roofs, ridges, parapets, and edges; and where necessary, over flat surfaces, in such a way as to join each air terminal to all the rest. Roof conductors surrounding tank tops, decks, flat surfaces, and flat roofs shall be connected to form a closed loop.

- D. **Down Conductors:** Down conductors shall be electrically continuous from air terminals and roof conductors to grounding electrodes. Down conductors shall be coursed over extreme outer portions of the building, such as corners, with consideration given to the location of ground connections and air terminals. Each building or structure shall have not less than two (2) down conductors located as widely separated as practicable, at diagonally opposite corners. On irregularly shaped structures, the total number of down conductors shall be sufficient to make the average distance between them along the perimeter not greater than 100 feet. Additional down conductors shall be installed when necessary to avoid "dead ends" or branch conductors exceeding 16 feet in length, ending at air terminals. Down conductors shall be equally and symmetrically spaced about the perimeter of the structure. Down conductors shall be protected where necessary, to prevent mechanical injury to the conductor.
- E. **Interconnection of Metallic Parts:** Metal doors, windows, and gutters shall be connected directly to the grounds or down conductors using not smaller than No. 6 copper conductor, or equivalent. Conductors placed where there is probability of unusual wear, mechanical injury, or corrosion shall be of greater electrical capacity than would normally be used, or shall be protected. The ground connection to metal doors and windows shall be by means of mechanical ties under pressure, or equivalent.
- F. **Ground Connections:** Ground connections comprising continuations of down conductors from the structure to the grounding electrode shall securely connect the down conductor and ground in a manner to ensure electrical continuity between the two. All connections shall be of the clamp type. There shall be a ground connection for each down conductor. Metal water pipes and other large underground metallic objects shall be bonded together with all grounding mediums. Ground connections shall be protected from mechanical injury. In making ground connections, advantage shall be taken of all permanently moist places where practicable, although such places shall be avoided if the area is wet with waste water that contains chemical substances, especially those corrosive to metal.
- G. **Grounding Electrodes:** A grounding electrode shall be provided for each down conductor located as shown. A driven ground shall extend into the earth for a distance of not less than 10 feet. Ground rods shall be set not less than 2 feet, nor more than 10 feet, from the structure. The complete installation shall have a total resistance to ground of not more than 10 ohms (if a counterpoise is not used). When two of any three ground rods, driven not less than 10 feet into the perimeter, give a combined value exceeding 50 ohms immediately after driving, a counterpoise shall be used. A counterpoise, where required, shall be of No. 1/0 copper cable or equivalent material having suitable resistance to corrosion and shall be laid around

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the perimeter of the structure in a trench not less than 2 feet deep at a distance not less than 2 feet nor more than 10 feet from the nearest point of the structure. All connections between ground connectors and grounds or counterpoise, and between counterpoise and grounds, shall be electrically continuous. Where so indicated on the design plans, an alternate method for grounding electrodes in shallow soil shall be provided by digging trenches radially from the building. The lower ends of the down conductors (or their equivalent in the form of metal strips or wires) are then buried in the trenches.

- H. Interconnection of Metal Bodies: Metal bodies of conductance shall be protected if not within the zone of protection of an air terminal. All metal bodies of conductance having an area of 400 square inches or greater or a volume of 1000 cubic inches or greater shall be bonded to the lightning protection system using main size conductors and a bonding plate having a surface contact area of not less than 3 square inches. Provisions shall be made to guard against the corrosive effect of bonding dissimilar metals. Metal bodies of inductance shall be bonded at their closest point to the lightning protection system using secondary bonding conductors and fittings. A metal body that exceeds 5 feet in any dimension, that is situated wholly within a building, and that does not at any point come within 6 feet of a lightning conductor or metal connected thereto shall be independently grounded.

3.02 TESTING

- A. System shall be installed so that tests of the grounds may be performed upon completion of the installation of the system and in the future.
- B. As soon as practicable after award of contract, the Contractor shall submit for approval complete details of the system including a layout drawing so that the system furnished can be coordinated in the refurbishing of the building.

PART 4 – WARRANTY

All materials and workmanship outlined in this Section shall be warranted for a period of one (1) year or the extent of the manufacturer's warranty, whichever is greater, from the date of final acceptance by the Owner. The warranty shall include all materials, labor, and shipping (if necessary).

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C. ELECTRICAL - GENERAL PROVISIONS

PART 1 - GENERAL

1.01 DESCRIPTION

A. Scope of Work:

1. Furnish all labor, materials, equipment and incidentals required for a complete electrical system as hereinafter specified and shown on the Drawings, whether or not specifically shown or called for.
2. The work, apparatus and materials which shall be furnished under these Specifications and accompanying Drawings shall include all items listed hereinafter and/or shown on the Drawings. All materials necessary for the complete installation shall be furnished and installed by the Contractor to provide complete power, generator, lighting systems, instrumentation, wiring and control systems as indicated on the Drawings and/or as specified herein whether or not specifically shown or called for. Certain equipment will be furnished as specified in other Sections of this specification that will require conduit and wire to complete the installation as required.
3. The Contractor shall furnish and install the necessary cables, transformers, motor control centers, protective devices (surge protection), conductors, exterior electrical system, etc., to serve motor loads, lighting loads and miscellaneous electrical loads as indicated on the Drawings and/or as specified hereinafter.
4. The work shall include complete testing of all equipment and wiring at the completion of the work and making any minor connection changes or adjustments necessary for the proper functioning of the system and equipment. All workmanship shall be of the highest quality; substandard work will be rejected.
5. Provide permitting and acceptance testing.
6. Make all field connections to process instrument panels and other control panels furnished under other Technical Provisions.
7. For process instrumentation furnish and install all conduit, wire and interconnections between primary elements, transmitters, local indicators and receivers.
8. It is the intent of these Specifications that the electrical system shall be suitable in every way for the service required. All material, equipment, appliances and all work which may be reasonably implied as being incidental to the work of this Section shall be furnished at no extra cost.
9. Each bidder or his authorized representatives shall, before preparing a bid, visit all areas of the existing building and/or proposed site in which work will

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take place and be performed to inspect carefully the present installation and conditions. The submission of the bid by this bidder shall be considered evidence that the bidder has visited the project and noted the locations and conditions under which the work will be performed and that the bidder takes full responsibility for a complete knowledge of all factors governing his work.

10. All necessary temporary power requirements are the responsibility of the Contractor and shall be furnished at no extra cost to the Owner
11. All necessary temporary power, control and instrumentation requirements are the responsibility of the Contractor and shall be furnished at no extra cost to the Owner. Power and controls shall be furnished to all existing equipment at all times.
12. Provide demolition, cutting, patching, and repair to match existing conditions.

B. Service and Metering:

1. Permanent electrical power will be provided by at 227/480 volts, 3-phase, 4 wire, wye, solid grounded, 60 Hertz. The Contractor will provide metering as directed by the local power utility
2. Furnish and install the secondary conduit, wire, connectors, to extend the service as directed by the local power utility.

C. Codes, Inspections and Fees:

1. All material and installation shall be in accordance with the latest edition of the National Electrical Code and all applicable national, local and state codes.
2. Pay all fees required for permits, inspections, and connections.

D. Tests:

1. Test all systems and repair or replace all defective work. Make all necessary adjustments to the systems and instruct the Owner's personnel in the proper operation of the systems.
2. The following minimum tests and checks shall be made prior to the energizing of electrical equipment. Test shall be by an independent NETA recognized testing firm, and a certified test report shall be submitted stating that the equipment meets and operates in accordance with the manufacturer's and job specifications, and that equipment and installation conforms to all applicable Standards and Specifications:
 - a. Testing of protective relays for calibration and proper operation.
 - b. Over potential, high potential, insulation resistance, and shield continuity tests for cables.
 - c. Mechanical inspection of air interrupter switches and circuit breakers to

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assure proper operation.

- d. Infrared hot spot inspection shall be made of all switchgear, switches, power and control panels. This shall be done under representation load conditions before the equipment is used by the Owner and again 3 months before expiration of the one-year warranty period.
- e. The EOR shall be notified 48 hours before tests are made to enable the Owner to have designated personnel present.
- f. All faulty equipment and materials indicated by infrared inspection shall be repaired or replaced by the Contractor at no additional cost to the Owner.
- g. Ground system testing per NETA.
- h. Breaker coordination, ground fault testing

3. Approved Testing Agents

- a. N.E. Testing - Fort Myers, FL
- b. Electric Power Systems – Orlando, FL
- c. ETI Electro-Test - Ft Myers, FL

E. Interpretation of Drawings:

- 1. The Drawings are not intended to show exact location of conduit runs.
- 2. All three-phase circuits shall be run in separate conduits unless otherwise shown on the Drawings.
- 3. Unless otherwise approved by the EOR, conduit shown exposed shall be installed exposed; conduit shown concealed shall be installed concealed.
- 4. Where circuits are shown as "home-runs", all necessary fittings and boxes shall be provided for a complete raceway installation.
- 5. The Contractor shall harmonize the work of the different trades so that interferences between conduits, piping, equipment, architectural and structural work will be avoided. All necessary offsets shall be furnished so as to take up a minimum space and all such offsets, fittings, etc., required to accomplish this shall be furnished and installed by the Contractor without additional expense to the Owner. In case interference develops, the Owner's authorized representative is to decide which equipment, piping, etc., must be relocated, regardless of which was installed first.
- 6. Verify with the EOR exact locations and mounting heights of lighting fixtures, switches and receptacles prior to installation.
- 7. The locations of equipment, fixtures, outlets, and similar devices shown on the Drawings are approximate only. Exact locations shall be as approved by the EOR during construction. Obtain in the field all information relevant to the

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placing of electrical work and, in case of any interference with other work, proceed as directed by the EOR and furnish all labor and materials necessary to complete the work in an approved manner.

8. Surface mounted panel boxes, junction boxes, conduit, etc., shall be supported by spacers to provide a clearance between wall and equipment.
9. Circuit layouts shown are not intended to show the number of fittings, or other installation details. Furnish all labor and materials necessary to install and place in satisfactory operation all power, lighting, and other electrical systems shown. Additional circuits shall be installed wherever needed to conform to the specific requirements of the equipment.
10. The ratings of motors and other electrically operated devices together with the size shown for their branch circuit conductors and conduits are approximate only and are indicative of the probable power requirements insofar as they can be determined in advance of the purchases of the equipment.
11. All connections to equipment shall be made as shown, specified, required, and directed and in accordance with the approved shop drawings, regardless of the number of conductors shown on the Electrical Drawings.

F. Size of Equipment:

1. Investigate each space in the building through which equipment must pass to reach its final location. If necessary, the manufacturer shall be required to ship his material in sections sized to permit passing through such restricted areas in the building.
2. The equipment shall be kept upright at all times. When equipment has to be tilted for each of passage through restricted areas during transportation, the manufacturer shall be required to brace the equipment suitably, to insure that the tilting does not impair the functional integrity of the equipment.

G. Component Interconnections:

1. Component equipment furnished under this Specification will not be furnished as integrated systems.
2. Analyze all systems components and their shop drawings; identify all terminals and prepare drawings or wiring tables necessary for component interconnection.

H. Record Drawings:

1. As the work progresses, legibly record all field changes on a set of project Contract Drawings. When the project is complete, furnish a complete set of reproducible "as-built" drawings for the Project Record Documents, Section 01720.

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1.02 SUBMITTALS

A. Material and Shop Drawings:

1. Shop drawings shall be submitted for approval of all materials, equipment, apparatus, and other items as required by the EOR.
2. Shop drawings shall be submitted for the following equipment:
 - a. Dry Type Transformers
 - b. Panelboards
 - c. Lighting Fixtures
 - d. Disconnect Switches
 - e. Wire and Cable
 - f. Supporting Devices
 - g. Control Panels
 - h. Variable Frequency Drives
 - i. Conduit
 - j. Receptacles
 - k. Boxes and Fittings
 - l. Switches
 - m. Lamps
3. Prior to submittal by the Contractor, all shop drawings shall be checked for accuracy and contract requirements. Shop drawings shall bear the date checked and shall be accompanied by a statement that the shop drawings have been examined for conformity to Specifications and Drawings. This statement shall also list all discrepancies with the Specifications and Drawings. Shop drawings not so checked and noted shall be returned.
4. The EOR's check shall be only for conformance with the design concept of the project and compliance with the Specifications and Drawings. The responsibility of, or the necessity of, furnishing materials and workmanship required by the Specifications and Drawings which may not be indicated on the shop drawings is included under the work of this Section.
5. The responsibility for all dimensions to be confirmed and correlated at the job site and for coordination of this work with the work of all other trades is also included under the work of this Section.
6. No material shall be ordered or shop work started until the EOR's approval of shop drawings has been given.

PART 2 - PRODUCTS

2.01 MATERIALS AND EQUIPMENT

- A. The materials used in all systems shall be new, unused and as hereinafter specified. All materials where not specified shall be of the very best of their respective kinds. Samples of materials or manufacturer's specifications shall be submitted for approval as required by the EOR.

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- B. Materials and equipment used shall be Underwriters Laboratories, Inc., listed.
- C. Electrical equipment shall, at all times during construction, be adequately protected against mechanical injury or damage by water. Electrical equipment shall not be stored out-of-doors. Electrical equipment shall be stored in dry permanent shelters. If any apparatus has been damaged, the Contractor at his own cost and expense shall repair such damage. If any apparatus has been subject to possible injury by water, it shall be thoroughly dried out and put through such special tests as directed by the EOR, at the cost and expense of the Contractor, or shall be replaced by the Contractor at his own expense.
- D. Unless noted otherwise, all conduits and fittings shall be PVC-80.
- E. All boxes shall be 316 stainless steel.

PART 3 - EXECUTION

3.01 INSTALLATION

- A. Provide and place all sleeves for conduits penetrating floors, walls, partition, etc. Locate all necessary slots for electrical work and form before concrete is poured.
- B. All cutting and patching shall be done in a thoroughly workmanlike manner.

3.02 INSPECTION AND TESTING

- A. Test all systems and repair or replace all defective work. Make all necessary adjustments to the systems and instruct the Owner's personnel in the proper operation of the systems.

PART 4 – WARRANTY

All materials and workmanship outlined in this Section shall be warranted for a period of one (1) year or the extent of the manufacturer's warranty, whichever is greater, from the date of final acceptance by the Owner. The warranty shall include all materials, labor, and shipping (if necessary).

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D. ELECTRICAL

PART 1 - GENERAL

1.01 SCOPE OF WORK

- A. Work consists of furnishing all labor, materials, equipment and transportation and performing all testing and demonstration operations of all system features required for electrical work in accordance with these specifications and drawings which includes, but is not limited to the following:
1. Temporary power
 2. Secondary electric feeders and service entrance
 3. Complete electrical wiring of all electrical distribution systems, lighting (including lamps), receptacles, necessary feeders and connections to flow meters and other instrumentation, and power loads as shown on the drawings and herein specified
 4. Mount and make all field connections to process instrument panels and other control panels
 5. For process instrumentation furnish and install all conduit, wire, instrumentation cabling and interconnections between primary elements, transmitters, local indicators and receivers
 6. Electrical permits, fees, tests, inspection and guarantees
 7. Connection of all electrical equipment, including complete ground system
 8. Submit shop drawings
 9. Coordination of work with the Owner
 10. Provide record drawings

1.02 DESCRIPTION

- A. Electric Service shall be 120/208 volts, 3-phase, 4-wire.

The incoming service shall be obtained from Duke Energy's transformer, as shown on drawings.

The transformer is existing. This contractor shall extend underground service entrance conduit and cables from the secondary connection box provided by Duke Energy to the meter and main disconnect switch location. Obtain all pertinent requirements and routing of the underground service entrance from the drawings.

All termination and installation shall be per Duke Energy's standards.

- B. Temporary Power: Furnish, install and maintain temporary power to be used by all trades during construction. The entire system shall be grounded. Payment for current

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consumption shall be the responsibility of the General Contractor. Overcurrent protection for any circuit shall be limited to 30 amperes. Thermal magnetic breakers or cartridge fuses only shall be used for overcurrent protection.

- C. Provide branch circuit panelboard as scheduled on the drawings.

The panel shall be NLAP type, surface type, in NEMA 3R enclosure. Branch circuit breakers shall be thermal-magnetic type with minimum short-circuit rating of 100,000 A.

Panel shall be manufactured by Square D, I.T.E., Westinghouse, G.E., or approved equal.

