

CITY OF HIGH POINT

AGENDA ITEM



Title: Ward Water Treatment Plant Upgrades
Wharton & Smith – Change Order No. 004

From: Terry Houk – Public Services Director
Derrick Boone – Asst. Public Services Director
Nawfal Shujaa- Projects Engineer

Meeting Date: 11/2/2020

Public Hearing: No

Advertising Date: N/A

Advertised By: N/A

Attachments: Figures (1-4), Black and Veatch Letter (Attachment A)

PURPOSE:

The Public Services Department recommends that the City Council approve Change Order No. 004 for the work listed below and further explained in attachment “A”.

Added control, wiring and associated programming for the High Service and Transfer Pumps

Added Emergency Back-Up Generator for the Shutdown on September 29-30, 2019.

Added concrete infill to reduce size of existing roof penetrations.

Deletion of demolition and new construction scope associated with existing Transfer Pumps 1 and 2 for a credit to the city.

Added programming services to the Control System Programmer to address modifications to the auto control sequence for High Service and Transfer Pumps.

Replacement of existing ¼ Horsepower Motors with ½ Horsepower Motors for the Lab Duct Fans.

BACKGROUND:

The Ward Water Treatment Plant is under electrical and HVAC upgrades for better functionality. The contract was awarded to Wharton Smith Inc. on September 18, 2018. The items listed in the change order were required to assure the continuity of the project and the quality of work.

BUDGET IMPACT:

Funds for this are available in the FY 20-21 budget.

RECOMMENDATION / ACTION REQUESTED:

The Public Services Department recommends the approval of Change Order No. 004 in the amount of \$103,626.00 to Wharton Smith, Inc.



Figure (1)



Figure (2)

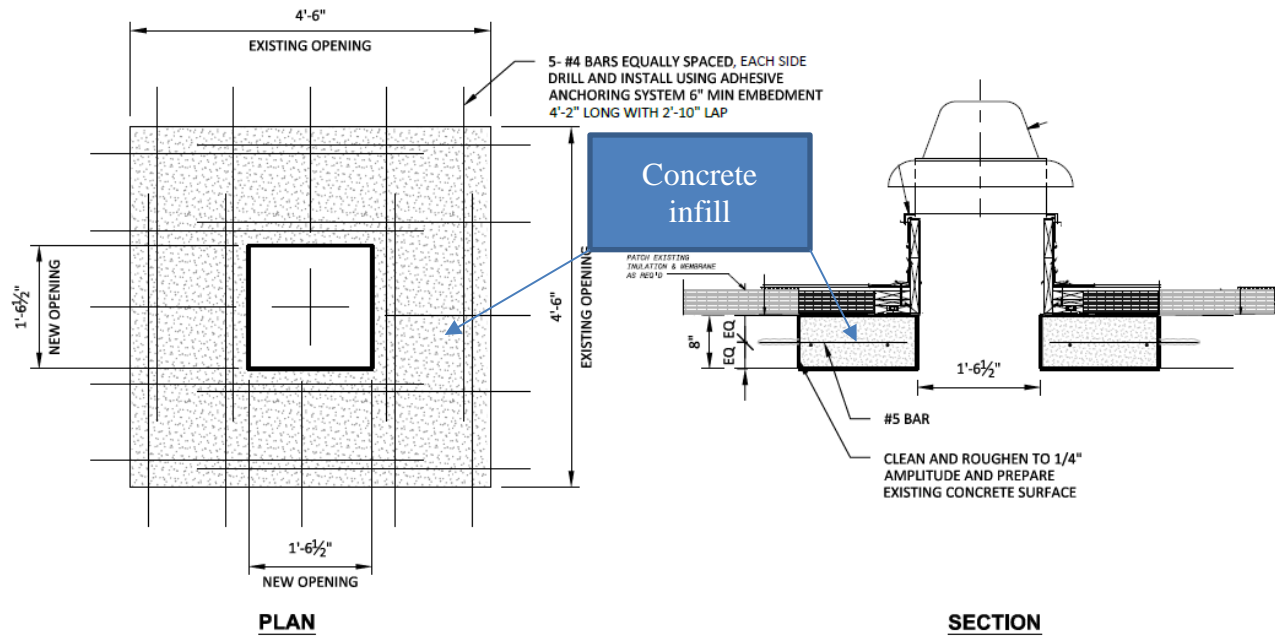


Figure (3)

