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Solicitation Addendum

Addendum No.: 2
Solicitation No.: 23-TA004498SAM
Project No.: 6050771
Solicitation Title: Cortez Booster Pump Station Upgrades
Addendum Date: February 1, 2023
Procurement Contact: Sherri Meier, Procurement Team Leader

IFBC 23-TA004498SAM is amended as set forth herein. Responses to questions posed by prospective bidders are provided below. This Addendum is hereby incorporated in and made a part of IFBC 23-TA004498SAM.

The deadline to submit all inquiries concerning interpretation, clarification or additional information pertaining to this IFBC is February 14, 2023.

DELETE:

SECTION C, BID ATTACHMENTS, BID ATTACHMENT 2, SECTION 13100 INSTRUMENTATION & CONTROL, GENERAL REQUIREMENTS

1.02 Scope

- ~~A. The following items will be provided outside of the CSI contract. This in no way relieves the Contractor or CSI from incorporating these items and providing a complete and functional ICS. The Contractor shall retain the services of McKim & Creed to perform the following for the contract Allowance.~~
- ~~1. PLC programming of control logic functions. This includes control applications for the monitoring and control of the existing high service pumping and chemical process. This does not include initial PLC configuration or any test programs to be provided by the CSI as part of the system installation and startup to satisfy testing requirements.~~
 - ~~2. SCADA and Historian Server application programming.~~

REPLACE:

SECTION B, BID FORMS, APPENDIX K, BID PRICING FORM

Replace Section B, Bid Forms, Appendix K, Bid Pricing Form with Appendix K, Bid Pricing Form Revised attached to this Addendum No. 1.

SECTION C, BID ATTACHMENTS, BID ATTACHMENT 2, 01150-MEASUREMENT AND PAYMENT

Replace Section C, Bid Attachments, Bid Attachment 2, 01150 – Measurement and Payment in its entirety, attached to this Addendum No. 2 and available for download as a separate attachment.

This will be updated with the spare pump/motor and the quantity below for the valves.

SECTION C, BID ATTACHMENTS, BID ATTACHMENT 2, 16110-CONDUITS AND FITTINGS

Replace Section C Bid Attachments, Bid Attachment 2, 16110 – Conduits and Fittings in its entirety, attached to this Addendum No. 2 and available for download as a separate attachment.

SECTION C, BID ATTACHMENTS, BID ATTACHMENT 2, SHEETS E001, E002, E003, E1.01, E1.02, E1.03, E2.01, E2.02, E3.01 AND E3.02

Replace Section C, Bid Attachments, Bid Attachment 2, Plan Sheets E001, E002, E003, E1.01, E1.02, E1.03, E2.01, E2.02, E3.01 and E3.02 incorporated into this IFBC and available for download as a separate attachment.

Replace Sheet E001 – General Notes and Abbreviations with Revised Sheet E001 – General Notes and Abbreviations.

Replace Sheet E002 – Electrical Symbols 1 of 2 with Revised Sheet E002 – Electrical Symbols 1 of 2.

Replace Sheet E003 – Electrical Symbols 2 of 2 with Revised Sheet E003 - Electrical Symbols 2 of 2.

Replace Sheet E1.01 Site and Pump Room Demolition Plan with Revised Sheet E1.01 – Site and Pump Room Demolition Plan.

Replace Sheet E1.02 Proposed Electrical Building Plan with Revised Sheet E1.02 – Proposed Electrical Building Plan.

Replace Sheet E1.03 – Proposed Partial Electrical Site Plan with Revised Sheet E1.03 - Proposed Partial Electrical Site Plan

Replace Sheet E2.01 – Existing & Demolition One Line with Revised Sheet E2.01 – Existing & Demolition One Line

Replace Sheet E2.02 – Proposed One Line with Revised Sheet E2.02 – Proposed One Line

Replace Sheet E3.01 – Elevation and Interconnect with Revised Sheet E3.01 – Elevation and Interconnect

Replace Sheet E3.02 Details and Panel Schedule with Revised Sheet E3.02 Details and Panel Schedule

QUESTIONS AND RESPONSES:

Q1. Item 3B Valves & Piping shows LS but estimated quantity is 3. (Is it LS or EA)

R1. LS with quantity 1.

Q2. Total Bid for 270-day construction completion? (Specs show it is for 280 days), just verifying.

R2. 280 days for final completion.

Q3. Referencing drawing M-2 & M-3, it appears the 24” terminates at elevation 9.00. The isometric drawing on the index page reflects a riser price of piping extending higher in the tank, please confirm height of piping.

R3. The mechanical sheets are correct.

Q4. Tom Evans Environmental is a representative of Peerless Pumps. Attached [to your email] are two pump selections that meet the criteria for pumps 1,2, and 3 under section 11310 AXIAL SPLIT CASE CENTRIFUGAL PUMPS. Please consider adding Peerless Pumps as an available manufacturer under section 11310 for there to be a competitive bid for the Axial Split Case Centrifugal Pumps.