- D. All conductor insulation, unless noted otherwise, shall be type THHN. The conductors shall be of copper and have a minimum conductivity of 98%. Splices or joints in conductors shall be mechanically and electrically sound and shall be made in outlet boxes only, except ballast connections. Wires shall be sized so as not to exceed 3% voltage drop at last device on circuit.
- E. All electrical joints are to be made using type Y, R or B "Scotchlok" connectors only. At each outlet box, a loop of wire not less than 8" long shall be left for connection to devices. Conductors in fluorescent fixture wiring channels shall be type THHN.
- F. A typewritten directory, listing branch circuit numbers and designation of circuit controlled, shall be placed on inside cover of panel by the electrical subcontractor. All disconnect switches, motor controllers, relays, starters and panels shall be clearly labeled as to their function. Labels shall be 0.5" high minimum, with 0.25" letters.
- G. All outlet boxes are to be one piece. Type FS installed where required. Boxes shall be surface mounted and not less than 2-1/8" deep. Outlet boxes on walls or ceilings shall be set in a neat and workman-like manner with conduits and boxes set parallel or at right angles to walls and ceilings.
- H. Except as noted otherwise, devices are to be located per the "Symbol List" on the electrical drawings.
- I. Install, completely wired and lamped, all lighting fixtures where designated on the drawings. All ballast shall be provided with internal automatic resetting thermal protector. The mounting and support of fixtures is the responsibility of this Subcontractor. Coordinate support and mounting method with all Subcontractors involved. Emergency lighting shall meet local codes.
- J. All toggle switches shall be intermediate grade, rated 15 amperes, brown body. Manufacturer shall be G.E., Leviton, Pass-Seymour or Hubbell.
- K. Receptacles shall be mounted, specification grade 15 amperes grounding type, gray body and manufactured by G.E., Leviton, Pass-Seymour or Hubbell. Device plates for receptacles and switches shall be brushed stainless steel.
- L. Description of equipment, position of the equipment and electric outlets to serve same as indicated on the drawings are generic only and must be coordinated at the site with the suppliers of the equipment selected by General Contractor. The Electric Subcontractor must make reasonable adjustments of his conduit wiring and outlets to

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accommodate exact locations and dimensions of equipment. Flexible "sealtight" conduit shall be used for all connections to pumps and etc., pieces of adjustable equipment.

- M. Furnish and install all electrical power and control connections to the equipment indicated on the drawings unless otherwise noted. The Electrical Subcontractor will provide all conduit and wiring from the panel to the motor terminal. He will make all power connections in these circuits. The control equipment, relays, controls and devices necessary for the operation of the equipment will be furnished by the respective Subcontractors and wired, connected and tested by the Electrical Contractor.

1.03 PROPRIETARY NAMES

- A. For convenience of description and as a standard for grade, type, quality, and performance characteristics, proprietary names are included with some descriptions. This does not imply preference to specific manufacturers (except where multiple choice is specified), but minimum requirements with approval to be made by the EOR.

1.04 QUALITY ASSURANCE

- A. Standards: All materials shall be new and free of defects, and shall be U.L. listed, bear the U.L. label or be labeled or listed with an approved, nationally recognized Electrical Testing Agency. Where no labeling or listing service is available for certain types of equipment, test data shall be submitted to prove to the EOR that equipment meets or exceeds available standards.
- B. Codes: Install in accordance with latest edition of the National Electric Code and the regulations of governing local, State, County and other applicable codes, including the Utilities Company. Pay for all required licenses, fees and inspections.
- C. Contract Documents: The drawings are generally diagrammatic; therefore, the Contractor shall make use of all the data in all of the contract documents and shall verify all information at the site. During execution of the contract, the location of electrical apparatus shall be coordinated with the owner. All questionable locations shall be approved by owner or his representative prior to installation.
- D. Inspections: During the course of construction, the work will be observed by the EOR. The Contractor shall call for inspections by the local building inspector during the normal phases of installation and, following each inspection phase, the EOR shall be furnished with Certificates of Inspection from all authorities having jurisdiction. After the completion of the work, the Contractor shall deliver all certifications or letters of approval from such bodies to the EOR. Following the successful completion of the final inspection, furnish the owner with a certificate of final approval.
- E. Tests: The Contractor shall provide all necessary instruments and special apparatus to conduct any test that may be required to insure system performance and that control wiring and power cables are free of all improper grounds and short circuits. These tests shall be conducted in the presence of the owner's representative prior to final acceptance.

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- F. After service, feeders, and mechanical equipment feeder wires or cables are in place, but before being connected to devices and equipment, the system shall be tested for shorts, opens, intentional and unintentional grounds by means of an approved type of constant "megger". All wires in conduit that are shorted or unintentionally grounded shall be replaced.
- G. With the system energized, line-to-line voltage and line current measurements shall be made under full load conditions. Should measured values deviate $\pm 10\%$ from the nameplate rating, the condition shall be corrected. Notify the EOR immediately should deviations occur.
- H. The resistance between ground and absolute earth shall not exceed 5 ohms and shall be measured by the Electrical Contractor before equipment is placed in operation. Testing shall be performed on all ground rod installations. Testing shall be three (3) point method in accordance with IEEE recommended practice.

1.05 SUBMITTALS

- A. Shop Drawings:
 - 1. Before submittal to the EOR, all shop drawings shall be perused, corrected and verified by signature, or stamp and signature as approved by the applicable subcontractor to be in accordance with the requirements of the drawings and specification. Shop drawings that have not been signed or stamped and signed as approved, but have not been perused for compliance with the drawings and specifications and have not been coordinated with other equipment and other trades, will be returned to the Contractor without being reviewed by the EOR. All component manufacturers' names shall be clearly visible on each submittal sheet. Dimensions, material lists, wiring diagrams, capacities, catalog numbers/cuts and other such pertinent data shall be submitted for approval of all equipment: disconnect switch, including circuit breakers, safety switches and controls; and all wiring and control devices. Approval of material will be based on the manufacturer's published ratings or on test results where specified. All data shall be submitted in a single package. No partial list will be reviewed.
 - 2. If any required items are omitted from this submittal, the EOR shall select each such item indicating manufacturer, model, etc., and such decision shall be final. The term "Per Specifications" will not be acceptable. Samples shall be required as requested by the EOR to further substantiate any substitutions.
 - 3. Any deviation from the specifications pertinent to shop drawings shall be listed separately and submitted with shop drawings. Failure to list all deviations in this manner shall be grounds for requiring removal of such items and installation of new items in exact accordance with specifications at no extra cost to the owner. No material shall be purchased or installed before written approval of any submission.
 - 4. In addition to the shop drawings, which must be submitted for approval before ordering equipment, the Contractor shall furnish four copies of complete installation drawings, instruction books, maintenance manuals, and parts lists for each major item of electrical equipment, and similar data on minor items of equipment if requested by the EOR. This information must be submitted

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before the installation of the equipment

- B. Permits, Fees, Inspection Certificates and Tests:
1. Permits: All required permits, fees and inspection certificates shall be obtained, paid for, and be made available by the Contractor during the progress of the work.
 2. The Contractor shall perform or secure such tests as may be required, supplying all labor and instruments needed, or paying such costs as may be involved.
 3. All tests required to establish the adequacy and quality of all systems shall be made in the presence of and to the satisfaction of the EOR.
 4. All concealed work must remain uncovered until approved. All tests shall be made in strict accordance to code requirements. Defects disclosed by tests shall be made good and the defective materials replaced without additional cost to the owner. Tests shall be repeated after repairs or replacements have been made.
- C. Record Drawings:
1. During the progress of the work, the job superintendent shall keep daily records on his complete field set of electrical drawings indicating the exact installed location of all underground and otherwise concealed conduits which were not installed exactly as shown on the contract drawings.
 2. This work must be kept up-to-date and verified by the EOR's field representative before the payment is made. The complete marked set shall be delivered to the owner before the final acceptance of the work.

PART 4 – WARRANTY

All materials and workmanship outlined in this Section shall be warranted for a period of one (1) year or the extent of the manufacturer's warranty, whichever is greater, from the date of final acceptance by the Owner. The warranty shall include all materials, labor, and shipping (if necessary).

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E. RACEWAYS AND FITTINGS

PART 1 - GENERAL

1.01 DESCRIPTION

A. Scope of Work:

1. Furnish and install complete raceway systems as shown on the Drawings and as specified herein.

- B. The complete raceway system shall be Schedule 80 PVC non-metallic conduit and fittings, except for raceway systems for shielded instrumentation wiring and variable frequency drives. Raceway systems for process shielded instrumentation wiring and for variable frequency drives shall be aluminum conduit. Raceway systems for interior administration area in air-conditioning plenums shall be EMT steel conduit

1.02 QUALITY ASSURANCE

A. Qualifications:

1. The equipment shall be products of manufacturers who are fully experienced, reputable and qualified in the manufacture of the equipment to be furnished. The system components shall be designed, constructed, delivered and installed in accordance with the best practices and methods.

B. Standards:

1. Underwriters Laboratories, Inc. (U.L.).
2. American Society for Testing and Materials, (ASTM).
3. Federal Specifications.

C. Manufacturers:

1. Non-Metallic Raceways.
 - a. Carlon.
 - b. Triangle Pipe and Tube Co.
 - c. Phillips Petroleum Co.
 - d. Indian Head Company.
 - e. Or equal.
2. Metallic Raceways:
 - a. Youngstown Sheet and Tube Co.
 - b. Allied Tube and Conduit Corp.
 - c. Wheeling-Pittsburg Steel Corp.
 - d. Or equal.

1.03 SUBMITTALS

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A. Material and Shop Drawings:

1. Copies of all materials required to establish compliance with these specifications shall be submitted in accordance with the provisions of the General Conditions. Submittals shall include at least the following:
 - a. Certified shop drawings with performance data and physical characteristics.
 - b. Descriptive literature, bulletins, and/or catalogs of each item of equipment.
 - c. A complete total bill of materials for all equipment.
2. In the event that it is impossible to conform with certain details of the specifications, describe completely all non-conforming aspects of the Shop Drawing transmittal.

PART 2 - PRODUCTS

2.01 GENERAL

- A. The specifications are intended to give a general description of what is required, but do not cover all details which may vary in accordance with the exact requirements of the equipment as offered. They are, however, intended to cover the furnishing, delivery, installation and field testing of all materials, equipment and apparatus as required. Any additional auxiliary equipment necessary for the proper operation of the proposed installation not mentioned in these specifications, or shown on the Drawings shall be furnished and installed.
- B. The material covered by these specifications is intended to be standard equipment of proven ability and as manufactured by reputable concerns having experience in the production of such equipment. The equipment furnished shall be designed, constructed, and installed in accordance with best practice and methods and shall operate satisfactorily when installed as shown on the Drawings.

2.02 MATERIALS AND EQUIPMENT

A. Metallic Conduit:

1. All conduit must be non-metallic.

B. Non-Metallic Conduit and Fittings:

1. PVC conduit shall be schedule 80 composed of High Impact PVC (polyvinyl) chloride (C-200 Compound), and shall conform to industry standards, and be

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UL listed in accordance with Article 347 of National Electrical Code for underground and exposed use. Materials must have tensile strength of 55 PSI, at 70 degrees F, flexural strength of 11,000 PSI, compression strength of 8600 PSI. Manufacturer shall have five years' extruding PVC experience.

2. Liquidtight Flexible Conduit and Fittings shall be for use per Article 351 of the NEC. PVC compounds shall not include fillers. Fittings shall be manufactured from high impact PVC.
- C. Liquidtight, Flexible Non-Metallic Conduit, Couplings and Fittings:
1. Liquidtight, flexible non-metallic conduit shall be all PVC conduits and manufactured by Thomas and Betts Co., K-Flex, Inc., or equal.
 2. Fittings used with Liquidtight flexible conduit shall be of the non-metallic type as manufactured by the Thomas and Betts Co., Xtraflex System, K-Flex, Inc., or equal.
- D. Flexible Couplings:
1. Flexible Couplings shall be as manufactured by the Thomas and Betts Co., K-Flex, Inc., or equal.
- E. Conduit hubs shall be as manufactured by Myers Electric Products, Inc., Raco Div., Appleton Electric Co., or equal.
- F. Conduit wall seals shall be Type WSK as manufactured by the O.Z. Electrical Mfg. O., or equal.
- G. Combination expansion-deflection fittings shall be Type XD as manufactured by the Crouse-Hinds Co., or equal.

PART 3 - EXECUTION

3.01 INSTALLATION

- A. Installation shall be in strict accordance with the manufacturer's instructions and recommendation, in the location shown on the Drawings.
- B. No conduit smaller than 1/2-inch electrical trade size shall be used, nor any have more than three 90 degree bends in any one run. Pull boxes shall be provided as required or directed. Minimum size floor conduit shall be 3/4-inch.
- C. No wire shall be pulled until the conduit system is complete in all details; in the case of concealed work, until all rough plastering or masonry has been completed; in the case of exposed work, until the conduit system has been completed in every detail.
- D. The ends of all conduit shall be tightly plugged to exclude dust and moisture while the buildings are under construction.
- E. Conduit supports shall be spaced at intervals of 4 feet or less, as required to obtain rigid construction. Conduit straps shall be type as manufactured by "CLIC".

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- F. Single conduits shall be supported by means of one-hole non-metallic pipe clamps in combination with one-screw back plates, to raise conduits from the surface. Multiple runs of conduits shall be supported on trapeze type hangers with fiberglass horizontal members and fiberglass treaded hanger rods. The rods shall be not less than 3/8-inch diameter.
- G. Conduit hangers shall be attached to structural steel by means of non-metallic beam or channel clamps. Where attached to concrete surfaces, concrete inserts of the spot type shall be provided.
- H. All conduits on exposed work shall be run at right angles to and parallel with the surrounding wall and shall conform to the form of the ceiling. No diagonal runs will be allowed. Bends in parallel conduit runs shall be concentric. All conduit shall be run perfectly straight and true.
- I. No broken run shall exceed 500 feet in length. 75 feet for each 90-degree elbow shall reduce this length.
- J. Conduit terminating in boxes shall have sealing double lock nuts and insulating bushings.
- K. Conduit terminating in gasketed enclosures shall be terminated with sealing conduit hubs.
- L. Conduit wall seals shall be used for all conduits penetrating walls below grade or other locations shown on the Drawings.
- M. Liquidtight flexible metal conduit shall be used for all motor terminations and other outdoor equipment where vibration is present.
- N. Flexible couplings shall be used in hazardous locations for all motor termination and other equipment where vibration is present.
- O. Expansion fittings shall be installed in the following cases: In each conduit run wherever it crosses an expansion joint in the concrete building structure; in each conduit run which is mechanically attached to separate structures to relieve strain caused by shift on one structure in relation to the other; in straight conduit runs above ground which is more than one hundred feet long and interval between expansion fittings in such a run shall not be greater than 100 feet.
- P. PVC joints shall be solvent welded. Threads will not be permitted on PVC conduit and fittings. Installation of PVC conduit shall be in accordance with manufacturer's recommendations. PVC conduit shall not be used to support fixture or equipment. Field bends shall be made with approved hotbox. Heating with flame and hand-held dryers are prohibited.
- Q. Conduit installations on roofs shall be kept to a bare minimum. Conduit shall be supported above roof at least 6 inches using approved conduit supporting devices.

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Supports to be fastened to roof using roofing adhesive as approved by roofing contractor.

- R. Cables in vertical raceways shall be supported as per NEC Article 300-19. Provide and install supporting devices for cables, including any necessary accessible pullbox as required regardless if shown on drawings or not. Provide and install access panels as required. Coordinate location of pull box and access panel with the EOR prior to installation. This includes empty raceways for future use.
- S. Provide and install pullboxes, junction boxes, fire barrier at fire rated walls, etc., as required by NEC Article 300, whether shown on drawings or not.
- T. Paint all field cut thread on rigid steel conduit with zinc rich sealant. Paint all field cuts on metallic channel or unistrut.
- U. Raceways which do not have conductors furnished under this specification shall be left with an approved nylon pull cord in the raceway.
- V. Grounding conductor shall be included in total conduit fill determining conduit sizes, even though not included or shown on drawings. Grounding conductors run with feeders shall be bonded to portions of conduit that are metal by approved ground bushings.

PART 4 – WARRANTY

All materials and workmanship outlined in this Section shall be warranted for a period of one (1) year or the extent of the manufacturer's warranty, whichever is greater, from the date of final acceptance by the Owner. The warranty shall include all materials, labor, and shipping (if necessary).

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F. WIRES AND CABLES

PART 1 - GENERAL

1.01 DESCRIPTION

A. Scope of Work:

1. Furnish, install and test all wire, cable and appurtenances as shown on the Drawings and as hereinafter specified.

B. General Design:

1. Wire for lighting, and receptacle circuits in the administration building shall be type THWN solid copper.
2. Wire for all power feeder and motor circuits outside of the administration building shall be type THWN stranded copper.
3. Single conductor wire for control, indication and metering shall be type THWN No. 14 AWG, stranded tinned copper.
4. Control cable shall be No. 14 AWG, stranded tinned copper.
5. Wire for process instrumentation shall be No. 16 AWG, stranded tinned copper.
6. Except for control and signal wire, no conductor smaller than No. 12 AWG shall be used.

1.02 QUALITY ASSURANCE

A. Standards:

1. Insulated Cable Engineers Association (ICEA).
2. Underwriters Laboratories, Inc. (U.L.)
3. American Society for Testing and Materials (ASTM)

B. Manufacturers:

1. 600 volt wire and cable.
 - a. Hi-Tech Cable Corp.
 - b. Collyer Insulated Wire Co.
 - c. Okonite Co.
 - d. Rome Cable Co.
 - e. American Insulated Wire Corp.
 - f. Triangle PWC, Inc.. Or equal
2. Instrumentation and Control Cable:
 - a. American Insulated Wire Corp.
 - b. Rome Cable Corp.

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- c. Okonite Co.
- d. Eaton Corp. "Polyset".
- e. Triangle PWC, Inc.
- f. Or Equal.

