

COUNCIL ACTION FORM

SUBJECT: CHANGE ORDER NO. 7 - UNIT 7 BOILER REPAIR PROJECT

BACKGROUND:

On March 26, 2019, the City Council approved the award of a contract to Helfrich Brothers Boiler Works, Inc. of Lawrence, MA, in the amount of \$6,376,685 for the Unit 7 Boiler Repair Project. This project is to repair the boiler through the following actions:

- Replacing the boiler tubes in the lower water wall section of the boiler. This includes the bottom 50' of tubes on all four sides of the boiler.
- Replacing all the pendant tubes in the superheat section
- Reinsulating the steam and mud drums
- Replacing the insulation and lagging (the aluminum skin) that covers the entire boiler

The existing tubes and insulation and lagging are original to the boiler, built in 1967. The replacement tubes will be coated with Inconel, an alloy that is resistant to the kind of corrosion created from combusting RDF and natural gas.

CHANGE ORDER HISTORY:

Six change orders were previously issued for this contract. Change Order 1, in the amount of \$233,260, was approved by the City Council on May 14, 2019. This change order was to change subcontractors because of concerns City staff had with the subcontractor Helfrich initially proposed to apply the Inconel cladding. These concerns related to the equipment and the process the subcontractor was going to use to apply the Inconel cladding to the tubes, plus concerns about quality control and the subcontractor's staff's training and experience.

Change Order 2, in the amount of \$22,951.50, was to perform nondestructive testing on the generating bank tubes to determine their condition. The generating bank is composed of 1,426 tubes that go between the steam drum and mud drum, located at the top of the boiler. The current Unit 7 capital project allowed for opportunity to examine these generating bank tubes, which was not part of the base contract. This change order was approved by staff.

Change Order 3, in the amount of \$18,931.40, was to install additional scaffolding in the upper furnace section to accommodate ultrasonic testing and to also remove the lower air seals at the bottom of the boiler. This change order was approved by staff.

Change Order 4, in the amount of \$761,733, was approved by City Council on July 16, 2019. This change order was to replace 269 thin tubes found in the generating bank with new tubes, 186 of them were to contain Inconel 625 weld overlay. Helfrich was to replace an additional 2-3' of all tubes on the front and back walls at the bottom of the boiler with new tubes without overlay. Helfrich was also to replace all tube stubs coming from both lower side wall headers with new 8-inch stubs that will have 5 inches of Inconel 625 weld overlay at .070 thickness.

Change Order 5, in the amount of \$458,027.41, was approved by City Council on August 27, 2019. This change order was the supply and installation of replacement screen tubes, the supply and installation of replacement seal trough and air seal, the supply and installation of new over grate air plenum, and perform front waterwall hanger modifications.

Change Order 6, in the amount of \$48,304.08, was to remove and replace the existing refractory from the trailing edge of the finishing superheater to the steam drum. In addition to the refractory replacement, Helfrich was to remove the old penthouse floor casing from the trailing edge of the finishing superheater to the steam drum and replace with new. This change order was approved by staff.

THIS ACTION:

Change Order 7, in the amount of \$80,250, is needed to complete the installation of new dump grates parts. At the bottom of the boiler are two large dump grates that run the entire width of the boiler. These grates hold the RDF that drops to the bottom of the boiler, allowing the RDF to fully burn. Once the RDF is burned, the grates open to drop the ash into the bottom ash hopper and convey it to the ash pond.

During demolition of the boiler, the parts for the dump grates were found in bad repair and needing to be replaced. The replacement parts were purchased by the City of Ames and now need to be installed. Plant staff would like Helfrich to install the new grate parts as they are working in the area of the boiler and have the expertise needed to assure proper attachment and alignment of the entire grate system. **Helfrich has provided a not-to-exceed quote of \$75,000. Payment for the installation would only be for the actual time and materials used to complete the install.**

Therefore, the action being requested at this time is to approve Change Order No. 7. This change order will add an additional \$80,250.00, inclusive of \$5,250.00 in sales tax, to the current contract. This will bring the total contract amount to \$8,000,142.39. With the engineer's estimate of \$8,400,000 for this project, the low bid plus the change orders is \$399,857.61 less than the engineer's estimate.

The FY 2019/20 Capital Improvements Plan (CIP) includes the following funding for the Unit No. 7 Boiler Repair Project:

2015/16 Engineering	\$5,150
2016/17 Engineering	\$125,796
2017/18 Engineering	\$50,000
2019/20 Materials/labor superheat and waterwalls	\$8,400,000
TOTAL	\$8,580,946

ALTERNATIVES:

1. Approve Change Order No. 7 in the amount of \$80,250 (inclusive of sales tax) to Helfrich Brothers Boiler Works, Inc., of Lawrence, MA, for the Unit 7 Boiler Repair Project.
2. Do not approve Change Order No. 7.

CITY MANAGER'S RECOMMENDED ACTION:

The installation of the new grates is an essential part in the operation of Unit 7 boiler. Operating the boiler with new parts that are properly aligned will allow for reliability of combusting the RDF.

Therefore, it is the recommendation of the City Manager that the City Council adopt Alternative No. 1, as described above.