

April 19, 2019

Chris Mattingly, PE
City of Norman
201 West Gray, Building C
Norman, OK 73069

Subject: Norman Water Treatment Plant Phase II Improvements
DWSRF Project No. P40-1020801-02, Norman Contract No. K-1617-121
Review of potential change order items

Dear Mr. Mattingly:

The purpose of this letter is to review 23 potential change order (PCO) items received and one as-bid to as-built quantity change. The potential change order proposals are attached to this letter with brief descriptions provided below. The recommended changes are summarized in Table 1 at the end of the letter.

PCO22 – Modifications to the raw water tank, diversion vault, and chemical/sample piping

The work generally includes modifications to the raw water diversion vault and raw water chemical piping and sample piping. The raw water diversion vault work includes relocating raw water chemical injections and sample lines to this vault, installing a new sump pump, and drainage connection of the adjacent raw water flow vault. This PCO also includes new electrical wiring to repower the raw water tank level element after the existing conduit and wiring was damaged during construction work. Following a review of the Contractor's proposal, Carollo Engineers has determined that the price and time proposed by Foley Company is fair and equitable for addition of the Work. Carollo recommends that the City accept this response to this proposal and provide the \$35,915.18 proposed as an addition to the Contract Price and 7 calendar days as an addition to the Contract Time.

PCO26 – Chemical tinhorn concrete encasement

The work generally includes concrete encasing the existing chemical tinhorn that is used to transport chemical feed lines from the chemical trench system to the basement of the Filter Building basement. Upon excavation of this area due to unrelated nearby work, the tinhorn was discovered to have significant corrosion and holes. Following a review of the Contractor's proposal, Carollo Engineers has determined that the price and time proposed by Foley Company is fair and equitable for addition of the Work. Carollo recommends that the City accept this response to this proposal and provide the \$17,833.90 proposed as an addition to the Contract Price and no additional days as a change in Contract Time.

PCO29 – Double-contained buried sodium hypochlorite piping

The work generally includes installing two continuous runs of sodium hypochlorite (SH) tubing within an HDPE conduit to serve as the double containment. The work included modifying the chemical pipe penetrations at the Filter Building and the SH injection manhole. Following a review of the Contractor's proposal, Carollo Engineers has determined that the price and time proposed by Foley Company is fair and equitable for addition of the Work. Carollo recommends that the City accept this response to this proposal and provide the \$7,335.89 proposed as an addition to the Contract Price and no additional days as a change in Contract Time.

PCO30 – Additional guardrail and ladders on the drain pump stations

The work generally includes installing new guardrails and access ladders on the manholes at the ozone contactor drain pump station and the clearwell drain pump station. This work provides safe access to the top of the manholes for operators while maintaining the pump station equipment. Following a review of the Contractor's proposal, Carollo Engineers has determined that the price and time proposed by Foley Company is fair and equitable for addition of the Work. Carollo recommends that the City accept this response to this proposal and provide the \$26,143.16 proposed as an addition to the Contract Price and no additional days as a change in Contract Time.

PCO31 – Modifications to SCC1 and SCC2 lime feed routing

This work generally includes installing a new chemical trench between SCC1 and SCC2 to house the lime feed hosing. Following a review of the Contractor's proposal, Carollo Engineers has determined that the price and time proposed by Foley Company is fair and equitable for addition of the Work. Carollo recommends that the City accept this response to this proposal and provide the \$11,662.17 proposed as an addition to the Contract Price and no additional days as a change in Contract Time.

PCO32 – Modifications of the PAC skid pad

This work generally includes modifications to the design of the PAC skid concrete pad. Following a review of the Contractor's proposal, Carollo Engineers has determined that the price and time proposed by Foley Company is fair and equitable for addition of the Work. Carollo recommends that the City accept this response to this proposal and provide the \$842.21 proposed as an addition to the Contract Price and no additional days as a change in Contract Time.

