



# City of Grand Island

Tuesday, December 04, 2007

Council Session

## Item G5

**#2007-311 - Approving Change Order #1 - Moorhead Machinery  
& Boiler Company - Horizontal Superheater Repair - Platte  
Generating Station**

Staff Contact: Gary R. Mader; Wesley Nespor

# Council Agenda Memo

**From:** Gary R. Mader, Utilities Director

**Meeting:** December 4, 2007

**Subject:** Moorhead Machinery & Boiler Company - Horizontal Superheater Repair Contract - Change Order #1

**Item #'s:** G-5

**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 specifications and received bids for major repairs to be done on the boiler superheater and rear furnace wall. The repair specifications were based on known problems found from visual inspections, at the short outage last spring, and plant operating history. The specifications included replacing the worn boiler tubes on the superheater and rear backpass wall. Moorhead Machinery & Boiler Company was awarded the contract for the Horizontal Superheater Repair at the Council Meeting of May 3, 2006 in the amount of \$1,032,029.00. The next low bid price for the original contract was \$1,816,277.00.

## Discussion

The testing and inspection of the high temperature, internal areas of the boiler after unit shut down found a number of problems not known at the time the original repair specifications were developed. The problems included several horizontal superheater tube attachments, alignment bars, spacers, and clips that were eroded beyond repair, boiler tube erosion and failing refractory inside the boiler. A more detailed description of the specific needed repairs is attached.

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 \$119,938 plus 7% tax for a total change of \$128,333.66, and a final contract cost of \$1,160,362.66.

## **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 authorizing Change Order #1 to the Horizontal Superheater Repair Contract at the Platte Generating Station for an addition to the contract price of \$128,333.66.

## **Sample Motion**

Move to approve Change Order #1 to the contract for Horizontal Superheater Repair with Moorhead Machinery & Boiler Company.

# Moorhead Machinery & Boiler Company

## Detailed Change Order Descriptions

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- *Corten Plate at Backpass Front Wall (\$23,200)*  
An area of the boiler backpass front wall was found to have sootblower erosion. Sootblower erosion is a boiler tube failure mechanism which may jeopardize reliability. This situation was unknown at the time of the repair contract. It was not included in the original repair scope. To mitigate tube erosion, a corten steel plate was welded to protect the section of boiler wall tubing being eroded by soot blower operation.
- *Refractory Dam at Backpass (\$23,400)*  
The boiler backpass rear wall refractory dam was found cracked and eroded to the point of needing repair. The refractory dam ensures proper gas flow and heat transfer in that section of the boiler. Neglecting repair at this time would jeopardize reliability.
- *Furnace Tube Samples (\$10,200)*  
Boiler tube samples are periodically evaluated by an independent laboratory to ensure boiler water chemistry is correct and effective. Boiler tubes are cut from the boiler at various locations and the internal surfaces are inspected and tested. The contractor replaced the boiler tubes taken for testing.
- *HSH Hanger Tube U-Bolt Rubs - 20 Pad Welds (\$810)*  
Twenty of the horizontal superheater hanger tubes were found to be worn at their U-bolt fasteners. These rubs decrease the tube thickness which jeopardizes reliability. Tubes eroded to less than 75% of their original thickness are repaired by laying on weld to restore thickness. This process is referred to as pad welding.
- *Backpass Front Wall Tubes – 23 Pad Welds (\$7,425)*  
Twenty-three of the backpass front wall tubes were found to have substantial sootblower erosion. Weld was laid on to restore tube thickness.
- *Backpass Rear Wall Tubes above overlaid wall – 16 Pad Welds (\$5,168)*  
Sixteen of the backpass rear wall tubes were found to have sootblower erosion.
- *HSH Top Bundle – Procure and install six superheater tube bends (\$22,300)*  
Six of the tubes in the Horizontal Superheater (HSH) were found to have serious sootblower erosion. Industry and insurance standards recommend that tubes eroded to less than 50% of their design thickness be replaced rather than pad welded. Moorhead Mechanical was already on-site performing other repairs requiring these skills.
- *HSH existing tubes – 45 Pad Welds (\$14,535)*  
Forty-five horizontal superheater (HSH) tubes were found to have sootblower erosion.
- *HSH existing tubes Hanger Clip/Tube Spacer Installation (\$12,900)*  
Several horizontal superheater tube attachments were found eroded and worn. Tube attachments, such as alignment bars, spacers, and clips, ensure proper tube alignment and to control movement as the boiler operates. The contractor replaced and/or repaired the alignment and supporting hardware on the superheater.

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**TOTAL OF ADDITIONAL WORK \$119,938.00**

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## Change Order #1

**TO:** Moorhead Machinery & Boiler Company  
3477 University Avenue N.E.  
Minneapolis, Minnesota 55418

**PROJECT:** Horizontal Superheater 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:           \$128,333.66

<b>The original Contract Sum</b>	<u>          \$1,032,029.00</u>
<b>Previous Change Order Amounts</b>	<u>          \$          -</u>
<b>The Contract Sum is increased by this Change Order</b>	<u>          \$  128,333.66</u>
<b>The Contract Sum is decreased by this Change Order</b>	<u>          \$          </u>
<b>The total modified Contract Sum to date</b>	<u>          \$  1,160,362.66</u>

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: **MOORHEAD MACHINERY & BOILER COMPANY**

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

Date \_\_\_\_\_

RESOLUTION 2007-311

WHEREAS, on May 2, 2006, by Resolution 2006-128, the City of Grand Island awarded the bid for the Horizontal Superheater Repair to Moorhead Machinery & Boiler Company, of Minneapolis, Minnesota; and

WHEREAS, it has been determined that modifications to the work to be performed by Moorhead Machinery & Boiler Company, 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 \$128,333.66 for a revised contract price of \$1,160,362.66.

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 Moorhead Machinery & Boiler Company, of Minneapolis, Minnesota to provide the modification set out as follows:

Corten Plate at Backpass Front Wall .....	\$23,200.00
Refractory Dam at Backpass.....	23,400.00
Furnace Tube Samples .....	10,200.00
HSH Hanger Tube U-Bolt Rubs – 20 Pad Welds .....	810.00
Backpass Front Wall Tubes – 23 Pad Welds .....	7,425.00
Backpass Rear Wall Tubes above Overlaid Weld – 16 Pad Welds .....	5,168.00
HSH Top Bundle – Procure and Install Six Superheater Tube Bends .....	22,300.00
HSH Existing Tubes – 45 Pad Welds .....	14,535.00
HSH Existing Tubes Hanger Clip/Tube Spacer Installation .....	12,900.00
Tax.....	<u>8,395.66</u>
Total.....	128,333.66

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Adopted by the City Council of the City of Grand Island, Nebraska, December 4, 2007.

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Margaret Hornady, Mayor

Attest:

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Approved as to Form	☐ _____
November 29, 2007	☐ City Attorney

RaNae Edwards, City Clerk