BID DOCUMENTS AND TECHNICAL SPECIFICATIONS

BROWN PLACE PUMP STATION & CONTROLS UPGRADE (EQUIPMENT ONLY)

PREPARED FOR

OKALOOSA COUNTY WATER & SEWER

BID #: ITB WS 66-20
BID OPENS: August 12, 2020 @ 3:15 P.M.

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PART 3 – APPENDIX A – DRAWINGS

INVITATION TO BID (ITB) & RESPONDENT'S ACKNOWLEDGEMENT

ITB TITLE:
BROWN PLACE PUMP STATION & CONTROLS UPGRADE (EQUIPMENT ONLY)

ITB NUMBER:
ITB WS 66-20

ISSUE DATE:	July 20, 2020	
LAST DAY FOR QUESTIONS:	August 4, 2020	3:00 P.M. CST
ITB OPENING DATE & TIME:	August 12, 2020	3:00 P.M. CST

NOTE: BIDS RECEIVED AFTER THE BID OPENING DATE & TIME WILL NOT BE CONSIDERED.

Okaloosa County, Florida solicits your company to submit a bid on the above referenced goods or services. All terms, specifications and conditions set forth in this ITB are incorporated into your response. A bid will not be accepted unless all conditions have been met. All bids must have an authorized signature in the space provided below. All bids must be sealed and received by the Okaloosa County Purchasing Department by the "ITB Opening Date & Time" referenced above. The official clock for the purpose of receiving bids is located in the Okaloosa County Purchasing Department, 5479A Old Bethel Rd., Crestview, FL 32536. All envelopes containing sealed bids must reference the "ITB Title", "ITB Number" and the "ITB Opening Date & Time". Okaloosa County is not responsible for lost or late delivery of bids by the U.S. Postal Service or other delivery services used by the respondent. Neither faxed nor electronically submitted bids will be accepted. Bids may not be withdrawn for a period of ninety (90) days after the bid opening unless otherwise specified.

RESPONDENT ACKNOWLEDGEMENT FORM BELOW MUST BE COMPLETED, SIGNED, AND RETURNED AS PART OF YOUR BID. BIDS WILL NOT BE ACCEPTED WITHOUT THIS FORM, SIGNED BY AN AUTHORIZED AGENT OF THE RESPONDENT.

COMPANY NAME _____

MAILING ADDRESS _____

_____

CITY, STATE, ZIP _____

FEDERAL EMPLOYER'S IDENTIFICATION NUMBER (FEIN): _____

TELEPHONE: _____ EXT: _____ FAX: _____

EMAIL: _____

I CERTIFY THAT THIS BID IS MADE WITHOUT PRIOR UNDERSTANDING, AGREEMENT, OR CONNECTION WITH ANY OTHER RESPONDENT SUBMITTING A BID FOR THE SAME MATERIALS, SUPPLIES, EQUIPMENT OR SERVICES, AND IS IN ALL RESPECTS FAIR AND WITHOUT COLLUSION OR FRAUD. I AGREE TO ABIDE BY ALL TERMS AND CONDITIONS OF THIS BID AND CERTIFY THAT I AM AUTHORIZED TO SIGN THIS BID FOR THE RESPONDENT.

AUTORIZED SIGNATURE: _____ PRINTED NAME: _____

TITLE: _____ DATE: _____

Rev: September 22, 2015

NOTICE TO RESPONDENTS

ITB WS 66-20

Notice is hereby given that the Board of County Commissioners of Okaloosa County, FL, will accept sealed bids until **3:00 p.m. (CST) August 12, 2020**, for **Brown Place Pump Station and Controls Upgrade**.

Interested respondents desiring consideration shall provide an original and two (2) copies (total three (3)) of their Invitation to Bids (ITB) response with the respondent's areas of expertise identified. Submissions shall be portrait orientation, unbound, and 8 ½" x 11" where practical. **All originals must have original signatures in blue ink.**

Proposal documents are available for download by accessing the following sites:

http://www.myokaloosa.com/purchasing/home

https://www.bidnetdirect.com/florida

https://www.demandstar.com/supplier/bids/agency_inc/bid_list.asp?f=search&mi=2442519

At **3:00 p.m. (CST), August 12, 2020**, all bids will be opened and read aloud. All bids must be in sealed envelopes reflecting on the outside thereof the Respondent's name and "**Brown Place Pump Station and Controls Upgrade**". The Board of County Commissioners will consider all bids properly submitted at its scheduled bid opening located at 5479A Old Bethel Rd., Crestview, FL 32536. Bids may be submitted to the Okaloosa County Purchasing Department prior to bid opening or delivered to the Okaloosa County Purchasing Department, 5479A Old Bethel Rd., Crestview, FL 32536.

NOTE: Crestview, FL is not a next day guaranteed delivery location by most delivery services. Respondents using mail or delivery services assume all risks of late or non-delivery.

The County reserves the right to award the bid to the lowest responsive respondent and to waive any irregularity or technicality in bids received. Okaloosa County shall be the sole judge of the bid and the resulting negotiated agreement that is in its best interest and its decision shall be final.

Any Respondent failing to mark outside of the envelope as set forth herein may not be entitled to have their bid considered.

All bids should be addressed as follows:

Brown Place Pump Station &
Controls Upgrade
ITB WS 66-20

Okaloosa County Purchasing Department
5479A Old Bethel Rd.
Crestview FL 32536

Jeff Hyde
Purchasing Manager

Date

OKALOOSA COUNTY
BOARD OF COUNTY COMMISSIONERS

Robert A. "Trey" Goodwin, III
Chairman

BID REQUIREMENTS

BID #: ITB WS 66-20

BID ITEM: Brown Place Pump Station & Controls Upgrade

SCOPE

Equipment covered by this bid includes the manufacture, deliver and start-up services for **Brown Place Pump Station & Controls Upgrade** specified herein. All materials shall be manufactured within the continental United States. No substitutions will be accepted unless approved by the Purchasing and the Water & Sewer Departments. **Note: Evaluation of bid will be based on "TOTAL BASE BID AMOUNT" for each Alternative listed. All bids shall include itemized unit cost for each identified items.**

Price shall be guaranteed for 90 days after the bids are read and received. Price shall include delivery of all equipment and appurtenances to the following location:

1804 LEWIS TURNER BLVD. FORT WALTON BEACH, FL. 32547
OWNER Delivery Contact:
Mark Griffin, Okaloosa County Water & Sewer
850-651-7176 or mgriffin@myokaloosa.com

Vendor is required to coordinate fabrication and shipping with the installation Contractor once a construction contract has been executed between the County and a Contractor.

THE FOLLOWING MUST BE SUBMITTED WITH THE PROPOSAL:

- A list of any and all exceptions to the Bid and Contract Documents.
- Dimensional and weight information on components and assemblies.
- Catalog information and cuts.
- Manufacturer's specifications, including materials description and paint system. Also a list of any requested exceptions to the Bid and Contract Documents.
- Performance data and pump curves, as applicable. Horsepower of all motors supplied.
- Outside utility requirements for each component, such as water, power, air, etc.
- Addresses and phone numbers of nearest service center and a listing of the manufacturers or manufacturer's representatives' services available at this location.
- Addresses and phone numbers for the nearest parts warehouse capable of providing mil parts replacement and/or repair service.
- A list of the three most recent installations where similar equipment by the manufacturer or manufacturer's representative is currently in service; include contact name, telephone number, mailing address, and the names of the Engineer, Owner, and installation contractor; if three installations do not exist, the list shall include all that do exist, if any.
- Description of structural, electrical, mechanical, and all other changes or modifications necessary to adapt the equipment or system to the arrangement shown and/or functions described on the Drawings and in the Technical Specifications.
- Any additional information requested by the OWNER.

THE FOLLOWING SHALL BE SUPPLIED PRIOR TO CONTRACT AWARD

- A SUPPLY BOND in the amount at least equal to 5% of the Base Bid Amount.

GENERAL BID CONDITIONS

PRE-BID ACTIVITY -

Except as provided in this section, respondents are prohibited from contacting or lobbying the County, County Administrator, Commissioners, County staff, and Review Committee members, or any other person authorized on behalf of the County related or involved with the solicitation. All inquiries on the scope of work, specifications, additional requirements, attachments, terms and general conditions or instructions, or any issue must be directed in writing, by US mail or email to:

Okaloosa County Purchasing Department
5479A Old Bethel Road
Crestview, FL 32536
Email: dmason@myokaloosa.com
(850) 689-5960

All questions or inquiries must be received no later than the last day for questions (reference ITB & Respondent's Acknowledgement form). Any addenda or other modification to the bid documents will be issued by the County five (5) days prior to the date and time of bid closing, as written addenda, and will be posted to and the Okaloosa County website at https://www.myokaloosa.com and the Bidnet website at https://www.bidnetdirect.com/florida.

Such written addenda or modification shall be part of the bid documents and shall be binding upon each respondent. Each respondent is required to acknowledge receipt of any and all addenda in writing and submit with their bid. No respondent may rely upon any verbal modification or interpretation.

PREPARATION OF BID – The bid form is included with the bid documents. Additional copies may be obtained from the County. The respondent shall submit bids in accordance with the public notice.

All blanks in the bid documents shall be completed by printing in ink or by typewriter in both words and numbers with the amounts extended, totaled and the bid signed. A bid price shall be indicated for each section, bid item, alternative, adjustment unit price item, and unit price item listed therein, or the words "No Bid", "No Change", or "Not Applicable" entered. No changes shall be made to the phraseology of the form or in the items mentioned therein. In case of any discrepancy between the written amount and the numerical figures, the written amount shall govern. Any bid which contains any omissions, erasures, alterations, additions, irregularities of any kind, or items not called for which shall in any manner fail to conform to the conditions of public notice inviting bids may be rejected.

A bid submitted by a partnership shall be executed in the partnership name and signed by a partner (whose title must appear under the signature). The official address of the partnership shall be shown below the signature.

A bid submitted by a limited liability company shall be executed in the name of the firm by a member and accompanied by evidence of authority to sign. The state of formation of the firm and the official address of the firm must be shown below the signature.

A bid submitted by an individual shall show the respondent's name and official address.

A bid submitted by a joint venture shall be executed by each joint venture in the manner indicated on the bid form. The official address of the joint venture must be shown below the signature. It is preferred that all signatures be in blue ink with the names type or printed below the signature. Okaloosa County does not accept electronic signatures.

The bid shall contain an acknowledgement of receipt of all Addenda, the numbers of which shall be filled in on the form. The address and telephone # for communications regarding the bid shall be shown.

If the respondent is an out-of-state corporation, the bid shall contain evidence of respondent's authority and qualification to do business as an out-of-state corporation in the State of Florida. A state contractor license # for the State of Florida shall also be included on the bid form. Respondent shall be licensed in accordance with the requirements of Chapter 489, Florida Statutes.

INTEGRITY OF BID DOCUMENTS - Respondents shall use the original Bid documents provided by the Purchasing Department and enter information only in the spaces where a response is requested. Respondents may use an attachment as an addendum to the Bid documents if sufficient space is not available. Any modifications or alterations to the original bid documents by the respondent, whether intentional or otherwise, will constitute grounds for rejection of a bid. Any such modification or alteration that a respondent wish to propose must be clearly stated in the respondent's response in the form of an addendum to the original bid documents.

SUBMITTAL OF BID – A bid shall be submitted no later than the date and time prescribed and at the place indicated in the advertisement or invitation to bid and shall be enclosed in an opaque sealed envelope plainly marked with the project title (and, if applicable, the designated portion of the project for which the bid is submitted), the name and address of the respondent, and shall be accompanied by the bid security and other required documents. It is the respondent's responsibility to assure that its bid is delivered at the proper time and place. Offers by telegram, facsimile, or telephone will **NOT** be accepted.

Note: Crestview is not a next day delivery site for overnight carriers.

MODIFICATION & WITHDRAWAL OF BID - A bid may be modified or withdrawn by an appropriate document duly executed in the manner that a bid must be executed and delivered to the place where bids are to be submitted prior to the date and time for the opening of bids.

If within 24 hours after bids are opened any respondent files a duly signed written notice with the County and promptly thereafter demonstrates to the reasonable satisfaction of the County that there was a material substantial mistake in the preparation of its bid, that respondent may withdraw its bid, and the bid security may be returned. Thereafter, if the work is rebid, that respondent will be disqualified from 1) further bidding on the work, and 2) doing any work on the contract, either as a subcontractor or in any other capacity.

BIDS TO REMAIN SUBJECT TO ACCEPTANCE – All bids will remain subject to acceptance or rejection for ninety (90) calendar days after the day of the bid opening, but the County may, in its sole discretion, release any bid and return the bid security prior to the end of this period.

IDENTICAL TIE BIDS - – In cases of identical procurement responses, the award shall be determined either by lot or on the basis of factors deemed to serve the best interest of the County. In the case of the latter, there must be adequate documentation to support such a decision.

CONDITIONAL & INCOMPLETE BIDS - Okaloosa County specifically reserves the right to reject any conditional bid and bids which make it impossible to determine the true amount of the bid.

PRICING – The bid price shall include all equipment, labor, materials, freight, taxes etc. Okaloosa County reserves the right to select that bid most responsive to our needs.

ADDITION/DELETION OF ITEM – The County reserves the right to add or delete any item from this bid or resulting contract when deemed to be in the County's best interest.

SPECIFICATION EXCEPTIONS – Specifications are based on the most current literature available. Respondent shall clearly list any change in the manufacturer's specifications which conflict with the bid specifications. Respondent must also explain any deviation from the bid specification in writing, as a foot note on the applicable bid page and enclose a copy of the manufacturer's specifications data detailing the changed item(s) with their bid. Failure of the respondent to comply with these provisions will result in respondents being held responsible for all costs required to bring the equipment in compliance with bid specifications.

APPLICABLE LAWS & REGULATIONS – All applicable Federal and State laws, County and municipal ordinances, orders, rules and regulations of all authorities having jurisdiction over the project shall apply to the bid throughout, and they will be deemed to be included in the contract the same as though they were written in full therein.

DISQUALIFICATION OF RESPONDENTS - Any of the following reasons may be considered as sufficient for the disqualification of a respondent and the rejection of its bid:

Submission of more than one proposal for the same work from an individual, firm or corporation under the same or different name.

Evidence that the respondent has a financial interest in the firm of another respondent for the same work.

Evidence of collusion among respondents. Participants in such collusion will receive no recognition as respondents for any future work of the County until such participant has been reinstated as a qualified respondent.

Uncompleted work which in the judgment of the County might hinder or prevent the prompt completion of additional work if awarded.

Failure to pay or satisfactorily settle all bills due for labor and material on former contracts in force at the time of advertisement of proposals.
Default under previous contract.

Listing of the respondent by any Local, State or Federal Government on its barred/suspended vendor list.

AWARD OF BID

Okaloosa County Review - Okaloosa County designated Staff will review all bids and will participate in the Recommendation to Award.

The County will award the bid to the responsive and responsible vendor(s) with the lowest responsive bid(s), and the County reserves the right to award the bid to the respondent submitting a responsive bid with a resulting negotiated agreement which is most advantageous and in the best interest of the County, and to reject any and all bids or to waive any irregularity or technicality in bids received. Okaloosa County shall be the sole judge of the bid and the resulting negotiated agreement that is in its best interest and its decision shall be final.

Okaloosa County reserves the right to waive any informalities or reject any and all bids, in whole or part, to utilize any applicable state contracts in lieu of or in addition to this bid and to accept the bid that in its judgment will best serve the interest of the County.

Okaloosa County specifically reserves the right to reject any conditional bids and will normally reject those which made it impossible to determine the true amount of the bid. Each item must be bid separately and no attempt is to be made to tie any item or items to any other item or items.

DISCRIMINATION - An entity or affiliate who has been placed on the discriminatory vendor list may not submit a bid on a contract to provide 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 award or perform work as a contractor, supplier, subcontractor, or consultant under contract with any public entity, and may not transact business with any public entity.

PUBLIC ENTITY CRIME INFORMATION - Pursuant to Florida Statute 287.133, a respondent may not be awarded or perform work as a contractor, supplier, subcontractor, or consultant under a contract with any public entity; and may not transact business with any public entity in excess of the threshold amount provided in s. 287.017 for CATEGORY TWO for a period of 36 months following the date of being placed on the convicted vendor list.

CONE OF SILENCE CLAUSE - The Okaloosa County Board of County Commissioners has established a solicitation silence policy **(Cone of Silence Clause)** that prohibits oral and written communication regarding all formal solicitations for goods and services (formal bids, Request for Proposals, Requests for Qualifications) issued by the Board through the County Purchasing Department. The period commences from the date of advertisement until award of contract.

All communications shall be directed to the Purchasing Department.

Note: For respondent's convenience, this certification form is enclosed and is made a part of the bid package.

REORGANIZATION OR BANKRUPTCY PROCEEDINGS – Bids will not be considered from respondents who are currently involved in official financial reorganization or bankruptcy proceedings.

INVESTIGATION OF RESPONDENT – The County may make such investigations, as it deems necessary to determine the stability of the respondent to perform the work and that there is no conflict of interest as it relates to the project. The respondent shall furnish to the Owner any additional information and financial data for this purpose as the County may request.

Note: For respondent's convenience, this certification form is enclosed and is made a part of the bid package.

REVIEW OF PROCUREMENT DOCUMENTS - Per Florida Statute 119.071 (2) 2 sealed bids, proposals, or replies received by the County pursuant to a competitive solicitation are exempt from public disclosure until such time as the County provides notice of an intended decision or until 30 days after opening the bids, proposals, or final replies, whichever is earlier.

COMPLIANCE WITH FLORIDA STATUTE 119.0701 - The Respondent shall comply with all the provisions of section 119.0701, Florida Statutes relating to the public records which requires, among other things, that the Respondent: (a) Keep and maintain public records; (b) Provide the public with access to public records on the same terms and conditions that the public agency would provide the records; (c) ensure that public records that are exempt or confidential and exempt from public records disclosure requirements are not disclosed except as authorized by law; and (d) Meet all requirements for retaining public records and transfer, at no cost, to the public agency all public records in possession of the respondent upon termination of the contract.

IF THE CONTRACTOR HAS QUESTIONS REGARDING THE APPLICATION OF CHAPTER 119, FLORIDA STATUTES, TO THE CONTRACTOR'S DUTY TO PROVIDE PUBLIC RECORDS RELATING TO THIS CONTRACT, CONTACT THE CUSTODIAN OF PUBLIC RECORDS AT OKALOOSA COUNTY RISK MANAGEMENT DEPARTMENT 302 N. WILSON ST. CRESTVIEW, FL 32536 PHONE: (850) 689-5977 riskinfo@myokaloosa.com.

PROTECTION OF RESIDENT WORKERS – The Okaloosa County Board of County Commissioners actively supports the Immigration and Nationality Act (INA) which includes provisions addressing employment eligibility, employment verifications, and nondiscrimination. Under the INA, employers may hire only persons who may legally work in the United States (i.e., citizens and nationals of the U.S.) and aliens authorized to work in the U.S. The employer must verify the identity and employment eligibility of anyone to be hired, which includes completing the Employment Eligibility Verifications. The respondent shall establish appropriate procedures and controls so no services or products under the Contract Documents will be performed or manufactured by any worker who is not legally eligible to perform such services or employment. Okaloosa County reserves the right to request documentation showing compliance with the requirements.

Respondents doing construction business with Okaloosa County are required to use the Federal Government Department of Homeland Security's website and use the E-Verify Employment Eligibility Verifications System to confirm eligibility of all employees to work in the United States.

SUSPENSION OR TERMINATION FOR CONVENIENCE - The County may, at any time, without cause, order Respondent in writing to suspend, delay or interrupt the work in whole or in part for such period of time as the County may determine, or to terminate all or a portion of the Contract for the County's convenience. Upon such termination, the Contract Price earned to the date of termination shall be paid to Respondent, but Respondent waives any claim for damages, including loss of profits arising out of or related to the early termination. Those Contract provisions which by their nature survive final acceptance shall remain in full force and effect. If the County orders a suspension, the Contract price and Contract time may be adjusted for increases in the cost and time caused by suspension, delay or interruption. No adjustment shall be made to the extent that performance is, was or would have been so suspended, delayed or interrupted by reason for which Respondent is responsible; or that an equitable adjustment is made or denied under another provision of this Contract.

FAILURE OF PERFORMANCE/DELIVERY - In case of default by the respondent, the County after due notice (oral or written) may procure the necessary supplies or services from other sources and hold the respondent responsible for difference in cost incurred. Continuous instances of default shall result in cancellation of the award and removal of the respondent from the bid list for duration of one (1) year, at the option of the County.

AUDIT - If requested, respondent shall permit the County or an authorized, independent audit agency to inspect all data and records of respondent relating to its performance and its subcontracts under this bid from the date of the award through three (3) years after the expiration of contract.

EQUAL EMPLOYMENT OPPORTUNITY; NON DISCRIMINATION – Respondent will not discriminate against any employee or an applicant for employment because of race, color, religion, gender, sexual orientation, national origin, age, familial status or handicap.

NON-COLLUSION – Respondent certifies that it has entered into no agreement to commit a fraudulent, deceitful, unlawful or wrongful act, or any act which may result in an unfair advantage over other respondents. See Florida Statute 838.22.

UNAUTHORIZED ALIENS/PATRIOT'S ACT – The knowing employment by respondent or its subcontractors of any alien not authorized to work by the immigration laws is prohibited and shall be a default of the contract. In the event that the respondent is notified or becomes aware of such default, the respondent shall take steps as are necessary to terminate said employment with 24 hours of notification or actual knowledge that an alien is being employed. Respondent's failure to take such steps as are necessary to terminate the employment of any said alien within 24 hours of notification or actual knowledge that an alien is being employed shall be grounds for immediate termination of the contract. Respondent shall take all commercially reasonable precautions to ensure that it and its subcontractors do not employ persons who are not authorized to work by the immigration laws.

CERTIFICATE OF GOOD STANDING FOR STATE OF FLORIDA - Florida Statute 607.1501 requires that all vendors who wish to do business in the State of Florida be licensed to do business through the Department of State of Florida and be in good standing with the State of Florida. As such, to do business with Okaloosa County a vendor must provide a Certificate of Good Standing with their bid/proposal package to the County. For more information on doing business in the State of Florida, please refer to the Florida Department of State. The website to register is https://dos.myflorida.com/sunbiz.

