Oscoda Area Schools
3550 East River Road
Oscoda, Michigan 48750

Bids for Replacing Boiler at Oscoda Area High School

Scope of Work

The following scope of work shall be the responsibility of the installing contractor, and all costs associated with this scope of work shall be included in each contractor's bid.

The scope of work is as follows:

- Before commencement of work, the installing contractor shall provide the owner with a copy of the contractor's boiler installers license, mechanical contractors license, and certificate of insurance. The owner will review the licenses and certificate of insurance provided, and reserves the right to reject any contractor if they are not properly licensed or insured, or if they feel the information provided is not suitable for such a project.

- Installing contractor shall be responsible for all labor, equipment, and costs associated with the removal and disposal of the east boiler at Oscoda Area High School.

- Provide and install a new Hurst Boiler with Weishaupt burner per the specifications provided. Submittals of the boiler and burner shall be provided for owner's approval.

- Asbestos abatement shall be the responsibility of the installing contractor.

- The boiler/burner start-up shall be performed by a factory authorized representative, and it will be the responsibility of the installing contractor to include the costs of such a start-up in their bid.

- Piping modifications to adapt the new boiler piping to the existing piping. The piping arrangement and all materials used shall be done in accordance with State and local codes, and per the manufacturer's installation instructions.

- All new piping shall be insulated. The insulation of the new piping shall match the thickness of the existing insulation, and shall meet or exceed the R-value of the existing insulation.

- All bids shall include the removal and disposal of the existing double exterior doors, and the installation of a new roll-up door at the same location so as to accommodate the installation of the new boiler. The installing contractor shall provide the owner with a submittal of the new door and the door must first meet the approval of the owner.

- Removal and disposal of one (1) remote condensate receiver system, with a dual pump condensate receiver system to match the capacity of the existing system. The installing contractor shall provide the owner with a submittal of the new condensate receiver system and the new system must first meet the approval of the owner.

- All bids shall include the costs of all applicable taxes, insurance, shipping, boiler permit fees, and mechanical permit fees.

- All work shall be performed in accordance with all State and local codes.

- The work is to be done between June 11, 2009 and July 31, 2009. The project must be completed by July 31, 2008. In the event that the current boiler at Oscoda Area High School becomes inoperable, the project would have to be completed as soon as possible.

SPECIFICATIONS – BOILER/BURNER: OSCODA SCHOOLS, MICHIGAN

1.0 Boiler Characteristics (Steam)
2.0 General Boiler Design
3.0 Steam Boiler Trim
4.0 Burner and Controls
5.0 Efficiency Guarantee
6.0 Warranty
7.0 Execution

1.0 Boiler Characteristics (Steam)

1.1 The Steam Boiler shall be Hurst Boiler & Welding Co., Inc. Series 400, 300 BHP designed for **15** PSIG steam. The maximum operating pressure shall be 12 PSIG.
1.2 The boiler shall have a maximum output of 10,350 lbs./hr, or 300 horsepower when fired with natural gas with 1000 Btu/cu-ft. Electrical power available shall be 208 Volt 3 Phase 60 Cycle.

2.0 General Boiler Design

2.1 The boiler shall be a three-pass wetback horizontal Firetube type boiler with five (5) square feet of heating surface per rated boiler horsepower. It shall be mounted on a heavy steel frame with integral forced draft burner and burner controls. The boiler shall be approved by Underwriters Laboratories and shall bear the UL label.
2. 1.1 The boiler shall be ready for immediate mounting on floor or simple foundation and ready for attachment of water, fuel, electrical, vent, and blowdown connections.
2.1.2 The boiler shall be built to comply with the following insurance and codes UL, IRI Insurance, and ASME CSD-1.

2.2 Boiler Shell (Steam)

2. 2.1 The boiler shell must be constructed in accordance with ASME Boiler Code, Section IV and must receive authorized boiler inspection prior to shipment. A copy of the inspection report shall be furnished to the purchaser.

2.2.2 The boiler shall be furnished with four (4) 3”x4” handholes in the boiler shell. One (1) 12”x16” manhole to be provided on boilers over 48” in diameter. Provide a plugged coupling in the front tube sheet to provide for furnace tube inspection. Two lifting lugs must be located on top of the boiler.

2.2.3 The front and rear doors shall be hinged and davited. Doors are to be sealed with heat resistant gaskets and fastened using lugs and brass nuts. Design doors so front and rear tube sheets and all flues are fully accessible for inspection and cleaning when doors are open.

2.2.4 Provide a baffle in the boiler shell below the main steam outlet flange to provide for dry steam with no water carry over.

Provide a baffle at the feedwater inlet to temper the water.

2.2.5 The exhaust gas vent shall be located at the rear of the boiler and be capable of supporting 2000 lbs. The boiler vent shall include a locking blade damper and a stack thermometer.

2.2.6 Provide observation ports at each end of boiler for inspection of flame conditions. Provide a plugged test port at the rear of the furnace for testing of furnace backpressure.

