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Executive Director & President

Macon Water Authority

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Frank Patterson, Vice-Chairman
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Dorothy "Dot" C. Black
Dwight Jones
Bert Bivins, III
Gary Bechtel

TO: All Bidders

RE: Amerson Water Treatment Plant - #2 Finish Water Pump to VFD Upgrades - Installation

DATE: May 26, 2017

The Macon Water Authority is requesting sealed bids from electrical contractors, for the installation of a Rockwell, 4160 Volt, Variable Frequency Drive, 7000B frame, as specified per Process Plus Engineering bid package. A mandatory pre-bid meeting is scheduled for Tuesday, June 28, 2017 at 10:00 am at the Amerson Water Treatment Plant, 703 River Bend Road, Macon, GA 31211- Finish Water Building.

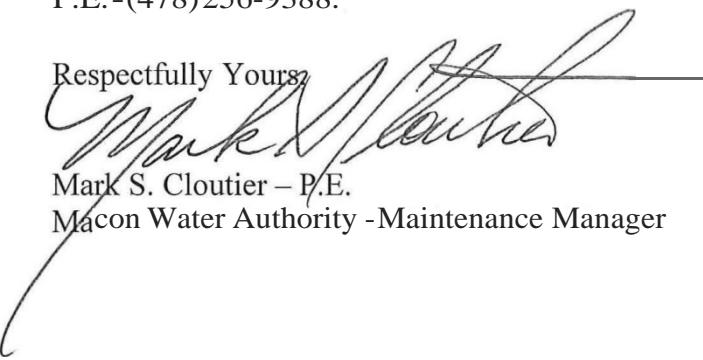
It is emphasized that sealed bids must be received by Macon Water Authority Maintenance Department (the "Owner") at the Owner's office, 951 Fifth Street, Macon, Georgia – 31202, by 11:00 am local time on Friday, July 14, 2017. The Owner shall not consider late proposals. Your attendance is encouraged but not required.

It will not be sufficient to mail your sealed bid and depend upon the postal services, or any other mail delivery organization, for an on time delivery. Bids received after 11 :00 am, Friday, July 14, 2017 will not be accepted. Your bid must be sealed and marked "Sealed Bid -Amerson Water Treatment Plant - #2 Finish Water Pump to VFD Upgrades - Installation".

Please review the attached bid specification documentation. All appurtenances must be fully executed for proper consideration, acceptance, and award by the Macon Water Authority.

Should any question arise regarding this proposal, please feel free to contact Mr. James McMillian – Process Plus – 513-658-2195 or Mr. Mark S. Cloutier – Macon Water Authority - P.E. - (478) 256-9388.

Respectfully Yours,



Mark S. Cloutier – P.E.
Macon Water Authority - Maintenance Manager



***1750 HP VFD Upgrade Project
VFD-FW-P-2
Installation Scope
Request For Bid***

REVISION B

Prepared for

MACON WATER AUTHORITY

*790 SECOND STREET
MACON, GEORGIA 31201*



February 02, 2017

OUR PROCESS REVOLVES AROUND YOU.

DOCUMENT HISTORY

Revision	Date	Author	Description
A	1/17/17	Jim Gardner	Issued for Review and Comment
B	2/2/17	Jim Gardner	Issued for Bid

REFERENCE DOCUMENTS NOT ATTACHED

The following supporting documents and drawings provide additional detail to the scope defined in this document:

Document	Date	Description	Author

PART 1 GENERAL

1.1 INFORMATION

- A. Following is the installation job scope for the installation of one (1) Rockwell model 7000B medium voltage, variable frequency drive. There will be a mandatory pre bid meeting at the plant site; 703 Riverbend Drive, Macon, GA 31211 – Finish Water Electrical Room – Tuesday, March 7, 2017 at 1:00 pm. Please review this job scope and submit a sealed bid no later than 11:00 pm local time on Friday, March 24, 2017. Note that the qualified bidder must have previous documented experience installing a 7000B series VFD.