PCO34 – Modifications to clearwell drain pump station vault

This work generally includes adding a new manhole section to increase the overall manhole height to above finished grade. Following a review of the Contractor's proposal, Carollo Engineers has determined that the price and time proposed by Foley Company is fair and equitable for addition of the Work. Carollo recommends that the City accept this response to this proposal and provide the \$2,472.85 proposed as an addition to the Contract Price and no additional days as a change in Contract Time.

PCO35 – Modifications to Maintenance Building air compressor electrical connections

This work generally includes providing a different electrical connection to the Maintenance Building air compressor to match existing rating. Following a review of the Contractor's proposal, Carollo Engineers has determined that the price and time proposed by Foley Company is fair and equitable for addition of the Work. Carollo recommends that the City accept this response to this proposal and provide the \$1,554.38 proposed as an addition to the Contract Price and no additional days as a change in Contract Time.

PCO36 – Modifications to 480V panelboard ratings

This work generally includes upgrading the 480V distribution panels to 65KAIC per the electrical coordination study. Following a review of the Contractor's proposal, Carollo Engineers has determined that

the price and time proposed by Foley Company is fair and equitable for addition of the Work. Carollo recommends that the City accept this response to this proposal and provide the \$10,330.90 proposed as an addition to the Contract Price and no additional days as a change in Contract Time.

PCO38 – Modifications to the filter gallery drain backwater valves

This work generally includes changing the filter galley floor drain backwater valves from Tideflex to ball float backwater valves. This work will prevent flooding of the filter gallery floor when backwashing a filter at a high backwash rate. Following a review of the Contractor's proposal, Carollo Engineers has determined that the price and time proposed by Foley Company is fair and equitable for addition of the Work. Carollo recommends that the City accept this response to this proposal and provide the \$15,279.91 proposed as an addition to the Contract Price and 5 calendar days as an addition to the Contract Time.

PCO40 – Modifications to SCC1 and SCC2 carbon dioxide solution feed piping

This work generally includes modifications to the piping that feeds carbon dioxide solution for pH adjustment to the effluent boxes at SCC1 and SCC2. Following a review of the Contractor's proposal, Carollo Engineers has determined that the price and time proposed by Foley Company is fair and equitable for addition of the Work. Carollo recommends that the City accept this response to this proposal and provide the \$2,963.36 proposed as an addition to the Contract Price and no additional days as a change in Contract Time.

PCO42 – Modifications to site grading and paving

This work generally includes changes to the site grading and paving to optimize stormwater control and drainage. Specific grading changes include the area west of SCC4 and the Chemical Building, the SCC4 retaining wall, and around the Maintenance Building. There are also changes to the paving for the plant road west of SCC4 and the Chemical Building. Following a review of the Contractor's proposal, Carollo Engineers has determined that the price and time proposed by Foley Company is fair and equitable for addition of the Work. Carollo recommends that the City accept this response to this proposal and provide the \$12,330.62 proposed as an addition to the Contract Price and 7 calendar days as an addition to the Contract Time.

PCO45 – Modifications to the Administration Building and Bac-T Lab

This work generally includes changes to the Administration Building cabinets, countertops, doors, and millwork. Following a review of the Contractor's proposal, Carollo Engineers has determined that the price and time proposed by Foley Company is fair and equitable for addition of the Work. Carollo recommends that the City accept this response to this proposal and provide the \$8,731.56 proposed as an addition to the Contract Price and no additional days as a change in Contract Time.

PCO46 – Modifications to Filters 1-4 effluent valve I/O and wiring

This work generally includes rewiring the Filters 1-4 effluent valve controllers such that they are modulated directly from the Filter PLCs. Following a review of the Contractor's proposal, Carollo Engineers has determined that the price and time proposed by Foley Company is fair and equitable for addition of the

Work. Carollo recommends that the City accept this response to this proposal and provide the \$2,525.87 proposed as an addition to the Contract Price and no additional days as a change in Contract Time.

