



Metropolitan Water Reclamation District of Greater Chicago

100 East Erie Street
Chicago, IL 60611

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Title: Authority to increase Contract 11-195-AP Phosphorus Recovery System, Stickney Water Reclamation Plant, to Black & Veatch Construction, Inc. in an amount of \$1,905,939.28, from an amount of \$34,905,483.55, to an amount not to exceed \$36,811,422.83, Accounts 401-50000-645650 and 201-50000-612430, Purchase Order 5001478

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Date	Ver.	Action By	Action	Result
11/16/2017	1	Board of Commissioners	Approved	Pass
11/16/2017	1	Committee of the Whole	Recommended	Pass

TRANSMITTAL LETTER FOR BOARD MEETING OF NOVEMBER 16, 2017

COMMITTEE ON PROCUREMENT

Mr. David St. Pierre, Executive Director

Authority to increase Contract 11-195-AP Phosphorus Recovery System, Stickney Water Reclamation Plant, to Black & Veatch Construction, Inc. in an amount of \$1,905,939.28, from an amount of \$34,905,483.55, to an amount not to exceed \$36,811,422.83, Accounts 401-50000-645650 and 201-50000-612430, Purchase Order 5001478

Dear Sir:

On August 7, 2014, the Board of Commissioners authorized the Director of Procurement and Materials Management to award Contract 11-195-AP Phosphorus Recovery System, Stickney Water Reclamation Plant, to Black & Veatch Construction, Inc. in an amount not to exceed \$31,879,000.00. The scheduled contract completion date was October 29, 2016.

As of November 3, 2017, the attached list of change orders has been approved. The effect of these change orders resulted in an increase in an amount of \$3,026,483.55 from the original amount awarded of \$31,879,000.00. The current contract value is \$34,905,483.55. The prior approved change orders reflect a 9.49% increase to the original contract value.

Item 1: This contract differed from typical District contracts in that a modified design-build approach was taken. The modified approach allowed for expedited design and construction of the facility with significant District oversight to ensure that District standards were met. During construction of the facility, several claims arose for work that was not foreseen during the design phase, differed from the original scope, or resulted from unexpected field conditions. The extra work included are as follows:

- a. Winter weather protection. The construction schedule was accelerated to have the majority of the facility completed for WEFTEC 2015. The timing of the contract award resulted in construction beginning in the winter months. Therefore, a heated tent was provided to allow for installation of the building foundation during the winter to expedite the project schedule. \$243,765.00.
- b. Additional costs associated with the accelerated schedule were due to re-sequencing of the equipment assembly and installation, including assembly of the reactors outside of the building foundation and placement of the reactors into the partially assembled building. Unanticipated work included the installation of a reactor assembly pad outside of the building and crane costs to move the assembled reactors into the building. \$42,477.21.
- c. Reinforcement and copper grounding of electrical duct banks. The District requested the contractor to include a higher level of reinforcement and grounding for all electrical duct banks through the entirety of the duct bank for increased stability and safety. Black & Veatch Construction (B&V) had only included the higher level of reinforcement within 15 feet of building entrances, under and within 5 feet of roadways, and within 10 feet of indicated future excavations. While their design was within code, the District requested a betterment to ensure long-term stability and safety of the duct bank. \$125,441.00.
- d. Steam line modifications. B&V's original design had the high pressure steam traps along the upper bridge, discharging to the pumped condensate from the facility. The District had concerns that in the long term operation of the facility, potential for hammer within the piping system may occur and requested a separate condensate return line be provided for these traps. Additionally, their original design had a steam pressure reducing station and low pressure coil for the make-up air handling unit. The District requested that a high pressure coil be provided to match the incoming steam pressure, thereby reducing future maintenance related to the reducing station. While their design was within code, the District requested a betterment to ensure long-term stability and safety. These requested modifications of the steam and condensate system resulted in additional engineering and construction costs. \$130,698.00.
- e. Building relocation. Upon initiation of the excavation for the post-digestion centrate pump station, an existing duct bank and manhole were encountered which were not shown on the existing As-Built drawings supplied to B&V. This caused an interference with the planned location of the pump station and building foundation. To eliminate the interference, the building was relocated 15 feet to the east. Due to this unforeseen condition, the relocation resulted in additional costs for steam system piping and supports, driveway surface, site grading, drainage and engineering design costs. \$134,616.00.
- f. Potable Water relocation. B&V's original design for potable water utilized a connection point from the MBM pelletizer facility water line. In order to control and reduce water usage costs, the District re-located the potable water connection to a District controlled supply at a location further from the facility. Additional costs were incurred to facilitate the longer connection distance. \$94,982.00
- g. Elevation adjustments for the pre-digestion centrate pumping station. Grade elevations at the pre-digestion wet well were different than what was shown on the existing As-Built drawings supplied from the District to B&V. Construction in the vicinity was occurring under a different District contract, resulting in the inability to properly survey the site and design was based on the best available information at the time. Due to a difference in actual elevation, redesign of the height of the wet well and installation and coating of an additional section of pre-cast ring were necessary. \$12,263.00
- h. Unanticipated obstructions encountered during pipe boring. Burial excess concrete that extended well beyond what could have been expected from an existing manhole was encountered under D Street during installation of the effluent and potable water lines. This obstruction was not reasonably foreseeable during the design, and was not shown on existing As-Built drawings. Additional work to remove the obstruction resulted in additional costs to the contractor. \$16,303.00.