1.2 JOB SCOPE

- A. Supply Labor, materials, tools and equipment to remove one (1) 4160 Volt, Starter FW-P-2 for the finish water pump 2 (1750 HP). Starter and Pump are located in the finish water building at the Amerson Water Treatment Plant (AWTP) located at 703 Riverbend Drive, Macon, Georgia. When removed, it shall be replace with one (1) Rockwell 7000B VFD supplied by Macon Water Authority. Contractor will coordinate with Rockwell and supply personnel to assist during installation, testing and start up. The contractor shall have engineers assigned to commission the drive.

1.3 WORK SCHEDULING

- A. Contractor shall coordinate their working schedules and shifts with MWA. Rockwell will supply technicians to verify and commission drive. Coordination between contractor and Rockwell will be established once start date of work is finalized.

1.4 DRIVE RECEIVING

- A. Drive is shipped with shock indicators. Contractor is responsible for supplying a digital camera with date and time stamping function enabled for all photos. All shock indicators are to be photographed prior to removing any drive sections from the trucks. These shock indicators are to be photographed again when the drives are in place on the foundation. This is to properly document that drives have not experienced any undue shock during shipping and installation, prior to assembly.
- B. Electrical Contractor shall receive and unload the VFD. Contractor shall have rigging insurance to \$1 Million dollars.

1.5 DRIVE HANDLING

- A. Reference Rockwell Automation Publication 7000-IN008C-EN-P -April 2013 for handling instructions.

1.6 PERMITS

- A. Contractor is responsible for obtaining and paying for necessary construction permits.

PART 2 PREWORK

2.1 JUNCTION BOX JB-FW-P-2

- A. Fabricate and install a floor mounted NEMA 3R steel splice box (JB-FW-P-2). Refer to drawing E-2101 for details.
- B. Unterminated 4160V line and load side wiring inside existing starter FW-P-2. This starter shall be removed and replaced by new splice box JB-FW-P-2.

2.2 HOUSEKEEPING PAD

- A. Fabricate and install new housekeeping pad as shown on drawing S-1301.

2.3 EXISTING LIGHTING

- A. Refer to drawing E-2100 for lighting that needs to be relocated and supplemented. Coordinate location with owners' representative prior to start of work. Insure that the same light level is obtained.

2.4 EXISTING DUCTWORK

- A. Refer to drawing E-2100 for ductwork that needs to be relocated. Coordinate location with owners' representative prior to start of work.

PART 3 INSTALLATION

3.1 4160V WIRING / JB-FW-P-2 INSTALLATION

A. 4160V Line and Load Side Splice

1. Replace existing starter FW-P-2 with new JB-FW-P-2. Coordinate location on existing housekeeping pad so that the existing two (2) 4" existing conduits stub into the bottom of this new box.
2. Install two (2) new 4" rigid galvanized conduits from JB-FW-P-2 up and over to the new VFD-FW-P-2. Coordinate entry/exit penetrations to drive with supplied manufacturers drawings. VFD-FW-P-2 line and load wiring shall be three (3) 5KV, 250KCMIL CU, Shielded. The ground wire shall be one (1) #2 600V unshielded wire. Refer to drawings E-2100 and E-2101 for splicing details.

3.2 INTERCONNECTING CONDUIT / WIRING

- #### A. Install conduits, cabling, and wiring as shown on drawing E-2100.

3.3 VFD-FW-P-2

A. Reference Rockwell Automation Publication 1512A-UM102A-EN-P Installation Instructions – Starters.

1. Anchor bolts shall be 1/2" (M12) floor mounting bolts.
2. The VFD will ship in (2) shipping splits. Sections 1 & 2 will be on first split, and Sections 3 & 4 will be the second. Coordinate with the Rockwell representative and installation drawings for interconnection of power, control and/or signal wiring between the shipping splits.
3. Work with Macon Water Authority to program Multilin 369 relay for interface with VFD and PLC controls.
4. There will be a ground bus link, 4160V cable and 480V cable that will need to be inter-connected between the units. Rockwell will supply the bus links and cable and the contractor will need to make the interconnections.