R4. Other pump manufacturers will not be considered.

Q5. The One-Line Drawing (E2-02) Show to use 3.5” Conduit for the feeder between VFD and the Pump (P1001B). The Electrical Specifications exclude 3/5” Conduit to be used on this project. Please confirm which is correct.

R5. Contractor shall use the 3.5”C, the Conduits and Fittings specs no. 16110 updated “attached”.

Q6. The new proposed one-line drawing No. E1.02 shows a new feeder from the existing manual transfer switch to the new MCC main breaker. However, drawing E1.02 does not show that conduit. If needed, is it going to the MTS on the right-hand side of the switchgear room?

R6. As per drawing E1.02 “Reuse the existing conduit where possible but pull in new wire”, for this specific cable please reuse the existing conduit and pull new wire.

Q7. Is there to be a new antenna for the Scada panel? What is the location and how high does it need to be mounted?

R7. No. The antenna, mounting pole and existing RTU is being upgraded as part of a separate project that is scheduled to be completed before this one. The Contractor shall take care during construction to protect the antenna, mounting pole and cable installation.

Q8. We would like to get clarification regarding Spec. Section 13100 Instrumentation & Control, General Requirements, 1.02 Scope, G. The Contractor shall retain the services of McKim & Creed to perform the following for the contract allowance.

We did not find an allowance item on the bid form; are we to request proposals from McKim & Creed for Scope, G.1 & 2?

R8. Delete Paragraph G and subparagraphs 1 and 2.

NOTE:

Deleted items will be ~~struck through~~, added or modified items will be underlined. All other terms and conditions remain as stated in the IFBC.

INSTRUCTIONS:

Receipt of this Addendum must be acknowledged as instructed in the solicitation document. Failure to acknowledge receipt of this Addendum may result in the response being deemed non-responsive.

END OF ADDENDUM

AUTHORIZED FOR RELEASE

APPENDIX K, BID PRICING FORM
INVITATION FOR BID CONSTRUCTION 23-TA004498SAM
CORTEZ BOOSTER PUMP STATION UPGRADES
PROJECT NO.6050771

*To be considered responsive, Bidders must provide prices for each line item and it is the sole responsibility of the Bidder to correctly calculate and manually enter all sub-total, contingency, and total bid price fields.

ITEM #	BRIEF DESCRIPTION OF ITEMS	UNIT	ESTIMATED QUANTITY	UNIT BID PRICE	AMOUNT
1	MOBILIZATION/DEMOBILIZATION	LS	1		
2	Site Work	LS	1		
3	Demolition				
3A	Concrete Vault	EA	1		
3B	Valving and Piping	LS	1		
4	Mechanical Improvements				
4A	Pump and Motor Replacement (Pumps #1, 2 & 3)	EA	3		
4A.1	<u>Spare Pump & Motor</u>	<u>EA</u>	<u>1</u>		
4B	24-inch Butterfly Valve	EA	2		
4C	12-inch Gate Valve	EA	1		
4D	24-inch Pressure Sustaining Valve	EA	1		
4E	24-inch Ductile Iron Pipe	LF	152		
4F	24-inch Blind Flange	EA	2		
4G	24-inch Plug	EA	1		
4H	24" 90 Degree Bend	EA	3		
4I	24" 11.25 Degree Bend	EA	1		
4J	24" x 24" Tee	EA	1		
4K	2-inch ARV	EA	2		
4L	Pipe Supports	EA	7		
4M	Bollards	EA	8		
4N	Equipment Pads	CY	4		
4O	Thrust Blocks	CY	10		
4P	Temporary By Passing Operation	LS	1		
	Mechanical Improvements - CROM TANK				
4Q	Mixer	EA	1		
4R	Inlet Pipe at Crom Tank	LS	1		
5	Instrumentation & Controls				
5A	Field Equipment	LS	1		

UPDATED

ADDED

Bidder: _____

Signature: _____

APPENDIX K, BID PRICING FORM
INVITATION FOR BID CONSTRUCTION 23-TA004498SAM
CORTEZ BOOSTER PUMP STATION UPGRADES
PROJECT NO.6050771