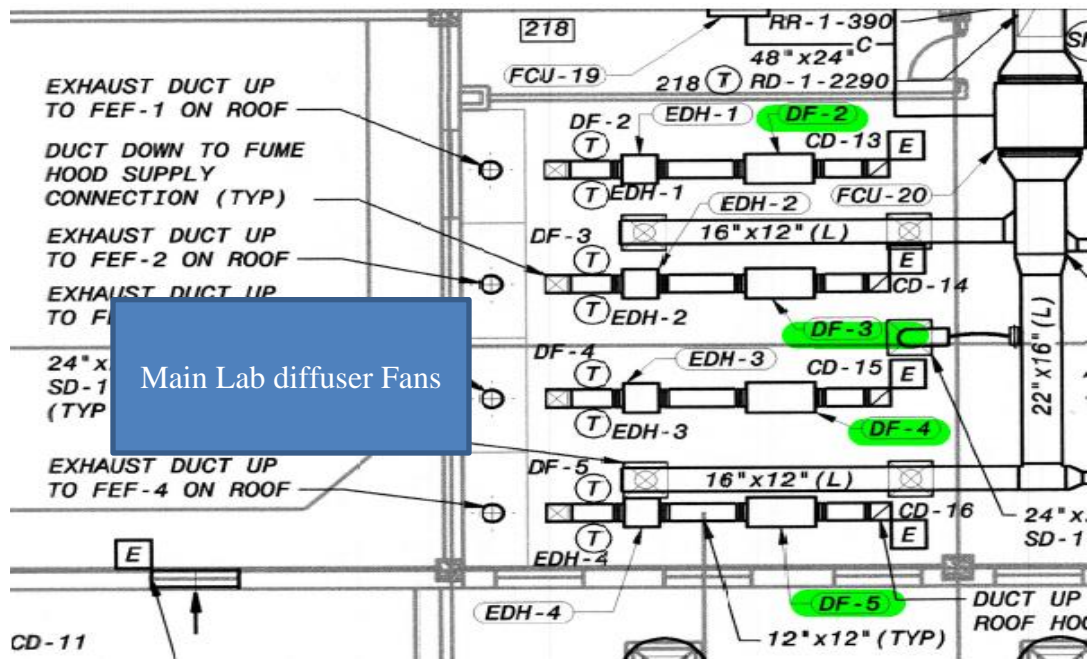


Figure (4)

Attachment

(A)

Change Order No. 004

Date of Issuance: 17-SEP-2020

Effective Date: 17-SEP-2020

Project: Ward WTP Upgrades	Owner: The City of High Point	Owner's Contract No.: Bid #56-082218
Contract: Ward Water Plant Upgrades	Date of Contract: 18-SEP-2018	
Contractor: Wharton Smith Inc.	Engineer's Project No.: 190221	

The Contract Documents are modified as follows upon execution of this Change Order:

Description: Site conditions changes are listed in Attachment A.

Attachments (list documents supporting change): Attachment A contains a descriptive list of every change to be incorporated into the project via this Change Order.

CHANGE IN CONTRACT PRICE:

CHANGE IN CONTRACT TIMES:

Original Contract Price:

\$ 12,737,000.00

Increase or Decrease from previously approved Change Orders:

\$ 392,153.00

Contract Price prior to this Change Order:

\$ 13,129,153.00

Increase of this Change Order:

\$ 103,626.00

Contract Price incorporating this Change Order:

\$ 13,232,779.00

Original Contract Times: ☐ Work days ☒ Calendar days

Final Completion of the Work (days): 930

Ready for final payment (date): 31-MAY-2021

Increase or Decrease from previously approved Change Orders:

Final Completion of the Work (days): 131

Ready for final payment (date): 9-OCT-2021

Contract Times prior to this Change Order:

Final Completion of the Work (days): 1061

Ready for final payment (date): 9-OCT-2021

Increase of this Change Order:

Final Completion of the Work (days): 0

Ready for final payment (date): 9-OCT-2021

Contract Times with all approved Change Orders:

Final Completion of the Work (days): 1061

Ready for final payment (date): 9-OCT-2021

RECOMMENDED:

By: 
Engineer (Authorized Signature)


Date: 17-SEP-2020

ACCEPTED:

By: _____
Owner (Authorized Signature)

Date: _____

ACCEPTED:

By: 
Contractor (Authorized Signature)

Date: 21-SEPT-2020

Change Order No. 004

Date of Issuance: 17-SEP-2020

Effective Date: 17-SEP-2020

Project: Ward WTP Upgrades	Owner: The City of High Point	Owner's Contract No.: Bid #56-082218
Contract: Ward Water Plant Upgrades		Date of Contract: 18-SEP-2018
Contractor: Wharton Smith Inc.		Engineer's Project No.: 190221

ATTACHMENT A

Item #1 – Added control, wiring and associated programming for the High Service and Transfer Pumps for an additional cost of \$48,205.00, and no time extension.

