



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

SPECIFICATION PACKAGE

for

FEEDWATER HEATER #5 INSTALLATION

Bid Opening Date/Time

**Tuesday, March 26, 2013 @ 2:00 p.m. (Local time)
City of Grand Island, City Hall
100 East 1st Street, P.O. Box 1968
Grand Island, NE 68802-1968**

Contact

**City of Grand Island – Utilities Department
Platte Generating Station
308/385-5496**

Date issued: March 5, 2013

**ADVERTISEMENT TO BIDDERS
FOR
FEEDWATER HEATER #5 INSTALLATION
FOR
CITY OF GRAND ISLAND, NEBRASKA**

Sealed bids will be received at the office of the City Clerk, 100 E. First Street, P.O. Box 1968, Grand Island, Nebraska 68802, until Tuesday, March 26, 2013 at 2:00 p.m. local time for Feedwater Heater #5 Installation, FOB the City of Grand Island, freight prepaid. Bids will be publicly opened at this time in the Grand Island City Hall Council Conference Room #1 located on 1st floor of City Hall. Submit an original and three copies. Bid proposal package and any Addendas are also available on-line at www.grand-island.com under Business-Bid Calendars. Bids received after the specified time will be returned unopened to sender.

The successful bidder will be required to comply with fair labor standards as required by Nebraska R.R.S.73-102 and comply with Nebraska R.R.S. 48-657 pertaining to contributions to the Unemployment Compensation Fund of the State of Nebraska. Successful bidder shall maintain a drug free workplace policy. Every public contractor and his, her or its subcontractors who are awarded a contract by the City for the physical performance of services within the State of Nebraska shall register with and use a federal immigration verification system to determine the work eligibility status of new employees physically performing services within the State of Nebraska.

Each bidder shall submit with the bid a certified check, a cashiers check, or bid bond payable to the City Treasurer in an amount no less than five percent (5%) of the bid price which shall guarantee good faith on the part of the bidder and the entering into a contract within fourteen (14) days at the bid price if accepted by the City. **Your certified check, cashier's check or bid bond must be submitted in a separate envelope attached to the outside of the envelope containing the bid. Each envelope must be clearly marked indicating its contents. Failure to submit the necessary qualifying information in clearly marked and separate envelopes will result in your bid not being opened or considered.** Surety companies authorized to do business in the State of Nebraska must issue bid bonds.

Bids will be evaluated by the Purchaser based on price, schedule, quality, adherence to schedule, plan and specifications, economy and efficiency of operation, experience and reputation of the bidder, ability, capacity, and skill of the bidder to perform contract required and adaptability of the particular items to the specific use intended.

The Purchaser reserves the right to reject any or all bids, to waive irregularities therein, and to accept whichever bid that may be in the best interest of the City, at its sole discretion.

No bidder may withdraw his/her bid for a period of thirty (30) days after date of bid opening.

RaNae Edwards, City Clerk

Advertised
Grand Island Independent

(All bids must be submitted on this form)

FEEDWATER HEATER #5 INSTALLATION
BID DATA FORM

CITY OF GRAND ISLAND
GRAND ISLAND, NE

The undersigned Bidder, having examined all specifications and other bidding documents, and all addenda thereto, and being acquainted with and fully understanding all conditions relative to the specified materials and equipment, hereby proposes to provide such equipment FOB the City of Grand Island, freight prepaid, at the following price:

| <u>ITEM DESCRIPTION</u> | <u>EXTENDED COST</u> |
|-------------------------|----------------------|
| Base Bid: | |
| Material | \$ _____ |
| Labor | \$ _____ |
| Applicable Sales tax* | \$ _____ |
| Total Base Bid | \$ _____ |

* If bidder fails to include sales tax in their bid price or takes exception to including sales tax in their bid price, the City will add a 7.0% figure to the bid price for evaluation purposes; however, the City will only pay actual sales tax due.

- By checking this box, Bidder acknowledges that Addenda Number(s) _____ were received and considered in Bid preparation.
- By checking this box, Bidder acknowledges the specified completion date of the project is **October 10, 2013**.

According to Nebraska Sales and Use Tax Requirements, Section 1-017, Contractors, check which option you have selected to file with the Nebraska Department of Revenue:

Nebraska law provides a sales and use tax exemption on contractor labor charges for the construction, repair, or annexation of any structure used for the generation, transmission, or distribution of electricity. Separately stated contractor labor would be exempt, all materials are taxable according to the contractor's option.

Option 1 (Section 1-017.05)_____ Option 2 (Section 1-017.06)_____ Option 3 (Section 1-017.07)_____

If the Nebraska sales and use tax election is not filed or noted above, the contractor will be treated as a retailer under Option 1 for sales and use tax purposes.

Bidder Company Name Date

Company Address City State Zip

Print Name of Person Completing Bid Signature

Telephone No. _____ Fax No. _____

By checking this box, Bidder acknowledges there are Exceptions noted to the bid.
NOTE: Any exceptions to specifications must be fully explained on a separate sheet attached to bid.

CHECKLIST FOR BID SUBMISSION
FOR
FEEDWATER HEATER #5 INSTALLATION

Bids must be received by the City Clerk before 2:00 p.m. on Tuesday, March 26, 2013.

The following items must be completed for your bid to be considered.

- A signed original and three copies of the bidding documents.
- A reference list of at least three projects of similar scope and complexity.
- A proposed schedule for the work scope, including an estimate of the number of hours and the number of employees required to perform the work.
- Firm lump sum pricing; firm unit pricing in case adjustments are necessary, and breakout of sales tax pricing.
- An itemized price list for materials and labor for removal/installation.
- Selection of Nebraska Sales Tax Option.
- Acknowledgment of Addenda Number(s) _____.
- Bidders must complete and sign the Bid Data Form provided in these Documents. All blank spaces must be filled in. Bidders shall acknowledge receipt of any Addenda information on the Bid Data Form.
- A certified check, cashiers check or bid bond in a separate envelope attached to the **outside of the envelope containing the bid**. Each envelope must be clearly marked indicating its contents. Failure to submit the necessary qualifying information in clearly marked and separate envelopes will result in your bid not being opened.

Please check off each item as completed.

Company

Signature

Telephone No. _____

Fax No. _____

INSTRUCTIONS TO BIDDERS

1. GENERAL INFORMATION.

The following instructions outline the procedure for preparing and submitting Bids. Bidders must fulfill all requirements as specified in these Documents.

2. TYPE OF BID.

Bidders shall be required to submit prices for all items listed in the Bid Data Form.

3. PREPARATION OF BIDS.

Bidders shall use only the Bid Data Form provided in these Documents. All blank spaces in the Bid Data Form must be filled in, preferably in BLACK ink, in both words and figures where required. No changes to the wording or content of the forms is permitted. Written amounts shall govern in case of discrepancy between the amounts stated in writing and the amounts stated in figures.

Prices stated shall be f.o.b. with freight and full insurance paid by Bidder, to the job site located in Grand Island, Nebraska.

The Bidder shall acknowledge receipt of all Addenda in the Bid Data Form. Bids received without acknowledgement or without the Addendum enclosed will be considered informal. Bidder will be responsible for checking for any Addenda at www.grand-island.com under Business-Bid Calendars or with the Engineer referenced in the Bid Specification.

4. SUBMISSION OF BIDS.

All Bids must be submitted intact no later than the time prescribed, at the place, and in the manner set forth in the ADVERTISEMENT FOR BIDS. Bids must be made on the Bid Data Form provided herein. Each Bid must be submitted intact in a sealed envelope, so marked as to indicate its contents without being opened, and delivered in person or addressed and mailed in conformance with the instructions in the ADVERTISEMENT FOR BIDS.

5. BID SECURITY.

Bids must be accompanied by cash, a certified check, or cashier's check drawn on a bank which is insured by the Federal Deposit Insurance Corporation, or a bid bond issued by a Surety authorized to issue such bonds in the state where the Work is located, in the amount of 5 percent of the bid amount payable to OWNER. This bid security shall be given as a guarantee that the Bidder will not withdraw his Bid for a period of **thirty (30) days after** bid opening, and that if awarded the Contract, the successful Bidder will execute the attached Contract and furnish a properly executed Performance Bond and Payment Bond, each in the full amount of the Contract price, within the time specified.