The following documents are to be submitted with the proposal packet. Failure to submit all required forms might result in your submittal being deemed non-responsive:

A. Drug-Free Workplace Certification Form

B. Conflict of Interest

C. Federal E-Verify

D. Indemnification and Hold Harmless

E. Certification Regarding Lobbying Proposal Sheet

F. Cone of Silence

G. Company Data/SAM Form

H. Addendum Acknowledgement

I. Equipment Owner's Data Sheet

J. Bid Sheet

K. Anti-Collusion

L. Vendors on Scrutinized List

M. Certificate of Good Standing for the State of Florida-provided by the Contractor

SPECIAL BID CONDITIONS

1. **Equipment Acceptance** - Delivery of material to Okaloosa County does not constitute acceptance for the purpose of payment. Final acceptance and authorization of payment shall be given only after a thorough inspection indicates that the material meets contract specifications and conditions as listed. Should the delivered material differ in any respect from specifications, payment will be withheld until such time as the supplier takes necessary corrective action. The Purchasing Department shall be notified of the deviation in writing within (10) calendar days and the provisions of the delivery paragraph shall prevail. If the proposed corrective action is not acceptable to Okaloosa County, the final acceptance of the material shall remain the property of the supplier and the County shall not be liable for payment for any portion thereof.

2. **Right to Waive and Reject**

   A. The Board, in its absolute discretion, may reject any bid of a bidder that has failed, in the opinion of the Board, to complete or perform an Okaloosa County contracted project in a timely fashion or has failed in any other way, in the opinion of the Board, to perform a prior contract in a satisfactory manner and has directed the Okaloosa County OMB Director to emphasize this condition to potential bidders.

   B. The County will award the bid to the lowest and most responsive bidder, and the County reserves the right to award the bid to the bidder submitting a responsive bid with a resulting negotiated agreement which is most advantageous and in the best interest of the County, and to reject any and all bids or to waive any irregularity or technicality in bids received. Okaloosa County shall be the sole judge of the bid and the resulting negotiated agreement that is in its best interest and its decision shall be final

   C. The Board of County Commissioners reserves the right to waive any informalities or reject any and all bids, in whole or part, and to utilize any applicable state contracts in lieu of or in addition to this bid.

   D. The Board of County Commissioners specifically reserves the right to reject any conditional bid and will normally reject those that make it impossible to determine the true amount of the bid. Each item must be bid separately and no attempt is to be made to tie any item or items to any other item or items.

3. **Terms and Conditions** – All bidders shall review the Terms and Conditions attached hereto and if the Board accepts their bid and executes a contract, the bidder awarded the contract (Seller) shall agree to the Terms and Conditions, completely, and agree to furnish the materials and services specified herein in accordance with the Specifications and Terms and Conditions herein.

4. **Delivery Schedule** - Submittal data to be delivered for approval with the Bid.
   Operation & Maintenance manuals to be delivered for approval no later than 30 calendar days prior to start-up and after receipt of Approved or Approved as Noted submittal data.
   Delivery of on-site Equipment/Materials shall be no later than calendar days identified on the Bid, after receipt of Purchase Order and shall be coordinated with the on-site installation Contractor.

5. **Terms of Sale** - FOB Job Site

6. **Sales Tax** – Is excluded from the Lump Sum amount of this order.

7. **Supply Bond**

A. Upon notice of Award, the Seller shall furnish to Buyer a Supply Bond in an amount at least equal to 5% of the Contract Price, as security for the faithful and timely delivery of all procured items covered by this procurement agreement. The bond shall remain in effect until 1) inspection by Buyer of satisfaction of delivery based on visual inspection, or 2) twenty days after receipt of all procured items, whichever is later. Seller shall also furnish such other bonds as are required by the Contract Documents.

B. All bonds shall be in the form prescribed by the Contract Documents except as provided otherwise by Laws or Regulations, and shall be executed by such sureties as are named in the current list of "Companies Holding Certificates of Authority as Acceptable Sureties on Federal Bonds and as Acceptable Reinsuring Companies" as published in Circular 570 (amended) by the Financial Management Service, Surety Bond Branch, U.S. Department of the Treasury. All bonds signed by an agent or attorney-in-fact must be accompanied by a certified copy of that individual's authority to bind the surety. The evidence of authority shall show that it is effective on the date the agent or attorney-in-fact signed each bond.

C. If the surety on any bond furnished by Seller is declared bankrupt or becomes insolvent or its right to do business is terminated in any state where any part of the Project is located or it ceases to meet the requirements of Contract, Seller shall promptly notify Buyer and Engineer and shall, within 20 days after the event giving rise to such notification, provide another bond and surety, both of which shall comply with the requirements.

STANDARD TERMS AND CONDITIONS

1. **AGREEMENT.** The executed agreement (Order) between the Board and the Seller for materials and services, including the terms and conditions herein and any attachments or specifications hereto, contains the complete agreement between the Board and the Seller and supersedes all prior agreements.
2. **TIME.** Time is of the essence in the performance of this Order.
3. **SELLERS CONDITIONS.** By acceptance of this Order and/or commencement of performance hereunder, Seller agrees to comply fully with the terms and conditions set forth in this document. Acceptance of this Order is expressly limited to the terms and conditions of this Order and none of the Seller's terms and conditions shall apply in acknowledging this Order or in the acceptance of this Order. Acceptance by the Board of the goods, equipment and/or services ("goods") delivered under this Order shall not constitute acceptance of the Seller's terms and conditions.
4. **DEFINITIONS.** As used herein, the term "goods" shall mean and includes all supplies, materials, work, services, equipment, training, start-up services, operation and maintenance manuals or other items whatsoever to be furnished by Seller under this Order.
5. **INSPECTION.** Notwithstanding any prior inspection or test, payment or receiving document, goods are subject to final inspection and acceptance at the destination for delivery stated herein. Payment for goods shall not constitute acceptance.
6. **WARRANTIES.** (a) Notwithstanding inspection and acceptance by the Board of goods furnished under this Order, Seller warrants that all goods furnished will be of merchantable quality, and will be free from defects in material, workmanship and design, and conform in all aspects with the specifications and requirements of this Order. (b) Seller further warrants that all goods furnished will be of the highest workmanlike quality. (c) All Warranties hereunder shall be for a period of one (1) year from the date of delivery or the beneficial use of the goods, or as indicated otherwise in this Order, whichever is later, and shall be warranties of future performance for each warranty year. (d) In the event of a breach of warranty hereunder, the Board may, at no increase in Order price or other cost to the Board, either: (1) require the prompt correction or replacement of defective or otherwise nonconforming goods or parts thereof, along with such new or revised data as is associated with the corrective action taken; or (2) retain such goods, whereupon the price thereof shall be reduced by an amount equitable under the circumstances; or (3) correct or replace such goods with similar goods, by contract or otherwise, and charge Seller for all additional costs caused thereby. (e) Any goods or parts thereof corrected or furnished in replacement pursuant to this clause shall be subject to all the provisions of this clause to the same extent as goods initially delivered. The warranty with respect to such goods or parts thereof shall be equal in duration to the initial warranty period and shall run from the date of delivery or placement in service of such corrected or replaced goods, whichever is later. (f) the Board's or its agents approval of Seller-generated designs drawings or other technical documents shall in no way relieve Seller of its obligations under this or any other clause of this Order.

7. **SCHEDULE & EXPEDITING.** Seller shall keep the Board informed as the status of the goods hereunder and Seller's schedule of activities to assure delivery by the time required herein. Without any responsibility to do so, the Board reserves the right to take steps to expedite acquisition, production and/or shipment of the goods, if, in the Board's sole judgment, delivery of the completed goods by the date required becomes doubtful. Seller shall reimburse the Board for all costs it may incur in expediting acquisition, production or shipment of the goods.
8. **CHANGES.** The Board reserves the right at any time prior to delivery, by written order, to cancel, suspends, revise or change the goods or quantity of goods to be furnished by Seller hereunder, and in no event shall the Board be responsible for loss of anticipated profits or consequential damages. In the event of a revision to this Order by the Board, the Board shall be responsible only for the price of the goods accepted. Any increase in the price of the goods resulting from a revision is subject to the approval of the Board. Failure to agree to any adjustment shall be a dispute within the meaning of the "Disputes" clause hereof. Pending resolution of the dispute, the Seller shall not be excused from proceeding with the order as changed.
9. **BANKRUPTCY.** The Board may terminate this Order in whole or in part by written notice: (a) if the Seller shall become insolvent or make a general assignment for the benefit of creditors; or (b) if a petition under any bankruptcy act or similar statute is filed by or against the Seller and is not vacated within ten (10) days after it is filed.
10. **PRICES.** Seller warrants that the prices of the goods covered by this Order are not in excess of prices charged by Seller for similar goods to Seller's most favored customers.
11. **INVOICING AND PAYMENT.** Unless otherwise specified, a separate invoice shall be issued for each shipment. Unless otherwise specified, an invoice shall not be issued prior to shipment of goods and payment will not be made prior to receipt and acceptance of both the goods and a correct invoice. Credit and discount periods as identified on the face of this Order (if any) shall be computed from the date of receipt of the correct invoice to the date Board's check is mailed. Discount shall be taken on full amount of invoice.
12. **ASSIGNMENT.** Neither this Order nor any interest herein nor claim thereunder shall be assigned or transferred by Seller, except as expressly authorized in writing by the Board.
13. **ADVERTISING AND PUBLICITY.** Seller shall not, without prior written consent of the Board, publish the fact that the Board has placed this Order with Seller, or release any information relative thereto. Seller shall not use the name of Seller or Engineer, or affiliates (hereinafter collectively referred to as Engineer) in any advertising or promotional literature without the prior written consent of the Board and Engineer.
14. **PATENT, COPYRIGHT OR TRADEMARK INFRINGEMENT.** Seller agrees to indemnify, defend and hold harmless Owner, the Board, Engineer and their officers, agents, employees, successors and assigns against loss, damage or liability, including costs, expenses and attorneys' fees on account of any suit, claim, judgment or demand involving the alleged infringement of any patent, copyright, trademark, or trade name by reason of the manufacture, use, sale or disposition of any item or material supplied hereunder. If so requested by the

Board or Engineer, Seller shall, at its expense, appear in and assume the defense of any litigation to which Owner, the Board and Engineer has been made a party which relates to any such infringement. If a final injunction against Owner or the Board's use of the goods results from such claim (or if the Board reasonably believes such a claim is likely), Seller shall, at its own expense and at the Board's request, obtain for Owner and the Board the right to continue using the goods or replace or modify (or any part thereof) so that it becomes non-infringing but functionally equivalent.

15. **INDEMNITY.** (a) Seller agrees to indemnify and hold harmless and upon request, defend the Board and Engineer and their agents and employees and persons claiming through the Board or Engineer from and against all claims, losses, damages, expenses for (1) damages to persons or property caused in whole or in part by any act, omission or default of Seller, its contractors, subcontractors, sub-subcontractors, material men, or agents of any tier or their respective employees except for claims of or damages resulting from the gross negligence, or willful, wanton or intentional misconduct of the Board, or Engineer, their officers, directors, agents or employees; and (2) statutory or punitive damages caused by or result from the acts or omissions of the Seller, its contractors, subcontractors, sub-subcontractors, material men, or agents of any tier or their respective employees. The indemnity provided by this Section 15 (a) shall be limited to the dollar amount of insurance specified in Section 25. (b) Seller further agrees to indemnify and hold harmless and upon request defend the Board and Engineer and persons claiming through the Board or Engineer and their agents and employees from liabilities, damages, losses and costs, including but not limited to attorneys' fees, to the extent caused by the negligence, recklessness, or intentional wrongful misconduct of the Seller and persons employed or utilized by Seller in the performance of the work. The indemnity provided by this herein shall in no way be limited by any insurance coverage provided by Seller.
16. **CONSEQUENTIAL DAMAGES.** Notwithstanding any other provision herein, the Board shall under no circumstances be responsible to Seller for any consequential, indirect or special damages.
17. **DELIVERY.** Delivery shall be to the project site Free on Board (F.O.B.) unless otherwise designated in this Order.
18. **TITLE AND RISK OF LOSS.** Title to and risk of loss on all goods shipped by Seller to the Board shall not pass to the Board until the Board inspects and accepts such goods at the location designated by the Board.
19. **TAXES.** The Board is a tax exempt public entity and the prices herein should not include Federal, state or local taxes for the goods purchased herein.
20. **DISPUTE RESOLUTION.** In the event of any dispute between the parties arising out of or in connection with the Order or the services or work contemplated herein; the parties agree to first make a good faith effort to resolve the dispute informally. Negotiations shall take place between the designated principals of each party. If the parties are unable to resolve the dispute informally, then either party may submit the controversy to a court of competent jurisdiction. Each party shall be responsible for its own costs and expenses including attorneys' fees and court costs incurred in the course of any dispute, mediation, or legal proceeding.
21. **COMPLIANCE WITH LAWS.** Seller agrees to comply with all applicable local, state and Federal laws and executive orders and a regulation issued pursuant

thereto and agrees to indemnify the Board and Engineer against any liability, loss, cost, damage, or expense incurred by reason of Seller's violation of this provision.

22. **GOVERNING LAW AND VENUE.** This Order shall be governed by the laws of the State of Florida. Venue for any legal proceedings arising out of this Order shall be in Okaloosa County, Florida.
23. **SEVERABILITY.** If any provision of this Order, or any part thereof, shall be invalid or unenforceable, such provision or part shall be deemed severed, and the remainder hereof shall be given full force and effect.
24. **INSURANCE REQUIREMENTS.** Seller shall maintain products liability and completed operations insurance which provides, under the terms of the primary policy or by contractual liability endorsement if necessary, coverage in respect of claims involving bodily injury or property damage arising out of or in connection with the goods. Such insurance shall be in such minimum amounts of 1 million, and shall declare the Board, Engineer and Owner as an additional insured. Seller shall also maintain workers compensation and employer's liability insurance. All policies of insurance shall not be cancelable except upon ten (10) days' written notice to the Board, shall include a waiver of subrogation in favor of the Board and Engineer. Seller shall furnish proof of such insurance to the Board.
25. **PUBLIC RECORDS.** Seller shall allow public access to all documents, records and other materials, subject to the provisions of Chapter 119, Florida Statutes, prepared or received by Seller in conjunction with this Order.
26. **AUDIT**. The Board shall have the right from time to time at its sole expense to audit the compliance by the Seller with the terms, conditions, obligations, limitations, restrictions and requirements of this Order and such right shall extend for a period of three (3) years after termination of this Order.

DRUG-FREE WORKPLACE CERTIFICATION

THE BELOW SIGNED RESPONDENT CERTIFIES that it has implemented a drug-free workplace program. In order to have a drug-free workplace program, a business shall:

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

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

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

4. In the statement specified in subsection 1, notify the employees that, as a condition of working on the commodities or contractual services that are under quote, 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, Florida Statutes, or of any controlled substance law of the United States or any state, for a violation occurring in the workplace no later than five (5) days after such conviction.

5. Impose a sanction on, or require the satisfactory participation in, drug abuse assistance or rehabilitation program if such is available in employee's community, by any employee who is convicted.

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

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

DATE: _____

COMPANY: _____

ADDRESS: _____

_____

_____

PHONE NO.: _____

SIGNATURE: _____

NAME: _____
(Typed or Printed)

TITLE: _____

E-MAIL: _____

CONFLICT OF INTEREST DISCLOSURE FORM

For purposes of determining any possible conflict of interest, all respondents, must disclose if any Okaloosa Board of County Commissioner, employee(s), elected officials(s), or if any of its agencies is also an owner, corporate officer, agency, employee, etc., of their business.

Indicate either "yes" (a county employee, elected official, or agency is also associated with your business), or "no". If yes, give person(s) name(s) and position(s) with your business.

YES_____ NO_____

NAME(S) **POSITION(S)**

_____

_____

_____

_____

FIRM NAME: _____

BY (PRINTED): _____

BY (SIGNATURE): _____

TITLE: _____

ADDRESS: _____

_____

PHONE NO. _____

E-MAIL _____

DATE _____

FEDERAL E-VERIFY COMPLIANCE CERTIFICATION

In accordance with Okaloosa County Policy and Executive Order Number 11-116 from the office of the Governor of the State of Florida, Respondent hereby certifies that the U.S. Department of Homeland Security's E-Verify system will be used to verify the employment eligibility of all new employees hired by the respondent during the contract term, and shall expressly require any subcontractors performing work or providing services pursuant to the contact to likewise utilize the U.S. Department of Homeland Securities E-Verify system to verify the employment eligibility of all new employees hired by the subcontractor during the contract term; and shall provide documentation such verification to the COUNTY upon request.

As the person authorized to sign this statement, I certify that this company complies/will comply fully with the above requirements.

DATE: _____

SIGNATURE: _____

COMPANY: _____

NAME: _____

ADDRESS: _____

TITLE: _____

E-MAIL: _____

PHONE NO.: _____

INDEMNIFICATION AND HOLD HARMLESS

Respondent shall indemnify and hold harmless the County, its officers and employees from liabilities, damages, losses, and costs including but not limited to reasonable attorney fees, to the extent caused by the negligence, recklessness, or intentional wrongful conduct of the Respondent and other persons employed or utilized by the Respondent in the performance of this Agreement.

Respondent's Company Name	Authorized Signature – Manual
Physical Address	Authorized Signature – Typed
Mailing Address	Title
Phone Number	FAX Number
Cellular Number	After-Hours Number(s)
Date	Email

LOBBYING - 31 U.S.C. 1352, 49 CFR Part 19, 49 CFR Part 20

APPENDIX A, 49 CFR PART 20--CERTIFICATION REGARDING LOBBYING

Certification for Contracts, Grants, Loans, and Cooperative Agreements

(To be submitted with each bid or offer exceeding $100,000)

The undersigned [Contractor] certifies, to the best of his or her knowledge and belief, that:

1. No Federal appropriated funds have been paid or will be paid, by or on behalf of the undersigned, to any person for influencing or attempting to influence an officer or employee of an agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with the awarding of any Federal contract, the making of any Federal grant, the making of any Federal loan, the entering into of any cooperative agreement, and the extension, continuation, renewal, amendment, or modification of any Federal contract, grant, loan, or cooperative agreement.
2. If any funds other than Federal appropriated funds have been paid or will be paid to any person for making lobbying contacts to an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with this Federal contract, grant, loan, or cooperative agreement, the undersigned shall complete and submit Standard Form--LLL, "Disclosure Form to Report Lobbying," in accordance with its instructions [as amended by "Government wide Guidance for New Restrictions on Lobbying," 61 Fed. Reg. 1413 (1/19/96). Note: Language in paragraph (2) herein has been modified in accordance with Section 10 of the Lobbying Disclosure Act of 1995 (P.L. 104-65, to be codified at 2 U.S.C. 1601, *et seq* .)]
3. The undersigned shall require that the language of this certification be included in the award documents for all subawards at all tiers (including subcontracts, subgrants, and contracts under grants, loans, and cooperative agreements) and that all subrecipients shall certify and disclose accordingly.

This certification is a material representation of fact upon which reliance was placed when this transaction was made or entered into. Submission of this certification is a prerequisite for making or entering into this transaction imposed by 31, U.S.C. § 1352 (as amended by the Lobbying Disclosure Act of 1995). Any person who fails to file the required certification shall be subject to a civil penalty of not less than $10,000 and not more than $100,000 for each such failure.

[Note: Pursuant to 31 U.S.C. § 1352(c)(1)-(2)(A), any person who makes a prohibited expenditure or fails to file or amend a required certification or disclosure form shall be subject to a civil penalty of not less than $10,000 and not more than $100,000 for each such expenditure or failure.]

The Contractor, _____, certifies or affirms the truthfulness and accuracy of each statement of its certification and disclosure, if any. In addition, the Contractor understands and agrees that the provisions of 31 U.S.C. A 3801, *et seq., apply* to this certification and disclosure, if any.

_____ Signature of Contractor's Authorized Official

_____ Name and Title of Contractor's Authorized Official

_____ Date

CONE OF SILENCE

The Board of County Commissioners have established a solicitation silence policy **(Cone of Silence)** that prohibits oral and written communication regarding all formal solicitations for goods and services (ITB, RFP, ITQ, ITN, and RFQ) or other competitive solicitation between the bidder (or its agents or representatives) or other entity with the potential for a financial interest in the award (or their respective agents or representatives) regarding such competitive solicitation, and any County Commissioner or County employee, selection committee member or other persons authorized to act on behalf of the Board including the County's Architect, Engineer or their subconsultants, or anyone designated to provide a recommendation to award a particular contract, other than the Purchasing Department Staff..

The period commences from the time of advertisement until contract award.

Any information thought to affect the committee or staff recommendation submitted after bids are due, should be directed to the Purchasing Manager or an appointed representative. It shall be the Purchasing Manager's decision whether to consider this information in the decision process.

Any violation of this policy shall be grounds to disqualify the respondent from consideration during the selection process.

All respondents must agree to comply with this policy by signing the following statement and including it with their submittal.

I _____ **representing** _____

Signature **Company Name**

On this _____ day of _____, 2020, hereby agree to abide by the County's **"Cone of Silence Clause"** and understand that violation of this policy shall result in disqualification of my proposal/submittal.

COMPANY DATA

Respondent's Company Name: _____

Physical Address & Phone #: _____

_____

_____

_____

_____

Contact Person (Typed-Printed): _____

Phone #: _____

Cell #: _____

Federal ID or SS #: _____

DUNNS/SAM #: _____

Respondent's License #: _____

Fax #: _____

Emergency #'s After Hours,
Weekends & Holidays: _____

System for Award Management (Oct 2016)

(a) Definitions. As used in this provision.

"Electronic Funds Transfer (EFT) indicator" means a four-character suffix to the unique entity identifier. The suffix is assigned at the discretion of the commercial, nonprofit, or Government entity to establish additional System for Award Management records for identifying alternative EFT accounts (see subpart 32.11) for the same entity.

