



# City of Grand Island

Tuesday, November 13, 2007

Council Session

## Item G17

**#2007-284 - Approving Change Order #1 for Boiler Inspection and Repair Contract with W-S Mechanical Group - Platte Generating Station**

Staff Contact: Gary R. Mader; Wesley Nespor

# Council Agenda Memo

**From:** Gary R. Mader, Utilities Director  
**Meeting:** November 13, 2007  
**Subject:** Boiler Inspection and Repair Contract Change Order  
**Item #'s:** G-17  
**Presenter(s):** Gary R. Mader, Utilities Director

## Background

Prior to the major overhaul and maintenance outage at Platte Generating Station this fall, plant staff developed an extensive specification and received bids for major repairs to be done on the plant boiler and auxiliary equipment. The repair specifications were based on known problems found from visual inspections, instrument tests, and plant systems operating histories. The specifications also included additional testing and inspections to be done during the overhaul. The testing during the outage is for internal boiler tubes, high pressure piping, hot gas paths, ducting and other plant components that cannot be accessed until the unit is off line and cooled down to allow access. Much of the internal boiler operates at temperatures in excess of 2,000° F. WS Mechanical Group was awarded the original contract for Boiler Inspection and Repair at the Council Meeting of June 26, 2007, in the amount of \$579,337.11. The next low bid price for the original contract was \$1,197,700.

## Discussion

The testing and inspection of the high temperature areas after unit shut down found a number of problems not known at the time the original repair specifications were developed. The problems included boiler tube erosion, cracked high temperature ducting, failed insulation, worn structural members, and critical piping supports. A more detailed description of the specific needed repairs is attached.

These repair needs were not known at the time of the original specification preparation, but that was the reason that the additional inspection and testing were included in that specification. The additional work required to accomplish the repairs was necessary to restore Platte Generating Station to a condition to operate reliably for the five year interval between major overhauls. The total cost of the additional repair work is \$123,237.93, for a final contract cost of \$702,575.04.

## **Alternatives**

It appears that the Council has the following alternatives concerning the issue at hand.  
The Council may:

1. Move to approve
2. Refer the issue to a Committee
3. Postpone the issue to future date
4. Take no action on the issue

## **Recommendation**

City Administration recommends authorization of Change Order #1 to the Boiler Inspection and Repair Contract at the Platte Generating Station for an addition to the contract price of \$123,237.93.

## **Sample Motion**

Move to approve Change Order #1 to the Boiler Inspection and Repair Contract with W-S Mechanical.

**WS Mechanical – Boiler Inspection & Repair/FWH Install/AH Basket Changeout –**  
**Contract Amount (\$580,000)**

- **Remove/Replace Clinker Grinder (\$6,440)**  
Upon boiler inspection, a bottom ash "clinker grinder" was found to be severely eroded and worn. The clinker grinder ensures that large pieces of slag are crushed so they can be conveyed through the bottom ash removal system. This extensive wear was unexpected; it was not included in the original outage repair work scope. WS Mechanical was already on-site performing other repairs of major equipment. They were the only qualified contractor, quickly available, who could meet the outage schedule.
- **Finishing SH Repairs: (14) Dutchmen & (2) Padwelds (\$7,840)**  
With boiler internal inspection, several finishing superheater tubes were found to be eroded by soot blower operation. Soot blower erosion is a boiler tube failure mechanism which may jeopardize reliability. This erosion was not known when the bid specifications were prepared and was not included in the original outage repair scope. All tubes, eroded to less than 50% of their design thickness needed to be replaced. All tubes eroded to less than 75% of their design thickness, were pad welded. WS Mechanical was already on-site performing other repairs.
- **Furnace Front Wall Tube Replacement (7 Tube Panel) (\$14,600)**  
A boiler tube wall area adjacent to C1 soot blower was found to be eroded. Repair of this erosion damage was not included in the original outage repair specifications. The repair consisted of a 7-tube panel, 18" in height.
- **Remove/Replace Superheat & Reheat Header TC's (\$2,240)**  
In the top of the boiler, several thermocouples were identified as needing replacement. The repair involves welding the new thermocouple pads to the high pressure piping and headers. This thermocouple replacement was not included in the original outage repair contract. WS Mechanical performed the replacement to meet the outage schedule.
- **Remove/Replace Dewatering Bin Insulation (\$2,240)**  
The Bottom Ash Dewatering Bin insulation was found to be cracked and eroded. Repair was necessary. Three Insulating contractors were contacted; Midwest Insulation, Insulation Systems and WS Mechanical. WS Mechanical was the only contractor who could meet the outage schedule.
- **Repair Precip Inlet Duct Leaks (\$38,472)**  
Upon precipitator inspection, several cracks were observed in the inlet ducting steel structure. These cracks allow moisture into the gas path entering the precipitator. Duct repair was not included in the original outage repair scope. WS Mechanical performed the repairs to meet the outage schedule.
- **Air Heater Drive Gear Repairs (\$2,520)**  
The air heater is a rotating "wheel" located in the boiler exhaust gas stream that transfers heat from the exhaust gas to the incoming combustion air. It is a rotating element weighing approximately 70 tons. The air heater drive gear was found to be out of

alignment. This situation causes "out of roundness" with the air heater basket assembly. To avoid premature breakdown, this situation required repair. WS Mechanical was used to perform the needed repair to meet the outage schedule.