The Attorney-in-Fact that executes this bond on behalf of the Surety must attach a notarized copy of his/her power of attorney as evidence of his/her authority to bind the Surety on the date of execution of the bond. Where State Statute requires, certification by a resident agent shall also be provided.

6. RETURN OF BID SECURITY.

Within fifteen (15) days after the award of the Contract, the OWNER will return the bid securities to all Bidders whose Bids are not to be further considered in awarding the Contract. All other retained bid securities will be held until the Contract has been finally executed, after which all bid securities, other than Bidders' bonds and guarantees which have been fortified, will be returned to the respective Bidders whose Bids they accompanied.

7. BASIS OF AWARD.

The award will be made by the OWNER on the basis of the Bid from the lowest responsive, responsible Bidder which, in the OWNER's sole and absolute judgment will best serve the interest of the OWNER. All Bids will be considered on the following basis:

Conformance with the terms of the Bid Documents.
 Bid price.
 Cost of installation.

Delivery time.

Responsibility and qualification of Bidder.

Suitability to project requirements.

The OWNER reserves the right to reject all Bids, or any Bid not in conformance with the intent of the Bid Documents, and to waive any informalities and irregularities in said Bids.

8. EXECUTION OF CONTRACT.

The successful Bidder shall, within fifteen (15) days after receiving notice of award, sign and deliver to the OWNER the Contract hereto attached together with the acceptable bonds as required in these Bid Documents. Within fifteen (15) days after receiving the signed Contract with acceptable bond(s) from the successful Bidder, the OWNER's authorized agent will sign the Contract. Signature by both parties constitutes execution of the Contract.

9. PERFORMANCE AND PAYMENT BONDS.

The successful Bidder shall file with the OWNER Performance and Payment Bonds in the full amount (100 percent) of the Contract price, as security for the faithful performance of the Contract and the payment of all persons supplying labor and materials for the Work under this Contract, and to cover all guarantees against defective workmanship or materials, or both, for a period of one (1) year after the date of final acceptance of the Work by the OWNER. The Surety furnishing these bonds shall have a record of service satisfactory to the OWNER, be authorized to do business in the State where the OWNER's project is located and shall be named on the current list of approved Surety Companies, acceptable on Federal bonds as published by the Audit Staff, Bureau of Accounts, U.S. Treasury Department.

The Attorney-in-Fact (Resident Agent) who executes these bonds on behalf of the Surety must attach a notarized copy of his/her power-of-attorney as evidence of his/her authority to bind the Surety on the date of execution of the bond.

10. TIME OF COMPLETION.

The time of completion of the Work to be performed under this Contract is the essence of the Contract. The time allowed for the completion of the Work is stated in the Bid Data Form.

11. GRATUITIES AND KICKBACKS.

City Code states that it is unethical for any person to offer, give, or agree to give any City employee or former City employee, or for any City employee or former City employee to solicit, demand, accept, or agree to accept from another person, a gratuity or an offer of employment in connection with any decision, approval, disapproval, recommendation, or preparation of any part of a program requirement or a purchase request, influencing the content of any specification or procurement standard, rendering of advice, investigation, auditing, or in any other advisory capacity in any proceeding or application, request for ruling, determination, claim or controversy, or other particular matter, pertaining to any program requirement or a contract or subcontract, or to any solicitation or proposal therefor. It shall be unethical for any payment, gratuity, or offer of employment to be made by or on behalf of a subcontractor under a contract to the prime contractor or higher tier subcontractor or any person associated therewith, as an inducement for the award of a subcontract or order.

12. FISCAL YEAR.

The City of Grand Island, Nebraska operates on a fiscal year beginning October 1st and ending on the following September 30th. It is understood and agreed that any portion of this agreement which will be performed in a future fiscal year is contingent upon the City Council adopting budget statements and appropriations sufficient to fund such performance.

CONTRACT AGREEMENT

THIS AGREEMENT made and entered into by and between **[SUCCESSFUL BIDDER]**, hereinafter called the Contractor, and the **CITY OF GRAND ISLAND, NEBRASKA**, hereinafter called the City.

WITNESSETH:

THAT, WHEREAS, in accordance with law, the City has caused contract documents to be prepared and an advertisement calling for bids to be published for *FEEDWATER HEATER #5 INSTALLATION*; and

WHEREAS, the City, in the manner prescribed by law, has publicly opened, examined, and canvassed the bids submitted, and has determined the aforesaid Contractor to be the lowest responsive and responsible bidder, and has duly awarded to said Contractor a contract therefore, for the sum or sums named in the Contractor's bid, a copy thereof being attached to and made a part of this Contract;

NOW, THEREFORE, in consideration of the compensation to be paid to the Contractor and of the mutual agreements herein contained, the parties have agreed and hereby agree, the City for itself and its successors, and the Contractor for itself, himself/herself, or themselves, and its, his/her, or their successors, as follows:

ARTICLE I. That the following documents shall comprise the Contract, and shall together be referred to as the "Agreement" or the "Contract Documents";

1. This Contract Agreement.
2. City of Grand Island's Specification for this project.
3. **[NAME OF SUCCESSFUL BIDDER]** bid signed and dated **[DATE OF BID]**.

In the event of any conflict between the terms of the Contract Documents, the provisions of the document first listed shall prevail.

ARTICLE II. That the Contractor shall (a) furnish all tools, equipment, superintendence, transportation, and other construction materials, services and facilities; (b) furnish, as agent for the City, all materials, supplies and equipment specified and required to be incorporated in and form a permanent part of the completed work; (c) provide and perform all necessary labor; and (d) in a good substantial and workmanlike manner and in accordance with the requirements, stipulations, provisions, and conditions of the Contract documents as listed in the attached General Specifications, said documents forming the Contract and being as fully a part thereof as if repeated verbatim herein, perform, execute, construct and complete all work included in and covered by the City's official award of this Contract to the said Contractor, such award being based on the acceptance by the City of the Contractor's bid;

ARTICLE III. That the City shall pay to the Contractor for the performance of the work embraced in this Contract and the Contractor will accept as full compensation therefore the sum (subject to adjustment as provided by the Contract) of **[DOLLAR AMOUNT] (\$00.00)** for all services, materials, and work covered by and included in the Contract award and designated in the foregoing Article II; payments thereof to be made in cash or its equivalent in the manner provided in the General Specifications.

The total cost of the Contract includes:

| | |
|-----------------------------------|---------------|
| Base Bid: | \$.00 |
| Sales Tax on Materials/Equipment: | \$.00 |
| Sales Tax on Labor: | <u>\$.00</u> |
| Total | \$.00 |

The City of Grand Island, Nebraska operates on a fiscal year beginning October 1st and ending on the following September 30th. It is understood and agreed that any portion of this agreement which will be performed in a future fiscal year is contingent upon the City Council adopting budget statements and appropriations sufficient to fund such performance.

ARTICLE IV. The Contractor hereby agrees to act as agent for the City in purchasing materials and supplies for the City for this project. The City shall be obligated to the vendor of the materials and supplies for the purchase price, but the Contractor shall handle all payments hereunder on behalf of the City. The vendor shall make demand or claim for payment of the purchase price from the City by submitting an invoice to the Contractor. Title to all materials and supplies purchased hereunder shall vest in the City directly from the vendor. Regardless of the method of payment, title shall vest immediately in the City. The Contractor shall not acquire title to any materials and supplies incorporated into the project. All invoices shall bear the Contractor's name as agent for the City. This paragraph will apply only to these materials and supplies actually incorporated into and becoming a part of the finished product of the FEEDWATER HEATER #5 INSTALLATION.

ARTICLE V. That the Contractor shall start work as soon as possible after the Contract is signed and the required bonds and insurance are approved, and that the Contractor shall deliver the equipment, tools, supplies, and materials F.O.B. Platte Generating Station, and complete the work on or before **OCTOBER 10, 2013**.

ARTICLE VI. The Contractor agrees to comply with all applicable State fair labor standards in the execution of this Contract as required by Section 73-102, R.R.S. 1943. The Contractor further agrees to comply with the provisions of Section 48-657, R.R.S. 1943, pertaining to contributions to the Unemployment Compensation Fund of the State of Nebraska. During the performance of this Contract, the Contractor and all subcontractors agree not to discriminate in hiring or any other employment practice on the basis, of race, color, religion, sex, national origin, age or disability. The Contractor agrees to comply with all applicable Local, State and Federal rules and regulations. The Contractor agrees to maintain a drug-free workplace policy and will provide a copy of the policy to the City upon request. Every public contractor and his, her or its subcontractors who are awarded a contract by the City for the physical performance of services within the State of Nebraska shall register with and use a federal immigration verification system to determine the work eligibility status of new employees physically performing services within the State of Nebraska.

