ITEM # __36__
DATE 11-24-15

COUNCIL ACTION FORM

SUBJECT: EMERGENCY REPAIR TO EXPANSION JOINTS FOR UNIT 8

BACKGROUND:

Power Plant staff were in the process of accessing and securing the siding (lagging, skin) on the ductwork on Unit 8 between the electrostatic precipitator (ESP) and the air heater. When staff obtained access (via scaffolding), it was discovered the expansion joints were in bad shape. At least one is virtually non-existent.

By early to mid-January 2016, staff is planning on test-firing Unit 8 on natural gas. In order to tune the unit and to perform the tests necessary for warranty and performance guarantees, the unit must perform well. With the current condition of the expansion joints, unwanted outside air will be pulled through the failed leaking joints passing through the air heater and fan, negatively effecting overall plant performance and fan capacity. Calculations have indicated this fan has enough capacity to handle the conversion, but the capacity margin is thin.

Under the *Iowa Code*, Chapter 384.103 (2) states that "when an emergency repair of a public improvement is necessary and the delay of advertising and a public letting might cause serious loss or injury to the city, the governing body shall, by resolution, make a finding of necessity to institute emergency proceedings under this section". Further, "the governing body shall procure a certificate from a competent licensed professional engineer or registered architect, not in the regular employ of the city, certifying that emergency repairs are necessary". It further states the "governing body may contract for emergency repairs without holding a public hearing and advertising for bids, and the provisions of Chapter 26 do not apply." Black & Veatch Corporation has certified that emergency proceedings are necessary to avoid the risk of serious loss to the City. (See attached letter)

Electric Services staff contacted two companies, Babcock & Wilcox, the OEM and Frenzelit a well know global supplier of utility expansion joints to obtain pricing, scheduling and availability. The cost comparison between the two companies were within 10% of each other. However, Babcock and Wilcox cannot meet our January testing schedule.

Staff is requesting that the City Council waive the City's purchasing policies requiring competitive bids, and award this contract to Frenzelit, Lexington, NC, in the amount of $680,328. This vendor is not licensed to collect Iowa sales tax. City of Ames will pay applicable sales tax directly to the state of Iowa.

The Power Plant will be carrying forward $1,500,300 of unspent maintenance funding from the approved FY14/15 operating budget into the FY15/16 Adjusted budget from

which this contract will be funded. It should be noted that the City Council does not approve the FY15/16 Adjusted budget until March 2016. Approval of this award of contract is predicated on the approval of the FY 2015/16 Adjusted budget for the Power Plant.

ALTERNATIVES:

1. a. Institute emergency proceedings and authorize staff to obtain informal bids and enter into a contract for repair of Unit 8 expansion joints.

   b. Waive the purchasing policy requirement for competitive bidding for the repair of Unit 8 expansion joints and award a contract to Frenzelit, Lexington, NC, in the amount of $680,328 plus applicable sales taxes to be paid directly by the City of Ames to the State of Iowa.

2. a. Deny request to institute emergency proceedings and direct staff to solicit bids in accordance with Chapter 26. It is estimated that this process would result in a contract award in April 2016.

   b. Deny request to waive the purchasing policy requirement for competitive bidding.

MANAGER'S RECOMMENDED ACTION:

There is significant damage to the Unit 8 expansion joints at the Power Plant. With conversion project in progress, it is critical to replace these expansion joints as soon as possible to avoid the risks of losing the City's rights to any performance warranty claims on the gas conversion burner and controls installations. There is a strong possibility Unit 8 would be load limited after gas conversion if the joints are not replaced.

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

BLACK & VEATCH
Building a world of difference.

MONTY HINTZ, P.E.
Senior Civil/Structural Engineer
11401 LAMAR AVE.
OVERLAND PARK, KS 66211 USA
+1 913-458-2464 | HINTZME@BV.COM

November 13, 2015

B&V Project 190419.0040

Mr. Donald Kom
Director – Electric Services
Ames Municipal Electric System
502 Carroll Avenue
Ames, IA 50010

Gentlemen:

On November 3, 2015, I completed an inspection of the existing metallic expansion joints in the exhaust ductwork between the precipitators and the airheater on Unit 8. City of Ames utility personnel had noted significant corrosion in the metallic expansion joints located throughout this ductwork and requested an inspection and an informed opinion of the current state of the joints.

