



ERIE COUNTY WATER AUTHORITY

INTEROFFICE MEMORANDUM

August 22, 2018

To: Terrence D. McCracken, Secretary to the Authority

From: Michael T. Haendiges, Production Engineer *MTH*

Subject: Contract EMA-003-A
Distribution SCADA Replacement
ECWA Project No. 201400160

Attached is Change Order No. 3 requested for the above referenced project.

The following documents are attached:

- Blue Authorization Form - this form provides the project name and project number, the action that is being requested of the Board, and it provides a list of approvals that are required prior to being acted on by the Board.
- Four copies of the Change Order requests signed by the Consulting Engineer.
- Back up Information from EMA, Inc. (Consulting Engineer) and Kaman Automation (Contractor).
 - Memo 24R1 from EMA, Inc. describing the funding reallocation proposed.
 - Quotation from Kaman Automation for the changes requested.
 - AIA Document G-703 from Kaman Automation

Summary

- ECWA decided to install nine of the tank site RTU panels with its own forces. This will result in a credit of \$21,870 and reduce the project time line by one week.
- ECWA engineers prefer not to have paper copies of documentation at each site based on the difficulty in maintain correct and updated versions. The electronic documentation will allow engineering to track and maintain current drawings and documents. All technicians and mechanics will have access to laptops and the documentation. This will result in a credit of \$8,960.
- The resulting credit of \$30,830 will offset the required changes described in the attached quotation from Kaman Automation with a small surplus of \$155. It will also leave line 18A Change Order Allowance intact for the potential changes required at the large Central service area pumping stations.
- A contingency budget was included in the project to account for unknown circumstances that require programming changes to the distribution system SCADA and the RTUs. Past practice allowed funds reallocated from contingency and other line items based on a Memo from EMA Inc. Based on the present board requirements we are documenting the reallocations with a change order and the required documentation.

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- There are ongoing changes to the SCADA and RTU software required due to unknown factors in the system. The changes listed on the attached quotation from Kaman Automation are necessary to operate the system and maintain proper control with one exception. The exception is Guenther pumping station altitude and bypass valve interlock is an added safety enhancement that will prevent deadheading of the 48-inch transmission line from Sturgeon Point. Cost \$315
- The attached example AIA (American Institute of Architects) form G703 is the most widely used construction industry standard billing document. The form structure is progress billing based on percent complete. The attached sheet shows where the credits and changes will be shown on this document on the next billing cycle after Board approval.

MTH:jmf

Attachments

cc: R.Stoll

L.Kowalski

CONT-EMA-003-A-1401-186-B



EMA, Inc.
PO Box 1414 – BMO-94
Minneapolis, MN 55480-1414
www.ema-inc.com

MEMO 24R1

DATE: August 21, 2018

TO: Greg Merriam

FROM: Gary Scheerer

CC: Dean Foote, Mike Haendiges

SUBJECT: Erie County Water Authority Distribution SCADA Replacement Project
Funding Reallocation

Erie County Water Authority has requested that paper copies of the documentation are not required for this project.

Please provide a credit for the hard copies of the documentation.

Revise the AIA item #8 to reflect this change once approved.

The credit is to be listed in the AIA as #8a Hard Copy Documentation Credit.

Erie County Water Authority decided to install the remaining nine (9) RTU backplates for the remaining tank sites.

Please provide a credit for the installation of the nine (9) RTU backplates.

Revise the AIA item #3 to reflect this change once approved.

The credit is to be listed in the AIA as #3a RTU Back Plate Installation Credit.

The credits are to be used against the additional programming changes that have risen during the transitioning of stations.

The items are as follows:

- 1) On start-up of a pump, the pump is held at minimum speed until the check valve is fully opened before the system controls of the pump speed. The VFD pump standard is to be changed and nine previously commissioned sites.
- 2) Second pump stepping start-up to provide a smooth transition in the system. This is to be done at four locations and the VFD pump standard.
- 3) Reduced data collection when pumps are starting or stopping. The VFD pump standard is to be changed and nine previously commissioned sites.
- 4) Chlorine automatic pause when the pumps are off or the chlorine residual reaches the High-High alarm. The chlorine standard is to be changed and three previously commissioned sites.
- 5) Site to site pump start-up interlock flags at both locations.