1.03 SUBMITTALS

- A. Materials and Shop Drawings:
 - 1. As per specifications in General Documents.

1.04 PRODUCT DELIVERY, STORAGE AND HANDLING

- A. All conductors shall be carefully handled to avoid kinks or damage to the insulation.
- B. All conductors stored outdoors shall be covered.

PART 2 - PRODUCTS

2.01 GENERAL

- A. Wires and cables shall be of annealed, 98 percent conductivity, soft drawn copper conductors.
- B. All conductors shall be stranded except lighting and receptacle circuits.

2.02 MATERIALS

- A. 600 Volt Wire and Cable:
 - 1. Type THWN shall be PVC insulation with nylon jacket.
- B. Instrumentation and Control Cable:
 - 1. Process instrumentation wire shall be twisted pair, 600 volt, PVC insulated, aluminum tape shielded, polyvinyl chloride jacketed. Multi-conductor cables with individually shielded twisted pairs shall be installed where indicated.
- C. Terminations and Splices:
 - 1. Unless otherwise indicated on the plans, no splices may be made in the cables without prior approval of the EOR. Where splicing is approved, the splicing material shall be as recommended and approved by the cable manufacturer.

PART 3 - EXECUTION

3.01 INSTALLATION

- A. All conductors shall be carefully handled to avoid kinks or damage to insulation.
- B. Lubrications shall be used to facilitate wire pulling. Lubricants shall be U.L. listed for

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use with the insulation specified.

- C. Shielded instrumentation wire shall be installed from terminal to terminal with no splicing at any intermediate point.
- D. Shielded instrumentation wire shall be installed in rigid steel conduit and pull boxes that contain only shielded instrumentation wire. Instrumentation cables shall be separated from control cables in manholes.
- E. Shielding on instrumentation wire shall be grounded at one end only as directed by the supplier of the instrument.
- F. Wire and cable connections to terminals, splices, and taps shall be made with compression connectors. Connections of insulated conductors shall be insulated and covered. All connections shall be made using materials and installation methods in accordance with instructions and recommendations of the manufacturer of the particular item of wire and cable. The conductivity of all completed connections shall not be less than that of the uncut conductor. The insulation resistance of all completed connections of insulated conductors shall be not less than that of the uncut conductor.
- G. All wire and cable shall be continuous and without splices between points of connection to equipment terminals, except a splice will be permitted by the EOR if the length required between the points of connection exceeds the greatest standard shipping length available from the manufacturer specified or as approved by the EOR.
- H. Installed, unapproved wire shall be removed and replaced at no additional cost to the Owner.
- I. Steel fish tapes and/or steel pulling cables shall not be used in PVC raceway systems.
- J. Remove debris and moisture from the conduits, boxes, and cabinets prior to cable installation and mandrel with device of one size smaller than conduit and mandrel with wire brush one size larger than conduit.

3.02 TESTS

- A. All 600-volt wire insulation shall be tested with a megohm meter after installation. Tests shall be made at not less than 1000-VDC. A cable test data form shall be provided for EOR review.
- B. All service conductors shall be tested as in Paragraph A above. The EOR shall witness these tests.

PART 4 – WARRANTY

All materials and workmanship outlined in this Section shall be warranted for a period of one (1) year or the extent of the manufacturer's warranty, whichever is greater, from the date of final acceptance by the Owner. The warranty shall include all materials, labor, and shipping (if necessary).

G. CABINETS, BOXES AND FITTINGS

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PART 1 - GENERAL

1.01 RELATED DOCUMENTS

- A. Drawings and general provisions of Contract Documents and these Technical Provisions that apply to this Section.

1.02 SUMMARY

- A. This section includes cabinets, boxes and fittings for electrical installations and certain types of electrical fittings not covered in other sections. Types of products specified in this Section include:
1. Outlet and device boxes
 2. Pull and junction boxes
 3. Cabinets
 4. Hinged door enclosures
 5. Boxes and fittings for hazardous locations
- B. Conduit-body-type electrical enclosures and wiring fittings are specified in section on "Raceways".

1.03 DEFINITIONS

- A. Cabinets: An enclosure designed either for surface or for flush mounting and having a frame, or trim in which a door or doors may be mounted.
- B. Device Box: An outlet box designed to house a receptacle device or a wiring box designed to house a switch.
- C. Enclosure: A box, case, cabinet or housing for electrical wiring or components.
- D. Hinged Door Enclosure: An enclosure designed for surface mounting and having swinging doors or covers secured directly to and telescoping with the walls of the box.
- E. Outlet Box: A wiring enclosure where current is taken from a wiring system to supply utilization equipment.
- F. Wiring Box: An enclosure designed to provide access to wiring systems or for the mounting of indicating devices or of switches for controlling electrical circuits.

1.04 SUBMITTALS

- A. General: Submit the following in accordance with Conditions of these Technical Provisions:
1. Product data for cabinets and enclosures with classification higher than NEMA 1.

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2. Shop drawings for floor boxes and boxes, enclosures and cabinets that are to be shop fabricated (non-stock items). For shop fabricated junction and pullboxes, show accurately scaled views and spatial relationships to adjacent equipment. Show box types, dimensions and finishes.

1.05 QUALITY ASSURANCE

- A. National Electrical Code Compliance: Components and installation shall comply with NFPA 70 "National Electrical Code".
- B. NEMA Compliance: Comply with NEMA Standard 250, "Enclosures for Electrical Equipment (1000 Volts Maximum)".

PART 2 - PRODUCTS

2.01 MANUFACTURERS

- A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated in the work include, but are not limited to, the following:
 1. Floor Boxes
 - a. American Electric
 - b. Butler Manufacturing Co.
 - c. Cooper Industries, Inc.
 - d. Raco, Inc.
 - e. Thomas and Betts Corp.
 2. Cabinets
 - a. Electric Panelboard, Inc.
 - b. Erickson Electrical Equipment Co.
 - c. Hoffman Engineering Co.
 - d. Parker Electrical Manufacturing Co.
 - e. Spring City Electrical Manufacturing Co.
 - f. Square D Co.
 3. Boxes and Fittings for Hazardous Locations
 - a. Adalet-PLM
 - b. Cooper Industries, Inc.
 - c. Killark Electric Manufacturing Co.
 - d. OZ/Gedney
 - e. Robroy Industries, Inc.
 - f. Spring City Electrical Manufacturing Co.
 - g. Woodhead Industries, Inc.

2.02 CABINETS, BOXES AND FITTINGS - GENERAL

- A. Electrical Cabinets, Boxes and Fittings: Of indicated types, sizes and NEMA enclosure

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classes. Where not indicated, provide units of types, sizes, and classes appropriate for the use and location. Provide all items complete with covers and accessories required for the intended use. Provide gaskets for units in damp or wet locations.

2.03 MATERIALS AND FINISHES

- A. Sheet Steel: Flat-rolled, code-gauge, galvanized steel
- B. Fasteners for General Use: Corrosion-resistant screws and hardware including cadmium and zinc plated items
- C. Fasteners for Damp or Wet Locations: Stainless steel screws and hardware
- D. Cast Metal for Boxes, Enclosures, and Covers: Copper-free aluminum except as otherwise specified
- E. Exterior Finish: Gray baked enamel for items exposed in finished locations except as otherwise indicated
- F. Painted Interior Finish: Where indicated, white baked enamel
- G. Fittings for Boxes, Cabinets and Enclosures: Conform to UL 514B. Malleable iron or zinc plated steel for conduit hubs, bushings and box connectors.

2.04 METAL OUTLET, DEVICE AND SMALL WIRING BOXES

- A. General: Conform to UL 514A "Metallic Outlet Boxes, Electrical" and UL 514B "Fittings for Conduit and Outlet Boxes". Boxes shall be of type, shape, size and depth to suit each location and application.
- B. Cast-Iron Boxes: Iron alloy, waterproof, with threaded raceway entries and features and accessories suitable for each location, including mounting ears, threaded screw holes for devices and closure plugs.

2.05 PULL AND JUNCTION BOXES

- A. General: Comply with UL 50 "Electrical Cabinets and Boxes" for boxes over 100 cubic inches volume. Boxes shall have screwed or bolted-on covers of material same as box and shall be of size and shape to suit application.
- B. Hot-Dipped Galvanized Steel Boxes: Sheet steel with welded seams. Where necessary to provide a rigid assembly, construct with internal structural steel bracing. Hot-dip galvanized after fabrication. Cover shall be gasketed.
- C. Stainless-Steel Boxes: Fabricate of stainless steel conforming to Type 302 of ASTM A 167 "Specification for Stainless and Heat Resisting Chromium-Nickel Steel Plate, Sheet and Strip". Where necessary to provide a rigid assembly, construct with internal structural stainless steel bracing. Cover shall be gasketed.

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- D. Cast-Iron Boxes: Molded of cast-iron alloy with gasketed cover and integral threaded conduit entrances.

2.06 CABINETS

- A. Comply with UL 50 "Electrical Cabinets and Boxes"

2.07 STEEL ENCLOSURES WITH HINGED DOORS

- A. Comply with UL 50 "Cabinets and Enclosures" and NEMA ICS 6 "Enclosures for Industrial Controls and Systems"

PART 3 - EXECUTION

3.01 INSTALLATION - GENERAL

- A. Locations: Install items where indicated and where required to suit code requirements and installation conditions.
- B. Cap unused knock-out holes where blanks have been removed and plug unused conduit hubs.
- C. Support and fasten items securely in accordance with section on "Supporting Devices".
- D. Sizes shall be adequate to meet NEC volume requirements, but in no case smaller than sizes indicated.
- E. Remove sharp edges where they may come in contact with wiring or personnel.

3.02 APPLICATIONS

- A. Hinged Door Enclosures: NEMA type 12 enclosure except as indicated
- B. Hinged Door Enclosures - Outdoors: Install drip hood, factory-tailored to individual units
- C. Hinged Door Enclosures in Corrosive Locations: NEMA type 4X metal enclosure
- D. Outlet Boxes and Fittings: Install outlet and device boxes and associated covers and fittings of materials and NEMA types suitable for each location and in conformance with the following requirements:
 - 1. Interior Dry Locations: Sheet steel, NEMA type 1
 - 2. Locations Exposed to Weather or Dampness: Cast metal, NEMA type 3R
 - 3. Wet Locations: NEMA type 4 enclosures

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4. Corrosive Locations: NEMA type 4X enclosures

3.03 INSTALLATION OF OUTLET BOXES

- A. Gasketed Boxes: At the following locations use cast metal, threaded hub type boxes with gasketed weatherproof covers:
1. Exterior locations
 2. Where surface mounted on unfinished walls, columns or pilasters (cover gaskets may be omitted in dry locations)
 3. Where exposed to moisture laden atmosphere
 4. Where indicated
- B. Cast-Iron Boxes: Iron alloy, waterproof, with threaded raceway entries and features and accessories suitable for each location, including mounting ears, threaded screw holes for devices and closure plugs.
- C. Mounting: Mount outlet boxes for switches with the long axis vertical or as indicated. Mount boxes for receptacles either vertically or horizontally but consistently either way. Three or more gang boxes shall be mounted with the long axis horizontal. Locate box covers or device plates so they will not span different types of building finishes either vertically or horizontally. Locate boxes for switches near doors on the side opposite the hinges and close to door trim, even though electrical floor plans may show them on hinge side.
- D. Protect outlet boxes to prevent entrance of plaster and debris. Thoroughly clean foreign material from boxes before conductors are installed.

3.04 INSTALLATION OF PULL AND JUNCTION BOXES

- A. Box Selection: For boxes in main feeder conduit runs, use sizes not smaller than 8-inches square by 4-inches deep. Do not exceed 6 entering and 6 leaving raceways in a single box. Quantities of conductors (including equipment grounding conductors) in pull or junction box shall not exceed the following:

<u>Size of Largest Conductors in Box</u>	<u>Maximum Number of Conductors in Box</u>
No. 4/0 AWG	30
250 MCM	20
500 MCM	15
Over 500 MCM	10

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- B. Cable Supports: Install clamps, grids or devices to which cables may be secured. Arrange cables so they may be readily identified. Support cable at least every 30-inches inside boxes.
- C. Size: Provide pull and junction boxes for telephone, signal and other systems at least 50 percent larger than would be required by Article 370 of NEC, or as indicated. Locate boxes strategically and provide shapes to permit easy pulling of future wires or cables of types normal for such systems.

3.05 INSTALLATION OF CABINETS AND HINGED DOOR ENCLOSURES

- A. Mount with fronts straight and plumb
- B. Install with tops 78-inches above floor

3.06 GROUNDING

- A. Electrically ground metallic cabinets, boxes and enclosures. Where wiring to item includes a grounding conductor, provide a grounding terminal in the interior of the cabinet, box or enclosure.

3.07 CLEANING AND FINISH REPAIR

- A. Upon completion of installation, inspect components. Remove burrs, dirt and construction debris and repair damaged finish including chips, scratches, abrasions and weld marks.
- B. Galvanized Finish: Repair damage using a zinc-rich paint recommended by the tray manufacturer.
- C. Painted Finish: Repair damage using matching corrosion inhibiting touch-up coating.

PART 4 – WARRANTY

All materials and workmanship outlined in this Section shall be warranted for a period of one (1) year or the extent of the manufacturer's warranty, whichever is greater, from the date of final acceptance by the Owner. The warranty shall include all materials, labor, and shipping (if necessary).

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H. WIRING DEVICES

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

- A. Drawings and general provisions of Contract Documents and Technical Provisions that apply to this Section.

1.02 SUMMARY

- A. This section includes the following:
 - 1. Receptacles
 - 2. Ground fault circuit interrupter receptacles
 - 3. Snap switches

1.03 SUBMITTALS

- A. Product data for each type of product specified.
- B. Samples of those products indicated for sample submission in Architect's comments on product data submittal. Include color and finish samples of device plates and other items per Architect's request.

1.04 QUALITY ASSURANCE

- A. Regulatory Requirements: Comply with provisions of the following codes.
- B. NFPA 70 "National Electrical Code":
 - 1. UL and NEMA Compliance: Provide wiring devices which are listed and labeled by UL and comply with applicable UL and NEMA standards.

1.05 SEQUENCE AND SCHEDULING

- A. Schedule installation of finish plates after the surface upon which they are installed has received final finish.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

- A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products which may be incorporated in the work include, but are not limited to, the following:
 - 1. Byrant Electric Co.
 - 2. Challenger-Circle F

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3. Crouse-Hinds Co.
4. Eagle Electric Manufacturing Co.
5. General Electric Co.
6. Hubbell, Inc.
7. Pass and Seymour, Inc.
8. Slater Electric Co.
9. Square D Co.
10. Steel City; Midland-Ross Corp.
11. Walker Division-Butler Manufacturing Co.

2.02 WIRING DEVICES

- A. General: Provide wiring devices in types, characteristics, grades, colors and electrical ratings for applications indicated which are UL listed and which comply with NEMA WD 1 and other applicable UL and NEMA standards. Provide ivory color devices and wall plates except as otherwise indicated. Verify color selections with Architect.
- B. Receptacles: As scheduled in Table 1 in Part 3.3. Comply with UL 498 and NEMA WD 1.
- C. Ground-Fault Interrupter (GFI) Receptacles: As indicated in Table 1 in Part 3.3. Provide "feed-through" type ground-fault circuit interrupter, with integral heavy-duty NEMA 5-20R duplex receptacles arranged to protect connected downstream receptacles on same circuit. Provide unit designed for installation in a 2-3/4 inch deep outlet box without adapter, grounding type, Class A, Group 1, per UL Standard 94.3.
- D. Snap Switches: Quiet type AC switches as indicated in Table 2, Part 3.3. Comply with UL 20 and NEMA WD 1.

2.03 WIRING DEVICE ACCESSORIES

- A. Wall Plates: Single and combination, of types, sizes and with ganging and cutouts as indicated. Provide plates which mate and match with wiring devices to which attached. Provide metal screws for securing plates to devices with screw heads colored to match finish of plates. Provide wall plate color to match wiring devices except as otherwise indicated. Provide wall plates with engraved legend where indicated. Conform to requirements of section on "Electrical Identification". Provide plates possessing the following additional construction features:
 1. Material and Finish: Gray plastic

PART 3 - EXECUTION

3.01 INSTALLATION OF WIRING DEVICES AND ACCESSORIES

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- A. Install wiring devices and accessories as indicated, in accordance with manufacturer's written instructions, applicable requirements of NEC and in accordance with recognized industry practices to fulfill project requirements.
- B. Coordinate with other work, including painting, electrical boxes and wiring installations, as necessary to interface installation of wiring devices with other work.
- C. Install wiring devices only in electrical boxes which are clean; free from building materials, dirt and debris.
- D. Install gray plastic wall plates in all spaces.
- E. Install wiring devices after wiring work is completed.
- F. Install wall plates after painting work is completed.
- G. Tighten connectors and terminals, including screws and bolts, in accordance with equipment manufacturer's published torque tightening values for wiring devices. Where manufacturer's torquing requirements are not indicated, tighten connectors and terminals to comply with tightening torques specified in UL Standard 486A. Use properly scaled torque indicating hand tool.

3.02 PROTECTION

- A. Protect installed components from damage. Replace damaged items prior to final acceptance.