PCO47 – Modifications to UV effluent, influent and drain valves logic and power

This work generally includes changes to the logic for the UV effluent, influent and drain valves. The changes to the UV effluent valves include logic changes to minimize back up in filters and off-spec water during emergencies. The work related to the drain valves and influent valves involves making these valves manual by removing the logic and power. The influent valves will be operated using a hand wheel operator. Carollo recommends that the City accept this response to this proposal and provide the \$4,312.49 proposed as an addition to the Contract Price with no change to the Contract Time.

PCO48 – Modifications to HPZ flowmeter and level switch I/O and wiring

This work generally includes modifications to the conduit, wiring, inputs, terminations, and programming for the existing HPZ flowmeter and level switch. Following a review of the Contractor's proposal, Carollo Engineers has determined that the price and time proposed by Foley Company is fair and equitable for addition of the Work. Carollo recommends that the City accept this response to this proposal and provide the \$2,690.57 proposed as an addition to the Contract Price and no additional days as a change in Contract Time.

PCO49 – Abandonment of unused 42" settled water pipe segment

This work generally includes abandoning an unused segment of 42" settled water pipe to prevent stagnant water. The work involves filling the segment with concrete and welding steel plates at the ends to close off this pipe so there is no concern of stagnant water. Following a review of the Contractor's proposal, Carollo Engineers has determined that the price and time proposed by Foley Company is fair and equitable for addition of the Work. Carollo recommends that the City accept this response to this proposal and provide the \$4,036.84 proposed as an addition to the Contract Price and no additional days as a change in Contract Time.

PCO50 – Modifications to Chemical Building fan and duct supports

This work generally includes modifications to the Chemical Building fan and duct supports on the roof of the Chemical Building. Following a review of the Contractor's proposal, Carollo Engineers has determined that the price and time proposed by Foley Company is fair and equitable for addition of the Work. Carollo recommends that the City accept this response to this proposal and provide the \$14,294.27 proposed as an addition to the Contract Price and no additional days as a change in Contract Time.

PCO51 – Change ozone and chlorine sample pumps

This work includes changing the pumps to a lower cost model that is more suitable for the application and the area in the Destruct Building. Following a review of the Contractor's proposal, Carollo Engineers has determined that the price and time proposed by Foley Company is fair and equitable for addition of the

Work. Carollo recommends that the City accept this response to this proposal and deduct the \$3,012.00 proposed from the Contract Price and no change in Contract Time.

PC052 – Abandonment of 24” finished water pipe segment

This work includes abandoning a segment of the existing 24” finished water piping. Following a review of the Contractor’s proposal, Carollo Engineers has determined that the price and time proposed by Foley Company is fair and equitable for addition of the Work. Carollo recommends that the City accept this response to this proposal and deduct the \$2,000.00 proposed from the Contract Price and no change in Contract Time.

PC053 – Modification to Maintenance Building door frame

This work includes modifying a door frame in the Maintenance Building to match the accompanying door. The door height was lower than the frame height, and the frame was cut to fit the door. Following a review of the Contractor’s proposal, Carollo Engineers has determined that the price and time proposed by Foley Company is fair and equitable for addition of the Work. Carollo recommends that the City accept this response to this proposal and deduct the \$450.00 proposed from the Contract Price and no change in Contract Time.

PC055 – Relocating UV Building louvers

This work includes shifting the UV Building louvers to avoid the bridge crane beam and provide full air free of obstruction. Following a review of the Contractor’s proposal, Carollo Engineers has determined that the price and time proposed by Foley Company is fair and equitable for addition of the Work. Carollo recommends that the City accept this response to this proposal and provide the \$1,999.20 proposed as an addition to the Contract Price and no additional days as a change in Contract Time.

PC057 – Weather Days

This item adds 27 days to the contract time due to adverse weather. As of March 12, 2019, 47 weather days have been claimed by the contractor. The contract documents required the Contractor to accommodate up to 20 weather days. Weather conditions that prevent or inhibit the Contractor’s performance of the Work and affect the Critical Path indicated on the Schedule shall be referred to as a Weather Day. These days have been used and the difference is the contract extension recommended in this item. Weather days were claimed for both rain and extreme cold events. . Following a review of the Contractor’s proposal, Carollo Engineers has determined that the time proposed by Foley Company is fair and equitable for addition of the Work. Carollo recommends that the City accept this response to this proposal and provide the 27 calendar days as an addition to the Contract Time.