"Registered in the System for Award Management (SAM) database" means that:

(1) The Offeror has entered all mandatory information, including the unique entity identifier and the EFT indicator, if applicable, the Commercial and Government Entity (CAGE) code, as well as data required by the Federal Funding Accountability and Transparency Act of 2006 (see subpart 4.14) into the SAM database;

(2) The offeror has completed the Core, Assertions, and Representations and Certifications, and Points of Contact sections of the registration in the SAM database;

(3) The Government has validated all mandatory data fields, to include validation of the Taxpayer Identification Number (TIN) with the Internal Revenue Service (IRS). The offeror will be required to provide consent for TIN validation to the Government as a part of the SAM registration process; and

(4) The Government has marked the record "Active".

"Unique entity identifier" means a number or other identifier used to identify a specific commercial, nonprofit, or Government entity. See www.sam.gov for the designated entity for establishing unique entity identifiers.

(b)(1) By submission of an offer, the offeror acknowledges the requirement that a prospective awardee shall be registered in the SAM database prior to award, during performance, and through final payment of any contract, basic agreement, basic ordering agreement, or blanket purchasing agreement resulting from this solicitation.

(2) The Offeror shall enter, in the block with its name and address on the cover page of its offer, the annotation "Unique Entity Identifier" followed by the unique entity identifier that identifies the Offeror's name and address exactly as stated in the offer. The Offeror also shall enter its EFT indicator, if applicable. The unique entity identifier will be used by the Contracting Officer to verify that the Offeror is registered in the SAM database.

(c) If the Offeror does not have a unique entity identifier, it should contact the entity designated at www.sam.gov for establishment of the unique entity identifier directly to obtain one. The Offeror should be prepared to provide the following information:

(1) Company legal business name.

(2) Tradestyle, doing business, or other name by which your entity is commonly recognized.

(3) Company Physical Street Address, City, State, and Zip Code.

(4) Company Mailing Address, City, State and Zip Code (if separate from physical).

(5) Company telephone number.

(6) Date the company was started.

(7) Number of employees at your location.

(8) Chief executive officer/key manager.

(9) Line of business (industry).

(10) Company Headquarters name and address (reporting relationship within your entity).

(d) If the Offeror does not become registered in the SAM database in timely manner, the Contracting Officer may proceed to award to the next otherwise successful registered Offeror.

(e) Processing time, which normally takes 48 hours, should be taken into consideration when registering. Offerors who are not registered should consider applying for registration immediately upon receipt of this solicitation.

(f) Offerors may obtain information on registration at https://www.acquisition.gov .

Offerors SAM information:

Entity Name: _____

Entity Address: _____

Duns Number:_____

CAGE Code: _____

ADDENDUM ACKNOWLEDGEMENT
ITB WS 66-20

Acknowledgment is hereby made of the following addenda (identified by number) received since issuance of solicitation:

ADDENDUM NO.	**DATE**

NOTE: Prior to submitting the response to this solicitation, it is the responsibility of the respondent to confirm if any addenda have been issued. If such addenda have been issued, acknowledge receipt by noting number(s) and date(s) above.

EQUIPMENT OWNER'S DATA SHEET

NAME OF OWNER _____
ADDRESS _____
PHONE NUMBER _____
PERSON TO CONTACT _____

NAME OF OWNER _____
ADDRESS _____
PHONE NUMBER _____
PERSON TO CONTACT _____

NAME OF OWNER _____
ADDRESS _____
PHONE NUMBER _____
PERSON TO CONTACT _____

NAME OF OWNER _____
ADDRESS _____
PHONE NUMBER _____
PERSON TO CONTACT _____

NAME OF OWNER _____
ADDRESS _____
PHONE NUMBER _____
PERSON TO CONTACT _____

BID SHEET

BID #: ITB WS 66-20

<u>BASE BID (Items 1 & 2)</u> - Brown Place Pump Station & Controls Upgrade

ITEM	QTY		DESCRIPTION	UNIT PRICE	EXT. PRICE
1	1	LS	**Submersible Pumps-** Two (2) ~36 HP Non-Clog Pumps and secondary level monitoring floats & hardware, guide rails and mounting system, and base elbows for a duplex pumping station.		
2	1	LS	One complete electrical control system including programmable PLC, soft starts, panel mounted NEMA 4X enclosure, SCADA termination points and all wiring for a duplex pumping station.		
	1	Lot	**Submittals: Include with this bid the following: Shop Drawings, Product Data, & Calculations (5 Copies w/Electronic PDF).** Preliminary O&M Manuals, and Final O&M Manuals **Warranty:** Warranty shall be in accordance with the attached specifications	Cost associated with these requirements shall be included in the associated unit price shown for the specified equipment in Item 1	N/A
	1	Lot	**Manufacturer Startup Services** - Up to 8 hours of field manufacturer startup/training services for providing a fully operational and functioning pump and control system.		N/A
	1	Lot	**Spare Parts and Tools:** As specified in Equipment Sections		N/A
			TOTAL BASE BID (ITEM 1-2)	**$**	

DELIVERY TIME: _____ MAXIMUM* DAYS FROM RECEIPT OF PURCHASE ORDER. Additional Days for Alt (Items 3).

*****Max Days is defined as calendar days to deliver all equipment to the site as specified, including submittals, manufacturing and testing. Time will be from date of receipt of purchase agreement from OWNER. Allow a max 10 working days for initial submittal review and each resubmit required by ENGINEER / OWNER.

TOTAL BASE BID AMOUNT (ITEMS 1&2) IS WRITTEN AS:

_____ Dollars and _____Cents,

$_____, To Be Fully Tested, Shipped and Delivered to the Project Site within _____ Calendar Days from Receipt of Official Purchase Order.

==========

ANTI-COLLUSION STATEMENT: The below signed bidder has not divulged to, discussed or compared his bid with other bidders and has not colluded with any other bidder or parties to bid whatever. (Note: No premiums, rebates, or gratuities permitted either with, prior to, or after any delivery of materials. Any such violation will result in the cancellation and/or return of material (as applicable) and the removal from bid list(s).

Bidder's Company Name	Authorized Signature – Manual
	Authorized Signature – Typed
Address	Title
Phone #	Fax #
Federal ID # or SS #	

VENDORS ON SCRUTINIZED COMPANIES LISTS

By executing this Certificate_____, the bid proposer, certifies that it is not: (1) listed on the Scrutinized Companies that Boycott Israel List, created pursuant to section 215.4725, Florida Statutes, (2) engaged in a boycott of Israel, (3) listed on the Scrutinized Companies with Activities in Sudan List or the Scrutinized Companies with Activities in the Iran Petroleum Energy Sector List, created pursuant to section 215.473, Florida Statutes, or (4) engaged in business operations in Cuba or Syria. Pursuant to section 287.135(5), Florida Statutes, the County may disqualify the bid proper immediately or immediately terminate any agreement entered into for cause if the bid proposer is found to have submitted a false certification as to the above or if the Contractor is placed on the Scrutinized Companies that Boycott Israel List, is engaged in a boycott of Israel, has been placed on the Scrutinized Companies with Activities in Sudan List or the Scrutinized Companies with Activities in the Iran Petroleum Energy Sector List, or has been engaged in business operations in Cuba or Syria, during the term of the Agreement. If the County determines that the bid proposer has submitted a false certification, the County will provide written notice to the bid proposer. Unless the bid proposer demonstrates in writing, within 90 calendar days of receipt of the notice, that the County's determination of false certification was made in error, the County shall bring a civil action against the bid proposer. If the County's determination is upheld, a civil penalty shall apply, and the bid proposer will be ineligible to bid on any Agreement with a Florida agency or local governmental entity for three years after the date of County's determination of false certification by bid proposer.

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

DATE: _____ SIGNATURE: _____

COMPANY: _____ NAME: _____
(Typed or Printed)

ADDRESS: _____

TITLE: _____

_____

E-MAIL: _____

_____

PHONE NO.: _____

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SECTION 01010

PROCUREMENT SCOPE

1PART - GENERAL

1.1 WORK COVERED BY CONTRACT DOCUMENTS

Work includes furnishing all materials and equipment required. No substitutions will be accepted unless approved by the Purchasing and Water and Sewer Departments.

Lift station pump and control update package to include the following equipment:

- New pumps, base elbows, mounting brackets, guide rail systems, backup control floats, and all other associated appurtenance. See attached Plans and Specifications for additional detail.
- Provide a minimum of 60 ft pump electrical leads for each pump and floats. Leads shall be capable of being extended for termination by the Owner into Disconnect Switch and Junction Box.
- One complete and pre-tested electrical control panel assembly including programmable PLC, soft starts for a duplex pumping station, generator receptacle, and all other associated appurtenance. The panel shall be 316L SS NEMA 4X rated and incorporate the Owner's latest standards for SCADA terminals.
- All equipment shall be delivered and offloaded at the project site and shall include all necessary material to secure structure as a permanent fixture. Coordinate with the OWNER a minimum 3 weeks in advance of delivery.
- ***(Include with this bid the following: Shop Drawings, Product Data, Pump Curves, & Calculations).***

Pumps shall be capable of producing 550 GPM @ 111' TDH (Static Head = 52.2') and shall be 1,750 RPM, 480V 3-Phase. Due to limitations of existing wet well opening, pumps shall be limited in width. See attached Plans and Specifications for additional detail.

The lift station will also include SCADA, however SCADA is **NOT** included in this bid package. The MCC panel shall have SCADA terminations. The lift station will also include a Generator and ATS, however the Generator and ATS is **NOT** included in this bid package.

Price shall include delivery to the location identified in the Bid Requirements.

1.2 CONTRACTOR'S USE OF PREMISES

A. Contractor shall coordinate access to site for delivery with the Owner at least 3-weeks prior to delivery.

B. Contractor shall assume full responsibility for the protection and safekeeping of products under this contract, stored on the site.

C. Contractor shall move any stored products, under Contractor's control, which interfere with operations of the Owner.

END OF SECTION 01010.

SECTION 1300

SUBMITTALS

1PART - GENERAL

1.1 DESCRIPTION AND REQUIREMENTS

A. Type of Submittals. This Section of the Specifications describes the procedures for submittals of Schedule of Submittals, Schedule of Construction, Insurance Certificates, List of Subcontractors, Anticipated Payment Schedules, Shop Drawings, Product Data, Samples, and miscellaneous work-related submittals.

B. Submittal Contents. The submittal contents required are specified in each section and in this specification.

C. Definitions. Submittals are categorized as follows:

1. Shop Drawings:
   a. Shop drawings shall include technical data, drawings, diagrams, performance curves, schedules, templates, patterns, reports, calculations, instructions, measurements and similar information as applicable to the specific item for which the shop drawing is prepared.
   b. Provide newly-prepared information, on reproducible sheets, with graphic information at accurate scale (except as otherwise indicated) or appropriate number of prints hereof, with name of preparer (firm name) indicated. The Contract Drawings shall not be traced or reproduced by any method for use as or in lieu of detail shop drawings. Show dimensions and note which are based on field measurement. Identify materials and products in the work shown. Indicate compliance with standards and special coordination requirements. Do not allow shop drawing copies without appropriate final "Action" markings by the Engineer to be used in connection with the Work.
2. Product Data:
   a. Product data includes standard printed information on materials, products and systems, not specially prepared for this project, other than the designation of selections from among available choices printed therein.
   b. Collect required data into one submittal for each unit of work or system, and clearly mark each copy to show which choices and options are applicable to project. Include manufacturer's standard printed recommendations for application and use, compliance with standards, application of labels and seals, notation of field measurements which have been checked, and special coordination requirements.

c. Show all performance characteristics, capacities, clearances required, and wiring or piping diagrams. Supplement standard information to provide all information specifically applicable to work.

3. Samples:
   a. Samples include both fabricated and unfabricated physical examples of materials, products and units of work, both as complete units and as smaller portions of units of work, either for limited visual inspection or (where indicated) for more detailed testing and analysis.
   b. Provide units identical with final condition of proposed materials or products for the work. Include "range" samples (not less than three (3) units) where unavoidable variations must be expected, and describe or identify variations between units of each set. Provide full set of optional samples where the Engineer's selection is required. Prepare samples to match the Engineer's sample where indicated. Include information with each sample to show generic description, source or product name and manufacturer, limitations, and compliance with standards. Samples are submitted for review and confirmation of "kind" by the Engineer. Engineer will not "test" samples (expect as otherwise indicated) for other requirements, which are the exclusive responsibility of the Contractor.
   c. Samples shall be of sufficient size to clearly indicate functional characteristics of the products and full range of color, texture, and pattern.
4. Miscellaneous submittals related directly to the work (non-administrative) include warranties, maintenance agreements, workmanship bonds, project photographs, survey data and reports, physical work records, statements of applicability, quality testing and certifying reports, copies of industry standards, record drawings, field measurement data, operating and maintenance materials, and similar information, devices and materials applicable to the Work but not processed as shop drawings, product data or samples.

1.2 GENERAL SUBMITTAL REQUIREMENTS

A. Scheduling. Where appropriate in various required administrative submittals (listings of products, manufacturers, supplier and subcontractors, and in job progress schedule), show principle work-related submittal requirements and time schedules for coordination and integration of submittal activity with related work in each instance.

B. Coordination of Submittal Times. Prepare and transmit each submittal to the Engineer sufficiently in advance of performing related work or other applicable activities, so the installation will not be delayed or improperly sequenced by processing times, including non-approval and resubmittal (if required). Coordinate with other submittals, testing, purchasing, delivery and similar sequenced activities. No extension of time will be authorized because of Contractor's failure to transmit submittals to the Engineer sufficiently in advance of the work.

C. Sequencing Requirements. As applicable in each instance, do not proceed with a unit of work until submittal procedures have been sequenced with related units of work, in a manner which will ensure that the action will not need to be later modified or rescinded by reason of a subsequent submittal which should have been processed earlier or concurrently for coordination.

D. Preparation of Submittals. Provide permanent marking on each submittal to identify project, date, Contractor, subcontractor, submittal name and similar information to distinguish it from other submittals. Show Contractor's executed review and approval marking and provide space for the Engineer's "Action" marking. Package each submittal appropriately for transmittal and handling. Submittals which are received from sources other than through the Contractor's office will be returned "without action".

E. Transmittal Identification.

1. Number transmittals in sequence for each Division of the Specifications. The number before the dash indicates the Section of the Specifications, and the number after the dash is the sequence number of the transmittal (15140-1 would be the first transmittal applicable to Section 15140 of the Specifications. 15140-2 would be the second transmittal for Section 15140, etc.).
2. Identify resubmittals with a letter of the alphabet following the original number, using A for the first resubmittal, B for the second resubmittal, etc. A resubmittal affecting transmittal 15140-1 would then be numbered 15140-1A. The 15140-1 would then be entered in the space "Previous Transmittal Number", which is left blank except on resubmittals.

1.3 SPECIFIC CATEGORY REQUIREMENTS

A. General. Except as otherwise indicated in the individual work sections, comply with general requirements specified herein for each indicated category of submittal.

1. Submittals shall be accompanied by a cover sheet which shall contain:
    a. The date of submission and the dates of any previous submissions.
    b. The Project title and number.
    c. Date.
    d. Contract No.
    e. The names of the:
        1) Contractor
        2) Supplier
        3) Manufacturer
    f. Identification of the product, with the Specification Section number.
    g. A list of all the sheets included in the submittal.
    h. Field dimensions, clearly identified as such.
    i. Relation to adjacent or critical features of the work or materials.

j. Applicable standards, such as ASTM or Federal Specification numbers.
k. Notification to the Engineer in writing, at time of submission, of any deviations on the submittals from requirements of the Contract Documents.
l. Identification of revisions on resubmittals.
m. An 8" x 3" blank space for Contractor and Engineer stamps.
n. Contractor's stamp, initialed or signed, certifying to review of submittal, verification of products, field measurements and field construction criteria, and coordination of the information within the submittal with requirements of the Work and of Contract Documents.
o. Submittal sheets or drawings showing more than the particular item under consideration shall have all but the pertinent description of the item for which review is requested crossed out.

1.4 CONTRACTOR RESPONSIBILITIES

A. In addition to any other requirements of this section, the Contractor shall be responsible to:

1. Review shop drawings, product data and samples prior to submission.
2. Determine and verify:
   a. Field measurements.
   b. Field construction criteria and required clearances.
   c. Catalog numbers and similar data.
   d. Conformance with specifications.
3. Coordinate each submittal with requirements of the work and of the Contract Documents.
4. Notify the Engineer in writing, at time of submission, of any deviations in the submittals from requirements of the Contract Documents.
5. Begin no fabrication or work which requires submittals until return of submittals with Engineer approval.

1.5 ROUTING OF SUBMITTALS

A. Submittals and routine correspondence shall be routed as follows:

1. Supplier to Contractor (through representative if applicable) for detailed review.
2. Contractor to Consulting Engineer for review or comment.
3. Consulting Engineer to Contractor.
4. Contractor to Field Office and Supplier.

1.6 SUBMITTAL COPIES REQUIRED

A. Shop Drawings, Product Data, and Miscellaneous Submittals. All released submittals will be distributed as follows:

1.	For Poly, Inc.	1 copy
2.	For Owner	2 copies
3.	For Contractor	2 copies
	TOTAL	5 copies

B. To the above number may be added additional copies as required by the Contractor.

C. The Engineer will mark all copies of each shop drawing. One will be retained in the Engineer's office, two will be retained for the Owner and the remaining copies sent to the Contractor for his records and distribution.

D. For non-approval items, such as parts lists, four (4) copies are required, unless specified otherwise:

1.	For Poly, Inc. File	1 copy
2.	For Owner Plant Maintenance Division File	2 copies
3.	For Owner Operating Division File	1 copy
	TOTAL	4 copies

E. Samples:

1. Submittal. At Contractor's option, provide preliminary submittal of a single set of samples for the Engineer's review and "action." Otherwise, initial submittal is final submittal unless returned with "action" which requires resubmittal. Submit two (2) sets of samples in final submittal; one set will be returned.
2. Quality Control Set. Maintain returned final set of samples at project site, in suitable condition and available for quality control comparisons by Engineer and by others.

1.7 REVIEW OF SUBMITTALS

A. Review Time. Allow a minimum of two (2) weeks for the Engineer's initial processing of each submittal requiring review and response, except allow longer periods where processing must be delayed for coordination with subsequent submittals or when a sufficiently large number of submittals are sent during a short period. The Engineer will advise the Contractor promptly when it is determined that a submittal being processed must be delayed. Allow two weeks for reprocessing each submittal. Advise the Engineer on each submittal as to whether processing time is critical to progress of the

work, and therefore the work would be expedited if processing time could be foreshortened.

B. Engineer's Action.

1. Final Unrestricted Release. Work may proceed, provided it complies with contract documents, when submittal is returned with the following:
   a. Marking: "A" - No Exceptions Taken.
2. Final-But-Restricted Release. Work may proceed, provided it complies with notations and corrections on submittal and with contract documents, when submittal is returned with the following:
   a. Marking: "B" - Exceptions Taken as Noted.
3. Returned for Resubmittal. Do not proceed with Work. Revise submittal in accordance with notations thereon, and resubmit without delay to obtain a different action marking. Do not allow submittals with the following marking (or unmarked submittals where a marking is required) to be used in connection with performance of the work.
   a. Marking: "C" - Revise and resubmit.
   b. Marking: "D" - Rejected - Does Not Comply with Project Requirements.
4. Only three (3) copies of items marked "C" or "D" will be reviewed and marked. One copy will be retained in the Polyengineering, Inc. office, one copy will be sent to the Polyengineering, Inc. Resident Project Representative, and the other copy with all remaining unmarked copies will be returned to the Contractor for resubmittal.

END OF SECTION 01300.

SECTION 01740

WARRANTIES AND BONDS

PART 1 - GENERAL

1.1 PROJECT MAINTENANCE AND WARRANTY

A. Maintain and keep in good repair the improvements covered by these Drawings and Specifications during the life of the Contract.

B. Indemnify the Owner against any repairs which may become necessary to any part of the work performed and to items of equipment and systems procured for or furnished under this Contract, arising from defective workmanship or materials used therein, for a period of one (1) year after acceptance from the final date of final resolution of the Owner accepting work.

C. The Contractor shall not be obligated to make replacements which become necessary because of ordinary wear and tear, or as a result of improper operation or maintenance, or as a result of improper work or damage by another Contractor or the Owner, or to perform any work which is normally performed by a maintenance crew during operation.

D. In the event of multiple failures of major consequences prior to the expiration of the one-year warranty described above, the affected unit shall be disassembled, inspected, and modified or replaced as necessary to prevent further occurrences. All related components which may have been damaged or rendered non-serviceable as a consequence of the failure shall be replaced. A new twelve (12) month warranty against defective or deficient design, workmanship, and materials shall commence on the day that the item is reassembled and placed back into operation. As used herein, multiple failures shall be interpreted to mean two (2) or more successive failures of the same kind in the same item or failures of the same kind in two (2) or more items. Major failures may include, but are not limited to, cracked or broken housings, piping, or vessels, excessive deflections, bent or broken shafts, broken or chipped gear teeth, premature bearing failure, excessive wear, or excessive leakage around seals. Failures which are directly and clearly traceable to operator abuse, such as operations in conflict with published operating procedures, or improper maintenance, such as substitution of unauthorized replacement parts, use of incorrect lubricants or chemicals, flagrant over- or under-lubrication, and using maintenance procedures not conforming with published maintenance instructions, shall be exempted from the scope of the one-year warranty. Should multiple failures occur in a given time, all products of the same size and type shall be disassembled, inspected, modified or replaced, as necessary and rewarranted for one year.

E. The Contractor shall, at his own expense, furnish all labor, materials, tools and equipment required and shall make such repairs and removals or shall perform such work or reconstruction as may be made necessary by any structural or functional defect or failure resulting from neglect, faulty workmanship or faulty materials, in any part of the Work performed by him. Such repair shall also include refilling of trenches, excavations or embankments which show settlement or erosion after backfilling or placement.

H. In the event the Contractor fails to proceed to remedy the defects of which he has been notified within fifteen (15) days of the date of such notice, the Owner reserves the right to cause the required materials to be procured and the work to be done, as described in the Drawings and Specifications, and to hold the Contractor and the sureties on his bond liable for the cost and expense thereof.

I. Notice to Contractor for repairs and reconstruction will be made in the form of a registered letter addressed to the Contractor at his home office.

J. Neither the foregoing paragraphs nor any provision in the Contract Documents, nor any special guarantee time limit implies any limitation of the Contractor's liability with the law of the place of construction.