3.03 FIELD QUALITY CONTROL

- A. Testing: Prior to energizing circuits, test wiring for electrical continuity and for short-circuits. Insure proper polarity of connections is maintained. Subsequent to energizing, test wiring devices and demonstrate compliance with requirements, operating each operable device at least six times.
- B. Test ground fault interrupter operation with both local and remote fault simulations in accordance with manufacturer recommendations.
- C. Table 1 (See Evaluations, Reference 3)

Receptacles

DESIGNATION (1)	CURRENT RATING AMPS	VOLTAGE RATING	SINGLE/ DUPLEX	NEMA CONFIGURATION	UL GRADE	NOTES
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--	20	125	Duplex	5-20R	Heavy Duty	--
WP	20	125	Duplex	5-20 R	Heavy Duty	Weatherproof
WP GFI	20	125	Duplex	5-20 R	Heavy Duty	Integral GFI (3)

D. Table 2 (See Evaluations, Reference 3)

Snap Switches

DESIGNATION (1)	TYPICAL APPLICATION	LOAD RATING	VOLTAGE RATING (AC)	POLES	UL GRADE	NOTES
S	Control Lights	20A	120/277	1	Heavy Duty	--

PART 4 – WARRANTY

All materials and workmanship outlined in this Section shall be warranted for a period of one (1) year or the extent of the manufacturer's warranty, whichever is greater, from the date of final acceptance by the Owner. The warranty shall include all materials, labor, and shipping (if necessary).

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I. PANELBOARDS

PART 1 - GENERAL

1.01 DESCRIPTION

A. Scope of Work:

1. Furnish all labor, materials, equipment and incidentals required and install all panelboards as hereinafter specified and as shown on the Drawings.

1.02 QUALITY ASSURANCE

A. Standards:

1. Panelboards shall be in accordance with the Underwriter Laboratories, Inc. "Standard for Panelboards" and "Standard for Cabinets and Boxes" and shall be so labeled where procedures exist. Panelboards shall also comply with NEMA Standard for Panelboards and the National Electrical Code.

B. Manufacturer (NEMA 1):

1. 120/240V, single phase, 3 wire, and 120/208V three phase, 4-wire panelboards shall be as manufactured by the Square D Co., Cutler Hammer or General Electric
2. 480V, three phase, 3-wire panelboards shall be as manufactured by the, Square D Co., I-Line, Cutler Hammer or General Electric.

C. Manufacturer (NEMA 3 and 12):

1. NEMA 3 and 12 panelboards shall be type NLP as manufactured by the Crouse-Hinds Company or equal.

PART 2 - PRODUCTS

2.01 RATING

- A. Panelboard ratings shall be as shown on the Drawings. All panelboards shall be rated for the intended voltage.

2.02 CONSTRUCTION AREA (NEMA 1)

A. Interiors:

1. All interiors shall be completely factory assembled with circuit breakers, wire connectors, etc. All wire connectors, except screw terminals, shall be of the anti-turn solderless type and all shall be suitable for copper or aluminum wire of the sizes indicated.

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2. Interiors shall be so designed that circuit breakers can be replaced without disturbing adjacent units and without removing the main bus connectors and shall be so designed that circuits may be changed without machining, drilling or tapping.
3. Branch circuits shall be arranged using double row construction except when narrow column panels are indicated. Branch circuits shall be numbered by the manufacturer.
4. A nameplate shall be provided listing panel type, number of circuit breakers, ratings and source.

B. Buses:

1. Bus bars for the mains shall be of tin-plated copper. Full size neutral bars shall be included. Bus bar taps for panels with single pole circuit devices shall be arranged for sequence phasing of the branch circuit devices. Bussing shall be braced throughout to conform to industry standard practice governing short circuit stresses in panelboards. Phase bussing shall be full height without reduction. Cross connectors shall be copper.
2. Neutral bussing shall have a suitable lug for each outgoing feeder requiring a neutral connection.
3. Spaces for future circuit breakers shall be bussed for the maximum device that can be fitted into them.

C. Boxes:

1. Recessed boxes shall be made from galvanized code gauge steel without multiple knockouts. Surface mounted boxes shall be painted to match the trim. Boxes shall be of sufficient size to provide a minimum gutter space of 4 inches on all sides.
2. Surface mounted boxes shall have an internal and external finish as hereinafter-specified in Paragraph D4.
3. At least 4 interior mounting studs shall be provided.
4. All conduit entrances shall be field punched.

D. Trim:

1. Hinged doors covering all circuit breaker handles shall be included in all panel trims.
2. Doors shall have semi flush type cylinder lock and catch, except that doors over 48 inches in height shall have a vault handle and 3-point catch, complete with lock, arranged to fasten door at top, bottom and center. Door hinges shall be concealed. Two keys shall be supplied for each lock. All locks shall be keyed alike; directory frame and card having a transparent cover shall be furnished on each door.

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3. The trims shall be fabricated from code gauge sheet steel.
4. All exterior and interior steel surfaces of the panelboard shall be properly cleaned and finished with ANSI Z55.1, No. 61 light gray paint over a rust-inhibiting phosphatized coating. The finish paint shall be of a type to which field applied paint will adhere.
5. Trims for flush panels shall overlap the box by at least 3/4 inch all around. Surface trims shall have the same width and height as the box. Trims shall be fastened with quarter turn clamps.

2.03 CONSTRUCTION (NEMA 4X)

A. Interiors and Buses:

1. Interiors and buses shall be as hereinbefore specified for NEMA 1 construction.

B. Boxes and Covers:

1. Boxes and covers shall be made from stainless steel.
2. Boxes and covers shall be hinged together and gasketed. All metallic parts on exterior shall be stainless steel.
3. Conduit openings shall be sealed with lock rings or sealing washers.
4. Polycarbonate or plastic enclosures or boxes are unacceptable.

2.04 CIRCUIT BREAKERS

- A. Panelboards shall be equipped with circuit breakers with frame size and trip settings as shown on the Drawings.
- B. Circuit breakers shall be molded case, bolt-in type, for NEMA 1 and plug-in for NEMA 4X.
- C. Circuit breakers used in 120/240 and 120/208V panelboards shall have an interrupting capacity of not less than 10,000 amperes, RMS symmetrical.
- D. Three pole breakers used in 480V panelboards shall have an interrupting capacity of not less than 25,000 - amperes, RMS symmetrical.
- E. GFCI:
 1. GFCI (ground fault circuit interrupter) shall be provided for circuits where indicated on the Drawings. GFCI units shall be 1 pole, 120 volt, molded case, bolt-on breakers, incorporating a solid state ground fault interrupter circuit insulated and isolated from the breaker mechanism. The unit shall be U.L. listed Class A Group I device (5 milliamp sensitivity, 25 millisecond trip time), and in interrupting capacity of 10000 amperes RMS.

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PART 3 - EXECUTION

3.01 INSTALLATION

- A. Boxes for surface mounted panelboards shall be mounted so there is at least 1/2 inch air space between the box and the wall.

- B. Unless otherwise noted on the Drawings, top of cabinets shall be mounted 6-feet 0-inch above the floor, properly aligned and adequately supported independently of the connecting raceways.

- C. All wiring in panelboards shall be neatly formed, grouped, laced and identified to provide a neat and orderly appearance. A typewritten directory card identifying all circuits shall be placed in the card holder inside the front cover.

PART 4 – WARRANTY

All materials and workmanship outlined in this Section shall be warranted for a period of one (1) year or the extent of the manufacturer's warranty, whichever is greater, from the date of final acceptance by the Owner. The warranty shall include all materials, labor, and shipping (if necessary).

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J. SUPPORTING DEVICES

PART 1 - GENERAL

1.01 DESCRIPTION

A. Scope of Work

1. Furnish and install all supports, hangers and inserts required to mount fixtures, conduit, pullboxes, control panels and other equipment as outlined on the construction drawings

B. General Design

1. All items shall be supported from the structural portion of the building. Supports and hangers shall be of a type approved by Underwriters' Laboratories. Wire shall not be used as a support. Boxes and conduit shall not be supported or fastened to ceiling suspension wires or to ceiling channels.
2. All items shall be supported from structure or grade by non-metallic fiberglass channel framing systems.

1.02 QUALITY ASSURANCE

A. Manufacturer's qualifications:

1. The manufacturer shall not have had less than 10 years experience in manufacturing Strut Systems.
2. The manufacturer must certify in writing all components supplied have been produced in accordance with an established quality assurance program.

B. Installer's qualifications:

1. Installer must be a Unistrut trained manufacturer's authorized representative/ installer with not less than 5 years experience in the installation of Strut Systems of this size and conformation.
2. All Strut System components must be supplied by a single manufacturer.

C. Standards:

1. Work shall meet the requirements of the following standards:
 - a. Federal, State and Local codes.
 - b. American Society for Testing and Materials ASTM A 240 (Type 304)
 - c. American Society for Testing and Materials (ASTM) B783

PART 2 - PRODUCTS

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2.01 MATERIALS

- A. All channels, sintered nuts and fitting shall be constructed of 304 stainless steel.

PART 3 - EXECUTION

3.01 GENERAL

- A. The installer shall inspect the work area prior to installation. If work area conditions are unsatisfactory, installation shall not proceed until satisfactory corrections are completed.
- B. Set strut system components into final position true to line, level and plumb, in accordance with approved shop drawings.
- C. Anchor material firmly in place. Tighten all connections to their recommended torques.
- D. Upon completion of this section of work, remove all protective wraps and debris. Repair any damage due to installation of this section of work.
- E. During installation, it shall be the responsibility of the installer to protect this work from damage

PART 4 – WARRANTY

All materials and workmanship outlined in this Section shall be warranted for a period of one (1) year or the extent of the manufacturer's warranty, whichever is greater, from the date of final acceptance by the Owner. The warranty shall include all materials, labor, and shipping (if necessary).

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K. GROUNDING SYSTEM

PART 1 - GENERAL

1.01 DESCRIPTION

A. Scope of Work

1. Furnish and install a complete grounding system in strict accordance with Article 250 of the National Electrical Code and as hereinafter specified and shown on the Drawings.

1.02 QUALITY ASSURANCE

A. Qualifications:

1. The equipment shall be products of manufacturers who are fully experienced, reputable and qualified in the manufacture of the equipment to be furnished. The system components shall be designed, constructed, delivered and installed in accordance with the best practices and methods.

1.03 SUBMITTALS

A. Material and Shop Drawings:

1. Copies of all materials required to establish compliance with these specifications shall be submitted in accordance with the provisions of the General Conditions. Submittals shall include at least the following:
 - a. Certified shop drawings with performance data and physical characteristics.
 - b. Descriptive literature, bulletins, and/or catalogs of each item of equipment.
 - c. Complete wiring diagrams and schematics of all power and control systems showing wiring requirements between system and connections to work of other sections.

1.04 PRODUCT DELIVERY, STORAGE AND HANDLING

- A. Deliver a complete system ready to install as job progress requires.

PART 2 - PRODUCTS

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2.01 GENERAL

- A. The specifications are intended to give a general description of what is required, but do not cover all details which may vary in accordance with the exact requirements of the equipment as offered. They are, however, intended to cover the furnishings, delivery, installation and field testing of all materials, equipment and apparatus as required. Any additional auxiliary equipment necessary for the proper operation of the proposed installation not mentioned in these specifications, or shown on the Drawings, shall be furnished and installed.
- B. The material covered by these specifications is intended to be standard equipment of proven ability and as manufactured by reputable concerns having experience in the production of such equipment. The equipment furnished shall be designed, constructed, and installed in accordance with best practice and methods and shall operate satisfactorily when installed as shown on the Drawings.

2.02 MATERIALS AND EQUIPMENT

- A. Ground rods: Ground rods shall be copper clad steel 3/4 inch x 20 foot, minimum depth. Ground rods shall be copperweld or equal.

PART 3 - EXECUTION

3.01 INSTALLATION

- A. The 480 volt switchgear ground bus shall be grounded to a ground loop system. The protecting conduits shall be bonded to the grounding conductor at both ends.
- B. All steel building columns shall be bonded together and connected to the building ground grid.
- C. Motors shall be grounded as hereinafter specified.
- D. Lighting transformer neutrals shall be grounded to the nearest grounding electrode.
- E. Grounding electrodes shall be driven as required. Where rock is encountered, grounding plates may be used in lieu of grounding rods.
- F. All equipment enclosures, motor and transformer frames, conduits systems, cable armor, exposed structural steel and similar items shall be grounded.
- G. Exposed connections shall be made by means of approved grounding clamps. Exposed connections between different metals shall be sealed with No-Oxide Paint Grade A or equal. All buried connections shall be made by welding process such as Cadweld or equal.
- H. For reasons of mechanical strength, grounding conductors shall be No. 10 AWG minimum copper, minimum size.
- I. All underground conductors shall be laid slack and where exposed to mechanical

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injury, shall be protected by pipes or other substantial guards. If guards are iron pipe or other magnetic material, conductors shall be electrically connected to both ends of the guard.

- J. The Contractor shall exercise care to insure good ground continuity, in particular between the conduit system and equipment frames and enclosures. Where necessary, jumper wires shall be installed.

3.02 INSPECTION AND TESTING

- A. The Contractor shall obtain the services of an NETA recognized testing firm to measure the ground resistance of the system. All test equipment shall be provided by the Contractor and approved by the EOR. Dry season resistance of the system shall not exceed 5 ohms. If such resistance cannot be obtained with the system as shown, the Contractor shall provide additional grounding as directed by the EOR, without additional payment.

PART 4 – WARRANTY

All materials and workmanship outlined in this Section shall be warranted for a period of one (1) year or the extent of the manufacturer's warranty, whichever is greater, from the date of final acceptance by the Owner. The warranty shall include all materials, labor, and shipping (if necessary).

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L. GENERAL PURPOSE TRANSFORMERS

PART 1 - GENERAL

1.01 DESCRIPTION

A. Scope of Work:

1. Furnish and install general-purpose transformers and all necessary accessories and appurtenances required as hereinafter specified and shown on the drawings.

B. General Design:

1. General-purpose transformers shall be dry type, two-winding type, self cooled, 600V class transformers.
2. Transformers shall be designed for continuous operation at rated kVA, with normal life expectancy as defined in ANSI C57.96.

1.02 QUALITY ASSURANCE

A. Standards:

1. National Electrical Manufacturers (NEMA)
2. American National Standards Institute (ANSI)
3. Underwriters Laboratories, Inc. (UL)

B. Equipment Manufacturer:

1. Siemens
2. Cutler Hammer
3. Square D. Co.
4. Or Equal

1.03 SUBMITTALS

A. Materials and Shop Drawings:

1. Copies of all materials to establish compliance with these specifications shall be submitted in accordance with the provisions of the general conditions. Submittals shall include at least the following:
 - a. Shop drawings with performance data and physical characteristics
 - b. Complete wiring diagrams and schematics of all power connections

1.04 PRODUCT DELIVERY, STORAGE AND HANDLING

- A. General-purpose transformers shall be stored indoors and protected against damage at all times.

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1.05 WARRANTY AND GUARANTEES

- A. The equipment manufacturer shall warrant the units being supplied to the Owner against defects in workmanship and materials for a period of one (1) year from the date of equipment startup and acceptance. In the event that the equipment fails to perform as specified, the equipment manufacturer shall promptly repair or replace the defective equipment without any cost to the owner

PART 2 - PRODUCTS

2.01 GENERAL

A. Insulation System:

1. Transformers shall be insulated as follows:
 - a. 150°C insulation with 80°C rise for 2 kVA and below
 - b. 185°C insulation with 115°C rise for 3 kVA to 15 kVA
 - c. 220°C insulation with 150°C rise for 15 kVA to 112.5 kVA
2. All insulation materials shall be flame retardant and shall not support combustion as defined in ASTM D635.

B. Coil Assemblies:

1. Transformer core shall be constructed with high grade, non-aging, grain-oriented silicon steel with high magnetic permeability and low hysteresis and eddy current losses. The core volume shall allow efficient transformer operation at 10% above the highest tap voltage. Coils shall be wound of electrical grade aluminum with continuous wound construction.
2. Non-ventilated unit coil assembly shall be completely encapsulated in a mixture of resin and aggregate.
3. Four full capacity taps shall be furnished, two 2-1/2 percent above and two 2-1/2 percent below rated primary voltage.

C. Enclosures:

1. The enclosures shall be made of heavy gauge steel and shall be degreased, cleaned, primed, and finished with ANSI 61 color weather-resistant enamel.
2. All ventilation openings shall be protected against falling dirt.
3. The maximum temperature of the enclosure shall not exceed 90°C.
4. The core of the transformer shall be visibly grounded to the enclosure.

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PART 3 - EXECUTION

3.01 INSTALLATION

- A. All floor mounted transformers shall be installed on 4-inch concrete housekeeping pads.
- B. All conduit entries to the transformer shall utilize sealtight flexible connectors.

3.01 INSPECTION

- A. The transformer interior shall be cleaned and free of all foreign materials.

PART 4 – WARRANTY

All materials and workmanship outlined in this Section shall be warranted for a period of one (1) year or the extent of the manufacturer's warranty, whichever is greater, from the date of final acceptance by the Owner. The warranty shall include all materials, labor, and shipping (if necessary).