PC058 – Addition of sump pump in chemical trench sump pit

This work includes adding a sump pump to the chemical trench sump pit that originates from the Chemical Building and feeds the network of yard chemical trenches. The pump is used to pump chemical spills and stormwater intrusion out of the sump pit. It is chemically resistant and discharges through a pipe into a

manhole. Following a review of the Contractor's proposal, Carollo Engineers has determined that the price and time proposed by Foley Company is fair and equitable for addition of the Work. Carollo recommends that the City accept this response to this proposal and provide the \$18,395.57 proposed as an addition to the Contract Price and no additional days as a change in Contract Time.

PCO59 – Modifications to the HPZ pump openings and wetwell baffle plates

This work includes modifications to the existing High Pressure Zone pump vault openings to make the installation of the new pumps more feasible. The work also includes modifying the wetwell baffle plates by cutting into two pieces to fit through the existing vault hatch opening. The two pieces for each baffle plate were bolted together inside the wetwell. Following a review of the Contractor's proposal, Carollo Engineers has determined that the price and time proposed by Foley Company is fair and equitable for addition of the Work. Carollo recommends that the City accept this response to this proposal and provide the \$2,461.51 proposed as an addition to the Contract Price and 3 calendar days as an addition to the Contract Time.

PCO60 – Rerouting ozone open loop CW discharge piping

This work includes changing the routing of the ozone open loop cooling water discharge. The pipe was originally routed to the Recarb Basins, but was rerouted to a manhole upstream of the lagoons. This gives allows the Owner to choose which lagoon to discharge to and to recycle the water to the head of the plant. Following a review of the Contractor's proposal, Carollo Engineers has determined that the price and time proposed by Foley Company is fair and equitable for addition of the Work. Carollo recommends that the City accept this response to this proposal and deduct the \$121.79 proposed from the Contract Price and 3 calendar days as an addition to the Contract Time.

PCO61 – Change sidewalk to gravel north of Chemical Building

This work includes changing the sidewalk around the chemical trench that is north of the Chemical Building to gravel. This reduces the impervious area to prevent stormwater from building up and flowing into the chemical trenches. Following a review of the Contractor's proposal, Carollo Engineers has determined that the price and time proposed by Foley Company is fair and equitable for addition of the Work. Carollo recommends that the City accept this response to this proposal and deduct the \$1,000.00 proposed from the Contract Price and no change in Contract Time.

PCO62 – MPZ/HPZ water system changes

The Work consists generally of changes to the MPZ/HPZ water system and includes replacing existing potable water line between filter and lime buildings and installing meter on line from distribution system. Following a review of the Contractor's proposal, Carollo Engineers has determined that the price and time proposed by Foley Company is fair and equitable for addition of the Work. Carollo recommends that the City accept this response to this proposal provide the \$47,154.59 proposed as an addition to the Contract Price and 6 calendar days as an addition to the Contract Time.

PCO63 – Modifications to the HPZ area excavation and vaults

This work generally includes changes to the HPZ area excavation and vaults. Due to groundwater intrusion, the HPZ area was excavated significantly in order to properly dewater and find stable soil. A new corbel was added to the existing pump vault to connect it to the new HPZ valve vault. Following a review of the Contractor's proposal, Carollo Engineers has determined that the price and time proposed by Foley Company is fair and equitable for addition of the Work. Carollo recommends that the City accept this response to this proposal and provide the \$49,187.21 proposed as an addition to the Contract Price and 38 calendar days as an addition to the Contract Time.

PCO65 – Filter PCM location changes

This work generally includes relocating the Filter PCMs and providing network connections. Following a review of the Contractor's proposal, Carollo Engineers has determined that the price and time proposed by Foley Company is fair and equitable for addition of the Work. Carollo recommends that the City accept this response to this proposal and provide the \$ 6,532.43 proposed as an addition to the Contract Price and 4 calendar days as an addition to the Contract Time.