5B	Panel Equipment	LS	1		
5C	Network Modifications Cable	LS	1		
5D	Spare Parts	LS	1		
5E	System Integration, Start Up, Testing and Software Implementation	LS	1		
6	Electrical				
6A	VFD (Variable Frequency Drives)	EA	3		
6B	Motor Control Center with Main	EA	1		
6C	Electrical Demolition	LS	1		
6D	Temporary Wiring	LS	1		
6E	Safety Disconnects, Junction and Terminal Boxes	EA	4		
6F	Rigid Conduit	LF	1800		
6G	Low Voltage Cables	LF	6474		
6H	Instrumentation Cable	LF	100		
6I	Grounding and Bonding (Equipment Ground part of Low Voltage Cables)				
6I-1	Ground Rods	EA	3		
6I-2	Bare Copper Cable #8	LF	25		
6I-3	Insulated Cable #8	LF	40		
7	Permit Allowance	1 LS	1	\$5,000.00	\$5,000.00
8	Record Drawings	1 LS	1		
SUBTOTAL FOR ITEMS 1 THRU 8					
9	Contract Contingency (Used with prior County approval only)	10%	1		
TOTAL BID FOR 270 280 DAY CONSTRUCTION COMPLETION (subtotal + Item 9)					

UPDATED

UPDATED

UPDATED

Bidder: _____

Signature: _____

SECTION 01150 MEASUREMENT AND PAYMENT

PART 1 GENERAL

1.01 SCOPE

- A. The scope of this section of the Contract Documents is to further define the items included in each Bid Item in the Bid Form section of the Contract Documents. Payment will be made based on the specified items included in the description in this section for each bid item.
- B. All contract prices included in the Bid Form section will be full compensation for all shop drawings, working drawings, labor, materials, tools, equipment, and incidentals necessary to complete the construction as shown on the Drawings and/or as specified in the Contract Documents to be performed under this Contract. Actual quantities of each item bid on a unit price basis will be determined upon completion of the construction in the manner set up for each item in this section of the Specifications. Payment for all items listed in the Bid Form will constitute full compensation for all work shown and/or specified to be performed under this Contract.

1.02 ESTIMATED QUANTITIES

The quantities shown are approximate and are given only as a basis of calculation upon which the award of the Contract is to be made. The County does not assume any responsibility for the final quantities, nor shall the Contractor claim misunderstanding because of such estimate of quantities. Final payment will be made only for satisfactorily completed quantity of each item.

1.03 WORK OUTSIDE AUTHORIZED LIMITS

No payment will be made for work constructed outside the authorized limits of work.

1.04 MEASUREMENT STANDARDS

Unless otherwise specified for the items involved, all measurements of distance shall be taken horizontally or vertically.

1.05 AREA MEASUREMENTS

In the measurement of items to be paid for on the basis of area of finished work, the lengths and/or widths to be used in the calculations shall be the final dimensions measured along the surface of the completed work within the neat lines shown or designated.

1.06 LUMP SUM ITEMS

Where payment for items is shown to be paid for on a lump sum basis, no separate payment will be made for any item of work required to complete the lump sum items. Lump sum contracts shall be complete, tested and fully operable prior to request for final payment. Contractor may be required to provide a break-down of the lump sum

totals.

1.07

UNIT PRICE ITEM

Separate payment will be made for the items of work described herein and listed on the Bid Form. Any related work not specifically listed but required for satisfactory completion of the work shall be considered to be included in the scope of the appropriate listed work items.

No separate payment will be made for the following items and the cost of such work shall be included in the applicable pay items of work. Final payments shall not be requested by the Contractor or made by the County until as-built (record) drawings have been submitted and approved by the County.

1. Project signs and photographs.
2. Removal, repair, replacement or relocation of all signs, walls, private irrigation systems and related items.
3. Rubbish and spoil removal.
4. Shop Drawings, Working Drawings.
5. Clearing, grubbing, and grading except as hereinafter specified.
6. Trench excavation, including necessary pavement removal and rock removal, except as otherwise specified.
7. Dewatering and disposal of surplus water.
8. Structural fill, backfill, and grading.
9. Replacement of unpaved roadways, and shrubbery plots.
10. Cleanup & miscellaneous work.
11. Foundation and borrow materials, except as hereinafter specified.
12. Testing and placing system in operation.
13. Any material and equipment required to be installed and utilized for the tests.
14. Pipe, structures, pavement replacement, asphalt, and shell driveways and/or appurtenances included within the limits of lump sum work, unless otherwise shown.
15. Maintaining the existing quality of service during construction.
16. Appurtenant work as required for a complete and operable system.
17. Seeding and hydro mulching.

(THE BID ITEM SECTION IS TO BE COMPLETED FOR EACH ITEM TO BE BID. EXAMPLES AS FOLLOWS)

BID ITEM NO. 1 - MOBILIZATION AND DEBMOBILIZATOIN

Measurement and payment for this Bid Item shall include full compensation for the required 100 percent (100%) Performance Bond, 100 Percent (100%) Payment Bond, all required insurance for the project and the Contractor's mobilization and demobilization costs as shown in the Bid Form. Mobilization includes, but it not limited to preparation and movement of personnel, equipment, supplies and incidentals such as safety and sanitary supplies/ facilities

Payment for mobilization shall not exceed 10 percent (10%) of the total Contract cost unless the Contractor can prove to the County that his actual mobilization cost exceeds 10 percent (10%).