END OF SECTION 01740.

DIVISION 11 EQUIPMENT

SECTION 11145 LIFT STATION SPECIFICATIONS

SECTION 11145

LIFT STATION SPECIFICATIONS

PART 1 - GENERAL

1.1 DESCRIPTION

A. General Requirements:

1. As-Built Records:
   a. A complete set of As-Built records shall be kept by the Contractor. These records shall show all items of construction and equipment which differ in size, shape or location from those shown on the contract drawings, also any additional work, existing features or utilities revealed by construction work which are not shown on the contract drawings. These reports shall be kept up-to-date daily. They may be kept on a marked set of contract drawings to be furnished by the contractor for this purpose, or in any other form, which is approved prior to the beginning of the work. They shall be available at all times during construction for reference by the Engineer and Owner, and shall be delivered to the OCWS Engineering Department upon completion of the work.
2. Nameplate:
   a. Each piece of mechanical equipment and motors shall be provided with a substantial nameplate of non-corrodible metal securely fastened in place, and clearly and permanently inscribed with the manufacturer's name, model, or type designation, serial number, rated capacity, electrical or other power characteristics, and other appropriate nameplate data. Spare nameplates shall be provided for each lift station and placed inside each control panel (one nameplate for each model pump).
3. Lubricants:
   a. All the equipment shall be delivered fully lubricated with oil and/or grease insofar as possible. If any point cannot be so serviced, it shall be clearly marked to the effect that it is not lubricated and requires servicing prior to operation. An adequate supply of the proper lubricant, with the instructions for its application shall be supplied with the equipment for each point not lubricated prior to shipment. The Contractor shall also provide the Owner with a sufficient amount of proper lubricants for one complete change of lubricant for all equipment furnished.
4. Operating Manuals and Parts Listed:
   a. The Contractor shall furnish three (3) complete, bound sets of literature giving the following information to the Okaloosa County Water and Sewer Engineering Department.

1) Clear and Concise instruction for operations, adjustment and lubrication and other of the equipment. These instructions shall include a complete lubrication chart.
2) A list of all parts of the equipment, with catalog number and other data necessary for ordering replacement parts.
3) Such instructions and parts listed shall have been prepared specifically for the model and type of equipment furnished and shall not refer to other models and types of similar equipment.
4) Complete sets of electrical schematic(s), (as built) one of which shall be encapsulated in plastic and permanently mounted to the inside of lift station door.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Submersible Pumping Equipment:

1. Pumps:

a. Pumps shall be submersible, heavy duty, recessed impeller type or an approved equal by the Okaloosa County Water & Sewer Engineering Department.

b. The pumps shall be capable of handling raw, unscreened sewage. The discharge connection elbow shall be permanently installed in the wet well along with the discharge piping. The pumps shall be automatically connected to the discharge connection elbow when lowered into place, and shall be easily removed for inspection or service. There shall be no need for personnel to enter pump well. Sealing of the pumping unit to the discharge connection elbow shall be accomplished by the simple linear downward force of the pump. A sliding guide bracket shall be an integral part of the pump unit. The entire weight of the pump unit shall be guided by no less than two guide bars and pressed tightly against the discharge connection elbow with metal-to-metal contact by gravity only. Sealing of the discharge interface by means of a diaphragm, O-ring, or other devices will not be acceptable. No portion of the pump shall bear directly on the floor of the wet well. The pump, with its appurtenances and cable, shall be capable of continuous submergence underwater, without loss of water-tight integrity to a depth of 65 ft. Totally submersible design, with all electrical parts housed in an air-filled cast-iron, water tight enclosure. Thrust and radial bearings shall be of the ball type. The motor shafting shall be stainless steel and designed for extremely difficult sewage pumping service. The motor shall be designed to operate on 3-phase, 60-cycle, 480 volt alternating current and shall be non-overloading at all points on the pump curve.

c. The pumps shall be equipped with a cooling jacket to allow the pumps to pump down to a minimum wet well level of 18” above the wet well invert.
d. Due to existing hatch constraints, the pumps shall be a maximum of 18.7” in overall width at widest point and a maximum width from centerline left of 10”. See plan sheet C-01 for detail.

2. Manufacturing:
   a. The duplex submersible pumps shall be as manufactured by WILO, Flygt, Grundfos, KSB, or an approved equal by the Okaloosa County Water & Sewer Engineering Department. Submittal data required before approval if equal is requested.
3. Submittal Data:
   a. The contractor shall provide three (3) copies of the following submittal data for each item of pumping equipment:
      1) Certified Dimensional Print
      2) Typical Performance Curve
      3) Pictorial and Schematic Wiring Prints
      4) Parts Listed and Instructional Prints
      5) Pump Components and Warranty.
4. Pump Characteristics:
   a. Pumps shall furnish the following:
      1) Pump to pass minimum sphere of 3.25" diameter.
      2) Recessed impeller unless otherwise approved by the OCWS Engineering Department.
      3) Impellers shall be cast iron or hardened steel with replaceable wear rings. Both impeller and volute shall receive two coats of ceramic coating of equivalent to the Belzona 1321 product. Coating shall be installed in accordance with manufactures requirements for high corrosive and abrasive wastewater application. Metal shall be sandblasted to near white finish prior to application to remove production coating surface. Impeller shall be fully balance in two planes after coating application.
      4) The maximum allowed pump motor shaft speed shall be identified on the contract drawings. In no case shall a motor be supplied to operate under normal condition in excess of 1800 RPM, unless specifically noted on the contract drawings.
5. Controls:
   a. See Division 16 for complete Electrical and Control specifications.

SECTION 16000

GENERAL ELECTRICAL

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

B. See Division 16 Sections as follows:

1. “Electrical Service Characteristics”
2. “Grounding and Bonding”
3. “Electrical Supports”
4. “Electrical Identification”
5. “Conductors and Cables”
6. “Raceways and Boxes”
7. “Wiring Devices”
8. “Enclosed Switches and Circuit Breakers”
9. “Enclosed Controllers”
10. “Controls”

1.2 SUMMARY

A. This Section includes general electrical requirements.

B. All work shall be performed in accordance with NFPA 70, “National Electrical Code”, latest edition.

C. This section includes all elements required to furnish and install a complete electrical and control system for a sewage lift station as indicated on the plans and specifications. The systems include all equipment, devices, wiring, and incidental materials to operate the system in accordance with these specifications.

D. The control panel shall be capable of controlling up to two (2) 36 hp pumps.

1.3 DESCRIPTION OF WORK

A. Electrical Service Characteristics:

1. The existing three-phase underground service shall be inspected by Owner and re-used.

2. The phase rotation shall be verified at this location with a standard phase rotation meter.

B. Main Service Disconnect (Existing by Owner)

1. The main service disconnect shall be provided per Section 16410, “Enclosed Switches and Circuit Breakers”.
2. The main service disconnect shall have a lockable handle in which the pad lock can be installed in the closed or open position.
3. The main service disconnect shall be fused and shall be a NEMA 4X Stainless Steel enclosure.

C. Grounding and Bonding (Existing by Owner)

1. The electrical installation shall be grounded and bonded in accordance with Section 16060, “Grounding and Bonding”.
2. A measured ground resistance of 10 ohms or less shall be provided in accordance with Section 16060, “Grounding and Bonding”.
3. Any deviations from these requirements shall be pre-approved by the Owner.
4. The system ground conductors shall not be less than 2 AWG.
5. Grounds such as concrete-encased electrodes and underground metal well casings may be used for additional supplemental grounding. However, the 10 ohms or less requirement shall be met prior to connecting additional supplemental grounds.

D. Electrical Supports (Existing by Owner)

1. All electrical equipment shall be supported in accordance with 16072, “Electrical Supports”.
2. The meter base, main service disconnect, and control panel shall be supported per details on the drawings.
3. Per the drawings, 10' galvanized deep channel steel slotted supports shall be mounted horizontally to three 3" diameter by 10' long threaded aluminum conduit posts mounted vertically in a concrete slab. The posts shall be imbedded 3' in the ground. In addition, one of the posts shall be extended an additional 5' to support the area light.
4. Per the drawings, space will be provided on the support structure for future automatic transfer switch and SCADA panel.
5. All posts shall be capped.
6. The bottom of the control panel shall be installed a minimum of 2 feet above the concrete slab.

E. Electrical Identification (Existing by Owner)

1. All electrical equipment and conductors shall be identified in accordance with 16075, “Electrical Indentification”.

2. After phase rotation has been verified by the owner, an adhesive back label shall be applied to the back of the control panel identifying the phase rotation.
3. All conductors shall be identified per the proper phase rotation.

F. Intermediate Junction Box (by Owner)

1. The intermediate junction box shall be provided in accordance with the drawings to mitigate the transmission of sewer gases to the main control panel.
2. The intermediate junction box shall be a NEMA 4X stainless steel enclosure.
3. The door shall be hinged on the left side and shall be capable of opening 90 degrees or more.
4. The interior back panel shall be finished in a dry baked white powder coat finish.
5. The enclosure shall be properly grounded.
6. All hardware including screws, nuts, bolts, and washers shall be stainless steel.
7. Provide terminal blocks for all connections. The terminal blocks shall be capable of waterproof connections.
8. The conduit from the wet well shall be sealed with removable rubber conduit seal.
9. The conduit going to the control panel shall have conduit seal fittings per the drawings.
10. The intermediate junction box shall be supported per details on the drawings.

G. Area Light (Existing by Owner)

1. An area light shall be provided on one of the post supports in accordance with the drawings. A photocell shall be installed for daylight control.

H. Inspections

1. The project is subject to inspections by local authorities and independent inspectors. The contractor shall provide all necessary work and material to meet the requirements of these inspections.
2. After substantial completion, the contractor shall submit to the Owner a certificate of final inspection from the inspecting authority.

PART 2 - PRODUCTS

2.1 GENERAL REQUIREMENTS

A. All materials and products shall be new and where applicable shall be UL listed.

B. Substitutes are not allowed unless specifically indicated and/or at the owner’s approval.

PART 3 - EXECUTION

3.1 COMMON REQUIREMENTS FOR ELECTRICAL INSTALLATION

A. Comply with NECA 1.

B. Equipment: Install to facilitate service, maintenance, and repair or replacement of components of both electrical equipment and other nearby installations. Connect in such a way as to facilitate future disconnecting with minimum interference with other items in the vicinity.

END OF SECTION 16000

SECTION 16010

ELECTRICAL SERVICE CHARACTERISTICS

PART 1 - GENERAL

1.1 SUMMARY

A. This Section includes the following:

1. Service rating
2. Service responsibilities
3. Service installation requirements.

B. See Division 16 Section “Grounding and Bonding” for service ground requirements.

C. See Division 16 Section “Raceway and Boxes” for service conduit requirements.

D. Secondary Service Rating: 277/480 volts, 3 phases, 4 wire, grounded neutral, wye connected.

1.2 RESPONSIBILITIES

A. Coordinate with local electric service company for service to be brought to pump station, and for the installation of meter. Pay all charges (if any) in connection therewith, including permanent meter deposit, which deposit will be refunded to Contractor at time of Owner's acceptance of the pump station.

B. It is responsibility of Bidders under this Section to re-affirm with Utility Companies involved, that locations, arrangement, Power Company voltage, phase, metering required, and connections to utility service are in accordance with their regulations and requirements.

C. Obtain from Utility Company any additional charges for service of type, size and location called for. Include charges in bid to be paid by Contractor to appropriate party. Provide payment of these charges so as to allow logical progression of construction and avoid delay of completion.

D. Furnish temporary electrical facilities to provide lighting and power for construction.

E. Verify proper phase rotation sequence with Power Company. Provide clockwise rotation indicated by a standard phase rotation meter.

PART 2 - PRODUCTS (NOT APPLICABLE)

PART 3 - EXECUTION

3.1 UNDERGROUND SERVICE WITH RISER POLE

A. New secondary service to pump station consists of underground conduit and conductors from new riser pole to main distribution equipment as shown on the drawings.

B. Provide riser pole per power company requirements.

C. Terminate conduit at pole with weatherhead(s). Terminate service conduits above Power Company service drop with conductors forming drip loop before connection to drop.

3.2 METERING

A. Install devices and conduit for Power Company metering of secondary service as shown. Power Company will furnish meter, and meter conductors to Contractor for installation. Install any additional conduit, junction boxes, etc., as required by Power Company.

B. Install meter equipment in accordance with Power Company requirements.

END OF SECTION 16010.

SECTION 16060

GROUNDING AND BONDING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. This Section includes methods and materials for grounding systems and equipment.

1.3 SUBMITTALS

A. Product Data: For ground rods, grounding conductor, and connectors (including exothermic welds).

B. Field quality-control test reports.

1.4 QUALITY ASSURANCE

A. Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, Article 100, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use.

B. Comply with UL 467 for grounding and bonding materials and equipment.

PART 2 - PRODUCTS

2.1 CONDUCTORS

A. Insulated Conductors: Copper wire or cable insulated for 600 V unless otherwise required by applicable Code or authorities having jurisdiction.

B. Bare Copper Conductors:

1. Solid Conductors: ASTM B 3.
2. Stranded Conductors: ASTM B 8.
3. Bonding Cable: 28 kcmil, 14 strands of No. 17 AWG conductor, 1/4 inch in diameter.
4. Bonding Conductor: No. 2 AWG, stranded conductor.
5. Bonding Jumper: Copper tape, braided conductors, terminated with copper ferrules; 1-5/8 inches wide and 1/16 inch thick.

2.2 CONNECTORS

A. Listed and labeled by a nationally recognized testing laboratory acceptable to authorities having jurisdiction for applications in which used, and for specific types, sizes, and combinations of conductors and other items connected.

B. Bolted Connectors for Conductors and Pipes: Copper or copper alloy, bolted pressure-type, with at least two bolts.

1. Pipe Connectors: Clamp type, sized for pipe.

C. Welded Connectors: Exothermic-welding kits of types recommended by kit manufacturer for materials being joined and installation conditions.

2.3 GROUNDING ELECTRODES

A. Ground Rods: Copper-clad steel, sectional threaded type; 5/8 inch diameter by 10 feet long.

PART 3 - EXECUTION

3.1 APPLICATIONS

A. Conductors: Stranded conductors unless otherwise indicated.

B. Conductors: Minimum grounding electrode conductor shall be #2 AWG.

C. Conductor Terminations and Connections:

1. Pipe and Equipment Grounding Conductor Terminations: Bolted connectors.
2. Underground Connections: Welded connectors.
3. Connections to Structural Steel: Welded connectors.

3.2 EQUIPMENT GROUNDING

A. Install insulated equipment grounding conductors with all feeders and branch circuits.

3.3 INSTALLATION

A. Grounding Conductors: Route along shortest and straightest paths possible, unless otherwise indicated or required by Code. Avoid obstructing access or placing conductors where they may be subjected to strain, impact, or damage.

B. Ground Rods: Drive rods until tops are 12 inches below finished floor or final grade, unless otherwise indicated.

1. Interconnect ground rods with grounding electrode conductor below grade and as otherwise indicated. Make connections without exposing steel or damaging coating, if any.
2. For grounding electrode system, install at least three rods spaced at least one-rod length from each other and located at least the same distance from other grounding electrodes, and connect to the service grounding electrode conductor.

C. Bonding Straps and Jumpers: Install in locations accessible for inspection and maintenance, except where routed through short lengths of conduit.

1. Bonding to Structure: Bond straps directly to basic structure, taking care not to penetrate any adjacent parts.
2. Bonding to Equipment Mounted on Vibration Isolation Hangers and Supports: Install so vibration is not transmitted to rigidly mounted equipment.
3. Use exothermic-welded connectors for outdoor locations, but if a disconnect-type connection is required, use a bolted clamp.

3.4 FIELD QUALITY CONTROL

A. Field Tests:

1. After installing grounding system but before permanent electrical circuits have been energized, test for compliance with requirements.
2. Test completed grounding system at service disconnect enclosure grounding terminal. Make tests at ground rods before any conductors are connected.
    a. Measure ground resistance not less than two full days after last trace of precipitation and without soil being moistened by any means other than natural drainage or seepage and without chemical treatment or other artificial means of reducing natural ground resistance.
    b. Perform tests with an inductive ground resistance meter.

B. Report measured ground resistances that exceed the following values:

1. Power and Lighting Equipment or System with Capacity 500 kVA and Less: 10 ohms.

C. Excessive Ground Resistance: If resistance to ground exceeds specified values, provide and attach additional 10 feet long sectional ground rods to each of the three ground rods until the specified value is met. The Contractor shall provide no more than five sections for each of the three ground rods.

END OF SECTION 16060.

SECTION 16072

ELECTRICAL SUPPORTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. This Section includes the following:

1. Hangers and supports for electrical equipment and systems.
2. Construction requirements for concrete bases.

1.3 DEFINITIONS

A. EMT: Electrical metallic tubing.

B. IBC: International Building Code.

C. IMC: Intermediate metal conduit.

D. NBC: National Building Code.

E. OSHPD: Office of Statewide Health Planning and Development.

F. RMC: Rigid metal conduit.

G. SBC: Standard Building Code.

H. UBC: Uniform Building Code.

1.4 SUBMITTALS

A. Product Data: Illustrate and indicate style, material, strength, fastening provision, and finish for each type and size of electrical support component used.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. In other Part 2 articles where titles below introduce lists, the following requirements apply to product selection:

1. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, manufacturers specified.

2.2 SUPPORT, ANCHORAGE, AND ATTACHMENT COMPONENTS

A. Rated Strength: Adequate in tension, shear, and pullout force to resist maximum loads calculated or imposed under this Project, with a minimum structural safety factor of five times the applied force.

B. Steel Slotted Support Systems: Comply with MFMA-3, factory-fabricated components for field assembly.

1. Available Manufacturers:
   a. Cooper B-Line; a division of Cooper Industries.
   b. Allied Support Systems; Power-Strut Unit.
   c. Unistrut; Tyco International, Ltd.
2. Finishes:
   a. Metallic Coatings: Hot-dip galvanized after fabrication and applied according to MFMA-3.
3. Channel Dimensions: Selected for structural loading.

C. Raceway and Cable Supports: As described in NECA 1.

D. Conduit and Cable Support Devices: Steel hangers, clamps, and associated fittings, designed for types and sizes of raceway or cable to be supported.

E. Structural Steel for Fabricated Supports and Restraints: ASTM A 36/A 36M, steel plates, shapes, and bars; black and galvanized.

F. Mounting, Anchoring, and Attachment Components: Items for fastening electrical items or their supports to building surfaces include the following:

1. Powder-Actuated Fasteners: Threaded-steel stud, for use in hardened portland cement concrete, steel, or wood, with tension, shear, and pullout capacities appropriate for supported loads and building materials where used.
   a. Available Manufacturers:
      1) Hilti, Inc.
      2) MKT Fastening, LLC.
      3) Simpson Strong-Tie Co. Inc.

2. Mechanical-Expansion Anchors: Insert-wedge-type, stainless steel, for use in hardened portland cement concrete with tension, shear, and pullout capacities appropriate for supported loads and building materials in which used.
    a. Available Manufacturers:
        1) Cooper B-Line; a division of Cooper Industries.
        2) Hilti, Inc.
        3) MKT Fastening, LLC.
        4) Powers Fasteners.
3. Clamps for Attachment to Steel Structural Elements: MSS SP-58, type suitable for attached structural element.
4. Through Bolts: Structural type, hex head, high strength. Comply with ASTM A 325.

PART 3 - EXECUTION

3.1 APPLICATION

A. Comply with NECA 1 for application of hangers and supports for electrical equipment and systems, except if requirements in this Section are stricter.

3.2 SUPPORT INSTALLATION

A. Comply with NECA 1 for installation requirements, except as specified in this Article.

B. Strength of Support Assemblies: Where not indicated, select sizes of components so strength will be adequate to carry present and future static loads within specified loading limits. Minimum static design load used for strength determination shall be weight of supported components plus 200 lb.

3.3 CONCRETE BASES

A. Concrete Bases: Anchor equipment to concrete base according to equipment manufacturer's written instructions at Project.

B. Construct concrete bases of dimensions indicated but not less than 4 inches larger in both directions than supported unit, and so expansion anchors will be a minimum of 10 bolt diameters from edge of the base.

1. Install epoxy-coated anchor bolts for supported equipment that extend through concrete base, and anchor into structural concrete floor.
2. Place and secure anchorage devices. Use supported equipment manufacturer's setting drawings, templates, diagrams, instructions, and directions furnished with items to be embedded.
3. Use 3000-psi, 28-day compressive-strength concrete. Concrete materials, reinforcement, and placement requirements are specified in Division 3.

END OF SECTION 16072.

SECTION 16075

ELECTRICAL IDENTIFICATION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. This Section includes the following:

1. Identification for conductors and communication and control cable
2. Underground-line warning tape
3. Warning labels and signs
4. Instruction signs
5. Equipment identification labels
6. Miscellaneous identification products.

1.3 SUBMITTALS

A. Product Data: For each electrical identification product indicated.

B. Identification Schedule: An index of nomenclature of electrical equipment and system components used in identification signs and labels.

1.4 QUALITY ASSURANCE

A. Comply with ANSI A13.1 and ANSI C2.

B. Comply with NFPA 70.

C. Comply with 29 CFR 1910.145.

1.5 COORDINATION

A. Coordinate identification names, abbreviations, colors, and other features with requirements in the Contract Documents, Shop Drawings, manufacturer's wiring

diagrams, and the Operation and Maintenance Manual, and with those required by codes, standards, and 29 CFR 1910.145. Use consistent designations throughout Project.

B. Coordinate installation of identifying devices with completion of covering and painting of surfaces where devices are to be applied.

C. Coordinate installation of identifying devices with location of access panels and doors.

D. Install identifying devices before installing acoustical ceilings and similar concealment.

PART 2 – PRODUCTS

2.1 CONDUCTOR AND COMMUNICATION- AND CONTROL-CABLE IDENTIFICATION MATERIALS

A. Color-Coding Conductor Tape: Colored, self-adhesive vinyl tape not less than 3 mils thick by 1 to 2 inches wide.

B. Marker Tapes: Vinyl or vinyl-cloth, self-adhesive wraparound type, with circuit identification legend machine printed by thermal transfer or equivalent process.