A total of ten Babcock & Wilcox (B&W) "traditional style" steel rectangular expansion joints, five per exhaust leg, exist in the ductwork. The expansion joints are original equipment from the initial plant construction in 1982. All ten joints were examined during the inspection. The exhaust ductwork is upstream of the induced draft (ID) fans and the ductwork thus operates under a vacuum during plant operation. The expansion joints are required to allow ductwork expansion and contraction under temperature changes while maintaining an airtight gas path to the chimney.

Severe corrosion and metal delamination were noted in several locations on each of the joints. The worst of the corrosion was normally found on the east side, and to a lesser extent, the north and south sides of the joints. In the topmost joint in the south leg of the ductwork, portions of the joint flutes on the exterior edge of the east side had corroded entirely through, leaving an opening one flute thickness by 18 to 24 inches long in the joint (Photo 1 attached). In the same joint, a smaller hole was located in the flute just below. Similar smaller holes through the entire joint wall thickness were found in other joints (Photo 2 attached). Delamination from corrosion was readily evident in several locations on each of the joints, some so severe that very little of the original joint wall thickness remained (Photo 3 attached). The delamination in some areas came off in rather large sections, exposing the remaining material beneath to further corrosion. The remaining metal in the flutes of the joint was badly corroded, with a brittle and crumbling surface. The physical integrity of the joint in these locations, as well as its ability to withstand further flexure under changing temperatures, is very much in doubt. The larger holes were obviously allowing in-leakage of air to the exhaust stream with the free edges of the remaining joint around the hole vibrating significantly.

BLACK & VEATCH
Building a world of difference.

MONTY HINTZ, P.E.
Senior Civil/Structural Engineer
11401 LAMAR AVE.
OVERLAND PARK, KS 66211 USA
+1 913-458-2464 | HINTZME@BV.COM

All of the existing expansion joints inspected have deteriorated beyond the point of reasonable repair and must be replaced. In several locations the joints have failed, leaving holes that allow in-leakage of outside air into the exhaust stream. In-leakage adds to the exhaust flow and increases load on the ID fans. Unless significant margin exists in the fan capacity, it would be impossible to reach plant full load operating capacity if in-leakage is significant. The City of Ames is currently converting Unit 8 from coal operation to gas operation. The failed expansion joints will make it extremely difficult to test and commission the converted boiler if they are not replaced prior to startup of the converted boiler. This would likely prevent the converted boiler from operating at full load due to ID fan limitations.

It is our understanding that under the Code of Iowa, Chapter 384.103 2, it is possible to initiate emergency proceedings to allow for the immediate replacement of the expansion joints. Emergency proceedings are warranted to prevent further catastrophic deterioration of the corroded expansion joints in the immediate future, as well as allow completion of the replacement to support the boiler conversion work currently ongoing. The boiler conversion work must be commissioned and in service prior to an EPA-mandated date of April 16, 2016. Proceeding with the replacement of the expansion joints on an emergency basis would allow that installation to be completed in time to support startup and commissioning of the converted boiler by the required date.

As a licensed professional engineer in the State of Iowa (License No. 10052, Expiration Date 12/31/16), I concur with recommendations of the utility staff that it would be in the best interest of the City of Ames to initiate immediate replacement of the metallic expansion joints in the exhaust ductwork of Unit 8.

