
City of Grand Island

Item G12

#318 Approving Award of Engineering Services Contract

The duct work connecting the boiler and precipitator at PGS has experienced stress cracking. The cracking is caused by precipitation leaking through the protective covering and quenching the hot duct steel which operates at 750 F. Plant maintenance crews have made extensive repairs to the failed materials but problems continue. It is recommended that an engineering firm be hired to evaluate this chronic problem and develop a permanent fix. Requests for Proposals were solicited in accordance with City purchasing policy. Three proposals were received and evaluated by plant engineering staff. It is recommended that the contract for this engineering evaluation be awarded to Sargent and Lundy of Chicago, Illinois, in the amount not to exceed \$67,500. Please see attached memorandums and Resolution.



Tuesday, November 20, 2001

Council Session

**INTEROFFICE
MEMORANDUM**



*Working Together for a
Better Tomorrow. Today.*

DATE: November 13, 2001

MEMO TO: Mayor and City Council

FROM: Gary R. Mader, Utilities Director
Dale Shotkoski, Assistant City Attorney/Purchasing

SUBJECT: Precipitator Inlet/Outlet Duct Engineering Services

Background: The precipitator, which removes fly ash from the boiler exhaust gas at the Platte Generating Station, has experienced continued problems with ash build up on the inlet fields and distribution plates. The buildup reduces the collecting efficiency of the precipitator and requires routine cleaning. Leaks in the lagging, which protects the insulation covering the ductwork from the boiler to the precipitator, allows rain water to come in contact with the 750 F ductwork and causes severe cracking. After this cracking forms, rain water is then drawn into the gas stream, causing the ash to foul the precipitator inlet surfaces. For several years, the plant maintenance staff has tried during plant outages to repair the cracks, but have not been successful in permanently correcting the problem. The water leaks have also caused a premature failure of the metal expansion joints in the ductwork. It is recommended that an engineering firm be hired to evaluate the problem and develop a permanent repair or replacement. Requests for proposals were solicited from consulting engineers familiar with boiler ductwork and expansion joints. The RFP requested services to investigate the problem, determine a way to stop water ingress, determine methods of repair or replacement, and prepare specifications for bid by contractors.

Discussion: Requests for Proposals for engineering services was publicly advertised and proposals from the following firms were received.

Black & Veatch, Kansas City
Lutz, Daily, & Brain, Kansas City, MO
Sargent & Lundy, Chicago, IL

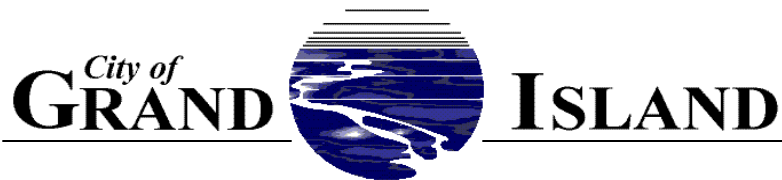
The RFP includes a general project outline since the specific project scope cannot be fully defined until the consultant completes engineering studies. The RFP's include an hourly fee breakdown as opposed to total project costs. After evaluation of the engineering studies and budget considerations, further project implementation will be conducted.

Recommendation: After carefully reviewing the proposals according to predetermined evaluation criteria, which included fees, company and personnel experience, contract forms, and proposal responsiveness, the Utilities Department recommends that Sargent & Lundy be awarded the engineering contract for this work. A copy of the evaluation of engineering firms is attached. Sargent & Lundy is a nationally recognized consultant that has successfully performed projects of this scope for other clients.

Alternatives: Award to a different firm; allow the problem to continue.

Fiscal Effects: An amount not to exceed \$67,500, which has been budgeted for this year in Enterprise Fund 520.

cc: Tim Luchsinger, Asst. Utilities Director
Dave Kuhlman, Plant Superintendent - PGS
David Springer, Finance Director



**INTEROFFICE
MEMORANDUM**
Utilities Department

***Working Together for a
Better Tomorrow. Today.***

TO: Tim Luchsinger
FROM: Dave Kuhlman
SUBJECT: Engineering Services for Precipitator Duct
and Expansion Joint Modification

DATE: November 9, 2001

For many years the plant has experienced precipitator problems with ash build up in the first field and on the inlet distribution plates. Plant maintenance people and contractors have repaired cracks in the metal ducts and expansion joints and welded plates over areas of corrosion in the ducts. During plant outages people have seen moisture in the precipitator and ducts which contributes to ash build up. The belief is that the duct lagging and flashing is inadequate and allows water to leak through, contacting the 750° F. duct and causing thermal expansion in the metal and thus creating the cracks.