B. Routing of Internal VFD power cable and CT (Current Transformer) Wiring.

1. Refer to photo #1 (before modifications) that shows existing VFD #1 Ground Vault potential Issue. Insure that this is not duplicated for VFD-FP-P-2.

2. Refer to photo #2 (after modifications) that shows revised VFD-FW-P-1 power wiring and the addition of a larger donut. Insure that this is duplicated to avoid possible nuisance ground Fault trips.

3.4 HVAC COORDINATION

A. DUCTWORK

1. Existing VFD-FW-P-1 exhaust ductwork shall be modified and extended to the new VFD-FW-P-2 such that either one or both drives can run simultaneously with the exhaust being exhausted through the HVAC system.

B. CONTROLS

1. Install a control circuit such that when either the existing VFD-FW-P-1 or new VFD-FW-P-2 runs the existing exhaust fan EF-805 runs. Coordinate with owners' representative for interface terminations.

3.5 VFD FAN HOODS

- A. The VFD fan hoods ship separately (installed inside the enclosures) and shall be installed on site by the contractor.

3.6 NEW LIGHTING

- A. Install new lighting that matches existing between existing VFD-FW-P-1 and new VFD-FW-P-2 to maintain existing switching and circuiting. Insure additional lighting will not overload existing circuit. If new circuit is added from existing lighting panel insure that a typed panel schedule is installed. Insure that the foot candle level is maintained prior to construction.

3.7 PLC PANEL (Located at motor)

- A. The Cone Valve Panel (Also called the PLC Panel) shall be provided by MR Systems. The Panel name is CONE VALVE 2 CP.
 1. Contractor shall install the panel and provide and install the interconnecting conduits, cabling, and wiring as shown on drawing E-2100. Reference MR System's drawing. MR System's contractor shall terminate all wires between the new PLC panel and the SAG correction panel, and the existing Cone Valve panel.

3.8 SAG CORRECTION PANEL

- A. The Sag Correction panel shall be provided by MR systems.
 - 1. Contractor shall provide and install the interconnecting conduits, cabling, and wiring as shown on drawing E-2100. Reference MR Systems drawing. MR System's contractor shall terminate all wires between the new PLC panel and the SAG correction panel, and the existing Cone Valve Panel.

3.9 GROUNDING AND BONDING

- A. Install grounding per manufacturer's installation requirements.
- B. Connect new JB-FW-P-2 and VFD-FW-P-2 to nearest building steel with #2 bare copper. Route overhead in 1" Schedule 40 PVC conduit.

3.10 DISPOSAL OF STARTER FW-P-2

- A. Starter FW-P-2 shall be disposed of by the contractor.



Z ENLARGED PARTIAL FINISHED WATER BUILDING
PARTIAL CONDITIONED ROOM LAYOUT

SCALE: 1/4" = 1'-0"

ROUGHEN ENTIRE EXISTING CONCRETE
SURFACE BENEATH NEW HOUSEKEEPING PAD
TO 1/8" DEPTH AND APPLY BONDING AGENT

#4 @ 12" O.C. EACH WAY

POST-INSTALLED VFD BASE
PER VFD SPECIFICATION

EXISTING CONCRETE SLAB

T/PAD

4"

1 1/2"
CLR.

T/EXISTING SLAB

2"

2"

#4 x 5" LONG BAR DOWEL
@ 12" o.c. W/ ADH ANCH

SLAB)

NEW SPLICE BOX
JB-FW-P-2

(UNDER SLAB)
(EXIST)

FW-P-2
25-MGD
(EXIST)

E
SPACE

E-2101.