- i. Interferences by Central Heat. During installation of the duct bank for the pre-digestion centrate pump station south of the Central Boiler Facility, underground asphaltic concrete was obstructing the path. This obstruction was not reasonably foreseeable during the design and was not shown on existing As-Built drawings. The contractor had to saw cut and remove the obstruction to allow for the installation of the duct bank. \$12,718.00.
- j. WASSTRIP license agreement and associated programming and commissioning to integrate with the Ostara facility. The contractor removed all costs related to integration of WASSTRIP to the Ostara phosphorus recovery facility from the overall construction costs when the District decided that District engineers would be responsible for the design of the WASSTRIP operation. A license agreement is required in order to operate the WASSTRIP process and additional programming and commissioning is required for the integration of WASSTRIP into the operations of the phosphorus recovery facility. The WASSTRIP contract is scheduled to be operational at the end of 2017. The WASSTRIP process will increase the phosphorus yield from Ostara from approximately 3,000 tons per year to 9,000 tons per year. Therefore to ensure the maximum use and benefit of the Ostara facility, this license and work needs to be added to this contract. \$326,679.10.
- k. Additional work related to large contaminants within the centrate and struvite build-up. Unexpected contaminants in the post-digestion centrate resulted in additional costs associated with cleaning and maintaining the strainers, replacement of the originally designed strainer baskets with baskets having larger mesh sizes, and replacement of the brushes, gaskets and gear boxes on the strainers. This work was above and beyond the normal routine maintenance required for this equipment. Unanticipated struvite build-up required removal of the large post-digestion centrate pumps for servicing and struvite removal. A previously approved change order will add an acid dosing system to the centrate flows, thus mitigating the costly pump rehabilitation costs and interruptions of the Ostara system. \$251,482.97.
- l. Six months of additional commissioning and optimization of the facility by Ostara. Additional on-site costs were incurred by Ostara for commissioning and optimizing the operation of the facility past the expected substantial completion date. This was for the months of March through June, 2017 and September and October 2017. The facility was not in operation during July and August, 2017. \$363,000.00.

A credit for work not required includes certain landscaping, valve material substitution and DCS integration and programming. The value of the above work is for an extra in the amount of \$1,633,425.28 and a credit in the amount of \$211,486.00 for a net extra in the amount of \$1,421,939.28.

Item 2: The District has determined that it is in our best interest to further extend the commissioning and optimization of the facility by Ostara under this contract for an additional six months (November 2017 through April 2018). During this period, Ostara will provide operational staff to further optimize the facility. The additional oversight by Ostara will allow the District operating staff further shadowing opportunities, optimization of the operation of the reactors for efficiency and optimal product recovery, and provide oversight during the start-up and integration of flows from the WASSTRIP process. The value of this work is an extra in the amount of \$363,000.00. The contractor submitted a proposal (CCO-025) in a negotiated amount for an extra in the amount of \$2,117,425.28 and a credit in the amount of \$211,486.00, for a net extra in the amount of \$1,905,939.28. The engineer reviewed this proposal, and stated via correspondence 574, that the Engineering Department would recommend its approval.

This change order is in compliance with the Illinois Criminal Code since the change is germane to the contract as signed.

It is hereby recommended that the Board of Commissioners authorize the Director of Procurement and Materials Management to execute a change order to increase Contract 11-195-AP in an amount not to exceed \$1,905,939.28 (5.46% of the current contract value), from an amount of \$34,905,483.55, to an amount not to

exceed \$36,811,422.83.

Funds are available in Accounts 401-50000-645650 and 201-50000-612430.

Requested, Marcella V. Landis, Acting Director of Engineering, ECB:GR

Recommended, Darlene A. LoCascio, Director of Procurement and Materials Management

Respectfully Submitted, Barbara J. McGowan, Chairman Committee on Procurement

Disposition of this agenda item will be documented in the official Regular Board Meeting Minutes of the Board of Commissioners for November 16, 2017

Attachment