Partial payments for this Bid Item will be made in accordance with the following schedule:

Percent of Original Contract Amount:	Percent Allowable Payment of Mobilization/Demobilization Bid Item Price:
5	25
10	35
25	45
50	50
75	75
100	100

These payments will be subject to the standard retainage provided in the Contract. Payment of the retainage will be made after completion of the work and demobilization.

BID ITEM NO. 2 - SITE WORK

Payment of all work included in this Bid Item will be made at the applicable Contract lump sum price for furnishing all labor, materials, and equipment necessary to excavation, grading and fill soils to return site to existing grade elevations or modify for new elevations. Refer to drawings and specification.

Payment for this item shall be lump sum.

BID ITEM 3 - DEMOLITION

Payment for all work included in this Bid Item will be made at the applicable Contract lump sum price for furnishing all labor, materials, and equipment necessary as specified herein or as otherwise necessary for the completion of the Work associated with this Contract. Refer to drawings and specifications.

3A **Concrete Vault** - Payment for all work included in this Bid Item will be made at the applicable Contract each for furnishing all labor, materials, and equipment necessary as specified herein or as otherwise necessary for the demolition of the concrete vault and the completion of the Work associated with this Contract. Refer to drawings and specifications.

Payment for this item shall be each.

3B **Valving and Piping** - Payment for all work included in this Bid Item will be made at the applicable Contract lump sum price for furnishing all labor, materials, and equipment necessary as specified herein or as otherwise necessary for the demolition of the valving and piping and the completion of the Work associated with this Contract. Refer to drawings and specifications.

Payment for this item shall be lump sum.

All costs for disposal of all items shall be included in the Contractor's Base Bid.

BID ITEM NO. 4- MECHANICAL IMPROVEMENTS

Payment of all work included in this Bid Item will be made at the applicable Contract lump sum price for furnishing all labor, materials, and equipment necessary for pump and header piping replacement. Provide all demolition, new pumps and piping, valves and supports specified herein or as otherwise necessary for the completion of the Work associated with this Contract. Refer to drawings and specifications.

4A **Pumps and Motor Replacement** shall include all labor, materials and equipment necessary for the removal of the existing pump to be replaced and the installation of the new axial split case centrifugal pumps, pipe spools, adjustments for alignment and fit, pump base as otherwise called out on the drawings and ancillary items as indicated on the drawings, specified herein or as otherwise necessary for the completion of the Work associated with this Contract.

Payment for this item shall be each.

4A.1 **Spare Pump and Motor** shall include one (1) new axial split case centrifugal pump and motor, tools and spare parts as indicated on the drawings, specified herein or as otherwise necessary for the completion of the Work associated with this Contract.

Payment for this item shall be each.

4B **24-inch Butterfly Valve** shall include all labor, materials and equipment necessary for the installation of the 24-inch butterfly valve as otherwise called out on the drawings and ancillary items as indicated on the drawings, specified herein or as otherwise necessary for the completion of the Work associated with this Contract.

Payment for this item shall be each.

4C **12-inch Gate Valve** shall include all labor, materials and equipment necessary for the installation of the 12-inch gate valve as otherwise called out on the drawings and ancillary items as indicated on the drawings, specified herein or as otherwise necessary for the completion of the Work associated with this Contract.

Payment for this item shall be each.

4D **24-inch Pressure Sustaining Valve** shall include all labor, materials and equipment necessary for the installation of a 24-inch pressure sustaining valve as otherwise called out on the drawings and ancillary items as indicated on the drawings, specified herein or as otherwise necessary for the completion of the Work associated with this Contract.

Payment for this item shall be each.

4E **24-inch Ductile Iron Pipe** shall include all labor, materials and equipment necessary for the installation of the 24-inch ductile iron pipe as called out on the drawings and ancillary items as indicated on the drawings, specified herein or as otherwise necessary for the completion of the Work associated with this Contract.

Payment for this item shall be linear feet.

4F **24" inch Blind Flange** shall include all labor, materials, and equipment necessary for the installation of a 24" Blind Flange as otherwise called out on the drawings and ancillary items as indicated on the drawings, specified herein or as otherwise necessary for the completion of the Work associated with this Contract.

Payment for this item shall be each.

4G **24" inch Plug** shall include all labor, materials, and equipment necessary for the installation of a 24" Plug as otherwise called out on the drawings and ancillary items as indicated on the drawings, specified herein or as otherwise necessary for the completion of the Work associated with this Contract.

Payment for this item shall be each.

4H **24" 90 Degree Bend** shall include all labor, materials, and equipment necessary for the installation of a 24" 90 Degree Bend as otherwise called out on the drawings and ancillary items as indicated on the drawings, specified herein or as otherwise necessary for the completion of the Work associated with this Contract.

Payment for this item shall be each.