- EQUIPMENT AND INSTALLATION PRACTICES SHALL MEET THE REQUIREMENTS OF THE NEC, GEORGIA BUILDING CODES, MSHA REGULATIONS, AND PLANT STANDARDS.
- DEVICE LOCATIONS ARE APPROXIMATE. LOCATIONS TO BE VERIFIED IN THE FIELD.
- ALL CONDUCTORS TO BE COPPER AND RATED 90°C, UNLESS OTHERWISE NOTED.
- PROVIDE STRANDED COPPER CONDUCTORS, 600V TYPE THHN/THWN, INSTALLED AS INDIVIDUAL CONDUCTORS IN THREADED RIGID METAL CONDUIT OR TYPE MC CABLE IN CABLE TRAY. FOR CONDUITS AND CABLES, PROVIDE CONNECTORS, FITTINGS AND APPURTENANCES AS NECESSARY AND IN ACCORDANCE WITH THE NEC.
- PROVIDE SEPARATE INSULATED GROUNDING CONDUCTOR WITHIN EACH FEEDER AND BRANCH CIRCUIT RACEWAY. TERMINATE EACH END ON SUITABLE LUG, BUS, OR BUSHING.
- PROVIDE ALL NECESSARY SUPPORTS TO FACILITATE INSTALLATION, INDEPENDENT OF EXISTING UTILITY SUPPORT STRUCTURES.
- COORDINATE FINAL CONTROL AND SIGNAL WIRE TERMINATIONS WITH OWNERS' REPRESENTATIVE.
- ALL POWERED EQUIPMENT AND DEVICES SHALL HAVE A PHENOLIC TAG.
- MEDIUM VOLTAGE CABLES TO HAVE 133% EPR INSULATION AND FOIL SHIELDS LABELED TYPE MV-105 UNLESS NOTED DIFFERENTLY.

DRAWING NOTES:

- EXISTING UNDERGROUND CONDUIT BETWEEN US-G3 AND THE LINE SIDE OF STARTER FW-P-2. MAINTAIN INTEGRITY OF CONDUIT AND CONDUCTORS THAT ENTER THE EXISTING STARTER FW-P-2. NOTE THAT STARTER FW-P-2 SHALL BE DEMO'D AND REPLACED BY NEW JB-FW-P-2.
- EXISTING UNDERGROUND CONDUIT FROM LOAD SIDE OF STARTER TO EXISTING MOTOR. MAINTAIN INTEGRITY OF CONDUIT AND CONDUCTORS THAT ENTER THE EXISTING STARTER FW-P-2. NOTE THAT STARTER FW-P-2 SHALL BE DEMO'D AND REPLACED BY NEW JB-FW-P-2.
- NEW FIELD ROUTED OVERHEAD CONDUIT TO NEW VFD-FW-P-2.
- NEW FIELD ROUTED OVERHEAD CONDUIT FROM NEW VFD-FW-P-2.
- EXISTING CUTLER HAMMER 4160V STARTER TO BE REMOVED. MAINTAIN THE INTEGRITY OF THE UNDERGROUND LINE AND LOAD SIDE CONDUIT AND CONDUCTORS (TO BE SPLICED AND REUSED).
- NEW 4160V SPLICE BOX, JB-FW-P-2 TO EXTEND LINE AND LOAD SIDE CONDUCTORS OVERHEAD TO NEW VFD-FW-P-2.
- NEW MEDIUM VOLTAGE SPLICE. MAINTAIN INTEGRITY OF EXISTING UNDERSLAB CONDUIT/CONDUCTORS.
- ELECTRICAL CONTRACTOR SHALL DETERMINE ROUTING OF NEW 4" OVERHEAD CONDUCTORS TO EXTEND EXISTING 4160V WIRING BETWEEN NEW JB-FW-P-2 TO NEW VFD-FW-P-2.
- ELECTRICAL CONTRACTOR SHALL INSTALL (1) 40A 1 POLE CIRCUIT BREAKER IN AVAILABLE POLE SPACE OF EXISTING PANELBOARD, "LPC-G". CONFIRM WITH MWA FOR BREAKER MFR. PROVIDE NEW TYPED PANELBOARD CIRCUIT SCHEDULE.