ARTICLE VII. Gratuities and kickbacks: City Code states that it is unethical for any person to offer, give, or agree to give any City employee or former City employee, or for any City employee or former City employee to solicit, demand, accept, or agree to accept from another person, a gratuity or an offer of employment in connection with any decision, approval, disapproval, recommendation, or preparation of any part of a program requirement or a purchase request, influencing the content of any specification or procurement standard, rendering of advice, investigation, auditing, or in any other advisory capacity in any proceeding or application, request for ruling, determination, claim or controversy, or other particular matter, pertaining to any program requirement or a contract or subcontract, or to any solicitation or

proposal therefor. It shall be unethical for any payment, gratuity, or offer of employment to be made by or on behalf of a subcontractor under a contract to the prime contractor or higher tier subcontractor or any person associated therewith, as an inducement for the award of a subcontract or order.

[SUCCESSFUL BIDDER]

By _____ Date _____

Title _____

CITY OF GRAND ISLAND, NEBRASKA

By _____ Date _____
Mayor

Attest: _____
City Clerk

The Contract is in due form according to law and hereby approved.

Attorney for the City Date _____

DRAFT



*Working Together for a
Better Tomorrow, Today.*

REQUEST FOR BIDS - GENERAL SPECIFICATIONS

The Bid shall be in accordance with the following and with all attached BID DATA and DETAILED SPECIFICATIONS.

All prices are to be furnished and installed FOB, Grand Island, Nebraska. **All prices shall be firm, and shall include all sales and use taxes as lawfully assessed under laws and regulations of the State of Nebraska.** * If bidder fails to include sales tax in their bid price or takes exception to including sales tax in their bid price, the City will add a 7.0% figure to the bid price for evaluation purposes; however, the City will only pay actual sales tax due.

Bids shall include the following on the **outside** of the mailing envelope: "**Feedwater Heater #5 Installation**". All sealed bids are due no later than Tuesday, **March 26, 2013 at 2:00 p.m. local time**. Submit **an original and three copies** of the bid to:

Mailing Address: City Clerk
City Hall
P. O. Box 1968
Grand Island, NE 68802-1968

Street Address: City Clerk
City Hall
100 E. First Street
Grand Island, NE 68801

Bids will be opened at this time in the City Hall Council Conference Room #1 located on 1st floor of City Hall. Any bid received after the specified date will not be considered. No verbal bid will be considered.

Bids will be evaluated by the Purchaser based on price, schedule, quality, adherence to schedule, plan and specifications, economy and efficiency of operation, experience and reputation of the bidder, ability, capacity, and skill of the bidder to perform contract required and adaptability of the particular items to the specific use intended.

The successful bidder will be required to comply with fair labor standards as required by Nebraska R.R.S.73-102 and comply with Nebraska R.R.S. 48-657 pertaining to contributions to the Unemployment Compensation Fund of the State of Nebraska. Contractor shall maintain a drug free workplace policy. Every public contractor and his, her or its subcontractors who are awarded a contract by the City for the physical performance of services within the State of Nebraska shall register with and use a federal immigration verification system to determine the work eligibility status of new employees physically performing services within the State of Nebraska.

The equipment and materials must be new, the latest make or model, unless otherwise specified. Prior to approving the invoice for payment, the City reserves the right to thoroughly inspect and test the equipment to confirm compliance with specifications. Any equipment or material which does not meet the City's requirements will be returned at vendor's expense for correction. The invoice will be paid after approval at the next regularly scheduled City Council meeting and occurring after departmental approval of invoice; the City Council typically meets the second and fourth Tuesday of each month. Invoices must be received well in advance of Council date to allow evaluation and processing time.

Each bidder shall submit with the bid a certified check, a cashiers check, or bid bond payable to the City Treasurer in an amount no less than five percent (5%) of the bid price which shall guarantee good faith on the part of the bidder and the entering into a contract within fourteen (14) days at the bid price if accepted by the City. **Your certified check, cashier's check or bid bond must be submitted in a separate envelope attached to the outside of the envelope containing the bid.** Each envelope must be clearly marked indicating its contents. **Failure to submit the necessary qualifying information in clearly marked and separate envelopes will result in your bid not being opened or considered.** Surety companies authorized to do business in the State of Nebraska must issue bid bonds.

Successful bidder shall comply with the City's insurance requirements; performance and payment bonds are required for this project as outlined in the Detailed Specifications and Instructions to Bidders.

All bids shall be valid for at least thirty (30) working days after the bid deadline for evaluation purposes.

All bids must be on the bid form and must be signed and dated to be accepted. Please contact Ryan Schmitz at 308-385-5495, for questions concerning this specification.

FEEDWATER HEATER #5 INSTALLATION
Fall Outage 2013
Detailed Specifications

SCOPE: The Contractor shall furnish all equipment, labor, and material necessary to remove Feedwater Heater #5, install a new feedwater heater that the City has purchased. The new feedwater heater will be stored on the plant site with a nitrogen blanket.

Work shall include (but is not limited to):

1. Remove all insulation from the existing heater and place in dumpsters furnished by the City. The insulation does not contain asbestos.
2. Contractor shall cut all connections and move the existing heater to a temporary location on site designated by plant personnel.
3. Contractor shall set and secure the new heater.
4. The attached TEI drawing shows the piping connections that must be cut to remove the existing feedwater heater and re-attached to the new heater. Three (3) inches has been added to each nozzle (the existing heater nozzles are 3" shorter). Contractor is required to cut and weld all the piping to fit the nozzles. The connection numbering that follows matches the numbers on the TEI outline drawing.
 - a. N1-N4 – Reconnect nozzles.
 - b. N6 & N7 – Reconnect the shell level control stand pipe
 - c. C1 & C2 – Reconnect the shell gage glass.
 - d. C3 & C4 – Reconnect the level alarms.
 - e. C5 & C6 – Reconnect the level controller.
 - f. C7 – Cut and cap existing connection to main vent line. Reconnect shell vent (operating vent) to main vent line at new location (it will be about 11'-0" higher than existing).**
 - g. C8 – Reroute and connect draincooler vent (startup vent) piping (it will be moved about 6" lower and 8 degrees clockwise) to main vent line.**
 - h. C10 – Reconnect C10 nitrogen port (+/- 6").
 - i. C11 – Reconnect C11 (channel vent piping).
 - j. C13 – Reconnect C13 channel drain (+/- 6").
 - k. C16 – Reconnect C16 (bottom) drain valves on bottom of heater. Install new drain line from C16 (mid-level) to within 3' of ground floor level. This drain should be valved and discharged to atmosphere.
 - l. C17, C18, C20, & C21 – Connect thermowells and pressure gages to new heater.
 - m. C22 – Valve & connect Desuperheating vent (startup vent) to existing vent piping.**

** C7, C8, and C22 will be valved and connected to a common existing vent pipe.

5. If extra valves (beyond existing) are required, they will be provided by the City but installed by the Contractor. Contractor shall provide/install any additional piping necessary in order to fit new connections.
6. Contractor shall install the two (2) new relief valves (N5 & C12) furnished with the heater; one welded (C12) and one flanged (N5). N5 & C12 will be reconnected to their existing independent drain lines. Valve (N5) should outlet near the ceiling (as existing) about 9' above valve. The new Shell Relief Valve (N5) will be a 3" 600lb (Inlet) x 4" 150lb (Outlet) with a carbon steel body and SS Trim. The new Channel Relief Valve (C12) will be ¾" x 1" with a carbon steel body and SS Trim.
7. Contractor shall re-insulate the new heater and all disturbed piping/fitting insulation. Heater shall be insulated with a high temperature fiberglass board (3½" thick minimum) with an operating temperature limit of 850 degrees Fahrenheit (min.). Insulation shall be installed per manufacturer's recommendation. Suitable products for heater insulation include Johns-Manville 1000 Series Spin-Glas and Johns-

Manville Precipitator Spin-Glas (or approved equals). Insulation should be banded to heater. No welded insulation attachments will be allowed.