4I **24" 11.25 Degree Bend** shall include all labor, materials, and equipment necessary for the installation of a 24" 11.25 Degree Bend as otherwise called out on the drawings and ancillary items as indicated on the drawings, specified herein or as otherwise necessary for the completion of the Work associated with this Contract.

Payment for this item shall be each.

4J **24" Tee** shall include all labor, materials, and equipment necessary for the installation of a 24" Tee as otherwise called out on the drawings and ancillary items as indicated on the drawings, specified herein or as otherwise necessary for the completion of the Work associated with this Contract.

Payment for this item shall be each.

4K **2-inch Air Release Valve** shall include all labor, materials, and equipment necessary for the installation of a 2-inch Air Release Valve as otherwise called out on the drawings and ancillary items as indicated on the drawings, specified herein or as otherwise necessary for the completion of the Work associated with this Contract.

Payment for this item shall be each.

- 4L **Pipe Supports** shall include all labor, materials, and equipment necessary for the installation of pipe supports as otherwise called out on the drawings and ancillary items as indicated on the drawings, specified herein or as otherwise necessary for the completion of the Work associated with this Contract.

Payment for this item shall be each.

- 4M **Bollards** - shall include all labor, materials and equipment necessary for the installation of bollards as otherwise called out on the drawings and ancillary items as indicated on the drawings, specified herein or as otherwise necessary for the completion of the Work associated with this Contract.

Payment for this item shall be each.

- 4N **Equipment Pad** shall include all labor, materials, and equipment necessary for the installation of an Equipment Pad as otherwise called out on the drawings and ancillary items as indicated on the drawings, specified herein or as otherwise necessary for the completion of the Work associated with this Contract.

Payment for this item shall be cubic yard.

- 4O **Thrust Blocks** shall include all labor, materials and equipment necessary for the installation of thrust blocks as otherwise called out on the drawings and ancillary items as indicated on the drawings, specified herein or as otherwise necessary for the completion of the Work associated with this Contract.

Payment for this item shall be in cubic yard.

- 4P **Temporary Bypass Operation with Backup** shall include all labor, materials, and equipment (ancillary piping and controls) necessary for the full bypass of the station during construction.

Payment for this item shall be lump sum.

MECHANICAL IMPROVEMENTS - CROM TANK

- 4Q **Mixer** shall include all labor, materials and equipment necessary for the installation of mixer in the Crom Tank as otherwise called out on the drawings and ancillary items as indicated on the drawings, specified herein or as otherwise necessary for the completion of the Work associated with this Contract.

Payment for this item shall be each.

- 4R **Inlet Pipe at Crom Tank** shall include all labor, materials and equipment necessary for the design and installation of the new inlet pipe into the Crom Tank including but not limited to the concrete encasement under the Crom tanks, tank penetration, tank inspection, miscellaneous fittings and waterstops, reinforcing steel, 36-inch underfloor pipe into the Crom Tank, coating repairs, as otherwise called out on the drawings and ancillary items as indicated on the drawings, specified herein or as otherwise necessary for the completion of the Work associated with this Contract.

Payment for this item shall be lump sum.

All costs for disposal of all items shall be included in the Contractor's Base Bid.

BID ITEM NO. 5 - INSTRUMENTATION AND CONTROLS

Payment of all work included in this Bid Item will be made at the applicable Contract lump sum price for furnishing all plant, labor, materials, and equipment necessary for the refurbishment of the pump station. Provide instrumentation as shown on drawings. Provide mounting hardware and ancillary items. Location of panel to be moved under separate contract.

- 5A **Field Equipment** - Payment of all work included in this Bid Item will be made at the applicable Contract lump sum price for furnishing all plant, labor, materials, and equipment necessary for furnishing the field equipment, including but not limited to start up, testing, training spare parts and other ancillary items necessary for the complete door installation as called out on the drawings and per the Contract Documents.

Payment for this item shall be lump sum

- 5B **Panel Equipment** - Payment of all work included in this Bid Item will be made at the applicable Contract lump sum price for furnishing all plant, labor, materials, and equipment necessary for instrumentation, including but not limited to start up, testing, training spare parts and other ancillary items necessary or as called out on the drawings and per the Contract Documents.

Payment for this item shall be lump sum

- 5C **Network Modification Cable** - Payment of all work included in this Bid Item will be made at the applicable Contract lump sum price for furnishing all plant, labor, materials, and equipment necessary for the network modification cable, including but not limited to start up, testing, training spare parts and other ancillary items necessary for the complete door installation as called out on the drawings and per the Contract Documents.

Payment for this item shall be lump sum

- 5D **Spare Parts** - Payment of all work included in this Bid Item will be made at the applicable Contract lump sum price for furnishing all plant, labor, materials, and equipment necessary for the furnishing of spare parts and other ancillary items necessary for the complete door installation as called out on the drawings and per the Contract Documents.