B	ISSUED FOR BID	JG	02/02/17
A	ISSUED FOR REVIEW	JG	01/17/17
NO.	REVISION/ISSUE	BY	DATE

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PHOTO #1

EXISTING STARTER FW-P-2

PHOTO #2

EXISTING STARTER FW-P-2

PHOTO #3

EXISTING STARTER FW-P-2



PHOTO #4

EXISTING VFD-FW-P-1 DUCTWORK



LOCATION OF NEW HOUSEKEEPING PAD VFD-FW-P-2 LIGHTING & EXHAUST DUCT (ABOVE)

PHOTO #5

LOCATION OF NEW VFD-FW-P-2



PHOTO #6A

VFD-FW-P-1 INCOMING POWER WIRING (CORRECTIVE ACTIONS)

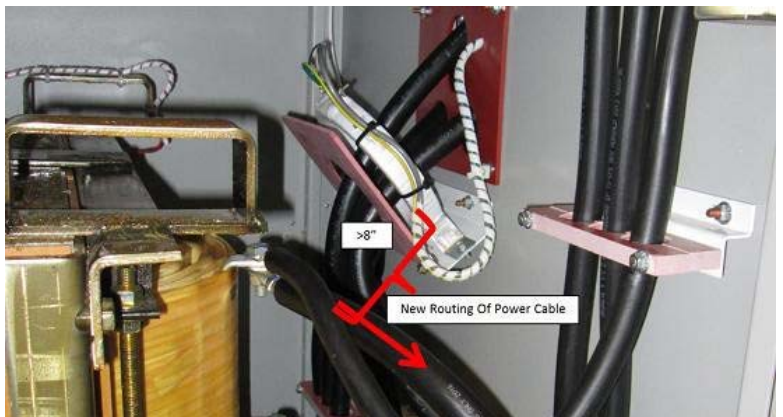


PHOTO #6B

EXISTING VFD-FW-P-1 INCOMING POWER WIRING (CORRECTED) (AFTER CORRECTIVE ACTIONS)

EXISTING CONDITIONS / AREA PHOTOS

NOTES:

CONTRACTOR SHALL HAVE DOCUMENTED... VERIFY EXISTING CONDITIONS PRIOR TO ANY... NOTIFY OWNER REPRESENTATIVE OF ANY... OBTAIN OWNER APPROVAL FOR ANY... WORKING AND NEW WORK WITH DWG E-2100... INSTALLATION PRACTICES SHALL MEET THE... THE NEC, GEORGIA BUILDING CODES, MSHA... PLANT STANDARDS... ARE APPROXIMATE. LOCATIONS TO BE... D... BE COPPER AND RATED 90°C, UNLESS

DRAWING NOTES:

- 1. REMOVE EXISTING CUTLER HAMMER 4160V STARTER... 2. PROVIDE FLOOR MOUNTED NEMA 3R STEEL SPLICE BOX... 3. VFD-FW-P-2 LINE AND LOAD SIDE FEEDERS SHALL BE (3)-5KV, 250 KCMIL CU, SHLD. HOUSTON WIRE AND CABLE HW20225001 OR AS APPROVED EQUAL BY ENGINEER OF RECORD...

DRAWING NOTES (CONT'D):

- 11. INSTALL NEW LIGHTING THAT MATCHES EXISTING BETWEEN VFD-FW-P-1 AND VFD-FW-P-2 TO MAINTAIN EXISTING SWITCHING AND CIRCUIT. INSURE ADDITIONAL LIGHTING WILL NOT OVERLOAD EXISTING CIRCUIT...