C. Write-On Tags: Polyester tag, 0.010 inch thick, with corrosion-resistant grommet and polyester or nylon tie for attachment to conductor or cable.

1. Marker for Tags: Permanent, waterproof, black ink marker recommended by tag manufacturer.

2.2 UNDERGROUND-LINE WARNING TAPE

A. Description: Permanent, bright-colored, continuous-printed, polyethylene tape.

1. Not less than 6 inches wide by 4 mils thick.
2. Compounded for permanent direct-burial service.
3. Embedded continuous metallic strip or core.
4. Printed legend shall indicate type of underground line.

2.3 WARNING LABELS AND SIGNS

A. Comply with NFPA 70 and 29 CFR 1910.145.

B. Self-Adhesive Warning Labels: Factory printed, multicolor, pressure-sensitive adhesive labels, configured for display on front cover, door, or other access to equipment, unless otherwise indicated.

C. Baked-Enamel Warning Signs: Preprinted aluminum signs, punched or drilled for fasteners, with colors, legend, and size required for application. 1/4-inch grommets in corners for mounting. Nominal size, 7 by 10 inches.

D. Metal-Backed, Butyrate Warning Signs: Weather-resistant, nonfading, preprinted, cellulose-acetate butyrate signs with 0.0396-inch galvanized-steel backing; and with colors, legend, and size required for application. 1/4-inch grommets in corners for mounting. Nominal size, 10 by 14 inches.

E. Warning label and sign shall include, but are not limited to, the following legends:

1. Multiple Power Source Warning: "DANGER - ELECTRICAL SHOCK HAZARD - EQUIPMENT HAS MULTIPLE POWER SOURCES. "Workspace Clearance Warning: "WARNING - OSHA REGULATION - AREA IN FRONT OF ELECTRICAL EQUIPMENT MUST BE KEPT CLEAR FOR 42 INCHES."

2.4 INSTRUCTION SIGNS

A. Engraved, laminated acrylic or melamine plastic, minimum 1/16 inch thick for signs up to 20 sq. in. and 1/8 inch thick for larger sizes.

1. Engraved legend with black letters on white face.
2. Punched or drilled for mechanical fasteners.
3. Framed with mitered acrylic molding and arranged for attachment at applicable equipment.

2.5 EQUIPMENT IDENTIFICATION LABELS

A. Engraved, Laminated Acrylic or Melamine Label: Punched or drilled for screw mounting. White letters on a dark-gray background. Minimum letter height shall be 3/8 inch.

2.6 MISCELLANEOUS IDENTIFICATION PRODUCTS

A. Cable Ties: Fungus-inert, self-extinguishing, 1-piece, self-locking, Type 6/6 nylon cable ties.

1. Minimum Width: 3/16 inch.
2. Tensile Strength: 50 lb, minimum.
3. Temperature Range: Minus 40 to plus 185 deg F.
4. Color: Black, except where used for color-coding.

B. Fasteners for Labels and Signs: Self-tapping, stainless-steel screws or stainless-steel machine screws with nuts and flat and lock washers.

PART 3 - EXECUTION

3.1 APPLICATION

A. Power-Circuit Conductor Identification: For primary and secondary conductors No.1/0 AWG and larger in vaults, pull and junction boxes, manholes, and handholes use color-coding conductor tape and marker tape. Identify source and circuit number of each set of conductors. For single conductor cables, identify phase in addition to the above.

B. Branch-Circuit Conductor Identification: Where there are conductors for more than three branch circuits in same junction or pull box, use color-coding conductor tape and marker tape. Identify each ungrounded conductor according to source and circuit number.

C. Auxiliary Electrical Systems Conductor Identification: Identify field-installed alarm, control, signal, sound, intercommunications, voice, and data connections.

1. Identify conductors, cables, and terminals in enclosures and at junctions, terminals, and pull points. Identify by system and circuit designation.
2. Use system of marker tape designations that is uniform and consistent with system used by manufacturer for factory-installed connections.
3. Coordinate identification with Project Drawings, manufacturer's wiring diagrams, and Operation and Maintenance Manual.

D. Locations of Underground Lines: Identify with underground-line warning tape for power, lighting, communication, and control wiring and optical fiber cable. Install underground- line warning tape for both direct-buried cables and cables in raceway.

E. Warning Labels for Indoor Cabinets, Boxes, and Enclosures for Power and Lighting: Comply with 29 CFR 1910.145 and apply baked-enamel warning signs. Identify system voltage with black letters on an orange background. Apply to exterior of door, cover, or other access.

1. Equipment with Multiple Power or Control Sources: Apply to door or cover of equipment including, but not limited to, the following:
   a. Power transfer switches.
   b. Controls with external control power connections.

2. Equipment Requiring Workspace Clearance According to NFPA 70: Unless otherwise indicated, apply to door or cover of equipment but not on flush panelboards and similar equipment in finished spaces.

F. Equipment Identification Labels: On each unit of equipment, install unique designation label that is consistent with wiring diagrams, schedules, and Operation and Maintenance Manual. Apply labels to disconnect switches and protection equipment, central or master units, control panels, control stations, terminal cabinets, and racks of each

system. Systems include power, lighting, control, communication, signal, monitoring, and alarm systems unless equipment is provided with its own identification.

1. Labeling Instructions:
   a. Outdoor Equipment: Engraved, laminated acrylic or melamine label.
2. Equipment to Be Labeled:
   a. Electrical cabinets, and enclosures
   b. Disconnect switches
   c. Motor starters
   d. Push-button stations
   e. Power transfer equipment

3.2 INSTALLATION

A. Verify identity of each item before installing identification products.

B. Location: Install identification materials and devices at locations for most convenient viewing without interference with operation and maintenance of equipment.

C. Apply identification devices to surfaces that require finish after completing finish work.

D. Attach non-adhesive signs and plastic labels with screws and auxiliary hardware appropriate to the location and substrate.

E. System Identification Color Banding for Raceways and Cables: Each color band shall completely encircle cable or conduit. Place adjacent bands of two-color markings in contact, side by side. Locate bands at changes in direction, at penetrations of walls and floors, at 50-foot maximum intervals in straight runs, and at 25-foot maximum intervals in congested areas.

F. Color-Coding for Phase and Voltage Level Identification, 600 V and Less: Use the colors listed below for ungrounded service, feeder, and branch-circuit conductors.

1. Color shall be factory applied or, for sizes larger than No. 10 AWG if authorities having jurisdiction permit, field applied.
2. Colors for 277/480-V, Three Phase Circuits:
   a. Phase A: Brown
   b. Phase B: Orange
   c. Phase C: Yellow
3. Field-Applied, Color-Coding Conductor Tape: Apply in half-lapped turns for a minimum distance of 6 inches from terminal points and in boxes where splices or taps are made. Apply last two turns of tape with no tension to prevent possible unwinding. Locate bands to avoid obscuring factory cable markings.

G. Underground-Line Warning Tape: During backfilling of trenches install continuous underground-line warning tape directly above line at 6 to 8 inches below finished grade.

Use multiple tapes where width of multiple lines installed in a common trench exceeds 16 inches overall.

H. Maintain proper phase rotation throughout the electrical distribution system. The clockwise phase rotation shall be A, B, C or 1, 2, 3, front to back, top to bottom, and left to right.

END OF SECTION 16075.

SECTION 16120

CONDUCTORS AND CABLES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. This Section includes the following:

1. Building wires and cables rated 600 V and less.
2. Connectors, splices, and terminations rated 600 V and less.

1.3 DEFINITIONS

A. EPDM: Ethylene-propylene-diene terpolymer rubber.

B. NBR: Acrylonitrile-butadiene rubber.

1.4 SUBMITTALS

A. Product Data: For each type of product indicated.

1.5 QUALITY ASSURANCE

A. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, Article 100, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use.

B. Comply with NFPA 70.

1.6 COORDINATION

A. Set sleeves in cast-in-place concrete, masonry walls, and other structural components as they are constructed.

PART 2 - PRODUCTS

2.1 CONDUCTORS AND CABLES

A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:

1. Alcan Aluminum Corporation; Alcan Cable Div.
2. American Insulated Wire Corp.; a Leviton Company
3. General Cable Corporation
4. Senator Wire & Cable Company
5. Southwire Company.

B. Aluminum Conductors: Comply with NEMA WC 70.

C. Conductor Insulation: Comply with NEMA WC 70 for Types THHN-THWN.

D. Multiconductor Cable: Comply with NEMA WC 70 for Type SO with ground wire.

2.2 CONNECTORS AND SPLICES

A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:

1. AFC Cable Systems, Inc.
2. AMP Incorporated/Tyco International.
3. Hubbell/Anderson.
4. O-Z/Gedney; EGS Electrical Group LLC.
5. 3M Company; Electrical Products Division.

B. Description: Factory-fabricated connectors and splices of size, ampacity rating, material, type, and class for application and service indicated.

PART 3 - EXECUTION

3.1 CONDUCTOR MATERIAL APPLICATIONS

A. Feeders: Copper. Stranded only.

B. Branch Circuits: Copper. Stranded only.

3.2 CONDUCTOR INSULATION AND MULTICONDUCTOR CABLE APPLICATIONS AND WIRING METHODS

A. All Applications: Type THNN-THWN, single conductors in raceway.

B. Cord Drops and Portable Appliance Connections: Type SO, hard service cord with stainless steel, wire mesh, strain relief device at terminations to suit application.

C. Class 1 Control Circuits: Type THHN-THWN in raceway.

D. Class 2 Control Circuits: Type THHN-THWN in raceway.

3.3 INSTALLATION OF CONDUCTORS AND CABLES

A. Conceal cables in finished walls, ceilings, and floors, unless otherwise indicated.

B. Use manufacturer-approved pulling compound or lubricant where necessary; compound used must not deteriorate conductor or insulation. Do not exceed manufacturer's recommended maximum pulling tensions and sidewall pressure values.

C. Use pulling means, including fish tape, cable, rope, and basket-weave wire/cable grips, that will not damage cables or raceway.

D. Install exposed cables parallel and perpendicular to surfaces of exposed structural members, and follow surface contours where possible.

E. Support cables according to Division 16 Section "Electrical Supports”.

F. Identify and color-code conductors and cables according to Division 16 Section "Electrical Identification".

3.4 CONNECTIONS

A. Tighten electrical connectors and terminals according to manufacturer's published torque- tightening values. If manufacturer's torque values are not indicated, use those specified in UL 486A and UL 486B.

B. Make splices and taps that are compatible with conductor material and that possess equivalent or better mechanical strength and insulation ratings than unspliced conductors.

C. Wiring at Outlets: Install conductor at each outlet, with at least 6 inches of slack.

END OF SECTION 16120.

SECTION 16130

RACEWAYS AND BOXES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. This Section includes raceways, fittings, boxes, enclosures, and cabinets for electrical wiring.

B. Related Sections include the following:

1. Division 16 Section "Electrical Supports" for supports, anchors, and identification products, for bracing of raceways, boxes, enclosures, and cabinets.
2. Division 16 Section “Electrical Identification” for identification products.
3. Division 16 Section "Wiring Devices" for devices installed in boxes and for floor-box service fittings.

1.3 DEFINITIONS

A. EMT: Electrical metallic tubing.

B. ENT: Electrical nonmetallic tubing.

C. FMC: Flexible metal conduit.

D. IMC: Intermediate metal conduit.

E. LFMC: Liquidtight flexible metal conduit.

F. LFNC: Liquidtight flexible nonmetallic conduit.

G. RNC: Rigid nonmetallic conduit.

1.4 SUBMITTALS

A. Product Data: For surface raceways, wireways and fittings, floor boxes, hinged-cover enclosures, and cabinets.

1.5 QUALITY ASSURANCE

A. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, Article 100, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use.

B. Comply with NFPA 70.

1.6 COORDINATION

A. Coordinate layout and installation of raceways, boxes, enclosures, cabinets, and suspension system with other construction that penetrates ceilings or is supported by them, including light fixtures, HVAC equipment, fire-suppression system, and partition assemblies.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. In other Part 2 articles where subparagraph titles below introduce lists, the following requirements apply for product selection:

1. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the manufacturers specified.

2.2 METAL CONDUIT AND TUBING

A. Available Manufacturers:

1. Anamet Electrical, Inc.; Anaconda Metal Hose.
2. Grinnell Co./Tyco International; Allied Tube and Conduit Div.
3. O-Z Gedney; Unit of General Signal.
4. Wheatland Tube Co.

B. RNC Fittings: NEMA TC 3; match to conduit or tubing type and material.

C. LFNC: UL 1660.

2.3 BOXES, ENCLOSURES, AND CABINETS

A. Available Manufacturers:

1. Cooper Crouse-Hinds; Div. of Cooper Industries, Inc.
2. Emerson/General Signal; Appleton Electric Company
3. Hoffman
4. Hubbell, Inc.; Killark Electric Manufacturing Co.
5. O-Z/Gedney; Unit of General Signal
6. RACO; Division of Hubbell, Inc.
7. Robroy Industries, Inc.; Enclosure Division
8. Thomas & Betts Corporation
9. Saginaw

B. Hinged-Cover Enclosures: NEMA 250, Type 4X, stainless steel with continuous hinge cover and flush latch.

1. Metal Enclosures: Steel, finished inside and out with manufacturer's standard enamel.

C. Cabinets: NEMA 250, Type 4X, stainless steel box with removable interior panel and removable front, finished inside and out with manufacturer's standard enamel. Hinged door in front cover with flush latch and concealed hinge. Include metal barriers to separate wiring of different systems and voltage and include accessory feet where required for freestanding equipment.

2.4 FACTORY FINISHES

A. Finish: For raceway, enclosure, or cabinet components, provide manufacturer's standard prime-coat finish ready for field painting.

PART 3 - EXECUTION

3.1 RACEWAY APPLICATION

A. Outdoors:

1. Exposed: Rigid aluminum.
2. Concealed: RNC.
3. Underground, Single Run: RNC.
4. Underground, Grouped: RNC.
5. Connection to Vibrating Equipment (Including Transformers and Hydraulic, Pneumatic, Electric Solenoid, or Motor-Driven Equipment): LFMC.
6. Boxes and Enclosures: NEMA 250, Type 4X.

B. Minimum Raceway Size: 3/4-inch trade size.

3.2 INSTALLATION

A. Complete raceway installation before starting conductor installation.

B. Support raceways as specified in Division 16 Section "Electrical Supports."

C. Install temporary closures to prevent foreign matter from entering raceways.

D. Make bends and offsets so ID is not reduced. Keep legs of bends in the same plane and keep straight legs of offsets parallel, unless otherwise indicated.

E. Join raceways with fittings designed and approved for that purpose and make joints tight.

1. Use insulating bushings to protect conductors.

F. Tighten set screws of threadless fittings with suitable tools.

G. Terminations:

1. Where raceways are terminated with locknuts and bushings, align raceways to enter squarely and install locknuts with dished part against box. Use two locknuts, one inside and one outside box.
2. Where raceways are terminated with threaded hubs, screw raceways or fittings tightly into hub so end bears against wire protection shoulder. Where chase nipples are used, align raceways so coupling is square to box; tighten chase nipple so no threads are exposed.

H. Install pull wires in empty raceways. Use polypropylene or monofilament plastic line with not less than 200-lb tensile strength. Leave at least 12 inches of slack at each end of pull wire.

I. Install raceway sealing fittings at suitable, approved, and accessible locations and fill them with UL-listed sealing compound. For concealed raceways, install each fitting in a flush steel box with a blank cover plate having a finish similar to that of adjacent plates or surfaces. Install raceway sealing fittings at the following points:

1. Where conduits pass from warm to cold locations, such as boundaries of refrigerated spaces.
2. Where otherwise required by NFPA 70.

J. Stub-up Connections: Extend conduits through concrete floor for connection to freestanding equipment. Install with an adjustable top or coupling threaded inside for plugs set flush with finished floor. Extend conductors to equipment with rigid steel

conduit; FMC may be used 6 inches above the floor. Install screwdriver-operated, threaded plugs flush with floor for future equipment connections.

K. Flexible Connections: Use maximum of 72 inches of flexible conduit for recessed and semirecessed lighting fixtures; for equipment subject to vibration, noise transmission, or movement; and for all motors. Use LFMC in damp or wet locations. Install separate ground conductor across flexible connections.

L. Install hinged-cover enclosures and cabinets plumb. Support at each corner.

3.3 PROTECTION

A. Provide final protection and maintain conditions that ensure coatings, finishes, and cabinets are without damage or deterioration at time of Substantial Completion.

3.4 CLEANING

A. After completing installation of exposed, factory-finished raceways and boxes, inspect exposed finishes and repair damaged finishes.

END OF SECTION 16130.

SECTION 16140

WIRING DEVICES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. This Section includes the following:

1. Single and duplex receptacles and ground-fault circuit interrupters.
2. Single and double-pole snap switches.
3. Device wall plates.
4. Pin and sleeve connectors and receptacles.

1.3 SUBMITTALS

A. Product Data: For each type of product indicated.

1.4 QUALITY ASSURANCE

A. Source Limitations: Obtain each type of wiring device through one source from a single manufacturer.

B. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, Article 100, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use.

C. Comply with NFPA 70.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Available Manufacturers: Subject to compliance with requirements, manufacturers

offering products that may be incorporated into the Work include, but are not limited to, the following:

1. Wiring Devices:
    a. Bryant Electric, Inc./Hubbell Subsidiary
    b. Eagle Electric Manufacturing Co., Inc.
    c. Hubbell Incorporated; Wiring Device-Kellems
    d. Leviton Mfg. Company Inc.
    e. Pass & Seymour/Legrand; Wiring Devices Div.
    f. Arctite

2.2 RECEPTACLES

A. Straight-Blade-Type Receptacles: Comply with NEMA WD 1, NEMA WD 6, DSCC W-C- 596G, and UL 498.

B. Straight-Blade and Locking Receptacles: Heavy.

C. GFCI Receptacles: Straight blade, feed-through type, Heavy-Duty grade, with integral NEMA WD 6, Configuration 5-20R duplex receptacle; complying with UL 498 and UL 943. Design units for installation in a 2-3/4-inch deep outlet box without an adapter.

D. Industrial Heavy-Duty Pin and Sleeve Devices: Comply with IEC 309-1.

2.3 SWITCHES

A. Single and Double-Pole Switches: Comply with DSCC W-C-896F and UL 20.

B. Snap Switches: Heavy-Duty grade, quiet type.

2.4 WALL PLATES

A. Single and combination types to match corresponding wiring devices.

1. Plate-Securing Screws: Metal with head color to match plate finish.
2. Material for Finished Spaces: 0.035-inch thick, satin-finished stainless steel.
3. Material for Unfinished Spaces: Smooth, high-impact thermoplastic.
4. Material for Wet Locations: Cast aluminum with spring-loaded lift cover, and listed and labeled for use in "wet locations."

2.5 FINISHES

A. Color:

1. Wiring Devices Connected to Normal Power System: Gray, unless otherwise

indicated or required by NFPA 70.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Install devices and assemblies level, plumb, and square with building lines.

B. Arrangement of Devices: Unless otherwise indicated, mount flush, with long dimension vertical, and with grounding terminal of receptacles on top. Group adjacent switches under single, multigang wall plates.

3.2 IDENTIFICATION

A. Comply with Division 16 Section "Electrical Identification."

3.3 CONNECTIONS

A. Ground equipment according to Division 16 Section "Grounding and Bonding."

B. Connect wiring according to Division 16 Section "Conductors and Cables."

C. Tighten electrical connectors and terminals according to manufacturer's published torque- tightening values. If the manufacturer's torque values are not indicated, use those specified in UL 486A and UL 486B.

3.4 FIELD QUALITY CONTROL

A. Perform the following field tests and inspections and prepare test reports:

1. After installing wiring devices and after electrical circuitry has been energized, test for proper polarity, ground continuity, and compliance with requirements. Test GFCI operation with both local and remote fault simulations according to manufacturer's written instructions.

B. Remove malfunctioning units, replace with new units, and retest as specified above.

END OF SECTION 16140.

SECTION 16289

SURGE PROTECTION FOR LOW-VOLTAGE ELECTRICAL POWER CIRCUITS

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes field-mounted SPDs for low-voltage (120 to 600 V) power distribution and control equipment.

1.2 ACTION SUBMITTALS

A. Product Data: For each type of product.

1. Include rated capacities, operating characteristics, electrical characteristics, and furnished specialties and accessories.
2. Copy of UL Category Code VZCA certification, as a minimum, listing the tested values for VPRs, Inominal ratings, MCOVs, type designations, OCPD requirements, model numbers, system voltages, and modes of protection.

1.3 INFORMATIONAL SUBMITTALS

A. Field quality-control reports.

B. Sample Warranty: For manufacturer's special warranty.

1.4 CLOSEOUT SUBMITTALS

A. Maintenance data.

1.5 WARRANTY

A. Manufacturer's Warranty: Manufacturer agrees to replace or replace SPDs that fail in materials or workmanship within specified warranty period.

1. Warranty Period: Five years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 GENERAL SPD REQUIREMENTS

A. SPD with Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.

B. Comply with NFPA 70.

C. Comply with UL 1449.

D. MCOV of the SPD shall be the nominal system voltage.

2.2 SERVICE ENTRANCE SUPPRESSOR

A. Manufacturers: Subject to compliance with requirements provide products by one of the following:
1. Advanced Protection Technologies Inc. (APT).
2. Eaton Corporation.
3. Schneider Electric Industries SAS.
4. Siemens Industry, Inc.
5. Surge Suppression, Inc.

B. SPDs: Comply with UL 1449, Type 1.

1. SPDs with the following features and accessories:

a. Integral disconnect switch.
b. Internal thermal protection that disconnects the SPD before damaging internal suppressor components.
c. Indicator light display for protection status.

C. Peak Surge Current Rating: The minimum single-pulse surge current withstand rating per phase shall not be less than 240kA. The peak surge current rating shall be the arithmetic sum of the ratings of the individual MOVs in a given mode.

D. Protection modes and UL 1449 VPR for grounded wye circuits with 480Y/277 V, three-phase, four-wire circuits shall not exceed the following:

1. Line to Neutral: 1200 V for 480Y/277 V.
2. Line to Ground: 1200 V for 480Y/277 V.
3. Line to Line: 2000 V for 480Y/277 V.