2.2.7 Unit(s) shall be provided with minimum 2” thick mineral wool insulation. The boiler shall be lagged with a 22-gauge thick carbon steel jacket. The boiler jacket shall feature a bottom side primer of polyurethane resin base coat of .2 mil. dry finish thickness and a final coat of .4 mil. dry finish thickness of Valspar. The top side (exterior) of the jacket shall feature a primer of .3 mil. dry finish thickness and a final coat of .8 mil. dry finish thickness of Valspar polyurethane resin based paint. The application of the paint is to be automated roller type and is to be oven dried. The exterior finish of the boiler jacket shall have a limited warranty by the manufacturer for five (5)) years from date of manufacture for chalking, fade, peeling, or blistering.

2.2.8 The entire boiler base frame and other components shall be factory painted before shipment, using a hard-finish enamel coating.
2.2.9 High-pressure steam boilers 300hp & larger must have a corrugated furnace. Low-pressure steam & hot water boilers may have a straight furnace. Furnace heat release shall not exceed 160,000 Btu per cubic foot of furnace volume. Provide a refractory plug in rear turn around for inspection and access to the furnace.
2.2.10 Platform & Ladder
The boiler shall include a manufacturer's fabricated platform & ladder in accordance with Michigan Code.

3.0 Steam Boiler Trim

3.1 Water Column
A water column shall be located on the right hand side of the boiler complete with try-cocks, gauge glass set, and water column blowdown valves.

3. 1.1 Feedwater Pump Control
The boiler feedwater pump control shall be included as an integral part of the water column to automatically actuate a motor driven feedwater pump to maintain the boiler water level within normal limits. McDonnell & Miller #157E. Include Shunt Switch.

3.1.2 Low Water Cutoff
The low water cutoff shall be included as an integral part of the boiler feedwater control wired into the burner control circuit to pre-vent burner operation if the boiler water level falls below a safe operating level.

3.1.3 Auxiliary Low Water Cut-off
Auxiliary low water cut-off shall be included, piped to the vessel, and wired to the burner control circuit. A manual reset device shall be used on this control.

3.1.4 Steam Pressure Gauge

The steam pressure gauge shall be located at the front of the boiler and include cock and test connection.

3.1.5 Safety Valves

Safety valves of a type and size to comply with ASME Code requirements shall be shipped loose.

3.1.6 Steam Pressure Controls
The steam pressure control to regulate burner operation shall be mounted near the water column. Controls shall be a high limit (manual reset), operating limit (auto reset), and firing rate control.

4.0 Burner General

4.0.1 Burner shall be Weishaupt

4.0.2 Regulation:

Fully modulating with 8:1 Turndown

4.0.3 Burner Housing:

Cast aluminum burner housing

The burner shall be capable of hinging open to the open to the left or the right, and incorporating a self checking differential combustion air pressure switch and burner flange safety interlock switch. The housing shall incorporate a large sight glass for flame viewing and a removable cover to allow free access to all serviceable components. The burner oil supply and return connections shall include stainless steel braided connection hoses.

4.0.4 Fan:

The combustion air fan shall be cast aluminum backward inclined, statically and dynamically balanced.

4.0.5 Air Intake:

Air intake shall consist of multiple cast aluminum air intake vanes on the suction side air regulation.

Air louvers shall be controlled by a dedicated servo drive repeatable to 0.2 of an angular degree. Air intake shall include sound attenuating material.

4.0.6 Combustion Head:

Stainless steel alloy flame tube

Stainless steel alloy diffuser assembly
Flame tube and diffuser assembly shall have a temperature rating of > 1470° F
Diffuser, ignition electrodes, mixing assembly, and all serviceable components shall be accessible without need for burner removal.

The gas butterfly valve shall be integral to the burner allowing the gas train to be connected to the left or the right of the burner and be controlled by a dedicated servo drive repeatable to 0.2 of an angular degree.

4.0.7 Pressure Side Air Regulation :

In addition to the suction side air regulation, the combustion air shall also be regulated on the pressure side by a sliding diffuser assembly driven by a dedicated servo drive repeatable to 0.2 of an angular degree to change the delta P across the diffuser and maintain optimal mixing pressure in accordance with the burner firing rate.

4.0.8 Fuel Air Ratio :

The entire fuel air ratio control system shall be free of linkages with each control component being individually controlled by dedicated servo drives programmable via the AZL keypad.

All functions including burner history, commissioned values, operating parameters and pressure temperature settings shall be accessible / adjustable without the need for laptop computer or other special tools.

There shall be four levels of password protection and both the AZL programming pad and the main module shall hold the programmed data with capability of uploading / downloading from one to the other should either module be damaged

The fuel air ratio shall be controlled by individual servomotors controlling suction side air, pressure side air and gas flow control valve.

The fuel air ratio shall be infinitely adjustable throughout the entire firing range with separate and independent programmable curve via the WFM programming pad AZL.

4.0.9 Emissions:

The burner shall operate on the staged combustion principle with NOx levels not exceeding 50 ppm gas firing.