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M. LIGHTING SYSTEM

PART 1 - GENERAL

1.01 DESCRIPTION

A. Scope of Work:

1. Furnish and install complete lighting systems including panelboards, transformers, lighting fixtures, receptacles, switches, contractors, and all necessary accessories and appurtenances required as hereinafter specified and shown on the Drawings.

1.02 QUALITY ASSURANCE

A. Qualifications:

1. The equipment shall be products of manufacturers who are fully experienced, reputable and qualified in the manufacture of the equipment to be furnished. The system components shall be designed, constructed, delivered and installed in accordance with the best practices and methods.
2. The system shall be furnished by a single manufacturer who shall be responsible for the coordination of the system design and who shall assume complete responsibility for the proper operation of the system including equipment supplied but not of his manufacture.

B. Standards:

1. All lighting fixtures shall be in accordance with the National Electrical Code and shall be constructed in accordance with the latest edition of the Underwriters Laboratories "Standards for Safety, Electrical Lighting Fixtures". All lighting fixtures shall be Underwriters Laboratories labeled.

1.03 SUBMITTALS

A. Material and Shop Drawings:

1. Copies of all materials to establish compliance with these specifications shall be submitted in accordance with the provisions of the General Conditions. Submittals shall include at least the following:
 - a. Certified shop drawings with performance data and physical characteristics
 - b. Descriptive literature, bulletins, and/or catalogs of each item of equipment
 - c. A complete total bill of materials for all equipment
 - d. Complete wiring diagrams and schematics of all power and control systems showing wiring requirements between system and connections

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to work of other sections

2. In the event that it is impossible to conform with certain details of the specifications, describe completely all non-conforming aspects of the Shop Drawing transmittal.

PART 2 – PRODUCTS

2.01 GENERAL

- A. The specifications are intended to give a general description of what is required, but do not cover all details which may vary in accordance with the exact requirements of the equipment as offered. They are, however, intended to cover the furnishing, delivery, installation and field testing of all materials, equipment and apparatus as required. Any additional auxiliary equipment necessary for the proper operation of the proposed installation not mentioned in these specifications, or shown on the Drawings, shall be furnished and installed.
- B. The material covered by these specifications is intended to be standard equipment of proven ability and as manufactured by reputable concerns having experience in the production of such equipment. The equipment furnished shall be designed, constructed, and installed in accordance with best practice and methods and shall operate satisfactorily when installed as shown on the Drawings.

2.02 MATERIALS AND EQUIPMENT

- A. Lighting Fixtures:
 1. Lighting fixture types shall be LED-type as shown on the "Lighting Fixture Schedule" on the Drawings. The catalog numbers listed are given as a guide to the design and quality of fixture desired. Equivalent designs and equal quality fixtures of other manufacturers will be acceptable.
- B. Lamps:
 1. All lamps shall be of one manufacturer and shall be as manufactured by Sylvania Electric Products, Inc., General Electric Company, Westinghouse Electric Corporation or equal.

PART 3 - EXECUTION

3.01 INSTALLATION

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- A. Each fixture shall be a complete finished unit with all components, mounting and/or hanging devices necessary, for the proper installation of the particular fixture in its designation location and shall be completely wired ready for connection to the branch circuit wires at the outlet.
- B. When fixtures are noted to be installed flush, they shall be complete with the proper accessories for installing in the particular ceiling involved. All flush mounted fixtures shall be supported from the structure and shall not be dependent on the hung ceilings for their support.
- C. Flexible fixture hangers shall be used for all pendant mounted fixtures.
- D. Conduit run in areas with hung ceilings shall be installed in the space above the hung ceiling as close to the structure as possible. Conduit shall be supported from the structure.

3.02 CLEANING UP

- A. All fixtures shall be left in a clean condition, free of dirt and defects, before acceptance by the EOR.

PART 4 – WARRANTY

All materials and workmanship outlined in this Section shall be warranted for a period of one (1) year or the extent of the manufacturer's warranty, whichever is greater, from the date of final acceptance by the Owner. The warranty shall include all materials, labor, and shipping (if necessary).

Basis of Payment

The unit price for this pay item includes, but is not limited to, all materials, labor, expenses, equipment, testing, and spare parts described within this Technical Provision and shown on the construction plans, including minor materials and hardware not shown on the plans but which can be reasonably anticipated as necessary to achieve the intent of the construction plans.

Payment shall be made under:

Item No. ATS-03	Site and Control System Electrical	- Lump Sum
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END OF SECTION

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TP ATS-04: FIBERGLASS-REINFORCED DOUBLE-WALLED PLASTIC TANK

PART 1 - GENERAL

1.01 SCOPE OF WORK

The Contractor shall furnish and install a fiberglass reinforced plastic (FRP) tank(s) for the storage of liquid alum, $\text{Al}_2(\text{SO}_4)_3 \cdot 14 \text{H}_2\text{O}$ (48.5%)

1.02 DESCRIPTION

- A. The tank furnished and installed under this section shall be fabricated, assembled, erected, and placed in proper operating condition in full conformity with drawings, specifications, engineering data, instructions, recommendations of the fabricator, and installed in accordance with local / state regulatory requirements – unless exceptions are noted by the EOR.
- B. The Contractor shall coordinate the work between the suppliers of equipment to be used with or connected to the storage tanks to ensure that all required provisions for mounting the accessories are included.
- C. This work includes all materials and labor for fastening the tank to the anchor slab in accordance with the manufacturer's recommendations.

1.03 QUALITY ASSURANCE

Governing Standards: Except as modified or supplemented herein, all materials and construction methods shall comply with the applicable provisions of the following standard: ASTM Standard D03299 and ASTM RTP-1.

1.04 SUBMITTALS FOR DRAWINGS AND DATA

- A. Complete drawings, details, and specifications covering the storage tanks and accessories shall be submitted.
- B. The data shall include full information on basic materials and test data confirming the chemical resistance of the proposed resins to the intended tank contents.
- C. The data shall also indicate the sizes of all major tank components including tank diameter, tank height including support legs, wall thickness, nozzle details and locations, anchor bolt locations and details, and full information and details concerning field assembly and installation.
- D. Manufacturer's certificate of testing for primary and secondary tank.

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1.05 PRODUCT DELIVERY, STORAGE AND HANDLING

The tanks and components shall be adequately protected during transportation, in storage at the job site, and during subsequent installation and construction activities. Damaged units will be rejected and shall be replaced with undamaged units.

1.06 WARRANTY AND GUARANTEES

The tank will not fail for a period of ten (10) years due to corrosion or structural failure. If failure occurs, replacement tank to be provided at vendor's expense.

PART 2 - PRODUCTS

2.01 ACCEPTABLE MANUFACTURERS

The tanks shall be as manufactured by:

- Augusta Fiberglass
- Belding Tank Technologies, Inc.
- Edwards Fiberglass, Inc.
- Southeast Fiberglass Products, Inc.
- Tank Connection
- XERXES Corporation

2.02 MATERIALS

Tanks shall be manufactured with 100% resin and glass fiber reinforcement. No sand filler. Basic materials shall be as follows:

1. Resin: Bisphenol-A polyester or vinyl ester resins suitable for use with the specified chemicals.
2. Reinforcement: Glass fiber with a suitable coupling agent.
3. Surfacing Material: Surlington Formed Fabrics "Nexus Veil", Nicofibers "Surmat 100", or equal.
4. Plastic Laminate: Conformity with the applicable governing standards.
5. Exposed Assembly and Bolts, Nuts, and Washers: Type 316 stainless steel.

2.03 PERFORMANCE AND DESIGN REQUIREMENTS

- A. **CONDITIONS OF SERVICE:** Each tank will normally be used to store the specified chemical at atmospheric pressure. The tanks shall be designed for the storage of the following liquid chemicals:

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1.	Chemical:	Alum
2.	Location:	As shown
3.	Maximum Concentration by Weight (%):	50
4.	Maximum Specific Gravity:	1.4
5.	Maximum Temperature (°F):	120
6.	Minimum Temperature Tank Contents (°F):	----

B. Design Criteria

1. Each tank shall be designed to withstand the hydrostatic head plus 24 inches water column.
2. The location, capacity, and dimensions of the tank(s) are specified within the design plan sheet set.
3. Each tank shall consist of one of the following configurations, as specified within the design plan sheet set.
 - a. Above-ground location, single wall tank installed within full containment structure.
 - b. Above-ground location, double-wall tank installed without containment structure.
 - c. Below-ground location, double-wall tank installed without containment structure.
4. All above-ground horizontal tanks to be provided with FRP hollow support saddles which are attached to the tank shell. Height of the saddles to conform to dimensions and under-tank clearances indicated on the Construction Drawings. The support saddles shall be filled with concrete per manufacturer's instructions.
5. All tanks shall be designed in accordance with the applicable design standards referenced herein. Design calculations shall be provided for each tank and shall be signed and sealed by a professional engineer, preferably registered in the State of Florida.

2.04 FABRICATION AND MANUFACTURER

- A. The tanks shall be hand lay-up, spray-up, or filament wound construction in accordance with the applicable governing standard. All tank shells and dishes shall be shop fabricated in a controlled environment by the manufacturer and no vertical seams shall be allowed. The finished laminate shall be constructed using a single generic type of thermoset resin throughout and shall not contain colorants, dyes, fillers, or pigments unless otherwise specified. Ultraviolet absorber shall be added to the resin used in the fabrication of tanks indicated on the drawings or specified to be suitable for installation in exposed, exterior locations.

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B. Manufacturer

1. The tanks shall be hand lay-up, spray-up, or filament wound construction in accordance with the applicable governing standard. All tank shells and dishes shall be shop fabricated in a controlled environment by the manufacturer and no vertical seams shall be allowed. The finished laminate shall be constructed using a single generic type of thermoset resin throughout and shall not contain colorants, dyes, fillers, or pigments unless otherwise specified. Ultraviolet absorber shall be added to the resin used in the fabrication of tanks indicated on the drawings or specified to be suitable for installation in exposed, exterior locations.
2. The top of each tank shall be reinforced in accordance with the requirements of the applicable governing standard. Additional reinforcement shall be provided as necessary to support the required accessories. As applicable to the project, vertical tanks shall have the surface of each domed top provided with a non-slip finish.
3. Bracketed flat surfaces shall be provided on each tank for the installation of a liquid level gauge, a nameplate, and a certification plate.
4. Minimum of three lifting lugs shall be provided on each tank as required for handling and installation.
5. All finished tanks shall be hydrostatically tested for a duration of one hour. Any leaks detected during the testing shall be repaired by the manufacturer and the tank retested until no detectable leakage is observed. A certification of successful testing shall be provided to the Owner.

2.05 ACCESSORIES

Accessories shall be provided on each tank as indicated on the drawings and as specified herein.

- A. Access Manholes: Access manholes shall have an inside diameter of 22 inches and shall be provided on the tank as indicated on the drawings. Each manhole shall be flanged, fully gasketed, and furnished with a fabricated blind flange having the same properties as the tank wall laminate. Gasket materials shall be compatible with and fully resistant to the chemicals stored. Flange diameter and drilling shall conform to ANSI B16.5, Class 150.
- B. Flanged Nozzles:
1. Nozzles for connecting piping and accessories shall be provided on each tank at the locations and of the sizes indicated on the drawings or specified herein.
 2. Each nozzle shall be flanged, with flange diameter and drilling conforming to ANSI B16.5, Class 150. Nozzles shall extend at least 3 inches from outside face of tank to face of flange unless otherwise noted on the plans.

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3. Flanged nozzles shall be fabricated of the same material as the tank and shall be gusseted to the tank or otherwise reinforced in accordance with governing standard.
4. Each tank shall be provided with flanged nozzles as specified on the design plans. At a minimum, each tank shall contain the following:

QUANTITY	CONNECTION	NOZZLE SIZE (inches)	LOCATION ON TANK
1	Vent	3	Top
1	Fill	2	Top
1	Discharge	2	Bottom
1	Upper Sight Tube Port	2	Near Top
1	Lower Sight Tube Port	2	Near Bottom
1	Access Manway	22	Horizontal Tank – end
1	Leak Detection	1 to 2	Bottom – per manufacturer
1	Containment Vent	1 to 2	Top – per manufacturer

5. Tank shall also have a sight tube with laminated strip chart calibrated in gallons.
 6. If level monitoring equipment is specified, include a 12", 150 lb. flanged nozzle with a minimum height of 12" above tank outside diameter to accommodate a flanged ultrasonic transducer. Locate nozzle at the opposite end of tank from the fill nozzle.
- C. Vents: Each tank shall be provided with a vent of the size recommended by the manufacturer to prevent developing pressure or a vacuum inside the tank during filling, pumping, or draining. The vent shall also be equipped with an insect screen of material compatible with the chemical stored.
- D. Certification Plates: A stainless steel certification plate shall be installed on the body of the tank. The following data shall be included on the certification plate:
1. Name of tank fabricator
 2. Date of manufacture
 3. Product to be stored
 4. Maximum allowable concentration, specific gravity and temperature of the specified chemical solution that can be stored safely
 5. Mechanical properties of the laminate
 6. Resin designation
 7. Maximum fill volume

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PART 3 - EXECUTION

3.01 INSTALLATION

- A. The tanks shall be installed at locations as indicated on the drawings. The tanks shall be installed in accordance with the fabricator's recommendations, the requirements of the applicable governing standard, and to the satisfaction of the EOR, and made ready for the installation of piping and other appurtenances as indicated on the drawings and specified under other sections.
- B. Once the tank is installed, the tank will be filled with water for 30 days prior to making any piping connections.

3.02 FIELD QUALITY CONTROL

After completion of installation, the tanks shall be filled with water to the top access manhole opening and allowed to stand full for a period of not less than 48 hours. During testing, flanged connections may be plugged by the installation of temporary blind flanges on the outside of the tank but shall not be blocked or plugged on the inside. All leaks or indications of leaks shall be repaired by the fabricator and made completely watertight. A leaking tank, upon repair, shall be retested to the satisfaction of the EOR.

3.03 CLEANING

When installation has been completed and all connections have been made, all tank surfaces, interior and exterior, shall be thoroughly cleaned as recommended by the fabricator and to the satisfaction of the EOR. Abrasive cleaning agents shall not be used. The tank and wetted accessories shall be completely dried before being placed into service.

PART 4 – WARRANTY

All materials and workmanship outlined in this Section shall be warranted for a period of five (5) years or the extent of the manufacturer's warranty, whichever is greater, from the date of final acceptance by the Owner. The warranty shall include all materials, labor, and shipping (if necessary).

Basis of Payment

The unit price for this pay item includes, but is not limited to, all materials, labor, expenses, equipment, testing, and spare parts described within this Technical Provision and shown on the construction plans, including minor materials and hardware not shown on the plans but which can be reasonably anticipated as necessary to achieve the intent of the construction plans.

Payment shall be made under:

Item No. ATS-04	Fiberglass-Reinforced Double-Walled Plastic Tank	- Lump Sum
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END OF SECTION

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TP ATS-05: POND ALUM INJECTION STRUCTURE

PART 1 - GENERAL

1.01 SCOPE OF WORK

Provide and install the pond injection structure and aluminum support posts, as indicated on the Construction Drawings.

1.02 DESCRIPTION

The Contractor will fabricate and install the pond injection structure as indicated on Sheet D-1 of the Construction Drawings. Alternate designs must be accompanied by Shop Drawings and engineering calculations, signed and sealed by an engineer registered in the State of Florida. The structure must be securely attached to the pond bottom by inserting the aluminum posts to a depth that creates a stable structure.

1.03 MATERIALS

- A. The pond injection structure and support piping shall be constructed of 3/16-inch aluminum with welded joints.
- B. The venturi nozzle shall have a 2-inch intake and be constructed of either 316 SS, PVC, fiberglass, or other material compatible with long-term exposure to alum.

PART 2 – WARRANTY

All materials and workmanship outlined in this Section shall be warranted for a period of one (1) year or the extent of the manufacturer's warranty, whichever is greater, from the date of final acceptance by the Owner. The warranty shall include all materials, labor, and shipping (if necessary).

Basis of Payment

The pond alum injection structure will be paid for at the contract unit price, completed and accepted. Payment shall be full compensation for work specified, including materials, labor, and appurtenances.

Payment shall be made under:

Item No. ATS-05	Pond Alum Injection Structure	- Lump Sum
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END OF SECTION

PART H
TECHNICAL SPECIFICATIONS
Lake Anderson Stormwater Treatment System

ATS-06: PIPING AND FITTINGS

A. HDPE PIPING

PART 1 - GENERAL

1.01 SCOPE OF WORK

The Contractor shall furnish and install HDPE pipe and fittings as indicated on the Construction Drawings.

1.02 DESCRIPTION

- A. This section includes material and performance standards and Contractor responsibilities associated with the furnishing of all materials, equipment, labor, and incidentals required to provide and install complete and make ready for operation all HDPE piping and fittings as shown on the Construction Drawings or as specified herein.
- B. This specification governs the material, pipe, fittings, connections, and general construction practice for HDPE pipe.

1.03 SUBMITTALS

Submit manufacturer's product data, installation instructions, and certification for all materials to be furnished in accordance with this Specification.