E. SCCR: Equal or exceed 100 kA.

F. Inominal Rating: 20 kA.

2.3 ENCLOSURES

A. Outdoor Enclosures: NEMA 250, Type 4X Stainless Steel.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Comply with NECA 1.

B. Install an OCPD or disconnect as required to comply with the UL listing of the SPD.

C. Install SPDs with conductors between suppressor and points of attachment as short and straight as possible, and adjust circuit-breaker positions to achieve shortest and straightest leads. Do not splice and extend SPD leads unless specifically permitted by manufacturer. Do not exceed manufacturer's recommended lead length. Do not bond neutral and ground.

D. Use crimped connectors and splices only. Wire nuts are unacceptable.

E. Complete startup checks according to manufacturer's written instructions. Energize SPDs after power system has been energized, stabilized, and tested.

3.2 FIELD QUALITY CONTROL

A. Perform the following tests and inspections with the assistance of a factory-authorized service representative.

1. Compare equipment nameplate data for compliance with Drawings and Specifications.
2. Inspect anchorage, alignment, grounding, and clearances.
3. Verify that electrical wiring installation complies with manufacturer's written installation requirements.

B. An SPD will be considered defective if it does not pass tests and inspections.

C. Prepare test and inspection reports.

3.3 DEMONSTRATION

A. Train Owner's maintenance personnel to operate and maintain SPDs.

END OF SECTION 16289.

SECTION 16410

ENCLOSED SWITCHES AND CIRCUIT BREAKERS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. This Section includes the following individually mounted, enclosed switches and circuit breakers:

1. Non-fusible switches
2. Enclosures.

1.3 DEFINITIONS

A. GD: General duty.

B. HD: Heavy duty.

C. RMS: Root mean square.

D. SPDT: Single pole, double throw.

1.4 SUBMITTALS

A. Product Data: For each type of enclosed switch, accessory, and component indicated. Include dimensioned elevations, sections, weights, and manufacturers' technical data on features, performance, electrical characteristics, ratings, and finishes.

1. Enclosure types and details for types other than NEMA 250, Type 1.
2. Current and voltage ratings.
3. Short-circuit current rating.

B. Operation and Maintenance Data: For enclosed switches to include in emergency, operation, and maintenance manuals.

1.5 QUALITY ASSURANCE

A. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, Article 100, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use.

B. Comply with NFPA 70.

PART 2 - PRODUCTS

2.1 FUSIBLE AND NON-FUSIBLE SWITCHES

A. Available Manufacturers:

1. Eaton Corporation; Cutler-Hammer Products
2. General Electric Co.; Electrical Distribution & Control Division
3. Siemens Energy & Automation, Inc.
4. Square D/Group Schneider.

B. Fusible Switch, 600 A and Smaller: NEMA KS 1, Type HD, with clips or bolt pads to accommodate specified fuses, lockable handle with capability to accept two padlocks, and interlocked with cover in closed position.

C. Accessories:

1. Equipment Ground Kit: Internally mounted and labeled for copper and aluminum ground conductors.
2. Neutral Kit: Internally mounted; insulated, capable of being grounded, and bonded; and labeled for copper and aluminum neutral conductors.

2.2 ENCLOSURES

A. NEMA AB 1 and NEMA KS 1 to meet environmental conditions of installed location.

1. Outdoor Locations: NEMA 250, Type 4X stainless steel.
2. Other Wet or Damp Indoor Locations: NEMA 250, Type 4X stainless steel.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine elements and surfaces to receive enclosed switches for compliance with installation tolerances and other conditions affecting performance.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

A. Comply with applicable portions of NECA 1, NEMA PB 1.1, and NEMA PB 2.1 for installation of enclosed switches.

B. Mount individual wall-mounting switches with tops at uniform height, unless otherwise indicated.

C. Comply with mounting and anchoring requirements specified in Division 16 Section "Electrical Supports."

3.3 IDENTIFICATION

A. Identify field-installed conductors, interconnecting wiring, and components; provide warning signs as specified in Division 16 Section "Electrical Identification."

B. Enclosure Nameplates: Label each enclosure with engraved metal or laminated-plastic nameplate as specified in Division 16 Section "Electrical Identification."

3.4 CLEANING

A. On completion of installation, vacuum dirt and debris from interiors; do not use compressed air to assist in cleaning.

B. Inspect exposed surfaces and repair damaged finishes.

END OF SECTION 16410.

SECTION 16420

ENCLOSED CONTROLLERS

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes the following enclosed controllers rated 600 V and less:

1. Reduced-voltage solid-state.

1.2 DEFINITIONS

A. CPT: Control power transformer.

B. MCCB: Molded-case circuit breaker.

C. MCP: Motor circuit protector.

D. N.C.: Normally closed.

E. N.O.: Normally open.

F. OCPD: Overcurrent protective device.

1.3 SUBMITTALS

A. Product Data: For each type of enclosed controller.

B. Shop Drawings: For each enclosed controller. Include dimensioned plans, elevations, sections, details, and required clearances and service spaces around controller enclosures.

1. Wiring Diagrams: For power, signal, and control wiring.

C. Field quality-control reports.

D. Operation and maintenance data.

1.4 QUALITY ASSURANCE

A. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.

B. Comply with NFPA 70.

PART 2 - PRODUCTS

2.1 REDUCED-VOLTAGE SOLID-STATE CONTROLLERS

A. General Requirements for Reduced-Voltage Solid-State Controllers: Comply with UL 508.

B. Reduced-Voltage Solid-State Controllers: An integrated unit with power SCRs, heat sink, microprocessor logic board, door-mounted digital display and keypad, bypass contactor, and overload relay; suitable for use with NEMA MG 1, Design B, polyphase, medium induction motors.

1. Manufacturers: Subject to compliance with requirements, provide products by:
   a. Danfoss VLT Soft Starter Series (To Match Existing, No Exceptions)
2. Configuration: Standard duty; nonreversible.
3. Starting Mode: field selectable.
4. Stopping Mode: field selectable.
5. Shorting (Bypass) Contactor: Operates automatically when full voltage is applied to motor, and bypasses the SCRs. Solid-state controller protective features shall remain active when the shorting contactor is in the bypass mode.
6. Shorting Contactor Coils: Pressure-encapsulated type; manufacturer's standard operating voltage, matching control power or line voltage, depending on contactor size and line-voltage rating.
7. Logic Board: Identical for all ampere ratings and voltage classes, with environmental protective coating.
8. Control Circuits: 120-V ac; obtained from integral CPT, with primary and secondary fuses, with CPT of sufficient capacity to operate integral devices and remotely located pilot, indicating, and control devices.
   a. CPT Spare Capacity: 200 VA.
9. Adjustable acceleration-rate control using voltage or current ramp, and adjustable starting torque control with up to 400 percent current limitation for 20 seconds.
10. SCR bridge shall consist of at least two SCRs per phase, providing stable and smooth acceleration without external feedback from the motor or driven equipment.
11. Keypad, front accessible; for programming the controller parameters, functions, and features; shall be manufacturer's standard and include not less than the following functions:

a. Adjusting motor full-load amperes, as a percentage of the controller's rating.
b. Adjusting current limitation on starting, as a percentage of the motor full-load current rating.
c. Adjusting linear acceleration and deceleration ramps, in seconds.
d. Initial torque, as a percentage of the nominal motor torque.
e. Adjusting torque limit, as a percentage of the nominal motor torque.
f. Adjusting maximum start time, in seconds.
g. Adjusting voltage boost, as a percentage of the nominal supply voltage.
h. Selecting stopping mode, and adjusting parameters.
i. Selecting motor thermal overload protection class between 5 and 30.
j. Activating and de-activating protection modes.
k. Selecting or activating communication modes.

12. Digital display, front accessible; for showing motor, controller, and fault status; shall be manufacturer's standard and include not less than the following:

    a. Controller Condition: Ready, starting, running, stopping.
    b. Motor Condition: Amperes, voltage, power factor, power, and thermal state.
    c. Fault Conditions: Controller thermal fault, motor overload alarm and trip, motor underload, overcurrent, shorted SCRs, line or phase loss, phase reversal, and line frequency over or under normal.

13. Controller Diagnostics and Protection:

    a. Microprocessor-based thermal protection system for monitoring SCR and motor thermal characteristics, and providing controller overtemperature and motor-overload alarm and trip; settings selectable via the keypad.
    b. Protection from line-side reverse phasing; line-side and motor-side phase loss; motor jam, stall, and underload conditions; and line frequency over or under normal.
    c. Shunt trip that opens the disconnecting means when the controller diagnostics detect a faulted solid-state component.

14. Remote Output Features:

    a. All outputs prewired to terminal blocks.
    b. Form C status contacts that change state when controller is running.
    c. Form C alarm contacts that change state when a fault condition occurs.

15. Optional Features:

    a. Solid-State Overload Relay:

        1) Switch or dial selectable for motor running overload protection.
        2) Sensors in each phase.
        3) Class 10 tripping characteristic selected to protect motor against voltage and current unbalance and single phasing.
        4) Class II ground-fault protection, with start and run delays to prevent nuisance trip on starting.

    b. Isolated overload alarm contact.

c. External overload reset push button.

PART 3 - EXECUTION

3.1 IDENTIFICATION

A. Identify enclosed controllers, components, and control wiring. Comply with requirements for identification specified in Division 16 Section "Electrical Identification."

1. Identify field-installed conductors, interconnecting wiring, and components; provide warning signs.
2. Label each enclosure with engraved nameplate.
3. Label each enclosure-mounted control and pilot device.

3.2 CONTROL WIRING INSTALLATION

A. Bundle, train, and support wiring in enclosures.

B. Connect selector switches and other automatic-control selection devices where applicable.

1. Connect selector switches with enclosed-controller circuit in both manual and automatic positions for safety-type control devices such as low- and high-pressure cutouts, high-temperature cutouts, and motor overload protectors.

3.3 FIELD QUALITY CONTROL

A. Perform tests and inspections.

B. Acceptance Testing Preparation:

1. Test insulation resistance for each enclosed controller, component, connecting supply, feeder, and control circuit.
2. Test continuity of each circuit.

C. Tests and Inspections:

1. Inspect controllers, wiring, components, connections, and equipment installation.
2. Test insulation resistance for each enclosed-controller element, component, connecting motor supply, feeder, and control circuits.
3. Test continuity of each circuit.
4. Verify that voltages at controller locations are within plus or minus 10 percent of motor nameplate rated voltages.

5. Test each motor for proper phase rotation.
6. Perform each electrical test and visual and mechanical inspection stated in NETA Acceptance Testing Specification. Certify compliance with test parameters.
7. Correct malfunctioning units on-site, where possible, and retest to demonstrate compliance; otherwise, replace with new units and retest.

D. Enclosed controllers will be considered defective if they do not pass tests and inspections.

E. Prepare test and inspection reports. Include notation of deficiencies detected, remedial action taken, and observations after remedial action.

END OF SECTION 16420.

SECTION 16900

CONTROLS

PART 1 - GENERAL

1.1 SUMMARY

A. This Section includes all elements required to furnish and install complete electrical control systems to control, operate, and display information as indicated in the plans and specifications. Control systems shall include all equipment, devices, wiring, and incidental materials to operate the system and display or relay information in accordance with these specifications. The intention of this Section is to secure complete control systems that will operate equipment in accordance with narratives and requirements indicated in the plans, these specifications, and manufacturer's literature for the equipment installed. All circuits and devices for protection of installed equipment shall be included in the price bid.

1.2 SYSTEM DESCRIPTION - WASTEWATER PUMPING STATION

A. The control system shall include all components necessary to be capable of satisfactorily performing the functions listed in this Article.

B. A duplex pump control panel shall be furnished and installed as shown on the plans.

The controls shall turn on the lead pump when fluids rise to preset level, turn on a lag pump at a higher level and actuate an autodialer for high level alarm when fluids rise to an even higher level. They shall turn off all pumps when fluid levels drop to a preset level. Primary Control shall be by the SCADA System with secondary float backup. A total of five floats shall be utilized.

1. An alternator shall be installed to alternate the lead pump and an elapsed run time meter shall be provided for each pump. Seal failure alarms and relays shall be installed to indicate moisture entering the outer seal of the pump motors. The seal failure alarm shall not shut down the pump. Starter overloads shall be installed to shut down any over-heated motor and actuate alarm. Only the starter overload alarm will lock out a pump motor. A separate panel light for each of the above conditions shall be mounted inside the panel. The controls shall be so wired and interlocked to prevent a false indication of seal failure or high temperature due to momentary or extended power fluctuations or failures.

1.3 SUBMITTALS

A. Product Data: Manufacturing data sheets for all components indicating pertinent data and identifying each component by item number and nomenclature as indicated on the drawings and in the specifications. Designation as listed in the bill of material shall be clearly indicated on the data sheet. If multiple products or options are shown on the same sheet, Contractor shall clearly indicate which products and options are intended for the item being provided.

B. Shop Drawings: Submit shop drawings in accordance with Section 01300, Submittals. Include the following:

1. Bill of Material listing all components provided in the control panel.
2. Complete control schematic in ladder diagram format. Diagram shall include all terminal and wire numbering. Designations for components shall match that used in the bill of material.
3. Physical layout drawing of switches, meters, pilot lights, and other devices on the control panel door or motor control center cover. If there is a dead front panel behind the door on which components are mounted, then a physical layout drawing of the dead front panel is also required. Component designations shall match the bill of material. Also indicate location and designation of each nameplate.
4. Physical layout drawing of all devices on the back planes. This shall include but not be limited to relays, starters, contactors, terminal blocks, and wiring troughs. Component designations shall match the bill of material.
5. A detailed system of identification for control conductors using both color coding and a coded numbering system. Identification system shall be in accordance with industrial standards and practices.
6. A set of physical wiring diagram drawings. Diagrams shall be point-to-point, and shall include all terminal and wire numbering. The physical layout drawings shall be used as base sheets for the wiring diagrams. The number of wiring diagram sheets shall be kept to a minimum, but still allow the accurate tracing of circuits during troubleshooting. There shall be no overlapping of wires shown in the diagrams.
7. Nameplate legend, showing the designation for each, and a scaled or full-size detail of the nameplate. Contractor shall also include a description of the material used for the plate, and the size and typeface of the lettering.
8. Range of and differential control setting for each variable control device.

C. Closeout Documentation: Prior to Contract Closeout, Contractor shall turn over to the Engineer one set of reproducible "as built" drawings as described below, and one set of all equipment catalog and maintenance data. Explain and demonstrate the electrical control systems to Owner and/or Owner's representative. As-built drawings shall consist of one complete set of drawings as described in the paragraph on Submittals, with modifications made to reflect any changes made in the field during construction. Contractor shall submit drawings on Mylar or vellum, along with CAD drawings of the same on floppy disk or CD-ROM. It is permissible to use any part of the Contract Documents as a starting point in the development of As-Built drawings; however, the

Contract Documents have no terminal and wire numbers, and will require substantial modification before submission.

D. All above submittals shall be completed and approved prior to Construction of Systems. Submittal shall be bound with pages continuously numbered. Any oversize documents shall be folded so as to be 8.5"x11" or smaller. Submittals shall include a cover sheet and table of contents listing all items being submitted, and the starting page number of each submittal item. Partial submittals will not be acceptable.

E. Qualification Data: For testing personnel, as described in “Startup and Testing” article of this section.

1.4 QUALITY ASSURANCE

A. All control equipment shall conform to UL 508.

B. Freestanding control panels shall be constructed in accordance with UL 508A.

C. Controls which are installed in Motor Control Centers shall comply with the requirements of UL 845.

D. Controls which are installed in Switchboards shall comply with the requirements of UL 891.

E. Installer Qualifications: The Contractor shall secure the services of a controls subcontractor that is regularly engaged in constructing and installing control equipment.

1.5 PRODUCT DELIVERY, STORAGE AND HANDLING

A. All materials relating to this section individually and as completed panels shall be handled as fragile equipment and stored only inside closed buildings and protected from moisture entry. All openings shall be continuously plugged until the moment that connections thereto are actually made.

1.6 CONTROL VOLTAGE

A. Control voltage shall be 120 volts unless otherwise indicated.

PART 2 - PRODUCTS

2.1 GENERAL

A. Control devices shall be heavy duty type units as manufactured by Idec, Allen Bradley, Square "D", General Electric, or equal. Where available, all devices incorporated shall be of the same manufacturer.

B. Pilot lights and switches shall be oil-tight, heavy-duty type. Devices shall include individual, extra-large nameplates indicating their specific function. Equal to Westinghouse Type OT, Idec ASN, General Electric Type CR240, and Square D Class 9001.

C. Control relays shall be heavy-duty industrial control relays with round type sockets containing a full set of pins and numbered screw terminals. Relay contacts shall be rated at 240 volts or higher, 10 amps with silver alloy contacts. Two Form-C contacts (minimum) shall be provided on each relay. Relay shall include an indicator inside the case to indicate whether or not the relay coil is energized. Provide with manual engagement latch to test energize the relay.

D. Coils shall be continuous duty rated.

E. Power relays and contactors shall be NEMA rated.

2.2 TERMINAL STRIPS

A. Terminal strips shall be solderless box lug compression type of adequate capacity for the size and number of conductors to be terminated. The area around each lug and set screw shall have insulation barriers to prevent accidental shorting during assembly or use.

B. Ratings: 300V and 20A minimum.

2.3 SELECTOR SWITCHES AND INDICATING LIGHTS

A. Selector switches, and indicating lights shall be heavy duty type of the same NEMA rating and suitable for installation in the NEMA rated panels specified.

B. Indicating lights shall be 120-V, miniature, bayonet base incandescent lamps and shall be push-to-test type.

C. Legend plates shall be provided with all units.

D. Selector switches shall be of the rotary lever type and shall have contacts as required.

E. Each device shall be installed with a nameplate. Nameplates shall be permanently attached.

2.4 CONTROL PANEL ENCLOSURE

A. All hinges and screws shall be stainless steel. Hinges shall be continuous piano type. Door shall be hinged on the left side and shall open greater than 90 degrees.

B. Dead-front latches shall be quarter-turn adjustable latches with ” thick latching dog and knurled knob.

C. Environmental Rating: NEMA 250, Type 4X, stainless steel.

D. Panel shall be adequately sized to house all components, meet code requirements for wire bending and prevent overheating of components. These measures shall not compromise the NEMA rating of the enclosure. Minimum enclosure dimension shall be 36"w x 48"h x 12"d.

2.5 RUNNING TIME METERS

A. Running time meters shall be non-resettable reading in hours and tenths of hours, from 0.0 to 99,999.9 readout. Acceptable manufacturers are Engler, Yokogana, Reddington, or equal.

2.6 PHASE LOSS MONITORS

A. Three phase power monitors shall be designed to continuously monitor power lines for phase loss, low voltage, power loss, and phase reversal. The unit shall consist of a solid state voltage and phase angle sensing circuit driving a SPDT electro mechanical relay. The relay shall be furnished for the nominal voltage utilized. The unit shall be self-protected for 2500 volt transients. The unit shall be automatically resetting. The phase loss monitor shall be Crouzet ONLY, no substitutions.

2.7 STARTERS

A. Starters shall be as specified in Division 16 Section “Enclosed Controllers”.

2.8 CONTROL POWER TRANSFORMERS

A. Size of transformer shall be 500VA minimum, unless a larger size is indicated on plans.

B. Available Manufacturers:

1. Micron
2. General Electric
3. Hevi-Duty.

2.9 PANEL-MOUNTED LIGHTING

A. Comply with requirements of Division 16 Section “Interior Lighting”.

B. Luminaries shall be 15 to 30 watt, rapid start fluorescent strip type, with warm white lamps.

C. A lens or guard shall be provided over each lamp.

D. Luminaire ballasts shall be rated for reliable operation in an ambient temperature of 30 degrees Fahrenheit.

2.10 DUPLEX RECEPTACLE

A. Receptacles shall comply with Division 16 Section “Wiring Devices”.

B. Controls shall include one (1) ground-fault circuit interrupting duplex receptacle in NEMA 5-20R configuration mounted on the outside.

2.11 FLOAT SWITCHES

A. Free-Hanging Float Switches: Free-hanging float switches shall be constructed of molded polyethylene with internal and redundant polyurethane foam. All cable and switch connections shall be potted and cable shall be rubber jacketed with fine stranded #18 conductors. The float switch shall be equipped with a suspended weight kit. Hanging float switches shall be similar and equal to ROTO-FLOAT and CONERY.

2.12 AUTO-DIALER

A. Dialer shall be capable of sensing and transmitting up to four alarm messages to a remote location via a voice-grade telephone line. Dialer shall utilize touch-tone dialing and shall be capable of dialing up to two different numbers, each up to sixteen digits long. Dialer shall have non-volatile memory and shall be equipped with a 24-hour battery backup. Dialer to operate on 120 volt, 60 Hz power and have a precision voltage controlled rapid recharge battery charger. Dialer to be Pro-Tech, Inc. Model # DD3-PTI. The dialer shall be furnished and installed by the Contractor. The Owner will program the dialer.

2.13 TELEPHONE INTERCONNECTIONS

A. Equipment connecting to telephone company shall be compatible to telephone company requirements and terminals shall be in accordance with their directives. Provide modular plugs and jacks for ease of servicing and testing. Provide appropriate control conductors to the telephone company service point.

2.14 CONTROL WIRING

A. Control wiring in panels shall be copper conductor, and a minimum 16 AWG stranded, and shall meet NEMA Class II.C requirements.

B. All SCADA wiring in control panel shall be blue.

2.15 IDENTIFICATION PRODUCTS

A. At Terminal Ends and in Above-Grade Junction Boxes: Self-laminating wire and cable markers equal to the Brady B-292 system.

B. In Manholes and Below-Grade Junction Boxes: Molded plastic clip on markers equal to Brady SCN series.

2.16 RELAYS, TIME DELAY

A. Time delay relays shall be solid state relays with a timer adjustable over the range 1 to 60 minutes unless other ranges are indicated or required. Time delay relays shall be Mars or equal.

2.17 RELAYS, SEAL FAIL

A. Seal fail relays shall be 8-pin plug in Crouzet Model PNR 110A.

2.18 RELAYS, ALTERNATOR

A. The alternator shall switch between the lead pumps to maintain equal run time. The alternator relay shall be 8-pin type Crouzet Model PJRX110A.