The scope of contracted work for this project included the installation of new 4160V power supply, which includes new switchgears, transformers, medium voltage AFDs and 4160V rated motors for high service pumps, also the demolition of existing MCCs units and the upgrade of existing 480V power supply with new MCCs and associated feeders, the installation of new medium and low voltage cable and conduits to power existing loads and new equipment, the installation of a new 12 MGD high service pump with 4160V rated motor with AFD and associated piping, a new 12 MGD transfer pump with 480V rated motor with AFD and associated piping, as well as the replacement of existing starters with soft starters for Transfer Pumps 5 and 6 and AFDs for Transfer Pumps 2 and 3, plus new Plant's Control System.

The scope of additional work associated with this item provides CLOSE command signals to the discharge valves from the High Service Pumps via additional wiring and programming, as well as integration of low-pressure switches from the High Service Pump to their respective Adjustable Frequency Drives or Motor Control Lineup. Also, the added scope takes in additional remote stop signals for the High Service and Transfer Pumps and integrates these digital output signals between the new Programmable Logic Controllers NACP-1 and NACP-2 and each drive equipment.

Item #2 – Added Emergency Back-Up Generator for the Shutdown on September 29 and 30, 2019 for an additional cost of \$45,501.00, and no time extension.

The scope of contracted work for this project included providing temporary generator power during construction to energize the existing 2.4kV Switchgear, while the new utility substation was being energized by the City of High Point Power Utility. As part of the base contract, the Contractor was responsible for providing a single 2MW generator, a multi tap transformer as required, all cable and accessories as required for connection of the generator to the transformer and to the 2.4kV Switchgear, a 300-gallon skid mounted fuel tank with 3000 gallons of fuel, all transportation to and from the site, as well as the installation for all connections between the generator, transformer and switchgear.

The scope of additional work requested by the City includes providing one additional 2 MW Emergency Standby Generator as secondary backup to provide temporary power to energize the existing 2.4kV Switchgear in case the first emergency generator fails to operate or malfunction. The additional scope of supply also includes all cable and accessories required for switching over between the two emergency generators to the transformer, all transportation to and from the site for this additional equipment, as well as all require startup and testing personnel and additional field staff to provide continuous operational and switchover supervision in case of an equipment failure.

Item #3 – Added concrete infill to reduce size of existing roof penetration from 54"x54" to 24"x24" for an additional cost of \$1,827.00, and no time extension.

The scope of contracted work for this project includes the installation of a new Power Roof Ventilator #9 (PRV-9) at the Sodium Hypochlorite Room #227, including all associated ductwork.

During initial installation, the Contractor discovered that the existing roof slab opening was larger than the opening dimensions needed for the new PRV-9. In order to reduce the size of the existing roof opening, the Contractor was required to form up the opening, secure additional steel reinforcement by means of drilling and adhesive anchors such rebar to the existing roof slab, pour the necessary concrete infill, and once properly cured proceed to strip the installed formwork.

Item #4 – Deletion of demolition and new construction scope associated with existing Transfer Pumps 1 and 2 for a credit cost of \$8,668.00, and no time extension.

The scope of contracted work for this project includes the demolition of Transfer Pump #1 (TP-1), its associated piping up to the existing 30"x20" Tee located at the 30" main distribution header, and its concrete equipment base, along with the demolition and construction of the equipment base for Transfer Pump #2. The scope associated to TP-1 includes the installation of a new Vertical Diffusion Pump Base with a steel cap plate, as well as the installation of a new blind flange at the existing 30"x20" Tee.

In accordance with Par. 18.02 "Potential Lead Based Paint" from Specification 01015 "Project Requirements" of the Project Manual, the City of High Point was uncertain at the time of project bid whether the pump/piping equipment to be demolished as part of this project at the existing High Service and Transfer Pumps Systems was coated with lead-based paint. Due to these circumstances, the scope of the Contract included provisions for the Contractor to perform coating testing where lead paint was suspected through a certified material testing firm.

For such lead-containing testing survey, the Contractor retained the services of ATC from Charlotte, NC. This certified firm conducted a random lead-containing paint screening across the accessible areas of the High Service and Transfer Pumps, and associated piping, which revealed painted surfaces on the selected equipment with detectable lead concentration in excess of regulated levels. Based on such field conditions along with associated contractual dispositions, considering lead-based paint was identified and Contractor's activities cause this to present a hazard to field personnel or the environment, the Contractor was guided to stop work in the affected area. Upon further review of the extent of lead-paint mitigation work that would have been required for TP-1 and TP-2 to proceed with the contracted work described above, the Owner decided to exercise cost control measures to effectively manage the issue and delete this scope of demolition.