▪ **Feedwater Heater #4 Thermal Well Drilling (\$560)**

Upon receipt of the new #4 feedwater heater, it was noted that it didn't contain wells to accept the required thermocouple installation. WS Mechanical was used to install the thermocouple wells.

▪ **HRH Hanger Beam Repair (\$1,120)**

Upon inspection of the high pressure piping supports, it was noted that the hot reheat (HRH) pipe had migrated away from its designed neutral cold position. The piping needed to be adjusted to ensure proper expansion to the hot position. A pipe guide beam was modified to allow correct movement. WS Mechanical performed the repair.

▪ **Install Corten Plating @ Economizer Front Wall (\$1,120)**

An area of the boiler economizer front wall was found to be eroded by soot blower erosion. To mitigate tube erosion, a corten steel plate was placed to protect the eroded section of economizer tubing. WS Mechanical performed the repair.

▪ **RH & SH Header Insulation Repair (\$5,488)**

Insulation failures were found on the reheat & superheat headers in the boiler penthouse. Some of the block insulation had crumbled and displaced itself. Three Insulating contractors were contacted; Midwest Insulation, Insulation Systems and WS Mechanical. WS Mechanical was the only contractor who could respond in time to meet the outage schedule.

▪ **House Heating Pipe Insulation (\$2,240)**

During plant inspection, the house heating turbine extraction piping was found with insulation damage. Three Insulating contractors were contacted including Midwest Insulation, Insulation Systems and WS Mechanical. WS Mechanical was the only contractor who could meet the outage schedule.

▪ **Feedwater Heater #4 Reinsulate (\$26,488)**

Replacement Feedwater Heater #4 was installed during this outage. The required insulation was overlooked when the replacement was specified. Three Insulating contractors were contacted; Midwest Insulation, Insulation Systems and WS Mechanical. WS Mechanical was the only contractor who could meet the outage schedule.

▪ **Total Material Costs (\$11,870)**

This item includes the materials used by the contractor to complete the work included in the added work assignments. The materials procured are separated for tax purposes.

**Total WS Mechanical Adder: \$123,238**



Working Together for a Better Tomorrow. Today.

TO: W-S Mechanical Group
P.O. Box 461085
Papillion, NE 68046-1085

PROJECT: Boiler Inspection and Repair Contract Change Order - Platte Generating Station

You are hereby directed to make the following change in your contract:

1 Additional payment per the attached spreadsheet.

ADD: \$123,237.93

Table with 2 columns: Description and Amount. Rows include: The original Contract Sum (\$ 579,337.11), Previous Change Order Amounts (\$ -), The Contract Sum is increased by this Change Order (\$ 123,237.93), The Contract Sum is decreased by this Change Order (\$ -), and The total modified Contract Sum to date (\$ 702,575.04).

Approval and acceptance of this Change Order acknowledges understanding and agreement that the cost and time adjustments included represent the complete values arising out of and/or incidental to the work described therein.

APPROVED: CITY OF GRAND ISLAND

By: \_\_\_\_\_

Date \_\_\_\_\_

Attest: \_\_\_\_\_

Approved as to Form, City Attorney

ACCEPTED: W-S MECHANICAL GROUP

By: [Signature]

Date 11/7/07

R E S O L U T I O N    2007-284

WHEREAS, on June 26, 2007, by Resolution 2007-146, the City of Grand Island awarded the bid for Boiler Inspection and Repair to W-S Mechanical Group, LLC, of Council Bluffs, Iowa; and

WHEREAS, it has been determined that modifications to the work to be performed by W-S Mechanical Group, LLC are necessary; and

WHEREAS, such modifications have been incorporated into Change Order No. 1; and

WHEREAS, the result of such modification will increase the contract amount by \$123,237.93 for a revised contract price of \$702,575.04.

NOW, THEREFORE, BE IT RESOLVED BY THE MAYOR AND COUNCIL OF THE CITY OF GRAND ISLAND, NEBRASKA, that the Mayor be, and hereby is, authorized and directed to execute Change Order No. 1 between the City of Grand Island and W-S Mechanical Group, LLC of Council Bluffs, Iowa to provide the modification set out as follows:

Remove/Replace Clinker Grinder .....	\$6,440.00
Finishing SH Repairs: (14) Dutchmen & (2) Padwelds .....	7,840.00
Furnace Front Wall Tube Replacement (7 Tube Panel).....	14,600.00
Remove/Replace Superheat & Reheat Header TC's .....	2,240.00
Remove/Replace Dewatering Bin Insulation .....	2,240.00
Repair Precip Inlet Duct Leaks .....	38,472.00
Air Heater Drive Gear Repairs .....	2,520.00
Feedwater Heater #4 Thermal Well Drilling.....	560.00
HRH Hanger Beam Repair .....	1,120.00
Install Corten Plating & Economizer Front Wall .....	1,120.00
RH & SH Header Insulation Repair .....	5,488.00
House Heating Pipe Insulation .....	2,240.00
Feedwater Heater #4 Re-insulate .....	26,488.00
Total Material Costs.....	<u>11,870.00</u>
Total.....	\$123,238.00

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Adopted by the City Council of the City of Grand Island, Nebraska, November 13, 2007.

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Margaret Hornady, Mayor

Attest:

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Approved as to Form <input type="checkbox"/> _____ November 8, 2007 <input type="checkbox"/> City Attorney
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RaNae Edwards, City Clerk