4.0.10 Performance:

The turndown ratio shall be a minimum of 8:1 for gas firing. The O2 level shall be a maximum of 3% at high fire and 4.5% at low fire. Co shall not exceed 20 PPM at all rates.

4.0.11 Motor:

Three phase TEFC blower motor fully compatible for use with variable frequency drive.

Motor starting shall be accomplished using a soft start device to minimize the current draw at start up.

4.0.12 Controls:

Flame safeguard system shall be Siemens WFM (LMV) c/w inbuilt PID pressure / temperature control and time / temperature adjustable cold start function to protect the boiler from thermal shock.

The burner shall be capable of communication with building automation via “Modbus”

4.0.13 Firing Sequence:

The burner operation shall be full modulation with minimum 8:1 Turndown and have low fire start.

4.0.14 Gas Pilot

The gas pilot shall be the premix type with automatic electric ignition, complete with electronic flame scanner to monitor the pilot so the primary fuel valve cannot open until pilot flame has been established. The gas pilot train is to consist of shut-off cock, pressure regulator, and automatic gas valve.

4.0.15 Gas Train

The main gas train shall be Siemens and shall be mounted on the boiler and shall include the following: A manually operated gas cock at the inlet to the train, a gas pressure reducing regulator, a motorized automatic gas valve, a second automatic gas valve, and a manually operated leak test cock located down stream from the automatic gas valve. The gas train shall include high and low gas pressure switches to monitor the gas pressure. Available inlet gas pressure is 2 PSIG.

4.0.16 Flame Safeguard

The electronic flame safeguard shall be complete with all necessary accessories and devices to control ignition and starting and stopping of the burner, to provide pre-combustion purge and post-combustion purge, and to shut down the burner on failure of ignition, pilot, or main flame by the electronic scanner.

4.0.17 Control Panel

The factory pre-wired control panel should be mounted on the burner proper or on the side of the boiler to allow for ease of maintenance and troubleshooting. The control panel shall contain the following items: control circuit transformer, motor starter, control circuit fuse, numbered terminal strips, and indicating lamps for major functions.

4.0.18 Codes and Standards

The boiler shall be inspected by an authorized inspector and be registered with the National Board of Boiler and Pressure Vessel Inspectors. The boiler shall carry an Underwriters Laboratory label "B", The burner unit shall meet the requirements of **UL or ETL** The boiler shall be rated and listed in accordance with the American Boiler Manufacturers Association (A.B.M.A.) "Package Fire tube Ratings."

5.0 Efficiency Guarantee:

5.1 The boiler must be guaranteed to operate at a minimum fuel-to-steam efficiency of 83 percent at 100 percent of rating when burning natural gas.

6.0 Warranty

6.1 All equipment is to be guaranteed against defects in materials and/or workmanship for a period of 15 months from date of shipment or 12 months from start-up, whichever occurs first.

7.0 Execution

7.1 Start-up Service

7.1.1 After boiler installation is completed; the manufacturer shall provide the services of an authorized field representative for starting the unit and training the operator at no additional costs.

7.1.2. A factory approved and authorized start-up report shall be submitted to the customer/user at the time of start-up.

BID FORM

To: **Oscoda Area Schools**
Board of Education Office
Attn: Christine Beardsley, Superintendent of Schools
3550 East River Road
Oscoda, Michigan 48750

Project: **Bids for Replacing Boiler at Oscoda Area High School**

Date: _____

Submitted by:

_____
(full name)

_____

_____
(full address)

_____
(telephone) **(facsimile)** **(e-mail address)**

1. OFFER
Having examined the Place of The Work and all matters referred to in the Invitation to Bid and Scope of Work for the Bids for Replacing Boiler at Oscoda Area High School dated **December 2, 2008, the undersigned, hereby offers to enter into a Contract to perform the Work for the**

Sum of: $_____ (numerical)

$_____ dollars in lawful (written) money of the United States of America.

* **We have included the required security deposit as required by the Invitation to Bid.**

* **All applicable federal taxes are included and the State of Michigan taxes are included in the Bid Sum.**

* **We have included the costs of any required construction permits and inspections in the bid sum.**

2. ACCEPTANCE
This offer shall be open to acceptance and is irrevocable for sixty (60) days from the bid closing date.

If this bid is accepted by the Owner within the time period stated above, we will:

* **Execute the Agreement within seven (7) days of receipt of Notice to Award.**
* **Furnish the required bonds within seven (7) days of receipt of Notice to Award.**
* **Commence work within seven (7) days after written Letter of Contract Award of this bid.**

3. CONTRACT TIME
* **The work is to be done between June 11, 2009 and July 31, 2009. The project must be completed by July 31, 2008. In the event that the current boiler at Oscoda Area High School becomes inoperable, the project would have to be completed as soon as possible.**

4. BID FORM SIGNATURES(S)
The Corporate Seal of

_____

(Bidder -- print the full name of your firm)

was hereunto affixed in the full presence of:

_____

(Authorized Signing Officer) **(Title)**

(SEAL)

_____

(Witnessed By) **(Title)**