The site interlocks are as follows:

- a. Clark to Horner
- b. Violet to Eden 1
- c. Lakeview to Hamburg
- d. Pine Hill to Windom

- e. Pine Hill to Ball
- 6) Site to site start-up interlock fault alarm time out alarm to shut down the process of starting the pump and returning the system to normal operation.
The site interlocks are as follows:
- a. Clark to Horner
 - b. Violet to Eden 1
 - c. Lakeview to Hamburg
 - d. Pine Hill to Windom
 - e. Pine Hill to Ball
- 7) Add valve interlock at Guenther so that the bypass valve and Altitude valve are never both closed at the same time.
- 8) Increase the alarm delay for 18 previously commissioned pump stations and the pump standard on the suction pressure, discharge pressure and discharge flow alarms. This is for the Low-Low, Low, High, High-High alarms for each device.
- 9) Revise the Chlorine injection point to the inlet of the tank instead of the outlet of the tank for three locations. The locations are Wohlhueter Tank, Trevett Tank and Rice Hill Tank.

If there are any questions, please contact me.

Regards,

Gary Scheerer

Item	Description	Cost to Date	Cost to Complete	
1	Pump Fully Operational. (Change to standard program plus HAM, SDG, VPK, CLV, HHS, WLM, EMY, CEN, JHS) HHS Complete - 9 programs and PCN to be completed VFD Pumps will be considered fully operation when the motor status is running and the check valve closed limit shows not closed for a PLC set able time delay of X minutes. The tag used will be "PMP00X_sRunning" to indicate pump running with check valve open . Revise VFD Pump Speed Reference control. The VFD speed reference will be held at minimum speed in both manual and automatic when commanded to run until the pump is fully operational. When in automatic the pump ramp to control speed will not be started until the pump is fully operational. When in automatic the PID control for flow, pressure, and tank level will not be initiated until the pump at least one pump is fully operational. The tag used will be "PMP00X_sAutoRunning" to indicate pump in auto, running, with check valve open.	\$2,310.00	\$7,980.00	
2	Second Pump Stepped Startup (Change to HHS, JHS, CLK, HAM) HHS Complete - 3 sites and PCN to be completed Revise VFD pump speed control when starting second pump to make matching step changes up for starting pump and down for operational pump.	\$5,250.00	\$2,940.00	
3	Reduced Pump Speed Data Collection (Change to standard program plus HAM, SDG, VPK, CLV, HHS, WLM, EMY, CEN, JHS) HHS Complete - 9 sites and PCN to be completed The data collection tolerance for pump speed will be increased to 5% when, Starting the pump until it is fully operational or when not commanding the pump to run (Stopping) Once operational the pump speed tolerance will return to the default tolerance of 0.5%	\$1,050.00	\$4,200.00	
4	Chlorine Pump Automatic Pause (Change to standard program plus BRO, CEN, WOL) BRO, CEN, WOL, and PCN complete The chlorine injection pump will pause when, Commanded by operator from the SCADA system, the last pump is stopped, the station flow drops below a PLC set point, or the Effluent Residual High High alarm is active.	\$750.00		
5	Site to Site Pump Startup Interlock (Change to Standard program plus HAM, LKV) HAM, LKV, and PCN to be completed Add flags to indicate to the operator the interlocked systems are in the process of starting a pump.		\$945.00	
6	Site to Site Pump Startup Interlock Fault (Change to Standard program plus HAM, LKV) Ham/ LKV, CLK/HOR, VIO/ED1, PIH/WIN, PIH/BAL to be completed Add interlock time out fault to alarm and shut down the process of starting a pump and return the stations to normal operation.		\$2,205.00	
7	Add interlock at Guenther PCN to be completed Interlock Altitude valve such that it cannot be closed below 30% unless Bypass valve is open more than 50% Interlock Bypass valve such that in cannot be closed below 30% unless Altitude valve is open more than 50%. (note percentages can be discussed)		\$315.00	
8	Increase alarm delay to 90 seconds SP, DP, and Flow (Change to standard and 18 pump sites)		\$840.00	
9	Revise Chlorine Injection to be on into the tank (Change to WOL/RCH/TVT)		\$1,890.00	
		\$9,360.00	\$21,315.00	\$30,675.00
	Credit for reduced Documentation Supply (All electronic no paper copies to be supplies)			(\$8,960.00)
	Credit for RTU panel installation			(\$21,870.00)
	Approval needed to proceed with changes			(\$155.00)

