City of Carroll

112 E. 5th Street Carroll, Iowa 51401-2799 (712) 792-1000 FAX: (712) 792-0139

MEMO TO: Mike Pogge-Weaver, City Manager MJP-W

FROM: Randall M. Krauel, Director of Public Works RMK

DATE: September 20, 2017

SUBJECT: Water Supply Well & Transmission Main Improvements
Group A Transmission Main – Change Order No. 2

Following completion of disinfection of the Transmission Main, it was determined that the Main required pressure and leakage testing prior to acceptance and placing it in service. The contractor did perform and pass a pressure and leakage test in November, 2015, prior to a period of disinfection procedures.

As a result of extensive discussions with the contractor, it was agreed to propose a Change Order in the amount of $2,400.00 for the contractor to perform a pressure and leakage test. The proposed Change Order is attached.

The change to the Contract Price based on the proposed Change Order No. 2 is as follows:

Original Contract	$752,719.00
Change Order No. 1	$37,415.07
Proposed Change Order No. 2	$2,400.00
Contract Price w/Change Orders	$792,534.07

RECOMMENDATION: Mayor and City Council consideration and approval of Change Order No. 2, in the amount of $2,400.00, to the Water Supply Well & Transmission Main Improvements Group A - Transmission Main contract.

RMK:ds

attachment

Change Order No. 2

Date of Issuance:	September 19, 2017	Efective Date:	September 25, 2017
Owner:	City of Carroll, IA	Owner's Contract No.:	
Contractor:	Drake Construction L.C. (Group A)	Contractor's Project No.:	
Engineer:	JEO Consulting Group, Inc.	Engineer's Project No.:	120491
Project:	Water Supply Well & Transmission Main Imp. - 2015	Contract Name:	A - Water Main

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

Description: Lump sum payment for 2-men to perform a pressure/leakage test on the new transmission main in accordance with pressure/leakage testing protocol developed by Water Quality Investigations, LLC (WQI).

Attachments: WQI Pressure/Leakage Testing - Carroll, Iowa (revised 9/18/17)

CHANGE IN CONTRACT PRICE	CHANGE IN CONTRACT TIMES *[note changes in Milestones if applicable]*
Original Contract Price: $ 752,719.00	Original Contract Times: Substantial Completion: - Ready for Final Payment: November 30, 2015 days or dates
Increase from previously approved Change Orders No. 1 to No. 1: $ 37,415.07	Increase from previously approved Change Orders No. 1 to No. 1: Substantial Completion: - Ready for Final Payment: 10 days
Contract Price prior to this Change Order: $ 790,134.07	Contract Times prior to this Change Order: Substantial Completion: Ready for Final Payment: December 10, 2015 days or dates
Increase of this Change Order: $ 2,400.00	Increase of this Change Order: Substantial Completion: - Ready for Final Payment: 0 days or dates
Contract Price incorporating this Change Order: $ 792,534.07	Contract Times with all approved Change Orders: Substantial Completion: - Ready for Final Payment: December 10, 2015 days or dates

RECOMMENDED:	ACCEPTED:	ACCEPTED:
By: [signature]	By:	By: [signature]
Engineer (If required)	Owner (Authorized Signature)	Contractor (Authorized Signature)
Title: Project Engineer	Title:	Title: MANAGER
Date: 9/19/2017	Date:	Date: 9-20-17

Approved by Funding Agency (if applicable)

By: Date:

Title:

WQI Water Quality Investigations, LLC

Date: September 18, 2017 (REVISED)
To: Ron Drake, Drake Construction
From: Andrew D. Jacque, PhD, PE
Chief Scientist, Water Quality Investigations, LLC
Regarding: Pressure/leakage testing – Carroll, Iowa

The following procedure should be used for the repeat pressure/leakage testing at Carroll, Iowa. The procedure provides clarification to follow-up steps in the event there is pressure loss and/or leakage during the repeat test:

1) The repeat pressure/leakage testing will be performed by Drake Construction in accordance with SUDAS, Division 5, which is the referenced standard in the Project Manual.
2) Inspection/documentation of testing to be performed by JEO.
3) Water for testing will be provided by Carroll, Iowa from their treated water distribution system.
4) Water for testing will be drawn from the treated water distribution system and put into a clean portable tank, re-chlorinated, and pumped by Drake Construction into the new main using a sanitized/clean pump.
5) Drake Construction will provide a 4-inch pressure gauge, 0 to 200 psi range, for monitoring pressure during the pressure test, with a gauge located at Sample Location 1 (connection to existing at Sta 86+50), Sample Location 11 (high point at plan Sta 10+00) and at the pressure/water injection point (HSPS).
6) Drake Construction will pressurize the new water main to 150 psi at the main at Sample Location 11 per SUDAS (water main is at Elevation 1300 feet). If the pressure gauge is on the nearby hydrant versus on the main in the air release vault, the gauge shall read 146 psi (hydrant arm is at about Elevation 1307 feet). Under this approach, pressure at Sample Location 1 will be about 185 psi. The time and pressure at Sample Location 11 will be recorded at the start of the test.
7) If at the end of two hours the pressure loss at Sample Location 11 is less than 5 psi, the combined pressure and leakage test has passed.
8) If at any time during the test the pressure drops to 5 psi below the initial test pressure, Drake Construction will repressurize the pipe by pumping in potable water in sufficient quantity to bring the pressure back to the original test pressure at Sample Location 10. The amount of water used to repressurize the main will be measured and recorded.
   a) If the leakage rate is less than 1.32 gallons/hour/1,000 feet of main tested (10.4 gallons per hour for 7,900 feet of main), the leakage test is satisfied and pressure test will be continued. If the pressure test is not passed after three attempts, further investigation will be performed to determine the location of the pressure loss (see below).
   b) If the leakage rate exceeds 1.32 gallons/hour/1,000 feet of main tested (10.4 gallons per hour for 7,900 feet of main), the location of the water loss will be further investigated to determine the location (see below).

The following procedure should be used for investigating the source of pressure/leakage loss at Carroll:

1) Drake Construction will pressurize the new water main as previously described. The starting time and pressure at Sample Location 11, Sample Location 1 and the injection point will be recorded at the start of the test.
2) The 16-inch mainline valve upstream and downstream of the pressure injection point will be closed to isolate and locate the section of 16-inch diameter of pipe with the loss. The isolated section of pipe that exhibits loss will be further isolated toward the sample location, with the process continuing until the location of the loss is identified, which would be between the previous two valves that were closed.

3) If the loss is deemed to be trapped air, the City shall provide Drake Construction with a flushing flow rate of 1,880 gpm (flow rate needed to obtain a 3 ft/sec velocity) from the existing water system to Sample Location 11 (high point at end of new main) for a minimum of 2 hours to purge the system of entrained air (see SUDAS Division 5, Section 3.02, 2016 edition), and retest the line. This flushing time and rate would provide two pipeline-volumes of water to turn over the pipeline and purge the system of air. The entrained air would likely be at high points that can't be adequately flushed in the reverse flow direction without additional air releases (flushing direction is opposite of intended flow direction when in use). This approach, which is in accordance with SUDAS, will allow the entire line to be flushed and purged of air, and keep the line from seeing negative pressures to prevent a potential cross connection and contamination.

Please feel free to call or email if you have any questions.

Respectfully submitted,

Andrew D. Jacque, Ph.D., P.E.
Chief Scientist, Owner

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