PART 2 - PRODUCTS

2.01 MATERIALS

- A. Products supplied under this section assume that petroleum products or organic solvents will not be encountered. If during the course of pipe installation the Contractor identifies or suspects the presence of petroleum products or any unknown chemical substance, stop installing piping in the area of suspected contamination until direction is provided by the EOR.
- B. Pipe and fittings shall be made from the same resin meeting the requirements of the Plastic Pipe Institute (PPI) material designation PE 3408 with an ASTM D3350 minimum cell classification of PE 345464C.
- C. The material shall have a minimum Hydrostatic Design Basis (HDB) of 1,600 psi at 73 degrees F.
- D. All materials which come in contact with water, including lubricants, shall be evaluated, tested, and certified for conformance with ANSI/NSF Standard 61.

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2.02 PIPE

- A. All pipe and fittings shall be manufactured in ductile iron pipe sizes (DIPS) only in accordance with AWWA Standard C906.
- B. The pipe shall contain no recycled compound except for rework material generated in the manufacturer's own plant that has the same cell classification as the material to which it is being added. The pipe shall be homogeneous throughout and free of visible cracks, holes, voids, foreign inclusions, or other defects that may affect the wall integrity.
- C. Permanent identification of water service piping shall be provided by co-extruding longitudinal blue stripes into the pipe outside surface. The striping material shall be the same material as the pipe material except for color. Stripes printed or painted on the outside surface shall not be acceptable.
- D. The nominal pipe diameter is specified on the Contract Drawings. The DR (dimension ratio) and the pressure rating of the pipe shall be as noted on the plans.
- E. All HDPE piping shall have an SDR rating as indicated on the Construction Plans.

2.03 FITTINGS

- A. Plain end butt fused fittings shall be used when joining similar polyethylene materials. Mechanical (compression) fittings may also be used when joining polyethylene materials to different piping materials as well as other types of polyethylene pipe.
- B. The fittings shall contain no recycled compound except for rework material generated in the manufacturer's own plant that has the same cell classification as the material to which it is being added. The fittings shall be homogeneous throughout and free of visible cracks, holes, voids, foreign inclusions, or other defects that may affect the wall integrity.
- C. Butt fusion fittings shall comply with ASTM D3261.
- D. Mechanical (compression) fittings used with polyethylene pipe shall be specifically designed for, or tested and found to be acceptable for, use with polyethylene pipe.

PART 3 - EXECUTION

3.01 PACKAGING, HANDLING, AND STORAGE

- A. The manufacturer shall ensure that the interior of all pipe is clean and install plastic cleanliness plugs in all pipes to keep the pipe interiors clean. The manufacturer shall package the pipe in a manner designed to ensure that it arrives at the project neat, clean, intact, and without physical damage. The transportation carrier shall use appropriate methods and intermittent checks to assure that the pipe is properly supported, stacked, and restrained during transport such that the pipe is not nicked, gouged, or physically damaged.

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- B. Inspect pipe and appurtenances for defects prior to installation in the trench. Set aside defective, damaged or unsound material and hold material for inspection by AW.
- C. Pipe shall be stored on clean, level ground to prevent undue scratching or gouging. If the pipe must be stacked for storage, such stacking shall be done in accordance with the pipe manufacturer's recommendations. The pipe shall be handled in such a manner that it is not pulled over sharp objects or cut by chokers or lifting equipment.
- D. Sections of pipe having been discovered with cuts or gouges in excess of 10% of the pipe wall thickness shall be cut out and removed. The undamaged portions of the pipe shall be rejoined by butt fusing or the use of electrofusion fittings.

3.02 PIPE INSTALLATION

- A. All pipe shall be installed in accordance with AWWA M55. All contractors and inspectors shall be trained and certified by the manufacturer prior to installing HDPE pipe. A copy of the training certification and proof of insurance shall be provided to the EOR before any work shall commence.
- B. Remove all dirt and foreign matter from pipe before lowering into the trench. Do not place debris, hand tools, clothing or other materials in the pipe. Keep pipe clean during and after laying.
- C. Maximum pipe bending radius shall be in conformance with the manufacturer's recommendation for the specific diameter and dimension ratio (DR) of the pipe. Whenever possible, changes in direction shall be accomplished by bending the pipe in lieu of installing a fitting, except as approved by the EOR.
- D. Place tracer wire (if required) immediately above the initial backfill material, directly over the pipe. The wire shall be contiguous except at test stations, valve boxes, and where splicing is required. All splices shall be encased. Wire insulation shall be highly resistant to alkalis, acid and other destructive agents found in soil.
- E. Prevent flotation of sealed pipe during work stoppages.
- F. HDPE pipe will not be employed with directional drilling through rock and other abrasive conditions unless it is encased.

3.03 PIPE AND FITTING JOINING

- A. Sections of polyethylene pipe should be joined into continuous lengths on the job site above ground. The joining method shall be the butt fusion method and shall be performed in strict accordance with the pipe manufacturer's recommendations. The butt fusion equipment used in the joining procedures should be capable of meeting all conditions recommended by the pipe manufacturer, including but not limited to, temperature requirements of 50°F, alignment, and 150 psi interfacial fusion pressure.

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- B. Butt fusion joining shall be 100% efficient, offering a joint weld strength equal to or greater than the tensile strength of the pipe. Socket fusion shall not be used. Extrusion welding or hot gas welding of HDPE shall not be used for pressure pipe applications, nor in fabrications where shear or structural strength is important. Flanges, unions, grooved-couplers, transition fittings, and some mechanical couplers may be used to mechanically connect HDPE pipe without butt fusion if specified on the construction drawings. Connection method shall be approved by the EOR. Refer to the manufacturer's recommendations.
- C. Butt fusion procedures shall be in accordance with the manufacturer's recommendations. Surfaces must be clean and dry before joining. The fusion equipment operator shall be fully trained in the use of the respective equipment, and certified/qualified in accordance with the requirements of the manufacturer's recommendations. The wall thicknesses of the adjoining pipes shall have the same DR at the point of fusion.
- D. Butt fusion equipment shall be equipped with a Data Logger to record and document key parameters of each fusion process including heater temperature, fusion pressure, melt time, hold time, etc. Information from the Data Logger shall be collected and filed daily. A record of each fused joint including a graph of the fusion cycle shall be submitted to the EOR.
- E. The temperature of the heating tool surfaces shall be monitored daily with a temperature measuring device, such as, a thermometer or temperature indicating crayons, to assure the temperature measuring device on the equipment is in sound working condition and that the appropriate temperature range is maintained.
- F. Each HDPE joint shall be traceable to the fusion operator and equipment. Also, the fusion joint number and fusion operator ID shall be stenciled on the pipe.

3.04 SERVICE CONNECTIONS

- A. Mechanical saddles shall be used for 3/4 inch and 1 inch service lines off mains 3 inches to 12 inches in diameter. For larger sized mains, polyethylene service saddles may be used, sidewall fused, and then tapped with a tapping tool or machine.
- B. For large mains (>12 inch), mechanical clamps or tapping saddles may be used provided they are designed for HDPE pipe and acceptable to the manufacturer of the pipe.

3.05 INCLEMENT WEATHER

- A. In inclement weather and especially in windy conditions, the fusion operation shall be shielded to avoid precipitation and excessive heat loss from wind chill.
- B. The time required to obtain the proper melt may increase when fusing in cold weather. Subcontractor shall maintain the specified heating tool surface temperature during the fusion process.

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- C. The proper cycle time for any particular condition shall be determined by making a melt pattern on a piece of scrap HDPE pipe using the recommended standard heating time. If the melt pattern is incomplete, the Subcontractor shall increase the heating time by three (3) second intervals until a complete melt pattern is established. Each time the procedure is repeated, a new piece of scrap pipe shall be used.

3.06 VISUAL INSPECTION

- A. The Subcontractor shall perform visual examination of HDPE piping installations to satisfy that they conform to the applicable assembly and erection requirements including: alignment, routing, elevation, cuts/gouges exceeding 10% of wall thickness, flanged joints, bolting torque, bolt length, gaskets, and supports (if applicable).
- B. All fused joints shall be examined by in-process examination for cleanliness, joint preparation, alignment, plate temperature, melt, joining, holding pressure and time, bead size (uniformly rounded and consistent in size all around the joint), storage of joining materials, and appearance of the finished joint.

3.07 BACK BEND TEST

- A. The Subcontractor shall perform a bend back test on an HDPE fusion joint to detect the presence of a “cold fusion” on a weekly basis.
- B. The Subcontractor shall cut out a section of pipe with the butt-fusion joint at the center. The cut out section shall be at least two (2) feet long one (1) foot on each side of the fusion joint. The Subcontractor shall cut out four (4) one-inch wide straps lengthwise across the fusion joint. These cut out straps shall be located 90 degrees apart around the circumference of the pipe. Each strap shall be held at or near the ends and bend so that the inside wall faces outwards to obtain a smooth bending radius.
- C. A fusion joint shall be considered good if none of the straps break. Further, if one out of the four straps breaks, a fifth strap shall be cut from an area of the pipe near to which the broken strap was cut. If this strap does not exhibit break then the strap is considered good. Records shall be kept regarding where strap was cut as failures occurring in a consistent location can be an indication of fusion equipment problem. A very smooth break will indicate that cold material was brought together during the fusion process.
- D. The result of each bend back test shall be recorded and submitted to the EOR for review.

3.08 PRESSURE TESTING AND DISINFECTION

- A. Pressure testing shall be conducted in accordance with the Manufacturer’s recommended procedure. Pressure testing shall use water as the test media. Pneumatic (air) testing is prohibited. Air must be completely removed before pressure testing. Under no circumstances shall HDPE pipe be pressure tested when the temperature of the pipe is above 80 degrees F.

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TECHNICAL SPECIFICATIONS
Lake Anderson Stormwater Treatment System

B. DOUBLE-WALL CONTAINMENT PIPING

PART 1 – GENERAL

1.01 SCOPE OF WORK

The Contractor shall furnish and install double-wall containment piping as indicated on the construction plans.

1.02 MATERIALS

- A. The pipe and fittings shall be of the same material for both the inner and outer piping. The responsible designer shall exercise good engineering practice in all areas including the selection of the materials of construction.
- B. Black UV stabilized block co-polymer polypropylene shall meet the requirements of ASTM D4101. Material shall provide weathering resistance for outdoor use without further coating, covering or wrapping.
- C. High-density polyethylene shall meet the requirements of ASTM D3408 cell classification 345434C or 355434C. All related accessories shall be made from the same resin.
- D. Elastomers shall be selected by the designer with regard to the compatibility of the fluid service anticipated. O-rings must be inspected during installation to verify surface quality, and as with all sealing materials, periodic inspections may be appropriate. Stainless steel bolts, nuts and washers are recommended for flange assemblies.

1.03 CONFIGURATION

- A. All pipe shall be one-piece double-wall extruded simultaneously. The primary pipe shall be integral with the secondary pipe via connecting ribs, which are continuous down the entire length of each section of pipe. No centralizing clips, spiders, disks or supports shall be allowed.
- B. Molded double containment fittings shall be of unitary construction. Permanent alignment of the inner and outer fittings shall be maintained via molded-in ribs. The ends of both the inner and outer fittings shall be flush (in one plane). Molded-in supports shall be set back from the ends of the fittings to allow mixing of any fluids in the annular space.
- C. Fabricated fittings in Polyethylene and Polypropylene shall be allowed provided all welds are butt fusion style. The manufacturer shall provide pressure ratings on fabricated fittings.
- D. Identical wall thickness for the inner and outer walls is mandatory for each size.

PART H
TECHNICAL SPECIFICATIONS
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- E. Termination of the double containment shall be conducted utilizing a termination flange or Female, Metric socket or IPS spigot adapter.

1.04 PRESSURE RATING

- A. Pipe and fittings shall be rated for 100 psi in all sizes and materials at 73°F.
- B. Inner and outer fittings shall both be rated for 100 psi, including all termination fittings, transition fittings and drainage fittings.

1.05 JOINING METHODS

- A. All field welding shall be butt welded per the general guidelines of ASTM D2657 for polyolefin piping, and in general accordance with the manufacturer's printed guidelines.
- B. Mechanical connections in polypropylene can be conducted utilizing a double wall flange adapter. A double wall flange shall be connected to a double wall o-ring flange for proper sealing.

1.06 INSTALLATION AND SUPPORT

- A. Installation procedures shall be as per the manufacturer's written specifications. Pipe support spacing must be adequate to prevent any appearance of sagging. Standard design practice for single wall thermoplastic piping with regard to expansion and contraction shall be followed. Valves and other auxiliary items shall be independently supported.

1.07 SYSTEM TESTING

- A. Pressure Systems
 - 1. To fully test both the inner and outer containment for full pressure rating a hydrostatic test of both the inner and outer pipes shall be performed as outlined in the Uniform Plumbing Code Section 318 as directed by the local Administrative Authority. Specifically, a water pressure test at 1.5 times (150%) the normal working pressure of the inner pipe should be applied to both the inner and outer walls in separate tests.
 - 2. To avoid a possible leak in the carrier from contaminating the containment space, a 5 to 10 psi air test can be first conducted for a quick check of the system.
 - 3. To avoid moisture in the containment an air test can be conducted on the containment pipe. Pressure test is recommended at 5 psi and shall not exceed 10 psi. The inner carrier pipe shall be full of water and under pressure to avoid any possible collapse.

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4. When testing with air on both the carrier and containment piping the ambient temperature should be above 32°F and extra safety precautions for personnel shall be put in place during the test

B. Drainage Systems

1. For systems in drainage applications a hydrostatic test of 1.5x the working pressure is recommended for the carrier pipe. To avoid moisture in the containment an air test can be conducted on the containment pipe. Pressure test is recommended at 5 psi and shall not exceed 10 psi. The inner carrier pipe shall be full of water and under pressure to avoid any possible collapse. When testing with air the ambient temperature should be above 32°F and extra safety precautions for personnel shall be put in place during the test.

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C. PVC PIPING

PART 1 - GENERAL

1.01 SCOPE OF WORK

The Contractor shall furnish and install PVC pipe and fittings as indicated on the Construction Drawings. This section does not include piping used for electrical conduits.

1.02 DESCRIPTION

- A. This section includes material and performance standards and Contractor responsibilities associated with the furnishing of all materials, equipment, labor, and incidentals required to provide and install complete and make ready for operation all PVC piping and fittings, as shown on the Construction Drawings or as specified herein.
- B. This specification governs the materials, pipe, fittings, connections, and general construction practice for PVC pipe.

1.03 SUBMITTALS

Submit manufacturer's product data, installation, instructions, and certification for all materials to be furnished in accordance with this Specification.

PART 2 – PRODUCTS

2.01 MATERIALS

- A. All PVC Schedule 40 pipe shall be manufactured from a Type I, Grade I Polyvinyl Chloride (PVC) compound with a Cell Classification of 12454 per ASTM D1784. The pipe shall be manufactured in strict compliance to ASTM D1785 and D2665 (where applicable), consistently meeting and/or exceeding the Quality Assurance test requirements of these standards with regard to material, workmanship, burst pressure, flattening, and extrusion quality. The pipe shall be manufactured in the US, using domestic material, by an ISO 9001 certified manufacturer. Standard lengths of pipe sizes 6 inches and larger shall be beveled each end by the pipe manufacturer.

2.02 PIPE

- A. All pipe and fittings shall be manufactured in ductile iron pipe sizes (DIPS) only in accordance with AWWA Standard C906.

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- B. The pipe shall contain no recycled compound except for rework material generated in the manufacturer's own plant that has the same cell classification as the material to which it is being added. The pipe shall be homogeneous throughout and free of visible cracks, holes, voids, foreign inclusions, or other defects that may affect the wall integrity.

2.03 FITTINGS

- A. The fittings shall contain no recycled compound except for rework material generated in the manufacturer's own plant that has the same cell classification as the material to which it is being added. The fittings shall be homogeneous throughout and free of visible cracks, holes, voids, foreign inclusions, or other defects that may affect the wall integrity.
- B. All pipe and fitting connections shall be solvent welded using solvent appropriate for the piping used.

PART 3 – EXECUTION

3.01 PACKAGING, HANDLING, AND STORAGE

- A. All pipe shall be stored indoors after production at the manufacturing site until shipped from the factory.
- B. The manufacturer shall ensure that the interior of all pipe is clean and install plastic cleanliness plugs in all pipes to keep the pipe interiors clean. The manufacturer shall package the pipe in a manner designed to ensure that it arrives at the project neat, clean, intact, and without physical damage. The transportation carrier shall use appropriate methods and intermittent checks to assure that the pipe is properly supported, stacked, and restrained during transport such that the pipe is not nicked, gouged, or physically damaged.
- C. Inspect pipe and appurtenances for defects prior to installation in the trench. Set aside defective, damaged or unsound material and hold material for inspection by AW.
- D. Pipe shall be stored on clean, level ground to prevent undue scratching or gouging. If the pipe must be stacked for storage, such stacking shall be done in accordance with the pipe manufacturer's recommendations. The pipe shall be handled in such a manner that it is not pulled over sharp objects or cut by chokers or lifting equipment.
- E. Sections of pipe having been discovered with cuts or gouges in excess of 10% of the pipe wall thickness shall be cut out and removed. The undamaged portions of the pipe shall be rejoined by butt fusing or the use of electrofusion fittings.