8. Contractor is responsible for determining the Code requirements for all welding and will submit welding procedures for approval no later than ninety (90) days before the start of the outage. All welders must be certified to work on high pressure vessels.
9. City personnel will remove and reinstall all electrical and instrument connections. Contractor will be required to assist in removal of any welded fittings.
10. Contractor will have access to the turbine room crane during project. The feedwater heater can be lifted, by existing generator floor crane, from the track bay below and set in place by access of removable grating above the existing heater on the turbine floor. New Heater will be located in track bay when Contractor arrives onsite. Existing heater can be removed by the same process.
11. As part of this project, Contractor shall be given existing Feedwater Heater #5 and previously removed Feedwater Heater #4 to scrap out for their profit. *This savings should be factored into the bid.*
12. The information listed below (and attached drawings) is provided for information only. Scrap Feedwater Heater #4 and existing Feedwater Heater #5 information is attached for scrap value assessment only.

| | Empty Weight (lb) | Flooded Weight (lb) | Bundle Weight (lb) |
|------------------------------|-------------------|---------------------|--------------------|
| New FW Heater #5 | 41000 | 53000 | 31000 |
| Existing FW Heater #5 | 36000 | 47000 | 27900 |
| Scrapped FW Heater #4 | 29000 | 40200 | 20900 |

| ATTACHED DRAWINGS | |
|---|----------------------------|
| Title | Description |
| TEI Feedwater Heater Spec Sheet | New FW Heater #5 Spec |
| TEI Replacement HP Feedwater Heater #HP-5 | New FW Heater Setting Plan |
| (Struthers Wells) Feedwater Heater Spec Sheet | Existing FW Heater #5 Spec |
| (Struthers Wells) Feedwater Heater Spec Sheet | Scrapped FW Heater #4 Spec |

BIDDING. The Bid shall include all applicable material, labor, travel, living expenses, taxes, permits, and/or delivery charges to Grand Island, Nebraska. Bids will be evaluated by the Owner based on price, schedule, quality, economy of operation, experience of the manufacturer, availability of service for repair and maintenance, adherence to specifications, and adaptability of the particular equipment for the specific use intended. Owner reserves the right to reject any or all bids, or waive informalities and to accept whichever bid that may be in the best interest of Owner, at its sole discretion. **Bids must be received by 2:00 p.m. on Tuesday, March 26, 2013.**

LOCATION: The Platte Generating Station is located at 1035 W. Wildwood Drive, two (2) miles south of Grand Island, Nebraska. The plant entrance is located two miles south of U.S. Highway 34 and 1 ½ miles east of U.S. Highway 281.

OWNER: Engineer Representative of the Platte Generating Station.

SCHEDULE: Work must be performed and completed during the facility's planned fall outage. The outage is **tentatively** scheduled for October 3rd 2013 to October 10th 2013. Manpower requirements and working hours should be chosen such that the work can be completed during the (1) week outage.

Access to the plant will be available at all times and Contractor may determine working hours, however, the plant staff will only be available during normal, daytime, weekday working hours.

There is no separate contractor entrance at the Platte Generating Station. There is one gate with a card access security system and the Contractor may request to use access cards rather than request entry and exit for each trip. There is a \$25.00 charge for each access card that is not returned when the job is completed.

MATERIALS, EQUIPMENT, AND SERVICES PROVIDED BY THE OWNER: Owner shall provide construction power and a drinking water source.

MATERIALS, EQUIPMENT, AND SERVICES PROVIDED BY THE CONTRACTOR: Contractor shall provide all required tools, test equipment, consumables and all other equipment and materials necessary to completely perform the work. Contractor shall also provide his/her own temporary restroom facility.

SAFETY: Contractor shall follow all applicable OSHA regulations and plant safety regulations. All personnel working on site will be required to view the plant's safety presentation.

During the course of work, Contractor shall clean up all debris daily and remove all unnecessary equipment/material. Upon completion, Contractor shall leave the premises in a neat and clean condition with respect to his/her own operation.

SUBMITTALS:

1. Contractor shall submit a proposed schedule for the work scope, including an estimate of the number of hours and the number of employees required to perform the work.
2. Contractor must supply a minimum of three (3) references for recent work with similar scope.
3. List Labor and Materials separately on the bid sheet.
4. Provide an hourly rate sheet in the event that additional work is required while onsite.

SERVICE RATES: Contractor shall include in the Bid a firm lump sum price, including expenses, and all other standard terms and conditions which will be in effect during the project. The Bid shall also include firm unit pricing for adjustments that may be required for work outside of the specified scope of services.

The Platte Generating Station is NOT tax exempt and is subject to 7.0% sales tax. See the Nebraska Department of Revenue's web site at www.revenue.state.ne.us for contractor's tax information.

INSURANCE: Contractor shall comply with the attached Insurance Requirements.

SITE VISIT: A site visit prior to bidding is not required but highly recommended. Site visits can be arranged by contacting Ryan Schmitz at (308) 385-5495.

MINIMUM INSURANCE REQUIREMENTS
CITY OF GRAND ISLAND, NEBRASKA

The successful bidder shall obtain insurance from companies authorized to do business in Nebraska of such types and in such amounts as may be necessary to protect the Bidder and the interests of the City against hazards or risks of loss as hereinafter specified. This insurance shall cover all aspects of the Bidder's operations and completed operations. Failure to maintain adequate coverage shall not relieve Bidder of any contractual responsibility or obligation. Minimum insurance coverage shall be the amounts stated herein or the amounts required by applicable law, whichever are greater.

1. WORKERS COMPENSATION AND EMPLOYER'S LIABILITY

This insurance shall protect the Bidder against all claims under applicable State workers compensation laws. This insurance shall provide coverage in every state in which work for this project might be conducted. The liability limits shall not be less than the following:

| | |
|----------------------|-------------------------|
| Workers Compensation | Statutory Limits |
| Employers Liability | \$100,000 each accident |
| | \$100,000 each employee |
| | \$500,000 policy limit |

2. BUSINESS AUTOMOBILE LIABILITY

This insurance shall be written in comprehensive form and shall protect the Bidder, Bidder's employees, or subcontractors from claims due to the ownership, maintenance, or use of a motor vehicle. The liability limits shall not be less than the following:

| | |
|---------------------------------|----------------------------------|
| Bodily Injury & Property Damage | \$ 500,000 Combined Single Limit |
|---------------------------------|----------------------------------|

3. COMPREHENSIVE GENERAL LIABILITY

The comprehensive general liability coverage shall contain no exclusion relative to explosion, collapse, or underground property. The liability limits shall not be less than the following:

| | |
|---------------------------------|----------------------------|
| Bodily Injury & Property Damage | \$ 500,000 each occurrence |
| | \$1,000,000 aggregate |

4. UMBRELLA LIABILITY INSURANCE

This insurance shall protect the Bidder against claims in excess of the limits provided under employer's liability, comprehensive automobile liability, and commercial general liability policies. The umbrella policy shall follow the form of the primary insurance, including the application of the primary limits. The liability limits shall not be less than the following:

| | |
|---------------------------------|-------------------------------|
| Bodily Injury & Property Damage | \$1,000,000 each occurrence |
| | \$1,000,000 general aggregate |

5. ADDITIONAL REQUIREMENTS

The City may require insurance covering a Bidder or subcontractor more or less than the standard requirements set forth herein depending upon the character and extent of the work to be performed by such Bidder or subcontractor.

Insurance as herein required shall be maintained in force until the City releases the Bidder of all obligations under the Contract.

The Bidder shall provide and carry any additional insurance as may be required by special provisions of these specifications.