CHANGE ORDER NO. 3

Erie County Water Authority
350 Ellicott Square Building, 295 Main Street
Buffalo, New York 14203

Contract No.: EMA-03A Project No.: 201400160 Date: August 21, 2018

Project: Distribution SCADA Replacement

Contractor: Kaman Automation Inc. Engineer: EMA Inc.
1000 University Ave. Ste 800 PO Box 1414 – BMO-94
Rochester, NY 14607 Minneapolis, MN 55480-1414

DESCRIPTION OF CHANGE:

1. A 0-day time extension to the Substantial Completion and Final Completion dates
2. Credit for the hard copies of As-built drawings and O&M manuals is not required.
3. Installation of nine (9) RTU panel back plates is not required by the contractor.
4. During the transition of RTU panels at several of the stations, several operational control issues arose that needed to be corrected through programming for the automation of the system.

REASON FOR CHANGE:

1. Erie County Water Authority has requested that paper copies of the documentation are not required for this project as they utilize digital documentation for information.
2. Erie County Water Authority decided to install the remaining nine (9) RTU backplates for the remaining tank sites so that time is not being spent waiting for the contractor to install the back plate with the authority personnel waiting for three to four hours until the back plate is installed. This will also allow more sites to be transitioned in a shorter time frame.
3. The additional programming items are as follows:
 - 1) On start-up of a pump, the pump is held at minimum speed until the check valve is fully opened before the system controls of the pump speed
 - 2) Second pump stepping start-up to provide a smooth transition in the system.
 - 3) Reduced data collection when pumps are starting or stopping.
 - 4) Chlorine automatic pause when the pumps are off or the chlorine residual reaches the High-High alarm.
 - 5) Site to site pump start-up interlock flags at both pump station locations.
 - 6) Site to site start-up interlock fault alarm time out alarm to shut down the process of starting the pump and returning the system to normal operation.
4. The site interlocks are as follows:
 - 1) Add valve interlock at Guenther so that the bypass valve and Altitude valve are never both closed at the same time.
 - 2) Increase the alarm delay for 18 previously commissioned pump stations and the pump standard on the suction pressure, discharge pressure and discharge flow alarms. This is for the Low-Low, Low, High, High-High alarms for each device.
 - 3) Revise the Chlorine injection point to the inlet of the tank instead of the outlet of the tank for three locations.

COMPENSATION:

1. 0-day time extension to the Substantial Completion and Final Completion dates
2. The credit for not having to supply hard copies of the As-built drawings and the O&M manuals results in a credit of (\$8,960.00). The credit for the labor to install the remaining none (9) RTU panel back plates is (\$21,870.00). The value of the additional programming changes is \$30,675.00. The net change to the contract value is a credit of (\$155.00).

APPROVALS:OWNER: _____ Date: _____
Erie County Water AuthorityCONTRACTOR: _____ Date: _____
Kaman Automation Inc.ENGINEER: Deon L. C. Froot Date: 22 August 2018
EMA Inc.

CHANGE IN CONTRACT PRICE:**Original Contract Price:**\$ 1,221,760.00**Net changes from previous Change Orders:**\$ 101,013.00**Contract Price prior to this Change Order:**\$ 1,465,505.25**Net Increase/Decrease of this Change Order:**\$ (155.00)**Contract Price with all approved Change Orders:**\$ 1,465,505.25**CHANGE IN CONTRACT TIMES:****Original Contract Times:**Milestone M1:
All Work July 13, 2016
Substantial Completion:
All Work October 26, 2017
Final Completion:
All Work October 26, 2017**Net Changes from previous Change Orders:**90 days / 0 days / 0 days**Contract Times prior to this Change Order:**Milestone M1:
All Work July 13, 2016
Substantial Completion:
All Work October 31, 2018
Final Completion:
All Work December 24, 2018**Net Increase/Decrease of this Change Order:**Milestone M1:
All Work 0 days
Substantial Completion:
All Work 0 days
Final Completion:
All Work 0 days**Contract Times with all approved Change Orders:**Milestone M1:
All Work July 13, 2016
Substantial Completion:
All Work October 31, 2018
Final Completion:
All Work December 24, 2018