



**PUBLIC WORKS DEPARTMENT  
MAINTENANCE DIVISION**

**PROJECT TITLE:  
REPLACING BOILERS AND HOT WATER STORAGE TANK  
AT BURGESS GYMNASIUM  
PROJECT NUMBER 27-033**

**INVITATION FOR INFORMAL BID (IFIB)**

**IFIB DUE DATE: WEDNESDAY, MARCH 10, 2010, 2:00 P.M.**

**A NON-MANDATORY PRE-BID WALK THROUGH IS SCHEDULED FOR  
TUESDAY, MARCH 2, 2010, 2:00 P.M.**

REQUESTS FOR ELECTRONIC BID DOCUMENTS SHOULD BE SENT TO WENDY DOUGHERTY, OFFICE ASSISTANT, AT [WDOUGHERTY@MENLOPARK.ORG](mailto:WDOUGHERTY@MENLOPARK.ORG) OR CALLING 1-650-330-6780.

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**INVITATION FOR INFORMAL BID (IFIB) SUMMARY**

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**NOTICE INVITING INFORMAL SEALED BIDS**  
**for**  
**Replacing Boilers and Hot Water Storage Tank**  
**At Burgess Gymnasium**  
**Issued: February 17, 2010**

**Pre-Bid Walk Through- March 2, 2010 at 2:00 PM at Burgess  
Gymnastics 501 Laurel Street Menlo Park, Ca.**

**Bids Due: March 10, 2010 at 2:00 PM at the City of Menlo Park  
Corporation Yard located at 333 Burgess Drive**

INFORMAL SEALED BIDS will be received by the Assistant Public Works Director or his/her designee, of the City of Menlo Park until **March 10, 2010 at 2:00 PM at the City of Menlo Park Corporation Yard located at 333 Burgess Drive at which time sealed bids will be opened.** Please submit sealed bids addressed to:

Carl Thomas, Facilities Supervisor  
City of Menlo Park – Burgess Gymnasium Replacement Boilers and Hot Water Tank  
333 Burgess Drive Menlo Park, CA 94025

The project consists of furnishing all labor, materials, equipment, and performing all work necessary and incidental to remove and dispose of the existing Bryan Boiler that is currently serving the heating and domestic water systems and removing and disposing of the existing vertical hot water storage tank that includes an indirect tube bundle insert. Supply and install two (2) RBI High Efficiency Vertically Fired Copper Fin Boilers one (1) For Heating and one (1) Domestic and 600 Gallon ADME Hot Water Storage tank that shall include a portable water internal lining. The boilers and hot water storage tank are located at 501 Laurel Street. The estimated cost of the project is **\$48,000.**

## **INVITATION FOR INFORMAL BID (IFIB) SUMMARY**

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All work shall be done in accordance with the City of Menlo Park Building Code requirements and State Standard Specifications. Bidders may obtain copies of the bid documents from the Public Works Department Corporation Yard 333 Burgess Drive, Menlo Park, California. Electronic documents may be obtained via email at no charge. Requests for electronic bid documents should be sent to Wendy Dougherty, Office Assistant at [wdougherty@menlopark.org](mailto:wdougherty@menlopark.org) or calling 650-330-6780. Any questions concerning the bid documents shall be addressed to Carl Thomas at 650-330-6780.

Pursuant to Section 1770, et. Seq. of the California Labor Code, the successful bidder and all subcontractors shall pay not less than the prevailing rate of per diem wages as determined by the Director of the California Department of Industrial Relations. Prevailing wage rates and information is available on the Internet at <http://www.dir.ca.gov>.

Per California Civil Code Section 3247, a payment bond in the amount of 100% of the bid total will be required from the successful bidder. The bond must be provided within 10 calendar days from notice of award and prior to the performance of any work.

All bidders shall be licensed under the provisions of the Business and Professions Code to do the type of work contemplated in the project. In accordance with provisions of California Public Contract Code Section 3300, the City has determined that the Contractor shall possess a valid **Class A or B License or Class C-4 License applicable to the work to be performed** at the time that the bid is submitted. Failure to possess the specified license shall render the bid non-responsive.

Each bidder shall submit with its bid a statement setting forth its experience on the forms included in the Contract Proposal.

The City reserves the right to reject any or all bids; to make any awards or any rejections in what it alone considers to be in the best interest of the City, and waive any informalities or irregularities in the bids. The successful bidder must insure that employees and applicants for employment are not discriminated against on the basis of age, color, race, national origin, ancestry, religion, sex, sexual preference, marital status, and shall comply with the Americans with Disabilities Act.