6. CERTIFICATE OF INSURANCE

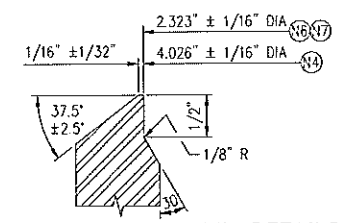
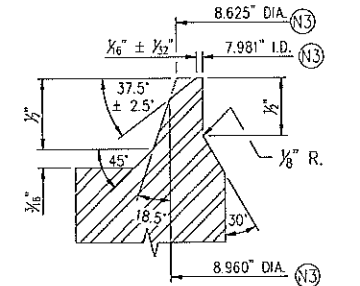
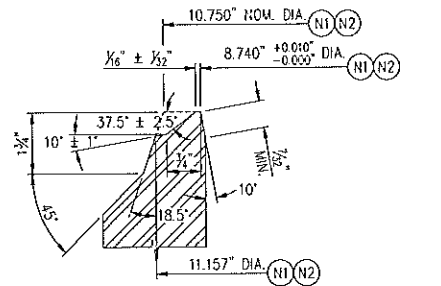
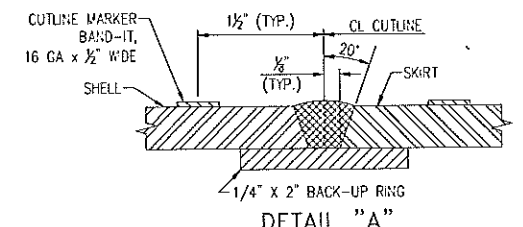
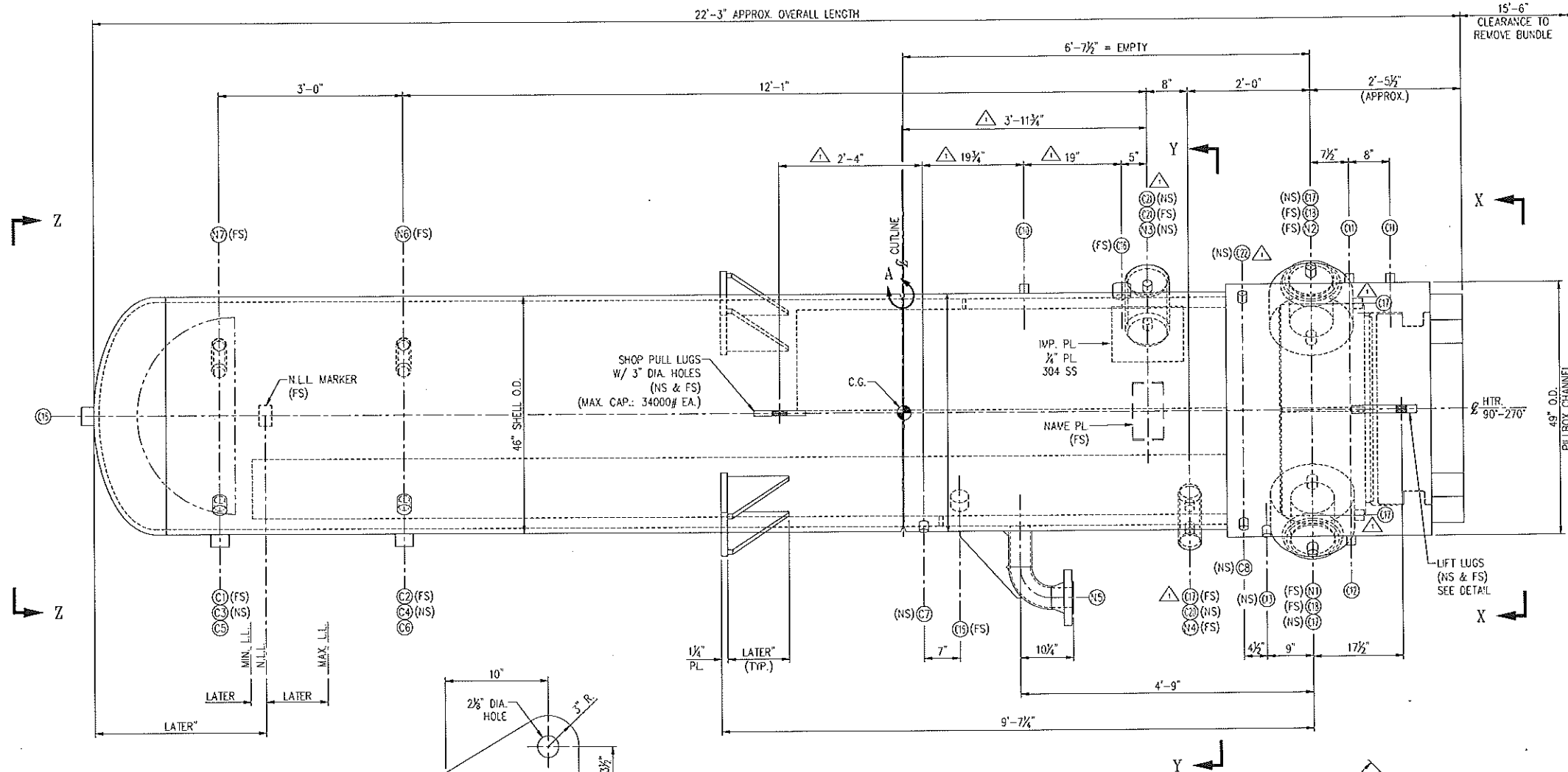
Satisfactory certificates of insurance shall be filed with the City prior to starting any work on this Contract. **The certificates shall show the City as an additional insured on all coverage except Workers Compensation. The certificate shall state that thirty (30) days written notice shall be given to the City before any policy is cancelled (strike the "endeavor to" wording often shown on certificate forms). If the Bidder cannot have the "endeavor to" language stricken, the Bidder may elect to provide a new certificate of insurance every thirty (30) days during the contract. Bidder shall immediately notify the City if there is any reduction of coverage because of revised limits or claims paid which affect the aggregate of any policy.**



10375 Slusher Dr.
 Santa Fe Springs, California 90670
 Telephone: (323) 726-0641
 Telefax: (323) 726-9592

FEEDWATER HEATER SPECIFICATION SHEET - BASE DESIGN COMPLETE HEATER

| | | | | | |
|---------------------------------|-----------------------|------------------------|-----------------|-------------------------|---------------------|
| Customer | City of Grand Island | | Date | 06-Nov-12 | |
| Engineer/ Consultant | | | Cust Ident. No. | | |
| Address | | | Mfg. Ident. No. | | |
| Plant Name | Platte | | Proposal No. | 12452F | |
| Plant Location | Nebraska | | Job No. | | |
| 1. Service of Unit | HP5 | | Item No. | | |
| 2. Size (in) | 44 x 204 | Type | U-Tubes | | Prepared By |
| 3. Surface Per Shell | | Effective | 4002 | Sq. Ft | H.S |
| 4. No. of Shells per Unit | 1 | No. of Units | 1 | | Total |
| | | | | | Position |
| | | | | | Verticle Ch-Up |
| PERFORMANCE OF ONE SHELL | | | | | |
| | | | Shell Side | | Tube Side |
| 5. Fluid Circulating | | Steam | Drains | | Feedwater |
| 6. Total Fluid Entering | Lb/Hr | 75,021 | | | 764,455 |
| 7. | | | | | 359.10 |
| 8. Inlet Enthalpy | Btu/Lb | 1353.06 | | | 455.68 |
| 9. Outlet Enthalpy | Btu/Lb | | 366.5 | | 381.9 |
| 10. Inlet Temperature | Deg. F | 694.4 | (471.8 SAT.) | | 471.8 |
| 11. Outlet Temperature | Deg. F | | 391.9 | | |
| 12. Operating Pressure | Psia | 523.80 | | | |
| 13. Number of Passes | | | 3 Zones | | 2 Pass |
| 14. Velocity | Ft/Sec | | | | 7.10 @ 426.9 Deg. F |
| 15. Pressure Drop | Psi | DSH | 1.80 | DC | 0.50 |
| | | | | | 9.80 |
| | | Heat Exchanged | Surface | LMTD | Transfer Rate |
| | | Btu / Hr | Sq. Ft | Deg. F | Btu/ |
| | | | Effective | | Hr*Sq. Ft* F |
| | | | | | Baffle |
| | | | | | Spacing |
| | | | | | in |
| | | | | | Reference |
| | | | | | Temperature |
| | | | | | Differences |
| 16. Desuperheating Zone | | 8,121,000 | 481.00 | 122.0 | 138 |
| 17. Condensing Zone | | 59,288,000 | 3020.00 | 32.6 | 603 |
| 18. Drain Subcooling Zone | | 6,594,000 | 501.00 | 31.2 | 422 |
| | | | | | TTD 0.0 Deg. F |
| | | | | | DCA 10.0 Deg. F |
| CONSTRUCTION-EACH SHELL | | | | | |
| | | | Shell Side | | Tube Side |
| 19. Design Pressure | Psig | | 625.00 /FV | | 3300 |
| 20. Test Pressure | Psig | | Per Code | | Per Code |
| 21. Design Temperature (Max) | Deg. F | | Shell | 500.0 Skirt | 750.0 |
| 22. Tubes Note 1 | (U's) | 845 | O.D. | 0.625 | Avg. 0.069 |
| 23. Shell | SA 516-70 | I.D. | 44 | Thickness | 1.000 |
| 24. Shell Cover | SA 516-70 | | | Shell Skirt | |
| 25. Channel | SA 350 LF2 | | | Channel Cover | SA-387-11-2 |
| 26. Tubesheet | SA 350 LF2 | | | Overlay | Stainless Steel |
| 27. Support Plates | Carbon Steel | Air Baffle | | Zone Baffle | Carbon Steel |
| 28. Shrouds: | DSH | DC | Carbon Steel | Impingement Baffles | SS 304 |
| 29. Type Joints | Shell Side | Welded | | Tube Side | Bolted |
| 30. Gasket | Shell | None | | Channel | Non Asbestos |
| 31. Connections | Steam-Inlet | 8" (W.E.) | | Drains- Inlets | " (W.E.) |
| 32. | Drains-Outlet | 4" (W.E.) | | | " (W.E.) |
| 33. | Feedwater-Inlet | 10" (W.E.) | | Feedwater Outlet | 10" (W.E.) |
| 34. Code Requirements | ASME SEC. VIII DIV. 1 | | | Heat Exchange Institute | |
| 35. Weights | Shell and Bundle | 41,000 | | Bundle | 31,000 |
| 36. Accessories | Shell Relief Valve | Optional | | Tube Side Relief Valve | Optional |
| 37. | Shell Gage Glass | | | | |
| 38. Method of Tube Attachment | Welded and Expanded | | | | |
| 39. Remarks: | (1) | SA-688 TP-304N SS | | | |
| 40. | (2) | | | | |
| 41. | (3) | 2 inner rows is 0.072. | | | |
| 42. | (4) | | | | |



