CITY OF HIGH POINT
AGENDA ITEM

Title: Ward Water Treatment Plant Upgrades

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

Meeting Date: November 4, 2019

Public Hearing: No

Advertising Date: N/A
Advertised By: N/A

Attachments: Figures (1-3) & Attachment "A"

PURPOSE:
The Public Services Department recommends that the City Council approve the change order for the works listed below and further explained in attachment "A"

1. Remove and replace fitting valves at Greenleaf filters.
2. Electrical conduit conflict under the electrical building foundation.
3. Low voltage pump VFD output filters.
4. Electrical duct bank relocation. (Transformers new layout)

BACKGROUND:
The Ward Water Treatment Plant has been approved for electrical and HVAC upgrades to meet current industry standards and long-term functionality. The contract was awarded to Warton & Smith Inc. in 09/18/2018, and the work started in Winter 2018. The items listed in the change order were required to assure the continuity of the project and the quality of works,

BUDGET IMPACT:
Funds for this are available in the FY 2019-2020 budget.

RECOMMENDATION / ACTION REQUESTED:
The Public Services Department recommends the approval of the repairs/ works to the Ward Water Treatment Plant and to accept a change order in the amount of $ 154,124.00.

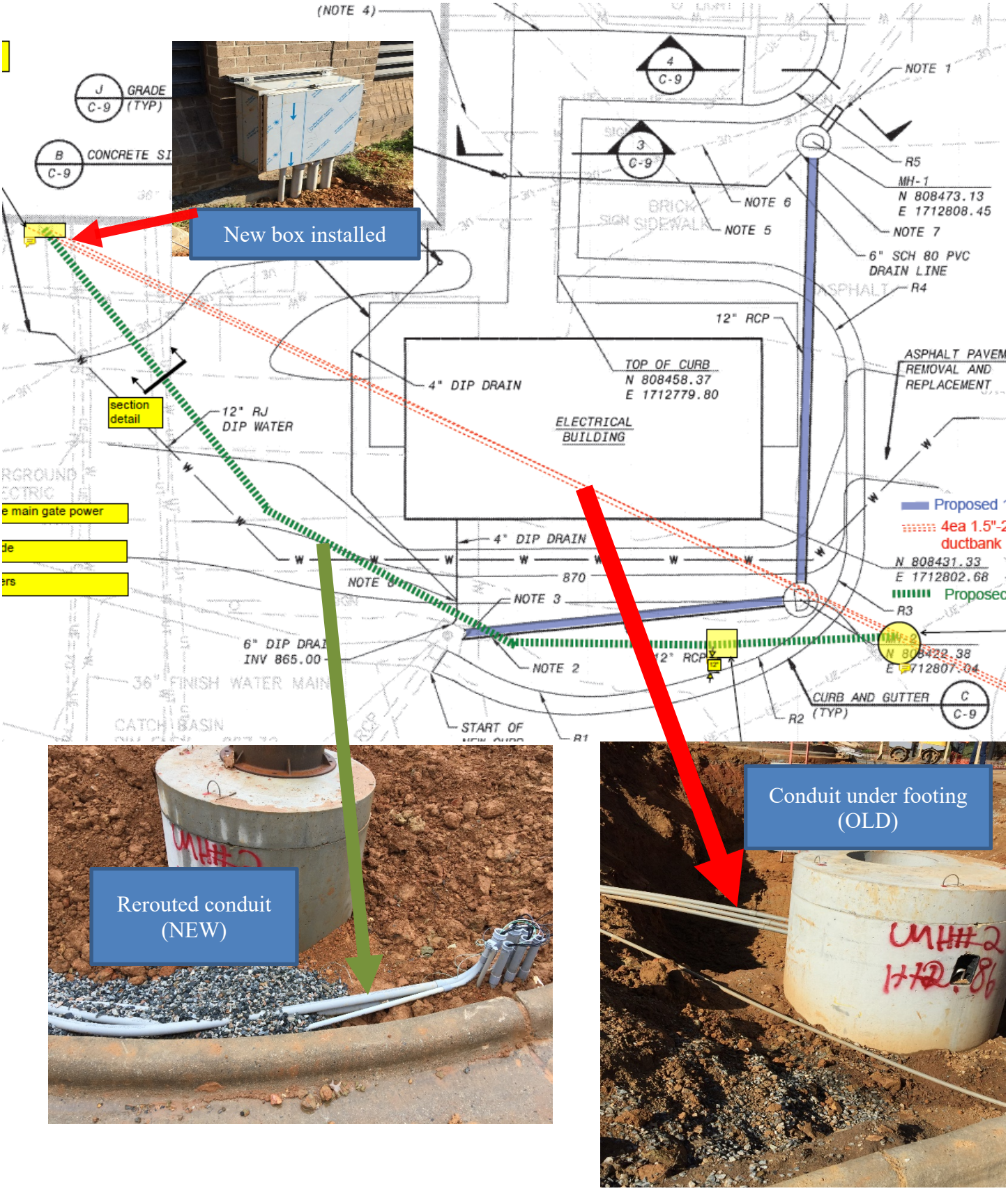
New box installed
Rerouted conduit (NEW)
Conduit under footing (OLD)
(NOTE 4)
GRADE (TYP)
CONCRETE SI
NOTE 1
R5
MH-1
N 808473.13
E 1712808.45
NOTE 6
NOTE 5
NOTE 7
6" SCH 80 PVC DRAIN LINE
R4
12" RCP
TOP OF CURB
N 808458.37
E 1712779.80
4" DIP DRAIN
ELECTRICAL BUILDING
ASPHALT PAVEM
REMOVAL AND REPLACEMENT
section detail
12" RJ DIP WATER
main gate power
Proposed
4ea 1.5"-2
ductbank
N 808431.33
E 1712802.68
Proposed
4" DIP DRAIN
870
NOTE 3
R3
NOTE 2
6" DIP DRAI
INV 865.00
12" RCP
CURB AND GUTTER (TYP)
START OF
R2
R1
36" FINISH WATER MAIN
CATCH BASIN