Very truly yours,

BLACK & VEATCH

Monty E. Hintz, P.E.
Senior Civil/Structural Engineer

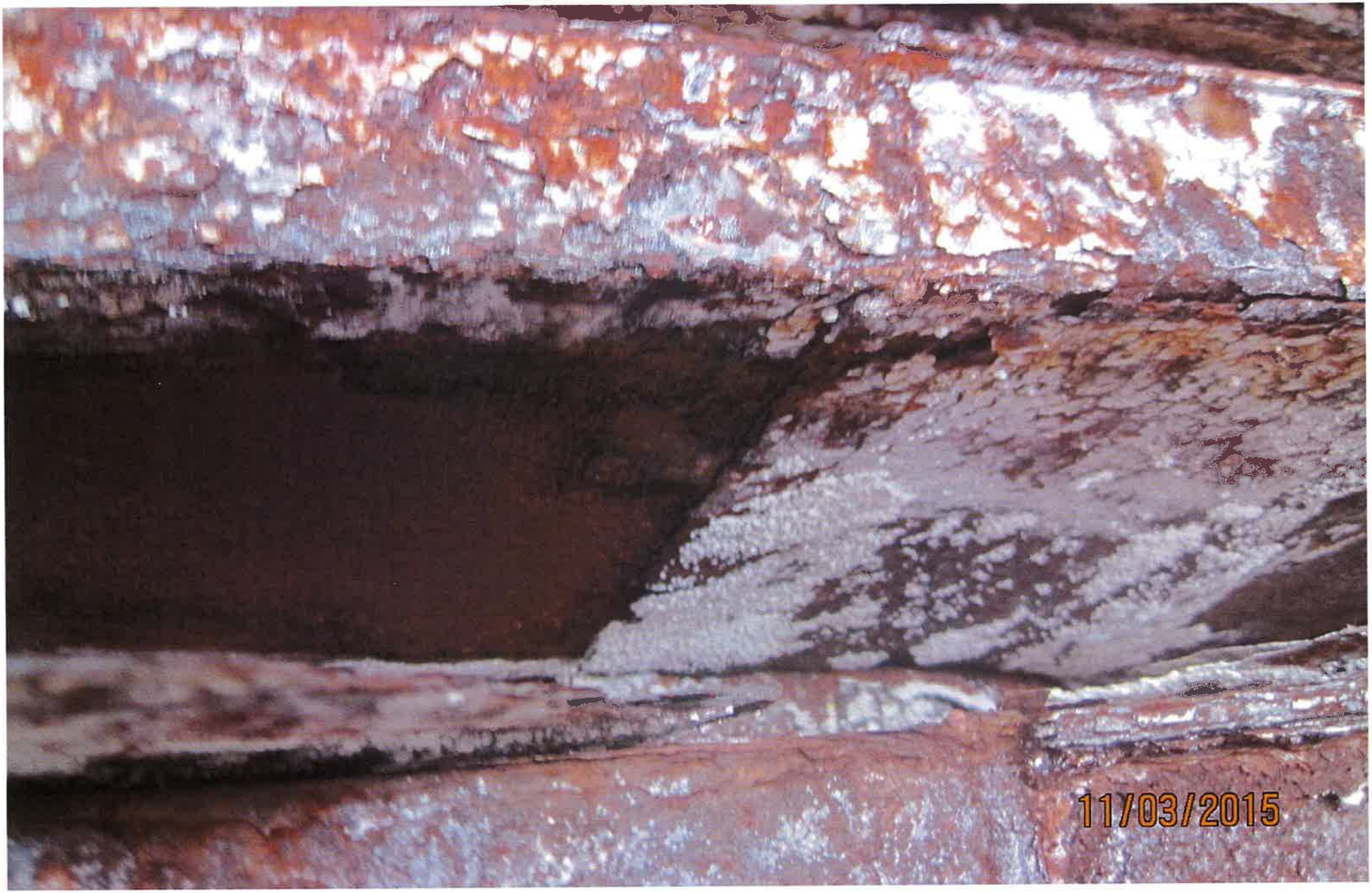
Enclosures: 1) Ames Photo 1
2) Ames Photo 2
3) Ames Photo 3

BLACK & VEATCH
Building a world of difference.

MONTY HINTZ, P.E.
Senior Civil/Structural Engineer
11401 LAMAR AVE.
OVERLAND PARK, KS 66211 USA
+1 913-458-2464 | HINTZME@BV.COM

cc: Dell Brown, City of Ames
Brian Trower, City of Ames
John E. Johnson, B&V
Robert Slettehaugh, B&V

11/03/2015
1
33 FEET
2
3
4
10m
2
3
4
5
6
7
8
9
10
1


11/03/2015


11/03/2015