Payment for this item shall be lump sum

- 5E **System Integration, Start Up, Testing and Software Implementation** - Payment of all work included in this Bid Item will be made at the applicable Contract lump sum price for furnishing all plant, labor, materials, and equipment necessary for the System Integration, Start Up, Testing and Software Implementation and other ancillary items necessary for the complete door installation as called out on the drawings and per the Contract Documents.

Payment for this item shall be lump sum

BID ITEM NO. 6 - ELECTRICAL

Payment of all work included in this Bid Item will be made at the applicable Contract lump sum price for furnishing all plant, labor, materials, and equipment necessary for the replacement of the electrical distribution and pump control equipment. Existing building lighting shall remain along with receptacle circuits; however, the receptacles and switches themselves will be replaced with corrosion resistant devices.

- 6A **Variable Frequency Drives (VFDs)** shall include all labor, materials, and equipment necessary for the installation of the new variable frequency drives (VFD) made by Yaskawa Incorporated will replace the old and be installed in the new electrical building. In addition, work will consist of but not limited to placing and connection of the electrical equipment and ancillary items as indicated on the drawings, specified herein or as otherwise necessary for the completion of the Work associated with this Contract.

Payment for this item shall be each.

- 6B **Motor Control Center with Main** shall include all labor, materials, and equipment necessary for the installation of the 480V main distribution equipment. Work will consist of but not limited to placing and connection of equipment and ancillary items as indicated on the drawings, specified herein or as otherwise necessary for the completion of the Work associated with this Contract.

Payment for this item shall be each.

6C **Demolition** shall include all labor, materials, and equipment necessary for site work, demolition, temporary power, and ancillary items as indicated on the drawings, specified herein or as otherwise necessary for the completion of the Work associated with this Contract.

Payment for this item shall be lump sum.

6D **Temporary Wiring** shall include all labor, materials, and equipment necessary for the installation of temporary wiring as indicated on the drawings, specified herein or as otherwise necessary for the completion of the Work associated with this Contract.

Payment for this item shall be lump sum.

6E **Safety disconnects, Junction and Terminal boxes** shall include all labor, materials, and equipment necessary for the installation of the junction and terminal boxes. Work will consist of but not limited to placing the junction and/or terminal boxes as called out on the drawings and ancillary items as needed, specified herein or as otherwise necessary for the completion of the Work associated with this Contract.

Payment for this item shall be each.

6F **Rigid Conduit** shall include all labor, materials, and equipment necessary for the installation of the rigid conduit as otherwise called out on the drawings and ancillary items as indicated on the drawings, specified herein or as otherwise necessary for the completion of the Work associated with this Contract.

Payment for this item shall be linear foot.

6G **Low Voltage Cables** shall include all labor, materials, and equipment necessary for the installation of the low voltage cables as otherwise called out on the drawings and ancillary items as indicated on the drawings, specified herein or as otherwise necessary for the completion of the Work associated with this Contract.

Payment for this item shall be linear foot.

6H **Instrumentation Cable** shall include all labor, materials, and equipment necessary for the installation of the instrumentation cable as otherwise called out on the drawings and ancillary items as indicated on the drawings, specified herein or as otherwise necessary for the completion of the Work associated with this Contract.

Payment for this item shall be linear foot.

6I **Grounding and Bonding** shall include all labor, materials, and equipment necessary for site work, grounding and bonding, and ancillary items as indicated on the drawings, specified herein or as otherwise necessary for the completion of the Work associated with this Contract.

6I-1 **Grounding Rods** shall include all labor, materials, and equipment necessary for the installation of grounding rods as indicated on the drawings, specified herein or as otherwise necessary for the completion of the Work associated with this Contract.

Payment for this item shall be each.

6I-2 **Bare Copper Cable #8** shall include all labor, materials, and equipment necessary for the installation of bare copper cable #8 as indicated on the drawings, specified herein or as otherwise necessary for the completion of the Work associated with this Contract.

Payment for this item shall be linear foot.

6I-3 **Insulated Cable #8** shall include all labor, materials, and equipment necessary for the installation of insulated cable #8 as indicated on the drawings, specified herein or as otherwise necessary for the completion of the Work associated with this Contract.

Payment for this item shall be linear foot.

All costs for disposal of all items shall be included in the Contractor's Base Bid.

BID ITEM NO. 7- PERMIT ALLOWANCE

Fees for submitting applications for permits required to complete construction in accordance with the plans and specifications, such as Building Permit, NPDES, etc. The quantity measured for payment shall be the actual receipt-supported permit fees. Payment will be made at the actual cost to the Contractor for the permits required and acquired. Upon completion of the permitting process, the Contractor will submit receipts for permit fees to the County and Engineer.

Payment for this item shall be lump sum.