## **INVITATION FOR INFORMAL BID (IFIB) SUMMARY**

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### **ITEM PRICE SCHEDULE**

Lump Sum

### **SPECIAL PROVISIONS**

The Contractor shall procure insurance against claims for injuries to persons or damages to property which may arise from or in connection to the performance of the work by the Contractor, his/her agents, representatives, employees or subcontractors and maintain it for the duration of the Contract. The cost of such insurance shall be considered included in the price for Contract lump sum of work involved and no additional compensation will be allowed therefore.

### **MINIMUM LIMITS OF INSURANCE**

- Commercial General Liability of \$2,000,000 combined single limit, annual aggregate for bodily injury, personal injury and property damage; and with a minimum of \$1,000,000 per occurrence.
- Automobile liability of \$1,000,000 combined single limit per accident for bodily injury and property damage.
- Workers compensation limits as required by the Labor Code of the State of California.
- Employer's liability limits of \$1,000,000 per accident.

A performance bond in the amount of 100% of the bid total will be required from the successful bidder.

### **SCHEDULE**

The contractor will be expected to begin work upon receipt of the notice to proceed and, weather permitting, complete the project within twenty (20) working days. Hours of construction shall be Monday–Friday 7am-5pm.

**EXHIBIT "A" PROPOSAL**

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PROPOSALS MUST BE SUBMITTED ON THE ORIGINAL FORMS (BLUE SHEETS) SUPPLIED WITH YOUR CONTRACT BOOK. COPIES OF THIS DOCUMENT ARE NOT ACCEPTABLE.



**EXHIBIT "A"  
PROPOSAL  
CITY OF MENLO PARK  
STATE OF CALIFORNIA**

**FOR**

**REPLACING BOILERS AND  
HOT WATER STORAGE TANK AT BURGESS GYMNASIUM  
PROJECT NO. 27-033**

NAME OF BIDDER: \_\_\_\_\_

BUSINESS ADDRESS: \_\_\_\_\_

CITY, STATE, ZIP: \_\_\_\_\_

LICENSE NO.: \_\_\_\_\_ CLASS: \_\_\_\_\_ EXP. DATE: \_\_\_\_\_

TAX I.D. NO.: \_\_\_\_\_

TELEPHONE NO: (    ) \_\_\_\_\_ FAX NO: (    ) \_\_\_\_\_

The work for which this Proposal is submitted is for construction in accordance with the Contract Documents, including the Special Provisions, the Agreement, the project Plans described below, and the State of California Department of Transportation Standard Specifications, May 2009 Edition. The Contract Book shall be used in conjunction with the above documents, and the State of California Department of Transportation Labor Surcharge and Equipment Rental Rates, and the State Department of Industrial Relations General Prevailing Wage Rates current at the bid opening date.

The project Plans for the work to be done are entitled **"REPLACING BOILERS AND HOT WATER STORAGE TANK AT BURGESS GYMNASIUM"** and are incorporated in the Special Provisions.

## EXHIBIT "A" PROPOSAL

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The project consists of furnishing all labor, materials, equipment, and performing all work necessary and incidental to remove and dispose of the existing Bryan Boiler that is currently serving the heating and domestic water systems and removing and disposing of the existing vertical hot water storage tank that includes an indirect tube bundle insert. Supply and install two (2) RBI High Efficiency Vertically Fired Copper Fin Boilers one (1) For Heating and one (1) Domestic and 600 Gallon ADME Hot Water Storage tank that shall include a portable water internal lining complete in place and ready for use, as indicated on the technical specifications.

The project shall be awarded to the lowest responsible bidder who meets all of the Proposal Requirements, and the requirements of the Contract Documents.

The Bidder shall set forth for each item of work a unit price and a total for the item, and for each lump sum item a total for the item, all in clearly legible figures in the respective spaces provided for this purpose. In the case of unit basis items, the amount set forth under the "Total" column shall be the extension of the item price bid on the basis of the estimated quantity for the item.

In case of conflict between an item price in words and the price in figures, the price in words shall prevail. In case of discrepancy between an item price and the total set forth for a unit basis item, the item price shall prevail. However, if the amount set forth as an item price is ambiguous, illegible or uncertain for any cause, or is omitted, or is the same amount as the entry in the "Total" column, then the amount set forth in the "Total" column for the item shall prevail and shall be divided by the estimated quantity for the item and the price thus obtained shall be the item price.

Failure to provide the required information, or if information provided is subsequently proved false, the Proposal shall be considered as non-responsive and shall be grounds for rejection of the bid.