Table with 4 columns: NO., REVISION/ISSUE, BY, DATE. It contains a grid for recording revisions.

B	ISSUED FOR BID	JG	02/02/17
A	ISSUED FOR REVIEW	JG	01/17/17

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MACON WATER AUTHORITY

1750 HP VFD UPGRADE VFD Request For Bid - Electrical Installation

PROJECT NUMBER: 16073300

Directions to Sub: Fill out the areas indicating the materials and labor that will be included in your pricing to the Owner. In most areas, the Owner does not require line item pricing. There will be a place to enter the cost of each electrical system. Strike thru items that you will not be including in your work. Some may have already been struck out that are not in the scope of work of this project. These quantities are not a guaranteed price, the contractor shall supply what is needed to make the installation full and complete based on the design documents. This form is strictly to assist in pricing evaluations from the contractors. If there are any questions, please contact the Owner or Process Plus for assistance.

CONTRACTOR: _____

DATE: _____

Quote #: _____

Item No.	Description	Units	Quantity Only
CATEGORY - MEDIUM VOLTAGE CONDUCTORS			
101	250kCMIL 5KV Shielded Cu Stranded Conductor	L.F.	
102	Medium Voltage In Line Splice Kit	LOT	
103	#2 AWG Cu Stranded Conductor	L.F.	
104	High Potential Test Each New Conductor	LOT	
105	Medium Voltage Terminations	LOT	
CATEGORY - LOW VOLTAGE CABLES			
201	1 Pair Multimode Fiber Optic Cable	L.F.	
202	#14 Twisted Shielded Pair Cable	L.F.	
203	#16 Twisted Shielded Pair Cable	L.F.	
204	Low Voltage Terminations	L.F.	
CATEGORY - SINGLE CONDUCTOR / CONTROL WIRING			
301	#8 AWG Black	L.F.	
302	#8 AWG White	L.F.	
303	#8 AWG Green	L.F.	
304	#14 AWG Red	L.F.	
305	#14 Blue	L.F.	
306	#14 Purple	L.F.	
307	#14 Green	L.F.	
308	Control Wiring Terminations	L.F.	
CATEGORY - RIGID METALLIC CONDUIT / SUPPORTS			
401	4" Galvanized Rigid Conduit and Supports	L.F.	
402	1" Galvanized Rigid Conduit and Supports	L.F.	
403	3/4" Galvanized Rigid Conduit and Supports	L.F.	
403	1" Schedule 40 PVC and Supports	L.F.	
404	Hangers and Supports for Electrical Systems	LOT	
405	Sleeves and Sleeve Seals for Electrical Raceways and Cabling	LOT	

CONTRACTOR: _____

DATE: _____

Quote #: _____

Item No.	Description	Units	Quantity Only
CATEGORY - RACEWAYS AND BOXES FOR ELECTRICAL SYSTEMS			
501	Fabricate / Install 4160V Splice Box JB-FW-P-2	each	
502	Install 3" IR viewing window in JB-FW-P-2.	each	
CATEGORY - MISCELLANEOUS			
601	Identification for Electrical Systems	LOT	
602	Wiring Devices	LOT	
603	Equipment Rentals	LOT	
604	Unloading, Uncrating & Installing VFD	LOT	
605	Grounding and Bonding for Electrical Systems	LOT	
606	#2/0 Bare Copper Ground	100'	
607	Ground Test	LOT	
608	Demo / Relocation of Existing Lighting	LOT	
609	New Lighting	LOT	
610	Demo / Relocation of Existing Ductwork	LOT	
611	New Exhaust Fan Ductwork	LOT	
612	Cable Testing	LOT	
613	Housekeeping Pad	LOT	
Bid Breakdown		Totals Only	
701	Total for Labor		
702	Total for Materials		
703	Total Miscellaneous		
Bid Total			
801	Total Bid		
Comments:			