2.19 LIGHTNING ARRESTOR

A. The lightning arrestor for the control panel shall be a GE 9L18BBB301 Protective Capacitor installed in combination with a GE 9L15ECC001 Secondary Arrestor.

PART 3 - EXECUTION

3.1 GENERAL

A. All Work shall be done in accordance with appropriate Division 16 Sections and shall be performed in a workmanlike manner.

3.2 FABRICATION

A. All control panels shall be shop assembled and factory tested prior to delivery to the site. Final as-built drawings shall be made to reflect all adjustments and modifications made to the systems after start-up has been completed satisfactorily. All equipment and devices shall be mounted, adjusted, calibrated and operated exactly as recommended by the manufacturer of each component.

B. Control switches, pilot lights, and other devices shall be grouped in a logical arrangement for ease of operation.

C. Control equipment shall be mounted to panel back plates with screws or bolts fastened into drilled and tapped holes. Nuts shall not be used. Panel face mountings shall be made by cutting holes exactly to manufacturer's instructions including keyways, etc. Engraved legend plates indicating function and operational instructions as applicable shall be mounted on all devices. All equipment shall be labeled and identified with designations which match the control wiring diagrams.

3.3 EQUIPMENT INSTALLATION

A. All equipment shall be installed in accordance with approved shop drawings and manufacturer's written instructions.

3.4 WIRING AND TERMINATIONS

A. All wires shall be run parallel to side walls of panels and/or in covered wiring troughs. Wiring passing across hinged areas shall be protected by abrasion resistant cabling material.

B. All connections shall be made on mechanical compression type terminals whenever possible. When screw terminals must be used, wire ends shall be equipped with compression applied lugs. All connections for incoming and outgoing electrical wires in all panels and junction boxes shall be made on fully labeled terminal boards mounted inside the panel.

3.5 IDENTIFICATION

A. All conductors shall be labeled at each end with numbers matching shop drawings and all wire terminations shall be identified by the component terminal numbers and shown on shop drawings. Each conductor shall be identified at each terminal end and each accessible manhole or junction box.

B. Identify and color-code conductors and cables according to Division 16 Section "Electrical Identification."

C. Identify all major components as shown on plans, according to Division 16 Section “Electrical Identification”.

3.6 FIELD CALIBRATION

A. All instrumentation shall be calibrated in the presence of the Architect in accordance with the range and accuracy specified herein.

B. All equipment shall be calibrated using a standard calibration sheet which has been approved by the Architect. This calibration sheet shall be filled out identifying the instrument or item to be calibrated and signed with date and initials of the person calibrating the device.

3.7 START-UP AND TESTING

A. Start-up and testing services shall be performed by ISA certified technicians experienced in these type systems. Certifications shall be attached with the bid documents.

3.8 DEMONSTRATION

A. Engage a factory-authorized service representative to train Owner's maintenance personnel to adjust, operate, and maintain control devices.

B. Train Owner's maintenance personnel on procedures and schedules for maintaining control devices.

C. Review data in maintenance manuals. Refer to Division 1 Section "Contract Closeout."

D. Schedule training with Owner with at least seven (7) days' advance notice.

END OF SECTION 16900.

APPENDIX A

HALF-SIZE DRAWINGS

(DRAFT – NOT FOR CONSTRUCTION)

ENGINEERING PLANS
FOR

DRAFT

BROWN PLACE PUMP STATION AND CONTROLS UPGRADE (EQUIPMENT ONLY)

OKALOOSA COUNTY WATER & SEWER SYSTEM
OKALOOSA COUNTY, FLORIDA
THE BOARD OF COUNTY COMMISSIONERS

CHAIRMAN
ROBERT A. "TREY" GOODWIN, III

BOARD MEMBERS
CAROLYN KETCHEL, VICE CHAIR
NATHAN BOYLES
GRAHAM W. FOUNTAIN
CHARLES K. WINDES, JR

CLERK
JD PEACOCK II

COUNTY ADMINISTRATOR
JOHN HOFSTAD

OKALOOSA COUNTY
WATER AND SEWER
JEFF LITTRELL, DIRECTOR
MARK WISE, P.E., DEPUTY DIRECTOR

ITB WS 66-20

JUNE 2020
POLY Job No. 41-378

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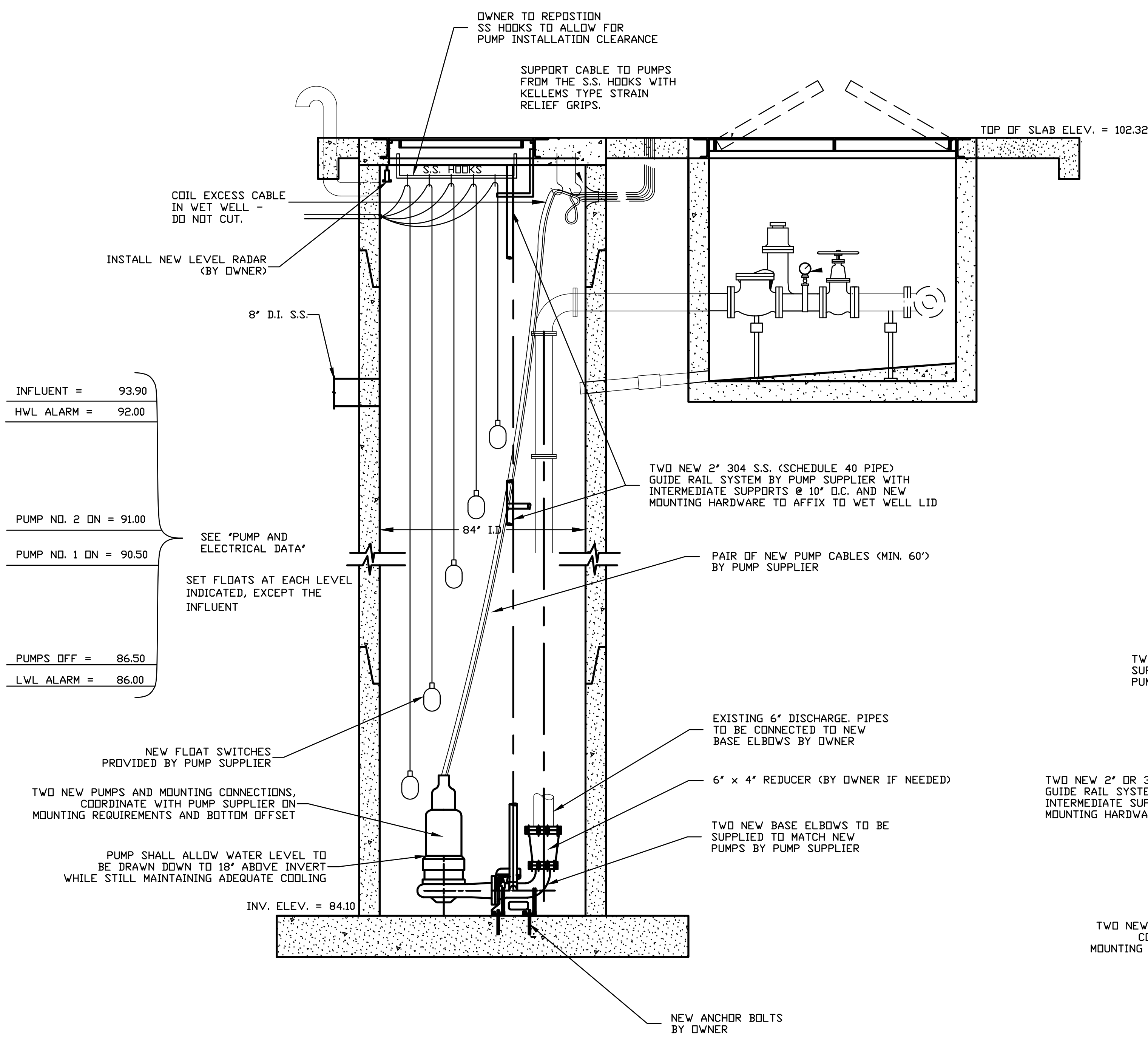
INDEX OF SHEETS

CERTIFICATE OF AUTHORIZATION CA-1818

Poly, Inc. - H:\MASTER PROJECT FOLDER\(41) Okaloosa\41-378 General Engineering Support\Brown's Place PS Upgrade\Plans\C-01 PUMP STATION.dwg [C-01] Last Printed: July 06, 2020 - 04:41pm By: MEvans

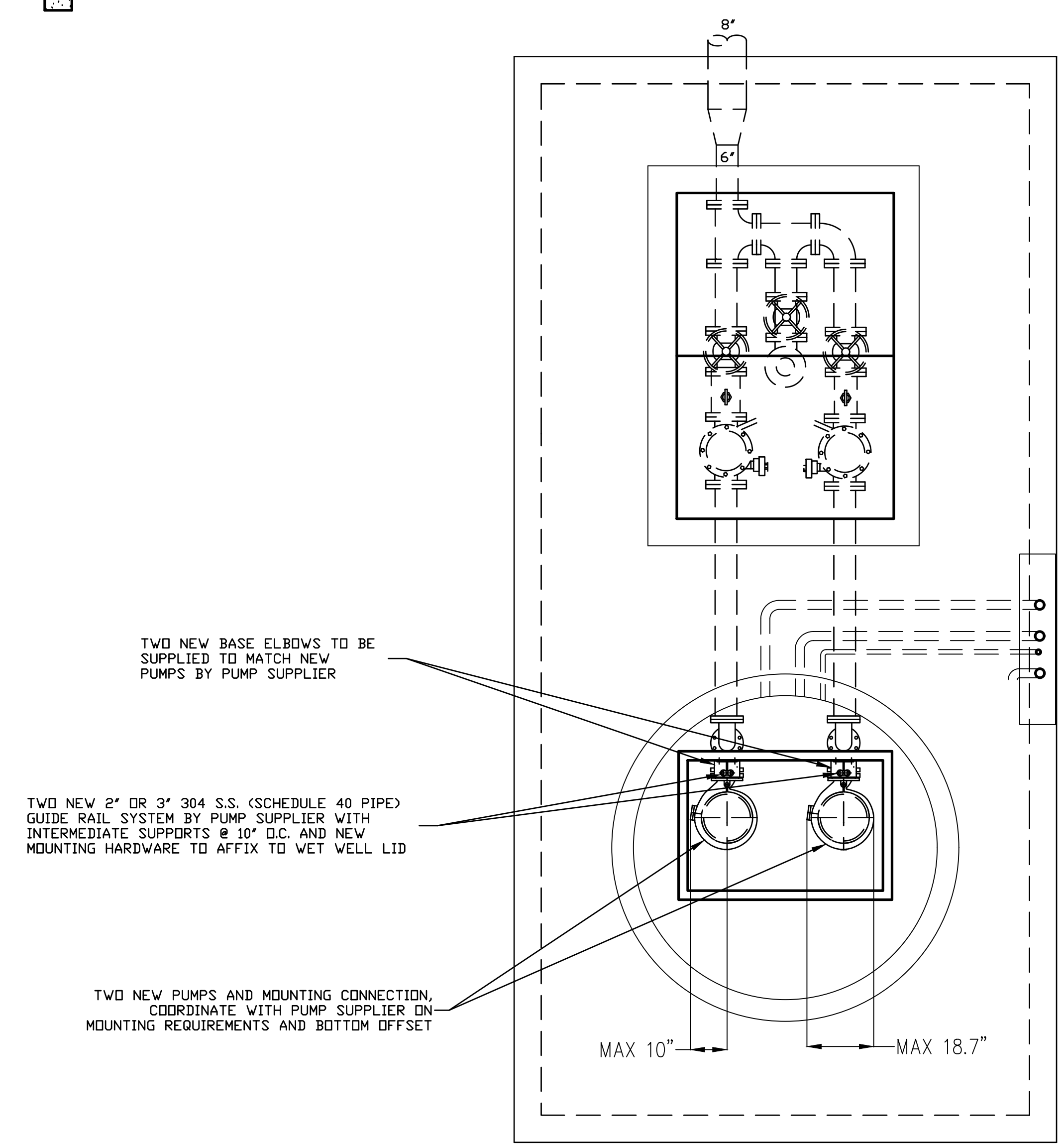
SPECIFICATIONS

PUMP DATA						STARTER	MOTOR SERVICE DATA				
PUMP STATION		CAP. G.P.M.	T.D.H.	H.P.	R.P.M.	STARTER	BREAKER	BRANCH CKT. CONDUCTORS	CONDUIT	EQUIPMENT GROUND	VOLTAGE
BROWN PLACE	P.S. #302	550	111	34	1750	SEE ELECTRICAL	SEE ELECTRICAL				



SECTION A-A

NOT TO SCALE



PLAN

NOT TO SCALE

Revision | Description | Date

DESIGNED BY: MCE
DRAWN BY: MCE
DATE: JUNE 2020

ENG / ARCH / SURVEYOR OF RECORD: MICHAEL C. EVANS, P.E.
REGISTRATION No. 59311

Cert. of Auth. No.	AL.	FL.	GA.
ARCHITECT	CA-0480	AA-C001551	001118
ENGINEER	CA-78-E	CA-1818	001118
SURVEY	CA-0018-LS	LB7527	LSF00132

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BROWN PLACE PUMP STATION AND CONTROLS UPGRADE (EQUIPMENT ONLY)
OKALOOSA COUNTY WATER AND SEWER
CRESTVIEW, FLORIDA

PUMP STATION UPGRADE PLAN AND PROFILE

SHEET No. C-01

PROJECT No. 41-378

ELECTRICAL SYMBOL LEGEND:

Lighting System Symbols

- A 1 — RECESSED CEILING MOUNTED LIGHT FIXTURE – FIXTURE MARK "A", CIRCUIT "1" INDICATED.
- WALL MOUNTED LIGHT FIXTURE.
- SURFACE MOUNTED STRIP FLUORESCENT FIXTURE, 4' LONG.
- $K — SWITCH, SINGLE POLE, 20A, 120/277V. "K" INDICATES KEY OPERATED SWITCH.
- P 4 — POLE MOUNTED LIGHTING FIXTURE, SINGLE HEAD. FIXTURE TYPE "P" INDICATED. CIRCUIT "4" INDICATED.

Miscellaneous Symbols

- (J) — JUNCTION BOX. SIZE AS REQUIRED.

Power System Symbols

- 1 — DUPLEX WALL OUTLET, CIRCUIT "1" INDICATED. "G" INDICATES GFCI TYPE. "WP" INDICATES WEATHERPROOF OUTLET.
- (#) — SINGLE PHASE MOTOR. # INDICATES MOTOR HORSEPOWER.
- [SP] — SINGLE PHASE MOTOR. # INDICATES MOTOR HORSEPOWER.

Raceway Symbols

- LA — CONDUIT CONCEALED IN WALL OR ABOVE CEILING. DOUBLE ARROWS INDICATE HOME RUN (PANEL "LA" INDICATED) NUMBER AND SIZE OF CONDUCTORS INDICATED, EITHER BY CALLOUTS OR HASHMARKS. NO HASHMARKS MEANS TWO (2) CONDUCTORS. IN ALL CONDUCTOR COUNTS, THE EQUIPMENT GROUNDING CONDUCTOR IS NOT INDICATED, ALTHOUGH IT IS REQUIRED TO BE INSTALLED.
- CONDUIT CONCEALED IN FLOOR OR BELOW GRADE
- CONDUIT CONTAINING UNSWITCHED CIRCUIT (FOR EMERGENCY LIGHTING)
- EXPOSED CONDUIT
- FLEXIBLE CONDUIT CONNECTION. LENGTH AS REQUIRED AND ALLOWED BY SPECIFICATIONS AND NEC. CONDUIT SHALL BE LIQUID–TIGHT IN ALL OUTDOOR LOCATIONS, MECHANICAL ROOMS AND OTHER LOCATIONS WHERE FALLING OR SPRAYING WATER IS POSSIBLE.

Controls:

- R1 — GENERAL PURPOSE RELAY, RELAY R1 INDICATED. CONTACT ARRANGEMENT AS REQUIRED.
- TD1 — TIME DELAY RELAY, RELAY TD1 INDICATED. CONTACT ARRANGEMENT AS REQUIRED.
- M1 — MOTOR STARTER COIL, MOTOR M1 INDICATED.

Controls:

- R1–1 — NORMALLY CLOSED CONTACTS – COIL 'R1', CONTACT '1' INDICATED.
- R1–1 — NORMALLY OPEN CONTACTS – COIL 'R1', CONTACT '1' INDICATED.
- TD1–1 — TIMED CONTACTS – COIL 'TD1', CONTACT '1' INDICATED. NORMALLY CLOSED, TIMED OPENING.
- TD1–1 — TIMED CONTACTS – COIL 'TD1', CONTACT '1' INDICATED. NORMALLY OPEN, TIMED CLOSING.
- (R) — PILOT LIGHT – PUSH–TO–TEST TYPE, OIL TIGHT. LETTER INDICATES LENS COLOR: R=RED, G=GREEN, A=AMBER.
- OFF / HAND / AUTO — HAND–OFF–AUTO, THREE POSITION ROTARY SELECTOR SWITCH, OIL–TIGHT. SEE SWITCHING DIAGRAM.
- STOP — PUSHBUTTON, NORMALLY CLOSED CONTACTS. MOMENTARY ACTION UNLESS NOTED OTHERWISE.
- FS1 — FLOAT SWITCH, NORMALLY OPEN, CLOSES ON RISING LIQUID LEVEL. SWITCH FS1 INDICATED.
- TS1 — TEMPERATURE SWITCH, NORMALLY CLOSED. SWITCH TS1 INDICATED.
- ETM — ELAPSED TIME METER.
- O.L. — MOTOR STARTER OVERLOAD RELAY CONTACTS.
- RESISTIVE HEAT STRIP FOR CONDENSATE CONTROL.
- 3A — FUSE. 3A OVERCURRENT RATING INDICATED.
- 120 V / 2 kVA / 24 V — CONTROL POWER TRANSFORMER. 2 kVA POWER RATING INDICATED. 120V PRIMARY VOLTAGE, 24V SECONDARY VOLTAGE INDICATED.
- FIELD WIRING POINT OR TERMINAL BLOCK
- DISCRETE (DIGITAL) OR ANALOG INPUT TO PLC OR RTU
- DISCRETE (DIGITAL) OR ANALOG OUTPUT TO PLC OR RTU

GENERAL ELECTRICAL NOTES:

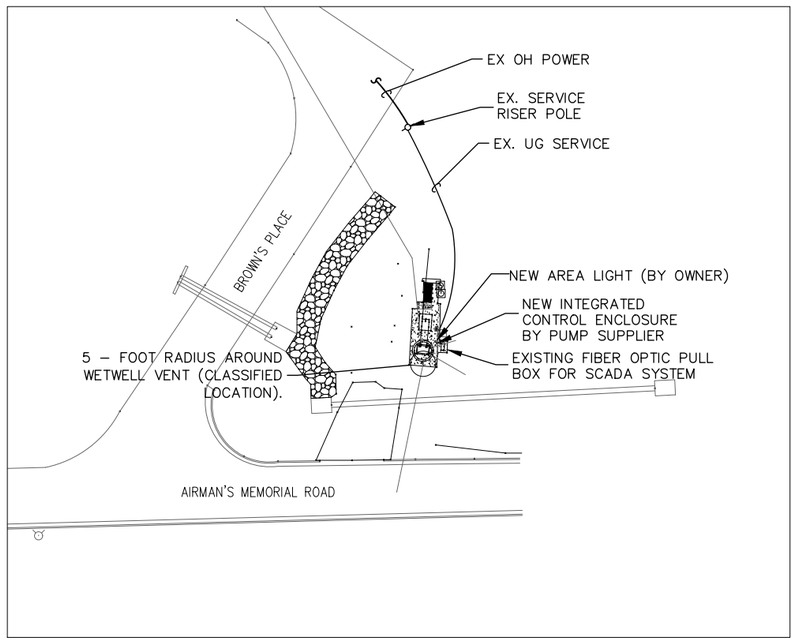
1. SERVICE TO EACH SITE SHALL BE AS INDICATED ON THE SCHEDULE ON THIS SHEET.
2. A GREEN EQUIPMENT GROUNDING CONDUCTOR (SIZED PER NEC) SHALL BE INSTALLED IN EACH CONDUIT.
3. ALL FLOAT SWITCHES SHALL BE WIRED AS INTRINSICALLY SAFE CIRCUITS AS REQUIRED BY NEC. CONTRACTOR SHALL SUBMIT SHOP DRAWINGS WHICH DEMONSTRATE THAT THIS REQUIREMENT HAS BEEN MET.
4. CONTRACTOR IS REQUIRED TO SUBMIT AS–BUILT CONTROL DIAGRAMS FOR EACH SITE WHICH REPRESENTS THE INSTALLED CONTROL SYSTEM. SEE SPECIFICATIONS FOR REQUIREMENTS.
6. FURNISH AND INSTALL FUSES IN FUSIBLE DISCONNECTS PER EQUIPMENT MANUFACTURER'S RECOMMENDATIONS.

ABBREVIATIONS:

ABV	ABOVE
AFG	ABOVE FINISHED GRADE.
BFG	BELOW FINISHED GRADE.
CKT	CIRCUIT
ECG	EQUIPMENT GROUNDING CONDUCTOR
EP	EXPLOSION–PROOF
FVNR	FULL–VOLTAGE NON–REVERSING (FOR STARTERS)
GEC	GROUNDING ELECTRODE CONDUCTOR
GFCI	GROUND FAULT CIRCUIT INTERRUPTING.
MTD	MOUNTED
NEC	NATIONAL ELECTRICAL CODE (NFPA 70).
RVAT	REDUCED–VOLTAGE AUTOTRANSFORMER (FOR STARTERS)
RVSS	REDUCED–VOLTAGE SOLID–STATE (FOR STARTERS)
SPD	SURGE PROTECTIVE DEVICE (IEEE DESIGNATION).
TVSS	TRANSIENT VOLTAGE SURGE SUPPRESSOR (NEC DESIGNATION). SEE ALSO SPD.
WP	WEATHER PROOF

PUMP STATION SCHEDULE

SITE	SERVICE CHARACTERISTICS	# OF PUMPS	PUMP HP	PUMP BREAKER	PUMP FEEDER	PUMP STARTER	REMARKS
BROWN PLACE PUMP STATION	480Y277 3ø 4W	2	36	100/3	3#4,1#8G–1"C.	RVAT SIZE 3	–



ELECTRICAL SITE PLAN - BROWN PLACE

SCALE: 1"=30'

POLY

No.	Description	Date
1		

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DATE: JUNE 2020
REGISTRATION No. 19070

ENG / ARCH / SURVEYOR OF RECORD: PHILIP M. HUBER, P.E.