BID ITEM 8- RECORD DRAWINGS

Payment for all work included under this Bid Item shall be made at the Contract lump sum price bid listed in the Bid Form and shall represent full compensation for all labor, materials and equipment required to generate and provide record drawings approved and accepted by the County. Record drawings shall be in strict accordance with

Section 1.14 of the Manatee County Public Work Utility Standards.

Payment for this item shall be lump sum.

BID ITEM 9 - CONTRACT CONTINGENCY

Payment for all work under this Bid Item shall be made only at the County's discretion. This Bid Item shall not exceed 10% of the Bidders Total Base Bid. The Bidder shall calculate and enter a dollar amount for this Bid Item.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION (NOT USED)

END OF SECTION

SECTION 16110 CONDUITS AND FITTINGS

PART 1 GENERAL

1.01 SCOPE OF WORK

Furnish and install the conduits, fittings, devices and appurtenances as hereinafter specified and/or as shown on the Contract Drawings. This specification applies to both low and medium voltage systems.

1.02 SUBMITTALS

The requirements of Section 01340 and Section 16050 shall be met.

1.03 APPLICATIONS

- A. Except where otherwise shown on the Contract Drawings, or hereinafter specified, all wiring shall be run in rigid conduits.
- B. Rigid aluminum conduits (RAC) shall be used at all locations aboveground and within structures and buildings, except where otherwise shown on the Contract Drawings.
- C. Rigid aluminum conduits shall be used at all locations for shielded instrumentation/control and communication wiring, except where otherwise shown on the Contract Drawings.
- D. Schedule 40 PVC conduits shall be used for all power and 120V instrumentation/control wiring when used in concrete steel reinforced ductbanks and in-slab applications except where otherwise shown on the Contract Drawings. Provide conduit spacers by "Carlon" or approved equal, every 6 feet or less to hold separation of conduits.
- E. Schedule 80 PVC shall be used for all power and instrumentation/control wiring in direct bury ductbank applications except where otherwise shown on the Contract Drawings. Provide conduit spacers by "Carlon" or approved equal, every 6 feet or less to hold separation of conduits.
- F. Schedule 80 PVC conduits shall be used in highly corrosive areas such as chemical storage areas, digesters, fluoride storage and handling areas, etc.
- G. All conduits of a given type shall be the product of one manufacturer.
- H. Except where otherwise shown on the Contract Drawings, or hereinafter specified, all boxes shall be metal.
- I. Surface and flush mounted switch, receptacle and control station boxes shall be 316 Stainless Steel.
- J. Devices designated as NEMA Type 4 shall be 316 stainless steel, gasketed.
- K. Devices designated as NEMA Type 4X shall be 316 stainless steel, gasketed, except

as otherwise shown on the Contract Documents.

- L. Combination expansion-deflection fittings shall be used where conduits cross structural expansion joints or as recommended by manufacturer for ambient conditions.

PART 2 PRODUCTS

2.01 MATERIALS

A. Rigid Conduit

1. Rigid aluminum conduit shall be Aluminum as manufactured by Allied Tube & Conduit, Patriot Aluminum Products or approved equal.
2. PVC Sch 80 & 40 conduit as manufactured by Carlon, Heritage Plastics or approved equal.

B. Liquidtight, Flexible Conduit

1. Liquidtight, flexible metal conduits shall be Sealtite, Type UA, as manufactured by Anaconda, American Flexible Conduit Co., Inc., or approved equal.
2. Liquidtight, flexible non-metallic conduits shall be Carflex Liquidtight Flexible Non-Metallic Conduit as manufactured by Carlon, or approved equal.

C. Rigid Conduit Fittings

1. Rigid Aluminum Conduit Fittings:
 - a. Aluminum elbows, bends, sweeps, nipples, couplings, etc., approved equal.
2. Rigid Non-Metallic Conduit Fittings: PVC elbows, bends, sweeps, nipples, couplings, device boxes, etc., shall be Plus 80 fittings as manufactured by Carlon, or approved equal.

D. Flexible Conduit Fittings

1. Flexible Metal Conduit Fittings: Fittings used with flexible metal conduit shall be of the screw-in type as manufactured by Thomas and Betts Company, or approved equal.
2. Flexible Non-Metallic Conduit Fittings: Fittings used with flexible non-metallic conduit shall be Carflex Liquidtight Non-metallic Fittings as manufactured by Carlon, or approved equal.

E. Flexible Couplings: Flexible couplings shall be as manufactured by Crouse-Hinds, Appleton Electric Company, or approved equal.

F. Wall Seals: Wall sleeves shall be used for all wall penetrations and conform to area classifications. Conduit wall seals shall be type "WSK" as manufactured by the O.Z. Electrical Manufacturing Company, or approved equal.

G. Expansion Fittings: Combination expansion-deflection fittings shall be type "XD" as

manufactured by Crouse-Hinds, or approved equal.