PCO67 – HPZ valve vault openings and surge vault pipe penetrations

This work generally includes adding openings and modifications to pipe penetrations. Following a review of the Contractor's proposal, Carollo Engineers has determined that the price and time proposed by Foley Company is fair and equitable for addition of the Work. Carollo recommends that the City accept this response to this proposal and provide the \$17,166.45 proposed as an addition to the Contract Price and 18 calendar days as an addition to the Contract Time.

Change Order 2 Summary

Table 1 presents a summary of the potential change order proposals presented and discussed here. Carollo recommends that the City process a change order in the amount of \$ 317,569.30 with an increase in contract time of 118 calendar days.

Table 1: Change Order 1 Summary

Item Description	Change in Contract Amount	Change in Contract Time (Calendar Days)
PCO22 - Raw water work	\$35,915.18	7
PCO26 - Chemical tinhorn concrete encasement	\$17,833.90	0
PCO29 - Double-contained sodium hypochlorite piping	\$7,335.89	0
PCO30 - Additional guardrail and ladders on drain pump stations	\$26,143.16	0
PCO31 - Modifications to SCC1 and SCC2 lime feed routing	\$11,662.17	0

Item Description	Change in Contract Amount	Change in Contract Time (Calendar Days)
PCO32 - Modifications of the PAC skid pad	\$842.21	0
PCO34 - Modifications to clearwell drain pump station vault	\$2,472.85	0
PCO35 - Modifications to Maintenance Building air compressor electrical connections	\$1,554.38	0
PCO36 - Modifications to 480V panelboard ratings	\$10,330.90	0
PCO38 - Modifications to the filter gallery drain backwater valves	\$15,279.91	5
PCO40 - Modifications to SCC1 and SCC2 carbon dioxide solution feed piping	\$2,963.36	0
PCO42 - Modifications to site grading and paving	\$12,330.62	7
PCO45 - Modifications to the Administration Building and Bac-T Lab	\$8,731.56	0
PCO46 - Modifications to Filters 1-4 effluent valve I/O and wiring	\$2,525.87	0
PCO47 - Modifications to UV effluent, influent and drain valves logic and power	\$4,312.49	0
PCO48 - Modifications to HPZ flowmeter and level switch I/O and wiring	\$2,690.57	0
PCO49 - Abandonment of unused 42" settled water pipe segment	\$4,036.84	0
PCO50 - Modifications to Chemical Building fan and duct supports	\$14,294.27	0
PCO51 - Change ozone and chlorine sample pumps	(\$3,012.00)	0
PCO52 - Abandonment of 24" finished water pipe segment	(\$2,000.00)	0
PCO53 - Modification to Maintenance Building door frame	(\$450.00)	0
PCO55 - Relocating UV Building louvers	\$1,999.20	0
PCO57 – Weather Days	\$0	27
PCO58 - Addition of sump pump in chemical trench sump pit	\$18,395.57	0
PCO59 - Modifications to the HPZ pump openings and wetwell baffle plates	\$2,461.51	3
PCO60 - Rerouting ozone open loop CW discharge piping	(\$121.79)	3
PCO61 - Change sidewalk to gravel north of Chemical Building	(\$1,000.00)	0

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Item Description	Change in Contract Amount	Change in Contract Time (Calendar Days)
PCO62 – PW system changes at MPZ and HPZ including connection between the filter and lime buildings and installing meter on the distribution line to the lime building.	\$47,154.59	6
PCO63 - Modifications to the HPZ area excavation and vaults	\$49,187.21	38
PCO65 – Filter PCM location changes	\$6,532.43	4
PCO67 – HPZ valve vault openings and surge vault pipe penetrations	\$17,166.45	18
Total recommended change order #2	\$ 317,569.30	118
Current contract value and time	\$30,197,892.96	817
Revised contract value and time	\$30,515,462.26	935

Sincerely,

CAROLLO ENGINEERS, INC.



Amber Wooten, PE
Project Manager

Enclosures: PCO documentation

cc: Tom Crowley, Carollo