Figure (1)

Figure (2)

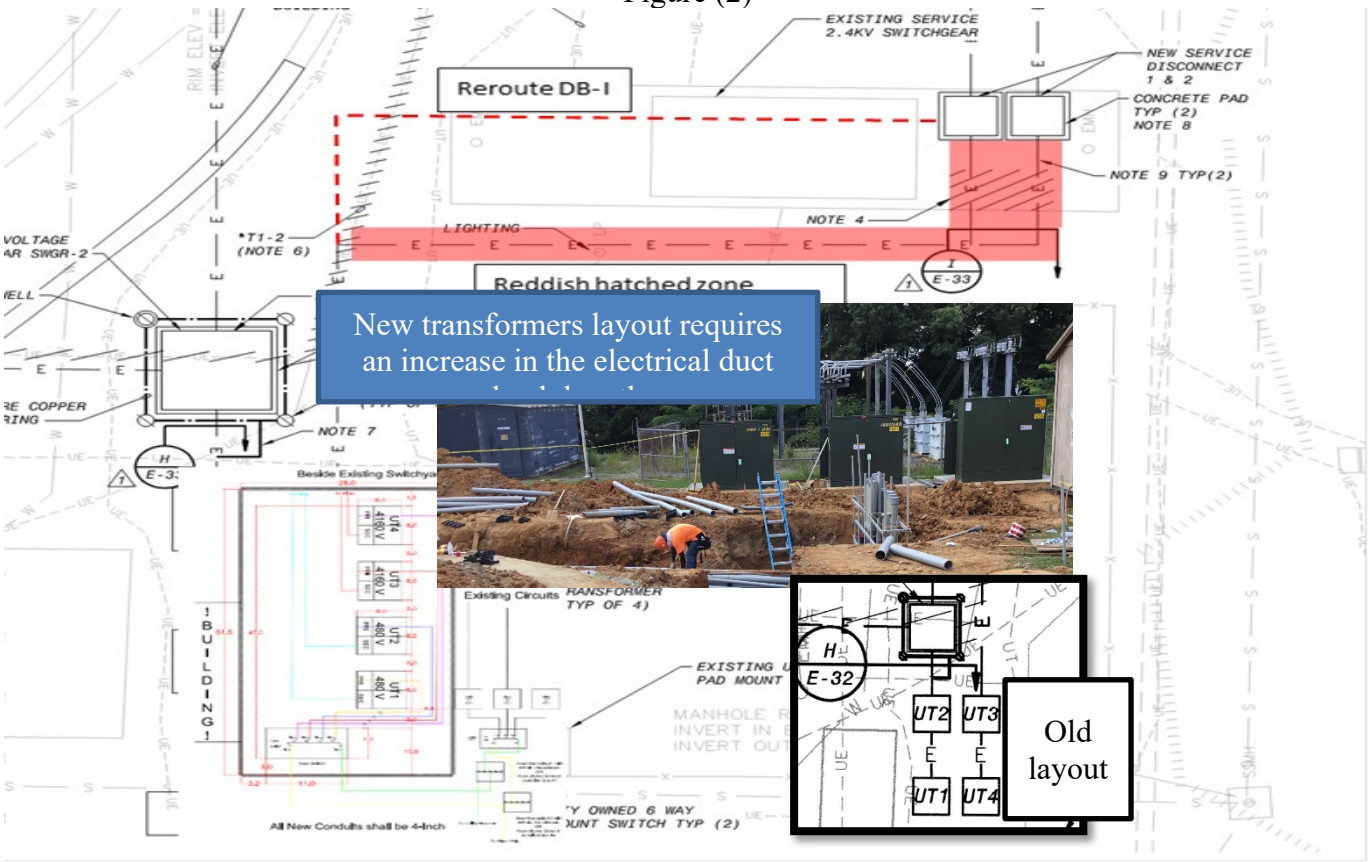

Figure (3)

Change Order No. 001

Date of Issuance: 18-OCT-2019 Effective Date: 18-OCT-2019

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 – Replacement of Butterfly Valves at the existing Cluster Filter Gallery for an additional cost of $38,483.00 and a time extension of 7 calendar days.

Per a request for proposal issued by the Engineer to the Contractor in representation of the City of High Point (CHP), the scope of additional work associated to this item of the change order includes the removal and reinstallation of designated Ductile Iron Pipe (DIP) sections located inside the Cluster Filter Pipe Gallery. The intent of such removal and reinstallation was to accommodate a visual inspection by maintenance personnel from the City of High Point to evaluate the extent of deterioration and leakage of (4) existing 16" Butterfly Valves, as well as the installation of new Owner furnished Butterfly Valves if needed. This additional task performed by the Contractor also included the installation of cribbing/rigging to secure and support the existing piping network inside the Pipe Gallery during disassembly/reassembly, as well as the use of temporary blind flanges and hardware, copper piping/fittings, PVC piping/fittings, hydraulic jacks, and dewatering pumps to safely secure the area during the performance of the work.

Item #2 – Repairs to existing Vent Stack Rain Cap located inside on the laboratories at Operations Building at no additional cost or time adjustment.

In accord to a request formulated by the City of High Point to the Contractor during the Monthly Progress Meeting on February 21st, 2019, the Contractor was inquired to address a roof infiltration through an existing rain cap located at one of the vent stacks that provides ventilation provisions to one of the laboratories inside the Operations Building. The scope of repairs associated to this item of the change order included modifying the existing flashing components of the rain cap at the roof level, which also involved the installation of additional stainless-steel sheet metal components with required anchorage and sealing details.