DETAIL OF LIFTING LUG
2-REQ. 1/2" THK.

NOZZLE BEVEL DETAILS

| NOZZLE | SIZE | MATERIAL | SAI05 | DESCRIPTION |
|--------|----------|------------|------------|--------------------------------|
| ΔC22 | 1 3/4" | SW | SAI05 | DESUPERHEATING VENT (STARTING) |
| C21 | 2 3/4" | SW | SAI05 | PRESSURE GAGE CONNECTION |
| ΔC20 | 1 3/4" | SW | SAI05 | THERMOWELL CONNECTION |
| C19 | 2 1" | SW | SAI05 | T.B.D. |
| C18 | 2 1" | SW | SAI05 | PRESSURE GAGE CONNECTION |
| C17 | 5 Δ 1" | SW | SAI05 | THERMOWELL CONNECTION |
| C16 | 3 2" | SW | SAI05 | SHELL DRAIN |
| C13 | 1 3/4" | SW | SAI05 | CHANNEL DRAIN |
| C12 | 1 3/4" | SW | SAI05 | CHANNEL RELIEF VALVE |
| C11 | 2 3/4" | SW | SAI05 | CHANNEL VENT |
| C10 | 1 3/4" | SW | SAI05 | NITROGEN PORT |
| C8 | 1 3/4" | SW | SAI05 | DRANCOOLER VENT (STARTING) |
| C7 | 1 3/4" | SW | SAI05 | SHELL VENT (CONTINUOUS) |
| C6 | 1 2" | SW | SAI05 | LEVEL CONTROLLER |
| C5 | 1 2" | SW | SAI05 | LEVEL CONTROLLER |
| C4 | 1 1 1/2" | SW | SAI05 | LEVEL ALARM |
| C3 | 1 1 1/2" | SW | SAI05 | LEVEL ALARM |
| C2 | 1 1" | SW | SAI05 | SHELL GAGE GLASS |
| C1 | 1 1" | SW | SAI05 | SHELL GAGE GLASS |
| N7 | 1 2 1/2" | BW | SA106-B | LEVEL CONTROL STAND PIPE |
| N6 | 1 2 1/2" | BW | SA106-B | LEVEL CONTROL STAND PIPE |
| N5 | 1 3/4" | 600 ANS RF | SAI05 | SHELL RELIEF VALVE |
| N4 | 1 4" | BW | SA106-B | DRAINS OUTLET |
| N3 | 1 8" | BW | SA335-P11A | STEAM INLET |
| N2 | 1 10" | BW | SA350-LF2 | FEEDWATER OUTLET |
| N1 | 1 10" | BW | SA350-LF2 | FEEDWATER INLET |

- NOTES:
1. TOLERANCE PER HELL
2. ALL BOLT HOLES STRADDLE CENTERLINES
3. NOZZLE WELD BEVEL TOLERANCES PER ANS B
4. ALL COUPLERS ARE 500# & PLUGGED w/ C/SPL
PILES FOR TESTING & SHIPPING
5. CODE CONSTRUCTION ASME CODE SECTION VIII
DIV 1, 2010 EDITION INCLUDING 2011 ADDENDA

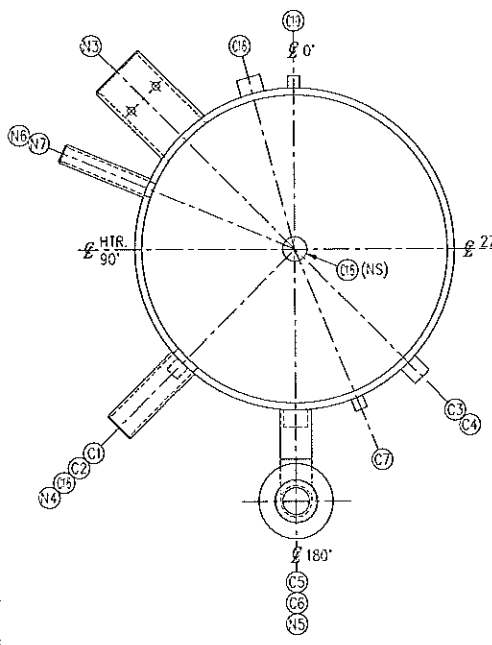
| GAS PURGING | SHELL SIDE | U-TUBE SIDE |
|-----------------|-------------------------|-------------------------|
| INLET NOZZLE | Ø TS ON COVER OF NOZZLE | Ø FS ON COVER OF NOZZLE |
| OUTLET NOZZLE | Ø TS ON COVER OF NOZZLE | Ø FS ON COVER OF NOZZLE |
| VOLUMES | 147 CU FT | 47 CU FT |
| APPROX WEIGHTS | LBS | |
| EMPTY | 41000 | |
| FULL OF WATER | 92700 | |
| OPERATING | 45500 | |
| REMOVABLE SHELL | 10700 | |

10375 SLOUSHER DRIVE
SANTA FE SPRING, CA 90403-1348
WWW.TEITHERMAL.COM
CORPORATE TEL: 323.728.0841
CORPORATE FAX: 323.728.5592
ENGINEERING FAX: 323.728.2388

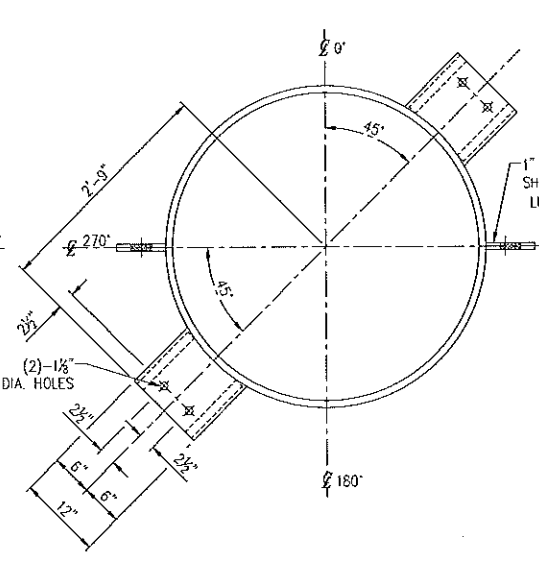
TEI
THERMAL ENGINEERING INTERNATIONAL

| FILE NO | SCALE | DATE |
|--------------------|---------------|-----------|
| 12-26 | 1/18 | 01/23/13 |
| CONTRACT #2012-359 | DESIGNER | C.Pomon |
| | CHECKER | JJ |
| | PROJECT ENGR | AH |
| | SALES ENGR | HS |
| | ENGRS RELEASE | T.O.Cerro |