Item #5 – Added programming services to the Control System Programmer to address modifications to the auto control sequence for High Service and Transfer Pumps for an additional cost of \$11,761.00, and no time extension.

The scope of contracted work for this project includes transitioning all associated input and output signals for each of the High Service and Transfer Pumps to their respective new driving equipment and new Programmable Logic Controllers. As such, the Contractor shall coordinate with the System Supplier and the Control System Programmer to perform a Factory Demonstration Test to validate the integrity and readiness of each panel prior to delivering it onsite.

During such testing witnessed by the Owner and Engineer, numerous operational controls were modified upon request by the Owner as follows:

- High Service Pumps level control changed from PID speed control to proportional speed control
- Once any of the High Service Pumps starts, its speed shall increase in 5% increments every 30 seconds up until the unit reaches maximum speed, at which point it will operate based on demand, and if such unit reaches maximum speed a second High Service Pump will start using the same sequence of operation (5% increase in speed every 30 seconds).

- A pop-up for pump speed change confirmation will be added to the HMI
- In case of Pump Restart, a 5-minute delay has been incorporated which shall be shown as notification on HMI screen
- An alarm for AFD room temperature shall be added to show warning sign on HMI without control to make pumps stop due to such alarm
- The ability for selection between the "*Lexington Tank*" and "*Potts Tank*" for level control has been incorporated
- In case of any pump failure, no pump will start automatically in its place

Item #6 – Replacement of existing ¼ Horsepower Motors with ½ Horsepower Motors for Duct Fans #2, #3, #4, and #5 an additional cost of \$5,000.00, and no time extension.

The scope of contracted work for this project include the installation of new belt driven duct fans to supply air to the Main Laboratory Room #217. The scope of additional work comprises the procurement and installation of 4 new duct fan motors of ½ horsepower each to meet the airstream demand provided by Duct Fans #2, #3, #4, and #5.

The total Contract Price adjustment by Change Order 004 is \$103,626.00, including no Contract Time adjustment to the date of Final Completion of the Work.

September 17th, 2020

Terry Houk
Public Services Director
City of High Point (CHP)
211 South Hamilton Street
High Point, NC 27260

Ward Water Plant Upgrades
B&V Project 190221
B&V File 81.1750

**Subject: Ward Water Treatment Plant Upgrades Project
Change Order #4 Descriptive Narrative**

Dear Mr. Houk:

This communication serves the objective to document and summarize an amendment to the Contract Documents in terms of changes to both the Contract Price and Contract Time by means of Change Order #4. This contractual amendment is being recommended in conformance with Article 11 "*Amending the Contract Documents; Changes in the Work*" as stipulated in the EJCDC C-700 Standard General Conditions of the Construction Contract between Wharton Smith Inc. (Contractor) and The City of High Point (Owner).

The scope of changes to be incorporated into the Contract Documents via Change Order 004 are as follows:

Item #1 – Added control, wiring and associated programming for the High Service and Transfer Pumps for an additional cost of \$48,205.00, and no time extension.

The scope of contracted work for this project included the installation of new 4160V power supply, which includes new switchgears, transformers, medium voltage AFDs and 4160V rated motors for high service pumps, also the demolition of existing MCCs units and the upgrade of existing 480V power supply with new MCCs and associated feeders, the installation of new medium and low voltage cable and conduits to power existing loads and new equipment, the installation of a new 12 MGD high service pump with 4160V rated motor with AFD and associated piping, a new 12 MGD transfer pump with 480V rated motor with AFD and associated piping, as well as the replacement of existing starters with soft starters for Transfer Pumps 5 and 6 and AFDs for Transfer Pumps 2 and 3, plus new Plant's Control System.

The scope of additional work associated with this item provides CLOSE command signals to the discharge valves from the High Service Pumps via additional wiring and programming, as well as integration of low-pressure switches from the High Service Pump to their respective Adjustable Frequency Drives or Motor Control Lineup. Also, the added scope takes in additional remote stop signals for the High Service and Transfer Pumps and

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Respectfully,

BLACK & VEATCH INTERNATIONAL COMPANY



Ramon Ortiz-Morgado
Construction Manager

CC D. Boone
 N. Shujaa
 M. Osborne
 D. Modi
 M. Galin
 D. Cashwell