Throughout a mutually agreed negotiation between the City of High Point and the Contractor, the costs associated with this additional work were equitably exchanged by the credit associated with Item #7 below.

Item #3 – Relocation of existing underground duct bank located within footprint of new Electrical Building for an additional cost of $62,024.00 and a time extension of 7 calendar days.

During the excavation works associated with the shallow foundation for the new Electrical Building, the Contractor discovered an existing underground duct bank, which provided power provisions to the existing Access Gate of the Water Treatment Plant. This existing underground utility was not shown on the As-Built Drawing of the facility or the project design drawings conforming the Contract Documents. The scope of additional work associated to this item of the change order includes rerouting approximately 160 linear feet of duct bank outside the footprint of the new Electrical Building, which consists of (3) 2" and (1) 1" PVC conduits, and its associated wiring conductors. The additional construction also required the installation of a new hinged NEMA 4X junction box mounted onto

the south wall of the existing Operations Building, the installation of a new FRP handhole at the southeaster corner of the new Electrical Building, and all necessary rewiring and terminations per RFI 005 response.

Item #4 – Elimination of (1) 3" diameter and (1) 6" diameter roof drain lines from the Operations Building for a credit of $3,271.00 and no time adjustment.

The scope of work for this project includes the relocation of two existing drain lines from the Operations Building, 3" and 6" in diameter respectively, to accommodate the construction of the new Electrical Building. During the course of construction, the Contractor investigated the actual routing of both drain lines within the adjacent premises of the building's water fountain and identified that: (a) the existing 3" drain line was a closed piping system within the existing water fountain, which in turn was interconnected to an recycling pump located at the basement of the Operations Building, and (b) that the existing 6" drain line was already interconnected to an existing 12" stormwater pipeline at MH-1, which in turn drained through MH-2 into an existing stormwater catch basin.