In 1997 Lutz, Daily and Brain was contracted to investigate the problem and recommend a solution. They looked at the ducts during the turbine outage and recommended installing an additional metal roof over the economizer outlet expansion joint area, extending the precipitator roof over the inlet ducts and replacing the corroded duct. During the spring outage in 2001 they investigated the area again to see if the condition had worsened.

Two insulating contractors visited the plant this summer and both believe that the water is entering because the original design of the lagging and flashing was inadequate and because of damage over the years by workman walking on the lagging. During the fall outage in October a precipitator repair contractor and an insulating contractor were hired to look at the problem. Insulation and lagging was removed over one of the economizer expansion joints and the top of the west precipitator inlet duct. Cracks were discovered both places and the extent of the leakage became evident. The original design of lagging and flashing does not have enough overlap or slope to keep water from blowing under the edges and there are valleys that retain water. There are lots of water leaks near the economizer expansion joints and the joints appear to be near the end of their life and will have to be replaced. They are metal joints about 8 foot by 30 foot and cannot be replaced in one piece. Investigation is required to see if the newer design of high temperature fabric joints can function in this location and, if not, how metal replacement joints can be installed.

In September, prior to the fall outage, a specification for engineering services was sent out for bid. The RFP requested services to investigate the problem, determine a way to stop the water ingress, determine the method of duct repair, investigate economizer and precipitator expansion joint material and replacement, and prepare specifications for bid to contractors. After the outage it was determined that this scope was not entirely correct since duct deterioration was less than expected and the precipitator expansion joints are in good condition. It was decided that the platform at the economizer outlet needs to be extended to prevent workmen from walking on the lagging and expansion joint cover while maintaining the oxygen sensors and flue gas analyzer. The precipitator inlet distribution baffles need to be replaced or modified.

Attached is an evaluation of the three firms that have submitted proposals for engineering services. I have adjusted their bids based on a revised scope which includes the lagging and flashing modifications, the economizer platform addition, the economizer expansion joints replacement, the inlet distribution

baffle work, and preparing drawings and specifications for bid. Both Black & Veatch and Sargent & Lundy have experience with high temperature duct design and repair. They have visited the plant and understand the problem.

I recommend against awarding the work to Lutz, Daily and Brain. They received the award in 1997 to investigate the problem, determine a solution, and prepare drawings and repair specifications for the modifications required. They never completed the work, which is the reason for the credit they offered in their current proposal. Their proposal to install a metal, check plate roof over some of the leaking areas is not a good solution and, in my opinion, will not stop all the leaks and may cause expansion problems. I do not believe they have enough experience with duct design, flashing and lagging, and expansion joints in high temperature applications to satisfactorily complete this project.

I recommend the award be made to Sargent & Lundy, the lowest evaluated bidder.

**City of Grand Island
Utilities Department
Economizer Ductwork
Repair**

Reviewer: Kuhlman

Evaluation Category	Consulting Firm		
	Black & Veatch Kansas City, MO	LD&B Kansas City, MO	Sargent & Lundy Chicago, IL
Company Experience	10	4	10
Personnel Experience	10	4	10
Proposal Responsiveness	10	6	10
Original Cost Estimate	\$115,000	\$42,600	\$67,500
Adjusted cost estimate	\$69,000 Reduction to remove duct design and post award activities 6	\$24,088 Reductions: 1. Credit proposed for for work not complete on previous study. 2. Remove duct design & post award activities. 10	\$67,500 6
Estimated manhours: Original estimate - Adjusted estimate -	896 528 6	497 345 5	750 750 10
Cost per man-hour on revised \$ and scope	\$130.68	\$69.82	\$90.00
Commercial Terms	Acceptable 10	Acceptable 10	Acceptable 10
Total	52	39	56

10 = Excellent
5 = Average
1 = Poor

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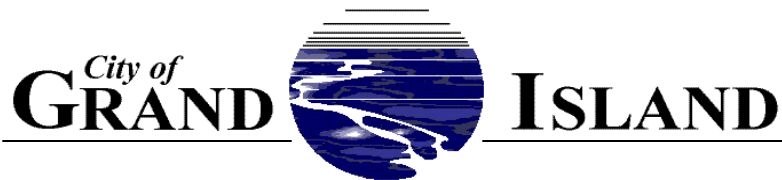
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