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3.02 PIPE INSTALLATION

- A. All pipe shall be installed in accordance with AWWA M55. All contractors and inspectors shall be trained and certified by the manufacturer prior to installing HDPE pipe. A copy of the training certification and proof of insurance shall be provided to the EOR before any work shall commence.
- B. Remove all dirt and foreign matter from pipe before lowering into the trench. Do not place debris, hand tools, clothing or other materials in the pipe. Keep pipe clean during and after laying.
- C. Maximum pipe bending radius shall be in conformance with the manufacturer's recommendation for the specific diameter and dimension ratio (DR) of the pipe. Whenever possible, changes in direction shall be accomplished by bending the pipe in lieu of installing a fitting, except as approved by the EOR.
- D. Place tracer wire (if required) immediately above the initial backfill material, directly over the pipe. The wire shall be contiguous except at test stations, valve boxes, and where splicing is required. All splices shall be encased. Wire insulation shall be highly resistant to alkalis, acid and other destructive agents found in soil.
- E. Prevent flotation of sealed pipe during work stoppages.

3.03 VISUAL INSPECTION

- A. The Subcontractor shall perform visual examination of HDPE piping installations to satisfy that they conform to the applicable assembly and erection requirements including: alignment, routing, elevation, cuts/gouges exceeding 10% of wall thickness, flanged joints, bolting torque, bolt length, gaskets, and supports (if applicable).

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D. APPLICABILITY AND PAYMENT

PART 1 – WARRANTY

All materials and workmanship outlined in this Technical Specification shall be warranted for a period of two (2) years or the extent of the manufacturer's warranty, whichever is greater, from the date of final acceptance by the Owner. The warranty shall include all materials, labor, and shipping (if necessary).

PART 2 – APPLICABILITY

This Technical Specification applies to the following Pay Items:

ATS-06-1	1½-inch HDPE - Sleeve for Alum Tubing
ATS-06-2	1½-inch HDPE - pH Monitoring Line
ATS-06-3	3-inch PVC (SCH 80) - Water Carrier Piping with Lentel weights
ATS-06-4	2" ID Double Wall HDPE - Alum Tank Fill Line
ATS-06-5	4-inch PVC (Sch. 40) – Building Drain

Basis of Payment

The unit price for this pay item includes, but is not limited to, all materials, labor, expenses, equipment, testing, and spare parts described within this Technical Provision and shown on the construction plans, including minor materials and hardware not shown on the plans but which can be reasonably anticipated as necessary to achieve the intent of the construction plans.

Payment shall be made under

Item No. ATS-06-1	1½-inch HDPE - Sleeve for Alum Tubing	- Linear Feet
Item No. ATS-06-2	1½-inch HDPE - pH Monitoring Line	- Linear Feet
Item No. ATS-06-3	3-inch PVC (SCH 80) - Water Carrier Piping with Lentel weights	- Linear Feet
Item No. ATS-06-4	2" ID Double Wall HDPE - Alum Tank Fill Line	- Linear Feet
Item No. ATS-06-5	4-inch PVC (Sch. 40) – Building Drain	- Linear Feet

END OF SECTION

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TECHNICAL PROVISIONS
Lake Anderson Stormwater Treatment System

TP ATS-07: CONCRETE UTILITY BOX WITH ALUMINUM HATCH

A. CONCRETE UTILITY BOX

PART 1 - GENERAL

1.01 SCOPE OF WORK

Provide and install concrete utility boxes, as indicated on the Construction Drawings.

1.02 DESCRIPTION

The Contractor shall furnish and install pre-cast concrete utility box(es) as indicated on the Construction Drawings. Proposed designs must be accompanied by Shop Drawings and engineering calculations, signed and sealed by an engineer registered in the State of Florida.

1.03 SUBMITTALS

- A. Shop Drawings: Submit shop drawings prepared by an experienced professional detailer showing complete information for fabrication and installation of pre-cast concrete units. Indicate unit dimensions and cross-section; fabrication tolerances; location, size, and type of reinforcement, including special reinforcement; and lifting devices necessary for handling and erection.
1. Shop layout, dimensions, and identification of each pre-cast unit corresponding to sequence and procedure of installation.
 2. Indicate welded connections by AWS standard symbols. Detail inserts, connections, and joints, including accessories and construction at openings in precast units.
 3. Quantities, dimensions, and locations of sleeves, anchors, brackets, inserts, reglets, accessories, and methods of securing same in forms.
 4. Casting, consolidating, and finishing procedures.
 5. Include setting diagrams and instructions as required for installation.
- B. Product Data: Submit manufacturer's product data of manufactured products and accessories. Include manufacturer's detailed drawings and dimensions when applicable.
- C. Quality Assurance Submittals:
1. Submit qualifications of fabricator including a list of three successfully completed pre-cast jobs of similar type and size to the project. Include a

PART H
TECHNICAL PROVISIONS
Lake Anderson Stormwater Treatment System

detailed description of the fabricated structure, project name, location, general contractor, and engineer.

2. For welders, furnish welding certificates or affidavits attesting to the welders' qualifications to perform the indicated and specified welding. Welders shall be pre-qualified in accordance with AWS D1.1 or AWS D1.4, as applicable to the work.

1.04 HANDLING, SHIPPING, AND STORAGE

- A. Transport, handle, and store pre-cast units in a manner that will prevent damage to the units. Units shall be handled such that the points of the support and direction of the reactions with respect to the unit are approximately the same during transportation and storage as when the unit is in the final position.
- B. Store units in a manner that will prevent cracking, distortion, staining, or other damage. Units shall be stored above-ground on skids or other supports to keep items free of dirt and other foreign debris.
- C. Units damaged by improper storage or handling shall be replaced or repaired to the satisfaction of the Engineer.

PART 2 – PRODUCTS

2.01 MATERIALS

- A. Concrete shall be 5000 psi at 28 days with a maximum of 5-8% entrained air and comply with the applicable requirements of Technical Provision 400-7-77.
- B. Maximum total chloride ion content contributed from all ingredients of concrete including water, aggregates, cement, and admixtures measured as a weight percent of cement shall not exceed 0.06.

2.02 FABRICATION

- A. Field verify dimensions shown on the Construction Drawings prior to fabrication of any pre-cast concrete structure. Notify the Engineer of any differences between field measurements and those shown on the Construction Drawings.
- B. Forms shall be accurately constructed to produce units to dimension, shape, configuration, and profile indicated. When not otherwise indicated, construct forms to produce smooth concrete.
- C. Anchors, Lift Devices, and Accessories: Provide concrete inserts, reglets, anchors, brackets, and fasteners as indicated or required for fabrication and installation work. All items shall be zinc-coated or galvanized. Contractor shall select the lift devices, and shall be responsible for their performance and for any damage resulting from the use of faulty or inferior devices. Lift devices shall not be visible on exposed faces of pre-cast members. Provide a minimum of four for each unit.

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- D. Concrete reinforcement, lifting reinforcement, and concrete inserts and anchorage devices shall be placed and secured against movement as required.
- E. Concrete shall be placed and consolidated to shape, configuration, and dimensions indicated.
- F. Identification: Identify each pre-cast unit, in a semi-permanent manner, at the pre-casting yard with respect to the final location. Locate such identification and make it of such material as to withstand wear during shipping and damage from the elements for a period of not less than one year. Protect and preserve identification marks and restore any identification which becomes damaged or partially obliterated.
 - 1. The Engineer reserves the right to reject any unit, and require replacement, if the identification becomes obliterated.
- G. Repair or replace any unit which does not conform to the dimensions or structural standards shown on the Contract Drawings or specified herein, and which is not suitable for use as determined by the Engineer.

PART 3 - WARRANTY

All materials and workmanship outlined in this Section shall be warranted for a period of one (1) year or the extent of the manufacturer's warranty, whichever is greater, from the date of final acceptance by the Owner. The warranty shall include all materials, labor, and shipping (if necessary).

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TECHNICAL PROVISIONS
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B. ALUMINUM ACCESS DOOR

PART 1 – GENERAL

1.01 SCOPE OF WORK

Provide and install aluminum access door(s) for concrete utility box(es) as indicated on the Construction Drawings.

1.02 DESCRIPTION

The Contractor shall furnish and install aluminum access door(s) for concrete utility box(es) with the following specifications:

- A. Hatch must be designed for periodic water loading
- B. Lids constructed of ¼-inch thick diamond pattern aluminum plate
- C. All hinges and attaching hardware to be construction of 316 stainless steel
- D. Stainless steel slam lock with removable key
- E. Auto-lock T-316 stainless steel hold-open arm with release handle
- F. Single leaf construction
- G. Stainless steel compression spring assist
- H. H-20 load rating
- I. Recessed lifting handle
- J. Hatch shall be Halliday Products Model H1R3636 or approved equivalent

PART 2 – WARRANTY

The hatch and associated products shall have a lifetime warranty against defects in materials and workmanship.

Basis of Payment

Concrete utility box(es) with aluminum hatch cover(s) will be paid for at the contract unit price, completed, installed, and accepted. Payment shall be full compensation for work specified, including materials, labor, and appurtenances.

Payment shall be made under:

Item No. ATS-07	Concrete Utility Box with Aluminum Hatch	- Each
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END OF SECTION



St. Johns River

Water Management District

Ann B. Shortelle, Ph.D., Executive Director

4049 Reid Street • P.O. Box 1429 • Palatka, FL 32178-1429 • (386) 329-4500
On the Internet at floridaswater.com.

December 04, 2015

Orange County BCC Orange County BCC
Orange County EPD
201 S Rosalind Ave
Orlando, FL 32801-3527

SUBJECT: 64864-5
Lake Anderson Pond Enhancement Project

Dear Sir/Madam:

Enclosed is your individual permit issued by the St. Johns River Water Management District on December 04, 2015. This permit is a legal document and should be kept with your other important documents. Permit issuance does not relieve you from the responsibility of obtaining any necessary permits from any federal, state, or local agencies for your project.

Technical Staff Report:

If you wish to review a copy of the Technical Staff Report (TSR) that provides the District's staff analysis of your permit application, you may view the TSR by going to the Permitting section of the District's website at floridaswater.com/permitting. Using the "search applications and permits" feature, you can use your permit number or project name to find information about the permit. When you see the results of your search, click on the permit number and then on the TSR folder.

Noticing Your Permit:

For noticing instructions, please refer to the noticing materials in this package regarding closing the point of entry for someone to challenge the issuance of your permit. Please note that if a timely petition for administrative hearing is filed, your permit will become nonfinal and any activities that you choose to undertake pursuant to your permit will be at your own risk.

Compliance with Permit Conditions:

To submit your required permit compliance information, go to the District's website at floridaswater.com/permitting. Under the "Apply for a permit or submit compliance data" section, click to sign-in to your existing account or to create a new account. Select the "Compliance Submittal" tab, enter your permit number, and select "No Specific Date" for the Compliance Due Date Range. You will then be able to view all the compliance submittal requirements for your project. Select the compliance item that you are ready to submit and then attach the appropriate information or form. The forms to comply with your permit conditions are available at floridaswater.com/permitting under the section "Handbooks, forms, fees, final orders". Click on forms to view all permit compliance forms, then scroll to the ERP application forms section and

GOVERNING BOARD

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COCOA

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JACKSONVILLE

select the applicable compliance forms. Alternatively, if you have difficulty finding forms or need copies of the appropriate forms, please contact the Bureau of Regulatory Support at (386) 329-4570.

Transferring Your Permit:

Your permit requires you to notify the District within 30 days of any change in ownership or control of the project or activity covered by the permit, or within 30 days of any change in ownership or control of the real property on which the permitted project or activity is located or occurs. You will need to provide the District with the information specified in rule 62-330.340, Florida Administrative Code (F.A.C.). Generally, this will require you to complete and submit Form 62-330.340(1), "Request to Transfer Permit," available at <http://www.floridaswater.com/permitting/permitforms.html>.

Please note that a permittee is liable for compliance with the permit before the permit is transferred. The District, therefore, recommends that you request a permit transfer in advance in accordance with the applicable rules. You are encouraged to contact District staff for assistance with this process.

Thank you and please let us know if you have additional questions. For general questions contact e-permit@sjrwmd.com or (386) 329-4570.

Sincerely,



Margaret Daniels, Office Director
Office of Business and Administrative Services
St. Johns River Water Management District
4049 Reid Street
Palatka, FL 32177-2529
(386) 329-4570

Enclosures: Permit

cc: District Permit File

Consultant: Harvey H Harper
Env. Research & Design
3419 Trentwood Blvd Ste 100
Belle Isle, FL 32812-4850

ST. JOHNS RIVER WATER MANAGEMENT DISTRICT
Post Office Box 1429
Palatka, Florida 32178-1429

PERMIT NO: 64864-5

DATE ISSUED: December 04, 2015

PROJECT NAME: Lake Anderson Pond Enhancement Project

A PERMIT AUTHORIZING:

Construction of an Alternative Stormwater Treatment System with stormwater treatment using Alum for the Lake Anderson Pond Enhancement Project, a 0.1 - acre project to be constructed as per plans received by the District on November 9, 2015.

LOCATION:

Section(s): 8 Township(s): 23S Range(s): 30E
Orange County

Receiving Water Body:

Name	Class
Lake Anderson	III Fresh

ISSUED TO:

Orange County EPD
201 S Rosalind Ave
Orlando, FL 32801-3527

The permittee agrees to hold and save the St. Johns River Water Management District and its successors harmless from any and all damages, claims, or liabilities which may arise from permit issuance. Said application, including all plans and specifications attached thereto, is by reference made a part hereof.

This permit does not convey to the permittee any property rights nor any rights or privileges other than those specified herein, nor relieve the permittee from complying with any law, regulation or requirement affecting the rights of other bodies or agencies. All structures and works installed by permittee hereunder shall remain the property of the permittee.

This permit may be revoked, modified or transferred at any time pursuant to the appropriate provisions of Chapter 373, Florida Statutes.

PERMIT IS CONDITIONED UPON:

See conditions on attached "Exhibit A", dated December 04, 2015

AUTHORIZED BY: St. Johns River Water Management District
Division of Regulatory, Engineering and Environmental Services

By: 

John Julianna
Regulatory Coordinator

"EXHIBIT A"
CONDITIONS FOR ISSUANCE OF PERMIT NUMBER 64864-5
Lake Anderson Pond Enhancement Project
DATED December 04, 2015

1. All activities shall be implemented following the plans, specifications and performance criteria approved by this permit. Any deviations must be authorized in a permit modification in accordance with Rule 62-330.315, F.A.C. Any deviations that are not so authorized may subject the permittee to enforcement action and revocation of the permit under Chapter 373, F.S.
2. A complete copy of this permit shall be kept at the work site of the permitted activity during the construction phase, and shall be available for review at the work site upon request by the District staff. The permittee shall require the contractor to review the complete permit prior to beginning construction.
3. Activities shall be conducted in a manner that does not cause or contribute to violations of state water quality standards. Performance-based erosion and sediment control best management practices shall be installed immediately prior to, and be maintained during and after construction as needed, to prevent adverse impacts to the water resources and adjacent lands. Such practices shall be in accordance with the State of Florida Erosion and Sediment Control Designer and Reviewer Manual (Florida Department of Environmental Protection and Florida Department of Transportation June 2007), and the Florida Stormwater Erosion and Sedimentation Control Inspector's Manual (Florida Department of Environmental Protection, Nonpoint Source Management Section, Tallahassee, Florida, July 2008), which are both incorporated by reference in subparagraph 62-330.050(9)(b)5, F.A.C., unless a project-specific erosion and sediment control plan is approved or other water quality control measures are required as part of the permit.
4. At least 48 hours prior to beginning the authorized activities, the permittee shall submit to the District a fully executed Form 62-330.350(1), "Construction Commencement Notice,"[10-1-13], incorporated by reference herein (<http://www.flrules.org/Gateway/reference.asp?No=Ref-02505>), indicating the expected start and completion dates. A copy of this form may be obtained from the District, as described in subsection 62-330.010(5), F.A.C. If available, an District website that fulfills this notification requirement may be used in lieu of the form.
5. Unless the permit is transferred under Rule 62-330.340, F.A.C., or transferred to an operating entity under Rule 62-330.310, F.A.C., the permittee is liable to comply with the plans, terms and conditions of the permit for the life of the project or activity.
6. Within 30 days after completing construction of the entire project, or any independent portion of the project, the permittee shall provide the following to the Agency, as applicable:
 - a. For an individual, private single-family residential dwelling unit, duplex, triplex, or quadruplex — "Construction Completion and Inspection Certification for Activities Associated With a Private Single-Family Dwelling Unit" [Form 62-330.310(3)]; or
 - b. For all other activities — "As-Built Certification and Request for Conversion to Operational Phase" [Form 62-330.310(1)].
 - c. If available, an Agency website that fulfills this certification requirement may be used in lieu of the form.