H. Boxes

1. Device Boxes

- a. Flush mounted wall device boxes shall be galvanized pressed steel as manufactured by the Raco Manufacturing Company, or approved equal.
- b. Surfaced mounted wall device boxes shall be cast or malleable iron as manufactured by Crouse-Hinds, Appleton Electric Company, or approved equal.
- c. Flush mounted in-floor device boxes shall be cast metal, shall be watertight, shall have adjustable cover frames, and shall be as manufactured by Russell & Stoll Company, Steel City Electric, or approved equal.

2. Other Boxes

- a. Terminal boxes, junction boxes, pull boxes, etc., except as otherwise specified and/or shown on the Contract Drawings, shall be PVC or 316 S.S.
- b. The boxes shall have continuously welded seams and shall be ground smooth.
- c. The box bodies shall be flanged, shall be not less than 14-gauge metal, and shall not have holes or knockouts.
- d. The box covers shall be not less than 12-gauge metal, shall be gasketed, and shall be fastened to the box bodies with stainless steel screws.

I. Conduit Mounting Devices: Hangers, rods, channel, backplates, clips, straps, beam clamps, etc., shall be 316 stainless steel as manufactured by Unistrut Corp., or approved equal.

J. Fixture Support System

1. The fixture support system shall be the channel type and shall be furnished complete with all requisite mounting hardware and appurtenances.
2. The channel, mounting hardware and related appurtenances shall be 316 stainless steel.
3. The fixture support system shall be as manufactured by the Unistrut Corp., or approved equal.

PART 3 EXECUTION

3.01 INSTALLATION

- A. No conduit smaller than 3/4-inch electrical trade size shall be used ~~nor shall either 1-1/4-inch conduit or 3-1/2-inch conduit be used.~~—Minimum size underground, under slab or in-slab shall be 1-inch.
- B. No wires shall be pulled until the individual conduit runs are complete in all details.

Additionally, each conduit shall be cleaned and reamed and certified clear of all burrs and obstructions before any wire is pulled.

- C. The ends of all conduits shall be tightly capped to exclude dust and moisture during construction.
- D. Conduits shall be supported at intervals of 8-feet or less, as required to obtain a rigid installation. For flexible conduit supports shall be in accordance with NEC 2014 350.30, A.
- E. Exposed conduits shall be run parallel with and/or perpendicular to the surrounding surface(s). No diagonal runs will be allowed.
- F. Single conduits shall be supported by one-hole pipe clamps in combination with one-screw backplates to provide space between the conduits and the mounting surface.
- G. Multiple horizontal runs of conduits shall be supported by trapeze type hangers (channel) suspended by threaded rod, 3/8-inch minimum diameter.
- H. Multiple vertical runs of conduits shall be supported by structurally mounted channel in combination with conduit clamps.
- I. Conduit support devices shall be attached to structural steel by welding or beam or channel clamps as indicated on the Contract Drawings.
- J. Conduit support devices shall be attached to concrete surfaces by "spot type" concrete inserts.
- K. Conduits terminating in steel interior boxes shall have double locknuts and insulating bushings. Exterior conduits installed in boxes shall have sealed conduit hubs when penetrating in the top or side.
- L. Conduits terminating in gasketed enclosures shall be terminated with sealed conduit hubs weather interior or exterior.
- M. Conduit wall seals, waterproof type, shall be used at all locations where conduits penetrate walls.
- N. Liquidtight, flexible conduit - metal or non-metallic ~~as shown on the Contract Drawings~~ –shall be used for all motor terminations and for all connections/terminations where vibration is anticipated.
- O. Flexible couplings shall be used in hazardous locations for all motor terminations and for all connections/terminations where vibration is anticipated.
- P. Conduit stubouts for future construction shall be capped at both ends with threaded PVC conduit caps.
- Q. The cement used for PVC conduit installations shall be as manufactured by Carlon, or approved equal.
- R. Provide grounding type bushings for a conduit entering ~~all control~~ panels and junction

[boxes.](#)

- S. Rigid aluminum conduits entering manholes and/or below grade pull boxes shall be terminated with grounding type bushings which shall be connected to a 3/4-inch by 10-foot long driven ground rod with No. 6 AWG bare copper wire.
- T. Rigid aluminum conduit shall be used for all risers. The underground portion of the riser and a 6-inch section of the riser immediately above the ground or slab/floor level shall be painted with a bitumastic coating. All below grade conduit [and conduit](#) sweeps shall be [PVC coated](#) metallic [or 40mil](#) ~~with~~ bitumastic coating. No aluminum conduit is to come into direct contact with concrete or earth.

3.02 **GUARANTEES AND WARRANTIES**

The Contractor shall guarantee and warrant all materials and labor provided under this Section in accordance with Section 01740 and Section 16050 of these Specifications.

END OF SECTION