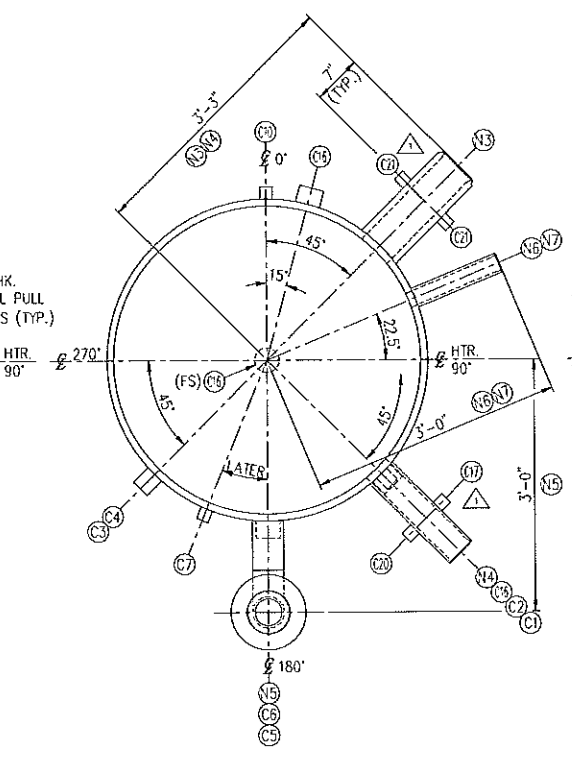
REPLACEMENT H.P. FEEDWATER HEATER #HP-5
SIZE: 44" O.D. x 204" x 4302 EFF 50 FT
TYPE: VERTICAL U-TUBE CHANNEL UP



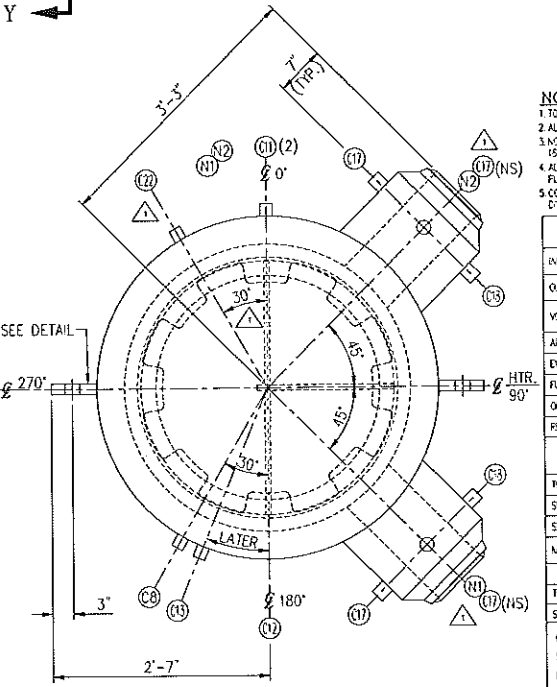
VIEW "Z"- "Z"
(CONNECTIONS ONLY)



SECTION "Y"- "Y"
(WITH LUGS & FIXED SUPPORTS ONLY)



SECTION "Y"- "Y"
(NOZZLES & CONNS ONLY)



VIEW "X"- "X"

| ITEM NO. | DESCRIPTION |
|----------|---|
| 1 | H.P. HEATER #5 |
| 2 | REPLACEMENT H.P. FEEDWATER HEATER #HP-5 |

| SCALE | DATE |
|---------------|-----------|
| 1/18 | 01/23/13 |
| DESIGNER | C.Pomon |
| CHECKER | JJ |
| PROJECT ENGR | AH |
| SALES ENGR | HS |
| ENGRS RELEASE | T.O.Cerro |

STRUTHERS WELLS

FEEDWATER HEATER SPECIFICATION SHEET

| | | | |
|--|---|--|-----------------------------------|
| CUSTOMER <u>Grand Island Nebraska</u> | | JOB <u>3-78-06-53028</u> | |
| ADDRESS <u>Lutz, Daily, and Brain, Cons'g. Eng'rs.</u> | | REF. _____ | |
| PLANT LOCATION <u>Grand Island, Nebraska</u> | | PROPOSAL <u>9875-K6</u> | DATE <u>11-1-77</u> |
| 1 | SERVICE OF UNIT <u>H.P. Feedwater Htr. No. 5</u> | ITEM NO. <u>5.0</u> | |
| 2 | SIZE <u>44- 192</u> TYPE <u>U-Tube Three Zone</u> | POSITION <u>Vert. Channel Up</u> | |
| 3 | SURFACE PER UNIT <u>3,313</u> SQ. FT. EFF <u>3,469</u> SQ. FT. TOTAL <u>1</u> = NO. OF UNITS | | |
| PERFORMANCE OF ONE UNIT | | | |
| | | SHELL SIDE | TUBE SIDE |
| 4 | FLUID CIRCULATED | STEAM | FEED WATER |
| 5 | TOTAL FLUID ENTERING #/HR. | 75,201 | 764,455 |
| 6 | INLET ENTHALPY BTU/# | 1353.06 | 359.10 |
| 7 | OUTLET ENTHALPY BTU/# | 366.26 | 455.68 |
| 8 | INLET TEMPERATURE °F | 694.4 (471.8 SAT.) | 381.90 |
| 9 | OUTLET TEMPERATURE °F | 391.90 | 471.80 |
| 10 | OPERATING PRESSURE P. S. I. A. | 523.8 | ---- |
| 11 | NUMBER OF PASSES PER SHELL | Three Zones (Two Shrouded) | |
| 12 | VELOCITY F. P. S. | 7.59 AT SP. GR. = 1. | |
| 13 | PRESSURE DROP P. S. I. | (A) 1.6 (C) 4.5 | 14.5 |
| | | HEAT EXCHANGED BTU/HR. | SURFACE SQ. FT. |
| 14 | (A) DESUPERHEATING SECTION | 7,719,771. | 472. |
| 15 | (B) CONDENSING SECTION | 59,502,795. | 2,341. |
| 16 | (C) DRAIN COOLING SECTION | 6,608,373. | 500. |
| | | M T D °F | TRANSFER RATE BTU/HR./SQ. FT./°F. |
| | | 129.27 | 126. |
| | | 32.66 | 778. |
| | | 32.32 | 408. |
| CONSTRUCTION OF ONE SHELL | | | |
| | | SHELL SIDE | TUBE SIDE |
| 17 | DESIGN PRESSURE PSI | 625. | 3,300. |
| 18 | TEST PRESSURE PSI | 938. | 4,950. |
| 19 | DESIGN TEMPERATURE °F | Skirt 750 - Shell 500 | |
| 20 | TUBES <u>70/30 Cu-Ni DSR</u> NO. <u>672U</u> S. D. <u>5/8</u> B. W. G. <u>16Av</u> S. E. T. L.* <u>16'-0"</u> PITCH <u>27/32 Δ</u> | | |
| 21 | SHELL <u>Steel</u> | I.D. <u>44</u> | THICKNESS <u>1 (A-515-70)</u> |
| 22 | SHELL COVER <u>Steel</u> WELDED TO SHELL | SHELL SKIRT <u>1/2Mo. 13/16Thk. (A-204, XR)</u> | |
| 23 | CHANNEL (SR) <u>Forged Steel</u> I.D. <u>39</u> | CHANNEL COVER <u>Stl. or Forged Stl. XR</u> | |
| 24 | TUBE SHEETS <u>Forged Steel</u> | IMPINGEMENT BAFFLE - STN'L'S STEEL <u>(1) 3/8Thk</u> | |
| 25 | SUPPORT PLATES - STEEL AIR BAFFLE - STEEL (2) | SEGMENTAL BAFFLE <u>Steel</u> | |
| 26 | SHROUDS (A) <u>Steel</u> | (C) <u>Steel</u> | |
| 27 | TYPE JOINTS - SHELL SIDE <u>Welded **</u> | TUBESIDE <u>Threaded</u> | |
| 28 | GASKETS - SHELL <u>None</u> | CHANNEL <u>Soft Steel</u> | |
| 29 | CONNECTIONS: STEAM-INLET (1) 8 DRAINS-INLET --- | --- SERIES <u>Weld Ends</u> | |
| 30 | DRAINS-OUTLET 4 | SERIES <u>Weld End</u> | |
| 31 | FEED WATER-INLET 10 OUTLET 10 | SERIES <u>Weld Ends</u> | |
| 32 | CODE REQUIREMENTS <u>ASME CODE SECTION VIII, DIV. I AND HEAT EXCHANGE INSTITUTE</u> | | |
| 33 | WEIGHTS - SHELL AND BUNDLE | BUNDLE ONLY | FULL OF WATER |
| 34 | ACCESSORIES: SHELL SAFETY VALVE <u>By others</u> | TUBE SIDE RELIEF VALVE <u>By others</u> | |
| 35 | SHELL DRAINER <u>By others</u> | SHELL GAGE GLASS <u>By others</u> | |
| 36 | REMARKS: (SR) INDICATES STRESS RELIEVING (XR) INDICATES RADIOGRAPHING | | |
| 37 | "U" TUBES WILL BE DUAL GAGE WHERE REQUIRED TO COMPENSATE FOR BEND THINNING <u>Three(3) in</u> | | |
| 38 | * S. E. T. L. - STRAIGHT EFFECTIVE TUBE LENGTH. <u>191 tubes 1st & 2nd pass. rows 16 Min.</u> | | |
| | ** Stainless steel flame protecting band provided at cut point. | | |
| | 1. Tubes are Cufenloy 30. 2. Bends stress relieved after bending. 3. Tubes are welded to overlaid tubesheet. 4. Pass partition cover required (bolted). 5. Tube and shell sides are nitrogen blanketed. Page 18 of 19 | | |
| | * 145 tubes in 1st and 2nd pass + 336 tubes in 3rd and 4th pass 14'-1" SETL. | | |