7. If the final operation and maintenance entity is a third party:
 - a. Prior to sales of any lot or unit served by the activity and within one year of permit issuance, or within 30 days of as-built certification, whichever comes first, the permittee shall submit, as applicable, a copy of the operation and maintenance documents (see sections 12.3 thru 12.3.3 of Volume I) as filed with the Department of State, Division of Corporations and a copy of any easement, plat, or deed restriction needed to operate or maintain the project, as recorded with the Clerk of the Court in the County in which the activity is located.
 - b. Within 30 days of submittal of the as- built certification, the permittee shall submit "Request for Transfer of Environmental Resource Permit to the Perpetual Operation Entity" [Form 62-330.310(2)] to transfer the permit to the operation and maintenance entity, along with the documentation requested in the form. If available, an Agency website that fulfills this transfer requirement may be used in lieu of the form.
8. The permittee shall notify the District in writing of changes required by any other regulatory District that require changes to the permitted activity, and any required modification of this permit must be obtained prior to implementing the changes.
9. This permit does not:
 - a. Convey to the permittee any property rights or privileges, or any other rights or privileges other than those specified herein or in Chapter 62-330, F.A.C.;
 - b. Convey to the permittee or create in the permittee any interest in real property;
 - c. Relieve the permittee from the need to obtain and comply with any other required federal, state, and local authorization, law, rule, or ordinance; or
 - d. Authorize any entrance upon or work on property that is not owned, held in easement, or controlled by the permittee.
10. Prior to conducting any activities on state-owned submerged lands or other lands of the state, title to which is vested in the Board of Trustees of the Internal Improvement Trust Fund, the permittee must receive all necessary approvals and authorizations under Chapters 253 and 258, F.S. Written authorization that requires formal execution by the Board of Trustees of the Internal Improvement Trust Fund shall not be considered received until it has been fully executed.
11. The permittee shall hold and save the District harmless from any and all damages, claims, or liabilities that may arise by reason of the construction, alteration, operation, maintenance, removal, abandonment or use of any project authorized by the permit.
12. The permittee shall notify the District in writing:
 - a. Immediately if any previously submitted information is discovered to be inaccurate; and
 - b. Within 30 days of any conveyance or division of ownership or control of the property or the system, other than conveyance via a long-term lease, and the new owner shall request transfer of the permit in accordance with Rule 62-330.340, F.A.C. This does not apply to the sale of lots or units in residential or commercial subdivisions or condominiums where the stormwater management system has been completed and converted to the operation phase.

13. Upon reasonable notice to the permittee, District staff with proper identification shall have permission to enter, inspect, sample and test the project or activities to ensure conformity with the plans and specifications authorized in the permit.
14. If any prehistoric or historic artifacts, such as pottery or ceramics, stone tools or metal implements, dugout canoes, or any other physical remains that could be associated with Native American cultures, or early colonial or American settlement are encountered at any time within the project site area, work involving subsurface disturbance in the immediate vicinity of such discoveries shall cease. The permittee or other designee shall contact the Florida Department of State, Division of Historical Resources, Compliance and Review Section, at (850) 245-6333 or (800) 847-7278, as well as the appropriate permitting agency office. Such subsurface work shall not resume without verbal or written authorization from the Division of Historical Resources. If unmarked human remains are encountered, all work shall stop immediately and notification shall be provided in accordance with Section 872.05, F.S.
15. Any delineation of the extent of a wetland or other surface water submitted as part of the permit application, including plans or other supporting documentation, shall not be considered binding unless a specific condition of this permit or a formal determination under Rule 62-330.201, F.A.C., provides otherwise.
16. The permittee shall provide routine maintenance of all components of the stormwater management system to remove trapped sediments and debris. Removed materials shall be disposed of in a landfill or other uplands in a manner that does not require a permit under Chapter 62-330, F.A.C., or cause violations of state water quality standards.
17. This permit is issued based on the applicant's submitted information that reasonably demonstrates that adverse water resource-related impacts will not be caused by the completed permit activity. If any adverse impacts result, the District will require the permittee to eliminate the cause, obtain any necessary permit modification, and take any necessary corrective actions to resolve the adverse impacts.
18. A Recorded Notice of Environmental Resource Permit may be recorded in the county public records in accordance with Rule 62-330.090(7), F.A.C. Such notice is not an encumbrance upon the property.
19. This permit for construction will expire five years from the date of issuance.
20. All wetland areas or water bodies that are outside the specific limits of construction authorized by this permit must be protected from erosion, siltation, scouring or excess turbidity, and dewatering.
21. The operation and maintenance entity shall inspect the stormwater or surface water management system once within two years after the completion of construction and every two years thereafter to determine if the system is functioning as designed and permitted. The operation and maintenance entity must maintain a record of each required inspection, including the date of the inspection, the name and contact information of the inspector, and whether the system was functioning as designed and permitted, and make such record available for inspection upon request by the District during normal business hours. If at any time the system is not functioning as designed and permitted, then within 30 days the entity shall submit a report electronically or in writing to the District using Form 62-330.311(1), "Operation and Maintenance Inspection Certification," describing the remedial actions taken to resolve the failure or deviation.
22. The proposed project must be constructed and operated as per plans and calculations received by the District on November 9, 2015.

23. During the alum dosing, pH levels in the pond shall be recorded by the pH data logger. The pH data logger records shall be maintained by the permittee. These records must be submitted to the District within 30 days of the end of each calendar year.

Notice Of Rights

1. A person whose substantial interests are or may be affected has the right to request an administrative hearing by filing a written petition with the St. Johns River Water Management District (District). Pursuant to Chapter 28-106 and Rule 40C-1.1007, Florida Administrative Code, the petition must be filed (received) either by delivery at the office of the District Clerk at District Headquarters, P. O. Box 1429, Palatka Florida 32178-1429 (4049 Reid St., Palatka, FL 32177) or by e-mail with the District Clerk at Clerk@sjrwmd.com, within twenty-six (26) days of the District depositing the notice of District decision in the mail (for those persons to whom the District mails actual notice), within twenty-one (21) days of the District emailing the notice of District decision (for those persons to whom the District emails actual notice), or within twenty-one (21) days of newspaper publication of the notice of District decision (for those persons to whom the District does not mail or email actual notice). A petition must comply with Sections 120.54(5)(b)4. and 120.569(2)(c), Florida Statutes, and Chapter 28-106, Florida Administrative Code. The District will not accept a petition sent by facsimile (fax), as explained in paragraph no. 4 below.
2. Please be advised that if you wish to dispute this District decision, mediation may be available and that choosing mediation does not affect your right to an administrative hearing. If you wish to request mediation, you must do so in a timely-filed petition. If all parties, including the District, agree to the details of the mediation procedure, in writing, within 10 days after the time period stated in the announcement for election of an administrative remedy under Sections 120.569 and 120.57, Florida Statutes, the time limitations imposed by Sections 120.569 and 120.57, Florida Statutes, shall be tolled to allow mediation of the disputed District decision. The mediation must be concluded within 60 days of the date of the parties' written agreement, or such other timeframe agreed to by the parties in writing. Any mediation agreement must include provisions for selecting a mediator, a statement that each party shall be responsible for paying its pro-rata share of the costs and fees associated with mediation, and the mediating parties' understanding regarding the confidentiality of discussions and documents introduced during mediation. If mediation results in settlement of the administrative dispute, the District will enter a final order consistent with the settlement agreement. If mediation terminates without settlement of the dispute, the District will notify all the parties in writing that the administrative hearing process under Sections 120.569 and 120.57, Florida Statutes, is resumed. Even if a party chooses not to engage in formal mediation, or if formal mediation does not result in a settlement agreement, the District will remain willing to engage in informal settlement discussions.
3. A person whose substantial interests are or may be affected has the right to an informal administrative hearing pursuant to Sections 120.569 and 120.57(2), Florida Statutes, where no material facts are in dispute. A petition for an informal hearing must also comply with the requirements set forth in Rule 28-106.301, Florida Administrative Code.

Notice Of Rights

4. A petition for an administrative hearing is deemed filed upon receipt of the complete petition by the District Clerk at the District Headquarters in Palatka, Florida during the District's regular business hours. The District's regular business hours are 8:00 a.m. – 5:00 p.m., excluding weekends and District holidays. Petitions received by the District Clerk after the District's regular business hours shall be deemed filed as of 8:00 a.m. on the District's next regular business day. The District's acceptance of petitions filed by e-mail is subject to certain conditions set forth in the District's Statement of Agency Organization and Operation (issued pursuant to Rule 28-101.001, Florida Administrative Code), which is available for viewing at floridaswater.com. These conditions include, but are not limited to, the petition being in the form of a PDF or TIFF file and being capable of being stored and printed by the District. Further, pursuant to the District's Statement of Agency Organization and Operation, attempting to file a petition by facsimile is prohibited and shall not constitute filing.
5. Failure to file a petition for an administrative hearing within the requisite timeframe shall constitute a waiver of the right to an administrative hearing. (Rule 28-106.111, Florida Administrative Code).
6. The right to an administrative hearing and the relevant procedures to be followed are governed by Chapter 120, Florida Statutes, Chapter 28-106, Florida Administrative Code, and Rule 40C-1.1007, Florida Administrative Code. Because the administrative hearing process is designed to formulate final agency action, the filing of a petition means the District's final action may be different from the position taken by it in this notice. A person whose substantial interests are or may be affected by the District's final action has the right to become a party to the proceeding, in accordance with the requirements set forth above.
7. Pursuant to Section 120.68, Florida Statutes, a party to the proceeding before the District who is adversely affected by final District action may seek review of the action in the District Court of Appeal by filing a notice of appeal pursuant to Rules 9.110 and 9.190, Florida Rules of Appellate Procedure, within 30 days of the rendering of the final District action.
8. A District action is considered rendered, as referred to in paragraph no. 7 above, after it is signed on behalf of the District and filed by the District Clerk.
9. Failure to observe the relevant timeframes for filing a petition for judicial review as described in paragraph no. 7 above will result in waiver of that right to review.

Notice Of Rights

Certificate of Service

I HEREBY CERTIFY that a copy of the foregoing Notice of Rights has been sent to the permittee:

Orange County BCC Orange County BCC
Orange County EPD
201 S Rosalind Ave
Orlando, FL 32801-3527

This 4th day of December, 2015.



Margaret Daniels, Office Director
Office of Business and Administrative Services
St. Johns River Water Management District
4049 Reid Street
Palatka, FL 32177-2529
(386) 329-4570

Permit Number: 64864-5

NOTICING INFORMATION

Dear Permittee:

Please be advised that the St. Johns River Water Management District will not publish a notice in the newspaper advising the public that it has issued a permit for this project.

Newspaper publication, using the District's notice form, notifies members of the public of their right to challenge the issuance of the permit. If proper notice is given by newspaper publication, then there is a 21-day time limit for someone to file a petition for an administrative hearing to challenge the issuance of the permit.

To close the point of entry for filing a petition, you may publish (at your own expense) a one-time notice of the District's decision in a newspaper of general circulation within the affected area as defined in Section 50.011 of the Florida Statutes. If you do not publish a newspaper notice to close the point of entry, the time to challenge the issuance of your permit will not expire and someone could file a petition even after your project is constructed.

A copy of the notice form and a partial list of newspapers of general circulation are attached for your convenience. However, you are not limited to those listed newspapers. If you choose to close the point of entry and the notice is published, the newspaper will return to you an affidavit of publication. In that event, it is important that you either submit a scanned copy of the affidavit by emailing it to compliancesupport@sjrwmd.com (preferred method) or send a copy of the original affidavit to:

Margaret Daniels, Office Director
Office of Business and Administrative Services
4049 Reid Street
Palatka, FL 32177

If you have any questions, please contact the Bureau of Regulatory Support at (386) 329-4570.

Sincerely,



Margaret Daniels, Office Director
Office of Business and Administrative Services

NOTICE OF AGENCY ACTION TAKEN BY THE
ST. JOHNS RIVER WATER MANAGEMENT DISTRICT

Notice is given that the following permit was issued on _____:

(Name and address of applicant) _____
permit# _____. The project is located in _____ County, Section
_____, Township _____ South, Range _____ East. The permit authorizes a surface
water management system on _____ acres for _____ known as
_____. The receiving water body is _____.

A person whose substantial interests are or may be affected has the right to request an administrative hearing by filing a written petition with the St. Johns River Water Management District (District). Pursuant to Chapter 28-106 and Rule 40C-1.1007, Florida Administrative Code (F.A.C.), the petition must be filed (received) either by delivery at the office of the District Clerk at District Headquarters, P.O. Box 1429, Palatka FL 32178-1429 (4049 Reid St, Palatka, FL 32177) or by e-mail with the District Clerk at Clerk@sjrwm.com, within twenty-one (21) days of newspaper publication of the notice of District decision (for those persons to whom the District does not mail or email actual notice). A petition must comply with Sections 120.54(5)(b)4. and 120.569(2)(c), Florida Statutes (F.S.), and Chapter 28-106, F.A.C. The District will not accept a petition sent by facsimile (fax). Mediation pursuant to Section 120.573, F.S., may be available and choosing mediation does not affect your right to an administrative hearing.

A petition for an administrative hearing is deemed filed upon receipt of the complete petition by the District Clerk at the District Headquarters in Palatka, Florida during the District's regular business hours. The District's regular business hours are 8 a.m. – 5 p.m., excluding weekends and District holidays. Petitions received by the District Clerk after the District's regular business hours shall be deemed filed as of 8 a.m. on the District's next regular business day. The District's acceptance of petitions filed by e-mail is subject to certain conditions set forth in the District's Statement of Agency Organization and Operation (issued pursuant to Rule 28-101.001, Florida Administrative Code), which is available for viewing at floridaswater.com. These conditions include, but are not limited to, the petition being in the form of a PDF or TIFF file and being capable of being stored and printed by the District. Further, pursuant to the District's Statement of Agency Organization and Operation, attempting to file a petition by facsimile (fax) is prohibited and shall not constitute filing.

The right to an administrative hearing and the relevant procedures to be followed are governed by Chapter 120, Florida Statutes, Chapter 28-106, Florida Administrative Code, and Rule 40C-1.1007, Florida Administrative Code. Because the administrative hearing process is designed to formulate final agency action, the filing of a petition means the District's final action may be different from the position taken by it in this notice. **Failure to file a petition for an administrative hearing within the requisite time frame shall constitute a waiver of the right to an administrative hearing. (Rule 28-106.111, F.A.C.).**

If you wish to do so, please visit http://floridaswater.com/nor_dec/ to read the complete Notice of Rights to determine any legal rights you may have concerning the District's decision(s) on the permit application(s) described above. You can also request the Notice of Rights by contacting the Director of Regulatory Support, 4049 Reid St., Palatka, FL 32177-2529, tele. no. (386)329-4570.

NEWSPAPER ADVERTISING

ALACHUA

The Alachua County Record, Legal Advertising
P. O. Box 806
Gainesville, FL 32602
352-377-2444/ fax 352-338-1986

BRAFORD

Bradford County Telegraph, Legal Advertising
P. O. Drawer A
Starke, FL 32901
904-964-6305/ fax 904-964-8628

CLAY

Clay Today, Legal Advertising
1560 Kinsley Ave., Suite 1
Orange Park, FL 32073
904-264-3200/ fax 904-264-3285

FLAGLER

Flagler Tribune, c/o News Journal
P. O. Box 2831
Daytona Beach, FL 32120-2831
386- 681-2322

LAKE

Daily Commercial, Legal Advertising
P. O. Drawer 490007
Leesburg, FL 34749
352-365-8235/fax 352-365-1951

NASSAU

News-Leader, Legal Advertising
P. O. Box 766
Fernandina Beach, FL 32035
904-261-3696/fax 904-261-3698

ORANGE

Sentinel Communications, Legal Advertising
633 N. Orange Avenue
Orlando, FL 32801
407-420-5160/ fax 407-420-5011

PUTNAM

Palatka Daily News, Legal Advertising
P. O. Box 777
Palatka, FL 32178
386-312-5200/ fax 386-312-5209

SEMINOLE

Seminole Herald, Legal Advertising
300 North French Avenue
Sanford, FL 32771
407-323-9408

BAKER

Baker County Press, Legal Advertising
P. O. Box 598
MacLenny, FL 32063
904-259-2400/ fax 904-259-6502

BREVARD

Florida Today, Legal Advertising
P. O. Box 419000
Melbourne, FL 32941-9000
321-242-3832/ fax 321-242-6618

DUVAL

Daily Record, Legal Advertising
P. O. Box 1769
Jacksonville, FL 32201
904-356-2466 / fax 904-353-2628

INDIAN RIVER

Vero Beach Press Journal, Legal Advertising
P. O. Box 1268
Vero Beach, FL 32961-1268
772-221-4282/ fax 772-978-2340

MARION

Ocala Star Banner, Legal Advertising
2121 SW 19th Avenue Road
Ocala, FL 34474
352-867-4010/fax 352-867-4126

OKEECHOBEE

Okeechobee News, Legal Advertising
P. O. Box 639
Okeechobee, FL 34973-0639
863-763-3134/fax 863-763-5901

OSCEOLA

Little Sentinel, Legal Advertising
633 N. Orange Avenue
Orlando, FL 32801
407-420-5160/ fax 407-420-5011

ST. JOHNS

St. Augustine Record, Legal Advertising
P. O. Box 1630
St. Augustine, FL 32085
904-819-3436

VOLUSIA

News Journal Corporation, Legal Advertising
P. O. Box 2831
Daytona Beach, FL 32120-2831
(386) 681-2322