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ENGINEER	CA-1516	CA-1818	001118
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BROWN PLACE PUMP STATION AND CONTROLS UPGRADE (EQUIPMENT ONLY)
OKALOOSA COUNTY WATER AND SEWER
CRESTVIEW, FLORIDA

LEGEND, NOTES, ABBREVIATIONS AND SITE PLANS

SHEET No.
E-01
PROJECT No.
41-378

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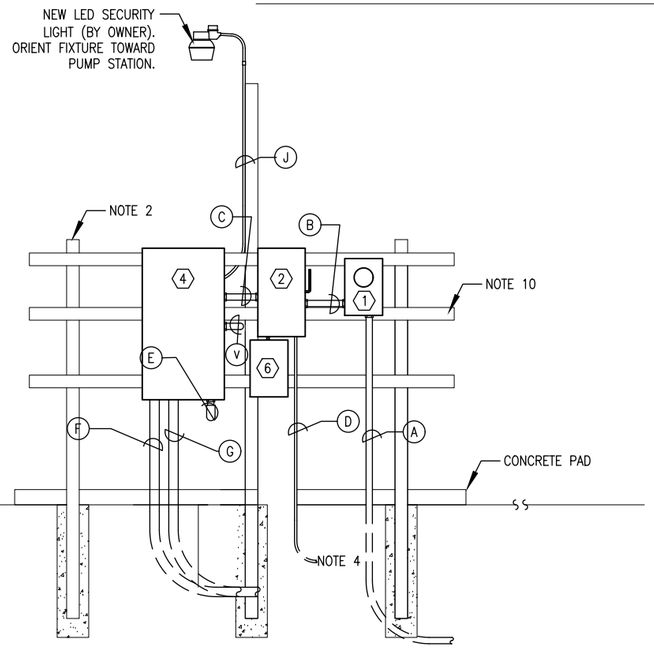
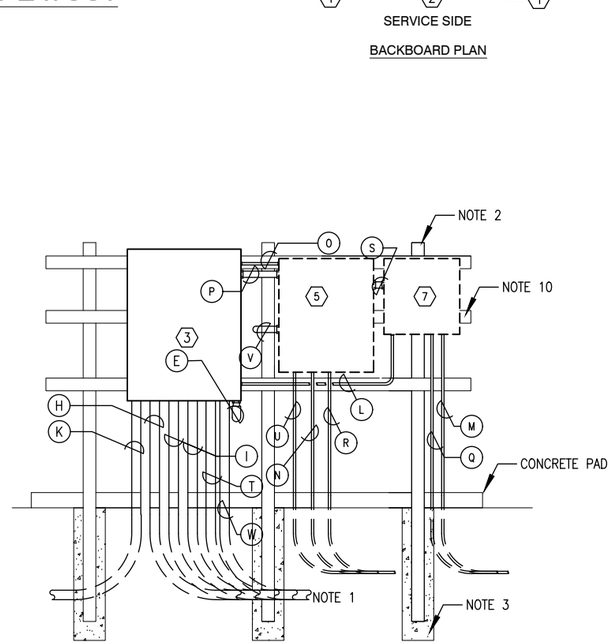
NOTES:

1. WET WELL CABLING (FOR PUMPS, FLOATS, ETC) SHALL BE ROUTED TO AN INTERMEDIATE JUCTION BOX, WHERE THE CABLES WILL BE TERMINATED. THEN THE SIGNALS SHALL CONTINUE TO THE CONTROL PANEL VIA PERMANENT WIRING. SEE DETAILS.
2. 3" X 10' ALUMINUM CONDUIT POLES IMBEDDED IN THE OUTSIDE EDGE OF SLAB 3' IN THE GROUND. PROVIDE CAP AT TOP OF POLE. (EXISTING)
3. EMBED SUPPORT LEGS IN CONCRETE FOOTING AS SHOWN. COAT SUPPORT LEGS BELOW GRADE WITH TWO COATS OF BITUMASTIC PAINT. (EXISTING)
4. SEE SPECIFICATIONS FOR REQUIREMENTS OF GROUNDING ELECTRODE SYSTEM.
5. ALL MOUNTINGS AND CONNECTIONS SHALL UTILIZE ADEQUATELY SIZED STAINLESS STEEL BOLTS, NUTS, AND WASHERS.
6. ARRANGEMENT OF ITEMS ON BACKBOARD MAY BE MIRRORED DEPENDING ON THE LOCATION OF THE UTILITY COMPANY SERVICE POLE. SEE SITE PLAN(S) TO DETERMINE CORRECT ORIENTATION. (EXISTING)
7. PROVIDE CIRCUIT BREAKERS MOUNTED INSIDE CONTROL PANEL ENCLOSURE TO MEET THE REQUIREMENTS OF 120V LOADS INCLUDING FOUR 20A, 1–POLE CIRCUIT BREAKERS FOR CONTROL POWER, CONTROL PANEL MOUNTED DUPLEX RECEPTACLES, PANEL LIGHT, SITE LIGHT, AND SPARE.
8. ALL CONTROLS SHALL BE PROVIDED IN ACCORDANCE WITH SPECIFICATIONS.
9. EXTEND POLE AN ADDITIONAL 5' TO MOUNT AN AREA LIGHT (EXISTING)
10. 10' STAINLESS STEEL CHANNEL EQUAL TO UNISTRUT P1000 SERIES. (EXISTING)

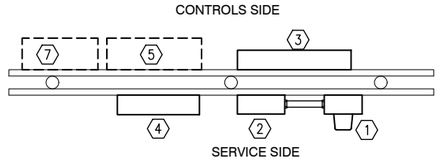
REPRESENTATIVE PANEL LAYOUT
MAY DIFFER FROM ACTUAL FIELD LAYOUT



BACKBOARD ELEVATION - SERVICE SIDE



BACKBOARD ELEVATION - CONTROLS SIDE



BACKBOARD PLAN

BACKBOARD DETAILS
SCALE: 1/2"=1'–0"

ELECTRICAL EQUIPMENT SCHEDULE

MARK	DESCRIPTION	MINIMUM VOLTAGE RATING	MINIMUM CURRENT RATING	NOTES
⟨1⟩	SERVICE METER. CONTRACTOR SHALL INSTALL METER BASE PER REQUIREMENTS OF THE LOCAL UTILITY COMPANY.	277/480V	200A	EXISTING
⟨2⟩	MAIN DISCONNECT SWITCH "MD". 3–POLE, 4–WIRE SWITCH . FUSED DISCONNECT SWITCH, FUSED WITH CLASS RK1 CURRENT LIMITING FUSES. NEMA 3R STAINLESS STEEL ENCLOSURE.	277/480V	200A	200A FUSES
⟨3⟩	CONTROL PANEL. NEMA 4X STAINLESS STEEL ENCLOSURE. SEE SPECIFICATIONS.	277/480V	N/A	BY SUPPLIER
⟨4⟩	AUTOMATIC TRANSFER SWITCH "ATS".	277/480V	200A	EXISTING
⟨5⟩	SCADA RTU ENCLOSURE BY OWNER			EXISTING
⟨6⟩	TVSS WITH INTEGRAL DISCONNECT PER SPECS	277/480V	N/A	
⟨7⟩	FLOW METER TRANSMITTER BY OWNER	N/A	N/A	N/A

CONDUIT & WIRE CABLE SCHEDULE

MARK	ORIGINATION	DESTINATION	TYPE	CONDUIT & WIRE/CABLE SIZES	NOTES
A	SERVICE RISER POLE	SERVICE METER	SERVICE	4#3/0 – 2"C.	REMAIN
B	SERVICE METER	MAIN DISCONNECT	SERVICE	4#3/0 – 2"C.	1
C	MAIN DISCONNECT	AUTOMATIC TRANSFER SWITCH	FEEDER	4#3/0 & 1#6G – 2"C.	1
D	MAIN DISCONNECT	GROUNDING ELECTRODE SYSTEM	GEC	#2 – 3/4"C. (PVC)	1
E	AUTOMATIC TRANSFER SWITCH	CONTROL PANEL	FEEDER	4#3/0 & 1#6G – 2"C.	1
F	STANDBY GENERATOR	AUTOMATIC TRANSFER SWITCH	FEEDER	4#3/0 & 1#6G – 2"C.	1
G	AUTOMATIC TRANSFER SWITCH	STANDBY GENERATOR	CONTROLS	CONTROL & SIGNAL WIRE IN 1"C.	1
H	CONTROL PANEL	FLOATS VIA JUNCTION BOX	CONTROLS	FLOAT SWITCH CABLES IN CONDUIT	2
I	CONTROL PANEL	PUMPS VIA JUNCTION BOX	FEEDER	3#2 & 1#6G – 2"C.	3
J	CONTROL PANEL	AREA LIGHT FIXTURE	BRANCH CKT	2#12 & 1#12G – 3/4"C.	
K	CONTROL PANEL	TELEPHONE SERVICE PEDESTAL	TELEPHONE	2"C. WITH PULL STRING	
L	CONTROL PANEL	FLOW METER XMTR	BRANCH CKT	2#12 & 1#12G – 3/4"C.	
M	FLOW METER XMTR	FLOW METER	INSTRUMENT	4–20mA CABLE – 1"C.	
N	SCADA RTU	FIBER OPTIC PULL BOX	SCADA	2"C. WITH PULL STRING	EXISTING
O	CONTROL PANEL	SCADA RTU	BRANCH CKT	2#12 & 1#12G – 3/4"C.	
P	CONTROL PANEL	SCADA RTU	SCADA	CONTROL CABLE – 2"C.	
Q	FLOW METER XMTR	FLOW METER	N/A	N/A	N/A
R	SCADA RTU	LEVEL TRANSDUCER VIA JCT. BOX	INSTRUMENT	4–20mA CABLE – 1"C.	
S	SCADA RTU	FLOW METER TRANSMITTER	INSTRUMENT	4–20mA CABLE – 1"C.	
T	CONTROL PANEL	BLOCK HEATER/BATTERY CHARGER	FEEDER	3#12 & 1#12G – 3/4"C	
U	GENERATOR	SCADA RTU	INSTRUMENT	CONTROL & SIGNAL WIRE IN 1"C	
V	AUTOMATIC TRANSFER SWITCH	SCADA RTU	INSTRUMENT	CONTROL & SIGNAL WIRE IN 1"C	
W	CONTROL PANEL	PUMPS VIA JUNCTION BOX	SPARE	SPARE 2" CONDUIT	

CONDUIT & WIRE CABLE SCHEDULE NOTES:

1. WIRING TO BE UPGRADED BY OWNER
2. PUMP POWER AND CONTROL CABLE(S) PROVIDED BY PUMP MANUFACTURER AND INSTALLED BY OWNER.
3. FLOAT SWITCH CABLES PROVIDED BY FLOAT SWITCH MANUFACTURER.

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TYPICAL ELECTRICAL DETAILS AND PUMP STATION SCHEDULE

SHEET No.
E-02
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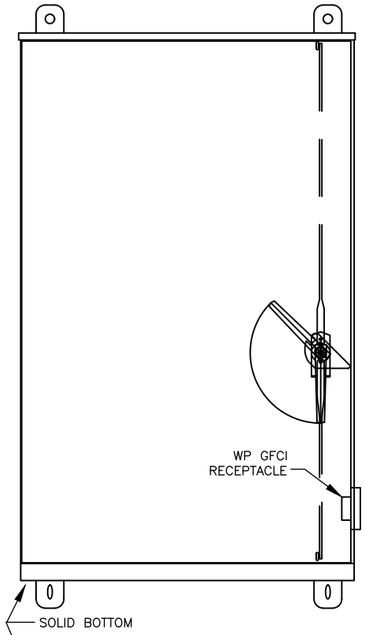
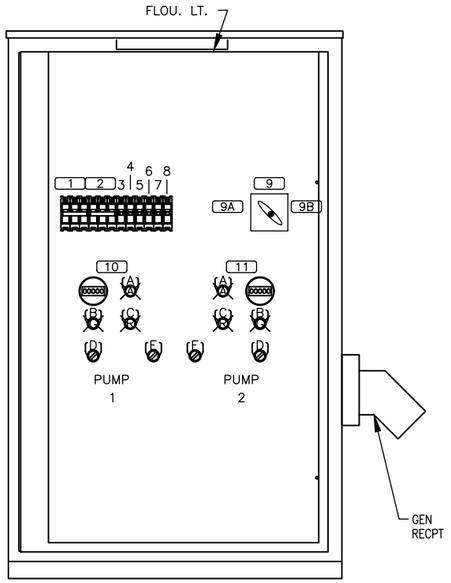
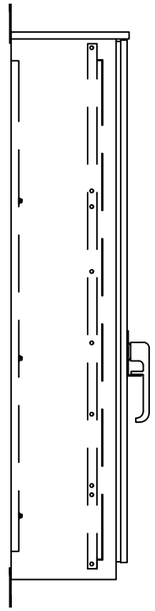


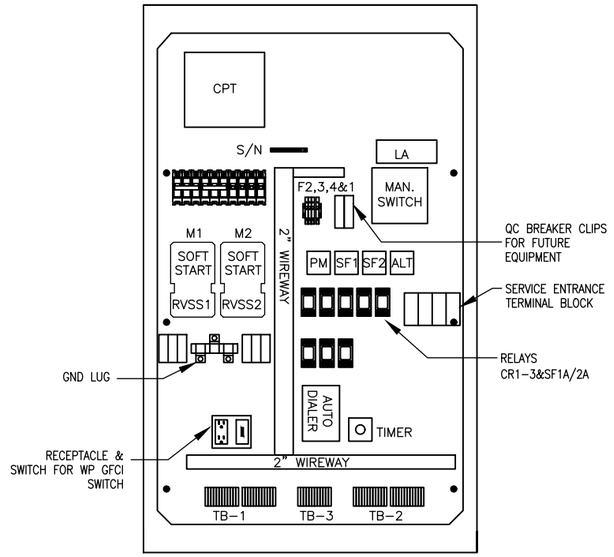
PANEL ELEVATION



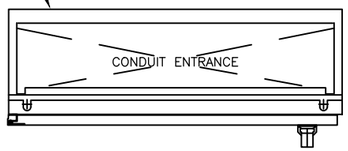
INNER DEADFRONT DOOR



PANEL SIDE VIEW



PANEL BACKPLANE



PANEL BASE PLAN

ENCLOSURE CONSTRUCTION NOTES

1. EXTERIOR 14 GA. 304 2D STAINLESS STEEL AND INTERIOR 14 GA. COLD ROLLED STEEL ELECTRICALLY WELDED AND REINFORCED WHERE REQUIRED.
2. CONSTRUCTION WILL BE NEMA 4X STAINLESS STEEL.
3. ALL NUTS, BOLTS, SCREWS AND HINGES WILL BE STAINLESS STEEL.
4. NUTS, BOLTS & SCREWS WITH NEOPRENE WASHERS.
5. PLASTIC NAMEPLATES WILL BE PROVIDED AS REQUIRED.
6. CONTROL WIRING WILL BE MARKED AT BOTH ENDS BY PERMANENT WIRE MARKERS.
7. A PLASTIC COVERED WIRING DIAGRAM WILL BE ATTACHED TO THE INSIDE OF THE FRONT DOOR. INCLUDE POCKET ON INSIDE OF DOOR FOR DIAGRAM.
8. ENCLOSURE WILL BE FACTORY WIRED AND CONFORM TO REQUIRED NEMA STANDARDS.
9. COLOR TO BE: UNPAINTED
10. A MINIMUM OF 12"H X 12"W SHALL BE VACANT ON INSIDE OF SUB PANEL FOR FUTURE EQUIPMENT.
11. ENCLOSURE LAYOUT AND EQUIPMENT IS DIAGRAMMATIC TO SHOW INTENT OF CONTROLS. ADJUST CONFIGURATION AND LAYOUT FOR A COMPLETE AND FUNCTIONING SYSTEM MEETING ALL LOCAL, STATE AND NATIONAL CODES.

NAMEPLATE SCHEDULE

TAG#	QTY	TYPE	SIZE	INSCRIPTION
1	1	PLATE	.75" x 3"	PUMP 1 DISCONNECT
2	1	PLATE	.75" x 3"	PUMP 2 DISCONNECT
3	1	PLATE	.75" x 3"	CONTROLS
4	1	PLATE	.75" x 3"	SCADA
5	1	PLATE	.75" x 3"	LT/RECPT.
6	1	PLATE	.75" x 3"	FLOW METER XMTR
7	1	PLATE	.75" x 3"	BATTERY CHARGER
8	1	PLATE	.75" x 3"	BLOCK HEATER
9	1	PLATE	.75" x 3"	CONTROL PANEL MAIN SWITCH – OFF
9A	1	PLATE	.75" x 3"	ON
9B	1	PLATE	.75" x 3"	GEN REC
10	1	PLATE	.75" x 3"	PUMP 1
11	1	PLATE	.75" x 3"	PUMP 2
A	2	RING	N/A	SEAL FAILURE
B	2	RING	N/A	RUNNING
C	2	RING	N/A	OVER TEMP
D	2	RING	N/A	OFF HAND AUTO
E	1	RING	N/A	OUTSIDE LIGHT ON OFF
F	1	RING	N/A	INSIDE LIGHT ON OFF

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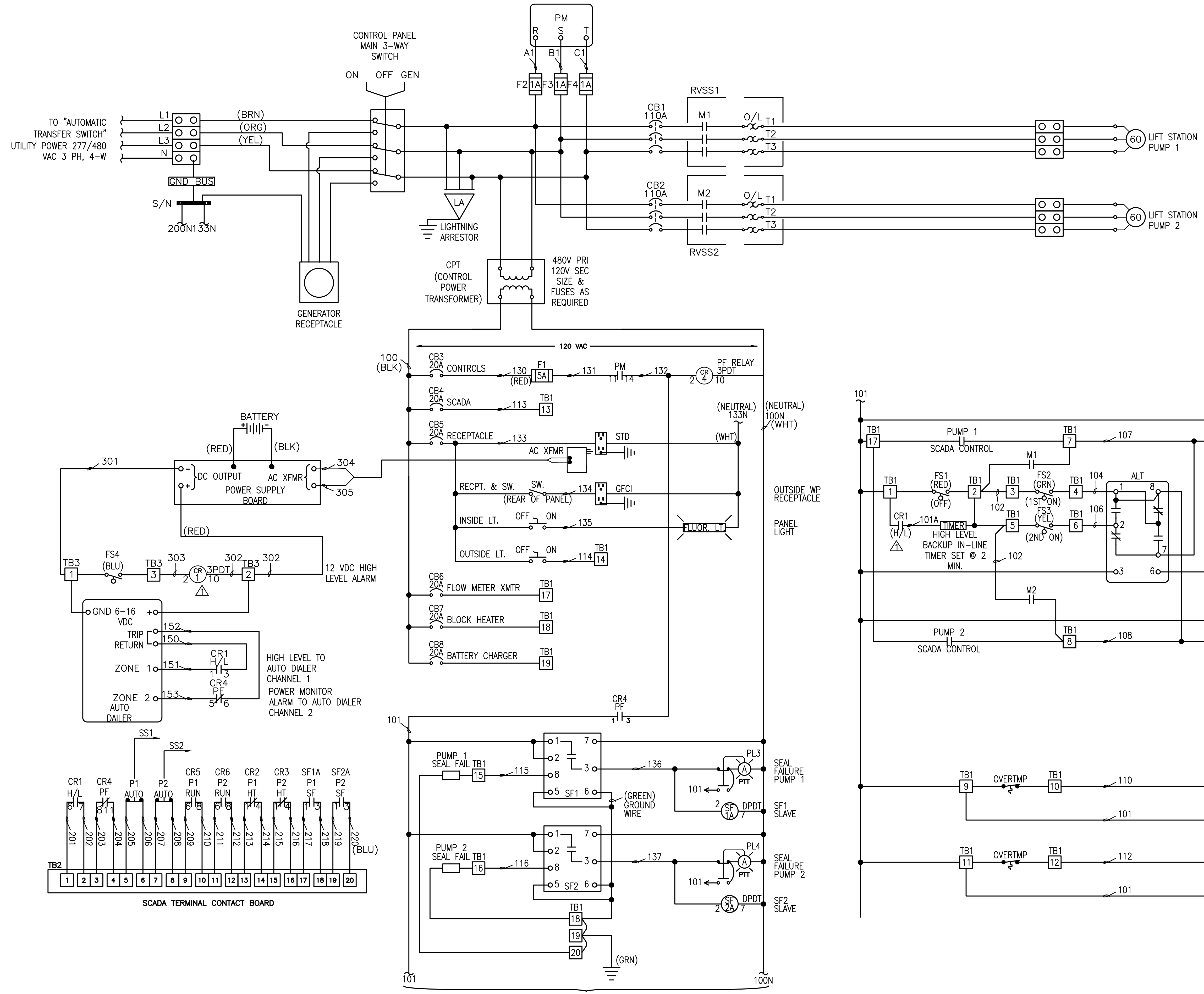
TYPICAL PANEL DETAILS

SHEET No.
E-03
PROJECT No.
41-378



3-LINE AND CONTROL DIAGRAM

GENERAL NOTES FOR CONTROL DIAGRAMS:

1. ALL CONTROLS ARE SHOWN DE-ENGERGIZED.
2. ALL CONTROL DIAGRAMS SHOW CONTROL FUNCTIONS ONLY WHERE REQUIRED, SLAVE RELAYS SHALL BE INSTALLED.
3. CONTROL DIAGRAM IS DIAGRAMMATIC TO SHOW INTENT OF CONTROLS. ADJUST CONFIGURATIONS FOR A COMPLETE AND FUNCTIONING SYSTEM MEETING ALL LOCAL, STATE AND NATIONAL CODES.

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ELECTRICAL CONTROLS AND POWER DISTRIBUTION

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