STRUTHERS WELLS

FEEDWATER HEATER SPECIFICATION SHEET

| | | | | | |
|---|--|--|---|-----------------------------------|---------------|
| CUSTOMER <u>Grand Island, Nebraska</u> | | JOB <u>3-78-06-53027</u> | | | |
| ADDRESS <u>Lutz, Daily, & Brain, Cons'g. Eng'rs.</u> | | REF. _____ | | | |
| PLANT LOCATION <u>Grand Island, Nebraska</u> | | PROPOSAL <u>9875-K6</u> | | | |
| | | DATE <u>10-31-77</u> | | | |
| 1 | SERVICE OF UNIT <u>H.P. Feedwater Htr. No. 4</u> | ITEM NO. <u>4.0</u> | | | |
| 2 | SIZE <u>44-186</u> TYPE <u>U-Tube Three Zone</u> | POSITION <u>Vert. Channel Up</u> | | | |
| 3 | SURFACE PER UNIT <u>2,914</u> SQ. FT. EFF. <u>3,046</u> SQ. FT. TOTAL |] = NO. OF UNITS | | | |
| PERFORMANCE OF ONE UNIT | | | | | |
| | | SHELL SIDE | | TUBE SIDE | |
| 4 | FLUID CIRCULATED | STEAM DRAINS | | FEED WATER | |
| 5 | TOTAL FLUID ENTERING #/HR. | 36,560 75,201 --- | | 764,455 | |
| 6 | INLET ENTHALPY BTU/# | 1419.58 366.39 --- | | 299.84 | |
| 7 | OUTLET ENTHALPY BTU/# | 305.58 | | 359.10 | |
| 8 | INLET TEMPERATURE °F | 788.4 (381.9 SAT.) --- | | 324.70 | |
| 9 | OUTLET TEMPERATURE °F | 334.70 | | 381.90 | |
| 10 | OPERATING PRESSURE P. S. I. A. | 200.20 | | ---- | |
| 11 | NUMBER OF PASSES PER SHELL | Three Zones (Two Shrouded) | | Four | |
| 12 | VELOCITY F. P. S. | 8.01 | | AT SP. GR. = 1. | |
| 13 | PRESSURE DROP P. S. I. | (A) 2.1 (C) 5.0 | | 14.9 | |
| | | HEAT EXCHANGED BTU/HR | | SURFACE SQ. FT. | |
| | | M T D °F | | TRANSFER RATE BTU/HR./SQ. FT./°F. | |
| 14 | (A) DESUPERHEATING SECTION | 6,188,602. | | 387. | |
| 15 | (B) CONDENSING SECTION | 33,622,666. | | 1,941. | |
| 16 | (C) DRAIN COOLING SECTION | 5,489,793. | | 586. | |
| | | 212.29 | | 75. | |
| | | 21.61 | | 802. | |
| | | 24.06 | | 389. | |
| CONSTRUCTION OF ONE SHELL | | | | | |
| | | SHELL SIDE | | TUBE SIDE | |
| 17 | DESIGN PRESSURE PSI | 250. | | 3,300. | |
| 18 | TEST PRESSURE PSI | 375. | | 4,950. | |
| 19 | DESIGN TEMPERATURE °F | Skirt 850 - Shell 410 | | 410. | |
| 20 | TUBES <u>70/30 Cu-Ni DSR</u> NO. <u>602U's</u> O. D. <u>5/8</u> B. W. G. <u>17</u> Min. S. E. T. L. <u>15'-6"</u> PITCH <u>27/32 Δ</u> | | | | |
| 21 | SHELL <u>Steel</u> | I. D. <u>44</u> | | THICKNESS <u>1/2(A-285-C)</u> | |
| 22 | SHELL COVER <u>Steel</u> WELDED TO SHELL | SHELL SKIRT <u>C-1/2Mo. 1/2Thk. (A-204-B)</u> | | | |
| 23 | CHANNEL (SR) <u>Forged Steel</u> I. D. <u>37</u> | CHANNEL COVER <u>Forged Steel</u> | | | |
| 24 | TUBE SHEETS <u>Forged Steel</u> | IMPINGEMENT BAFFLE - STNLS STEEL (2) <u>3/8"</u> | | | |
| 25 | SUPPORT PLATES - STEEL AIR BAFFLE - STEEL (2) | SEGMENTAL BAFFLE <u>Steel</u> | | | |
| 26 | SHROUDS (A) <u>Steel</u> | (C) <u>Steel</u> | | | |
| 27 | TYPE JOINTS - SHELL SIDE <u>Welded **</u> | TUBESIDE <u>Threaded</u> | | | |
| 28 | GASKETS - SHELL <u>None</u> | CHANNEL <u>Soft Steel</u> | | | |
| 29 | CONNECTIONS: STEAM-INLET (1) 8 | DRAINS-INLET 4 | | --- SERIES <u>Weld Ends</u> | |
| 30 | | DRAINS-OUTLET 6 | | SERIES <u>Weld End</u> | |
| 31 | | FEED WATER-INLET 10 | | OUTLET 10 | |
| 32 | | SERIES <u>Weld Ends</u> | | | |
| 32 | CODE REQUIREMENTS <u>ASME CODE SECTION VIII, DIV. I & HEAT EXCHANGE INSTITUTE</u> | | | | |
| 33 | WEIGHTS - SHELL AND BUNDLE | | BUNDLE ONLY | | FULL OF WATER |
| 34 | ACCESSORIES: SHELL SAFETY VALVE <u>By others</u> | | TUBE SIDE RELIEF VALVE <u>By others</u> | | |
| 35 | SHELL DRAINER <u>By others</u> | | SHELL GAGE GLASS <u>By others</u> | | |
| 36 | REMARKS: (SR) INDICATES STRESS RELIEVING (XR) INDICATES RADIOGRAPHING | | | | |
| 37 | "U" TUBES WILL BE DUAL GAGE WHERE REQUIRED TO COMPENSATE FOR BEND THINNING <u>Four (4) inner</u> | | | | |
| 38 | * S. E. T. L. - STRAIGHT EFFECTIVE TUBE LENGTH <u>231</u> tubes in 1st & 2nd pass. rows <u>17/16</u> min. | | | | |
| ** <u>Stainless steel flame protecting band provided at cut point.</u> | | | | | |
| 1. <u>Tubes are Cufenloy 30.</u> | | | | | |
| 2. <u>Bends stress relieved after bending.</u> 3. <u>Tubes are welded to overlaid tubesheet.</u> | | | | | |
| 4. <u>Pass partition cover required (bolted).</u> 5. <u>Tube & shell sides are nitrogen</u> | | | | | |
| blanketed. * <u>70</u> tubes in 1st and 2nd pass + <u>301</u> in 3rd and 4th pass <u>13'-8"</u> SETL. | | | | | |