Considering the as-built conditions of these drain lines did not affected the construction of the new Electrical Building, the associated scope to reroute these existing drain lines as required in the Contract Documents was found to be unnecessary and were therefore eliminated from the project scope.

Item #5 – Installation of (1) dV/dT Output Filter at the new Low Voltage Variable Frequency Drive associated to the Transfer Pumps for an additional cost of $4,834.00 and a time extension of 2 calendar days.

The project scope includes the procurement and installation of (2) modulated-type Adjustable Frequency Drives (AFD) to control the operation of the existing Transfer Pumps #2 and #3. During review of the equipment submittal, a recommendation was made to add one dV/dT Output Filter per each AFD to provide additional protection to the exiting motors, which are not AFD rated type motors, with the purpose of maximizing their electrical protection against power harmonic spikes as well as to extend their respective service live.

Item #6 – Installation of additional underground duct bank from new Switchgear #2 to the new Low and Medium Voltage Transformers due to Switchyard modification by the City of High Point Utility for an additional cost of $76,752.00 and a time extension of 13 calendar days.

During the course of construction, the City of High Point Utility (CHP Utility) provided notice the all project related parties about a rearrangement of the switchyard layout housing the new 4160V/480V transformers (4 transformers total). Per the requirements of the Contract Documents, these 4 transformers are to be furnished and installed by the CHP Utility. These modifications required by the CHP Utility altered the original design layout depicted in Drawing E-4 "*Enlarged Site Plan 1*", requiring from the Contractor to extend further the underground Duct Banks "H" coming from Switchgear #2 to the new transformers, as well as Duct Bank "I" coming from the new transformers to the new Service Disconnects #1 and #2, respectively.

The scope of work associated to this item of the change order included additional trench excavation, the installation of new 5" and 4" Schedule 40 PVC conduits with associated fittings and high-impact spacers and support systems, the wiring of #500, #350 and #4/0 XHHW CU stranded wire conductors, and the placement of 3,000 psi concrete encasement to protect the extended underground duct bank, as well as the required additional backfilling, detectable tape and soil stabilization to finish grade.

Item #7 –Modifications to the new 12" DI Water Line adjacent to the new Electrical Building at no additional cost or time adjustment.

The project scope includes the relocation of an existing 12" Water Pipeline to accommodate the construction of the new Electrical Building, in accordance with Drawing C-4 "*Site Plan – Enlarged Partial Plan*". During the course of construction, the Contractor uncovered the referenced water utility line, and upon further investigation it was

found to be 6" in diameter, which differs from the prescribed pipe size within the Contract Documents. Because of the difference in pipe size, the Contractor was instructed to install a 6" RJ Ductile Iron Pipe in lieu of the 12" pipeline as specified in the original design, and to make any necessary adjustments to the pipe's alignment and grade so as to fit actual field conditions.

Considering the recommended modifications resulted in an equitable cost saving to the City of High Point due to the reduction in pipe size, throughout a mutually agreed negotiation between the City of High Point and the Contractor, the credit associated with this item of the change order were exchanged by the additional cost correlated with Item #2 above.

Item #8 – Elimination of (2) new Motor Started associated to (2) existing Rapid Mixers located within the Sedimentation Basins for a credit of 749.00 and no time adjustment.

The scope of work for this project includes the procurement and installation of (2) separately enclosed Size 1 Motor Starters, and associated conduits and wiring provisions, to control the power source for two existing Rapid Mixers located at the Sedimentation Basins, RM-1 and RM-2. Such installation was required to be conducted in accordance to Drawings E-26 "*Miscellaneous One-Line Diagram*".

Per a request formulated by the City of High Point to the Contractor during the Monthly Progress Meeting on Tuesday, June 11th, 2019, the two rapid mixers are no longer required as part of the operational scheme of the water treatment facility, and therefore has been reassigned for demolition and disposal. Therefore, the scope of additional work associated to this item of the change order includes demolishing and disposing two rapid mixers (RM-1 & RM-2), including motor, mixer equipment, associated wiring and conduit provisions from MCC-3 to the referenced equipment, the start-stop control station and associate cable and conduits. Upon completion of the required demolition, the Contractor is also required to provide (1) 3/8" galvanized diamond plate per each rapid mixer, which shall be bolted to the existing grating with a minimum four (4) 304 SS bolts with lock washers, so as to close the equipment base opening upon removal.