The undersigned, as Bidder, declares that the only persons or parties interested in this Proposal as principals are those named herein; that this Proposal is made without collusion with any other person, firm or corporation; careful examination of the location of the proposed work, and the annexed proposed form of Contract, and the Plans therein referred to; and the undersigned proposes and agrees, if this Proposal is accepted, and that they will Contract with the City of Menlo Park in the form of the copy of the Contract annexed hereto, to provide all necessary machinery, tools, apparatus and other means of construction, and to do all the work and furnish all the materials specified in the Contract, in the manner and time therein prescribed, and according to the requirements of the Engineer as therein set forth, and they will take in full payment therefore in the amounts shown on the following Item Price Schedule, to wit:

**EXHIBIT "A" PROPOSAL**

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**ITEM PRICE SCHEDULE**

<b>Item No.</b>	<b>Item Description</b>	<b>Item Price (In words)</b>	<b>Total Contract Sum (In figures)</b>
1	The project consists of furnishing all labor, materials, equipment, and performing all work necessary and incidental to remove and dispose of the existing Bryan Boiler and existing vertical hot water storage tank that includes an indirect tube bundle insert. Supply and install two (2) RBI High Efficiency Vertically Fired Copper Fin Boilers one (1) For Heating and one (1) Domestic and 600 Gallon ADME Hot Water Storage tank that shall include a portable water internal lining.	DOLLARS	\$
<b>TOTAL</b>		DOLLARS	\$

(Abbreviations: LF=linear feet, SF=square feet, SY=square yards, CY=cubic yards, TN=tons, LS=lump sum, EA=each)

Prices shall be good for 60 days from opening of bids.

**EXHIBIT "A" PROPOSAL**

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**EXPERIENCE QUALIFICATIONS**

The bidder has been engaged in the contracting business under State License No. \_\_\_\_\_ for a period of \_\_\_\_\_ years.

The bidder's three most recently completed Contracts are:

1. Title of Project: \_\_\_\_\_

Owner: \_\_\_\_\_

Address: \_\_\_\_\_

Telephone No.: \_\_\_\_\_

Engineer in Charge: \_\_\_\_\_

Date Accepted: \_\_\_\_\_

**EXHIBIT "A" PROPOSAL**

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**EXPERIENCE QUALIFICATIONS CONTINUED**

2. Title of Project: \_\_\_\_\_

Owner: \_\_\_\_\_

Address: \_\_\_\_\_

Telephone No.: \_\_\_\_\_

Engineer in Charge: \_\_\_\_\_

Date Accepted: \_\_\_\_\_

3. Title of Project: \_\_\_\_\_

Owner: \_\_\_\_\_

Address: \_\_\_\_\_

Telephone No.: \_\_\_\_\_

Engineer in Charge: \_\_\_\_\_

Date Accepted: \_\_\_\_\_

## SCOPE OF WORK

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1. Remove and dispose of the existing (Defective) Bryan Boiler that is currently serving the heating and domestic water systems.
2. Remove and dispose of the existing vertical hot water storage tank that includes an indirect tube bundle insert.
3. Supply and install two (2) RBI High Efficiency Vertically Fired Copper Fin Boilers, one (1) Heating Model FB-0500 and One (1) Domestic Boiler Model FW-0500 to include the following trim:
  - a. 500,000 BTU Input / 425,000 BTU Output
  - b. 85% Efficiency
  - c. LOW NOx Sub 30 NOx per the BAAQMD Reg. 9 Rule 7 Requirement
  - d. Natural Gas Fired
  - e. California Code Trim
  - f. ASME-CSD-1 Trim
  - g. Honeywell RM7800 Series Flame Safeguard Control
  - h. Primary Pump mounted on each boiler with contactor and time delay relay mounted in control panel.
  - i. 120 VAC Control Voltage
  - j. Stainless Steel Exterior Cabinet
  - k. 125 PSIG relief valve on Domestic Boiler / 75 PSIG on Heating Boiler
4. Remove existing Bladder tanks and Supply and install two N1a or approved equal Bladder tanks for each boiler.

**STANDARD EQUIPMENT ON EACH BOILER:  
FOR BOTH HEATING AND DOMESTIC BOILER(S)**

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- Bronze Headers
- Sealed Combustion
- Low NOx
- Finned Copper Tube Heat Exchanger
- High Strength Low Alloy Steel Burners
- Low Air Pressure Switch
- Stainless Steel Combustion Chamber
- Heat Exchanger Drain Valves
- Temperature and Pressure Gauge (Boilers)
- Flow switch mounted and wired
- Operating Aquastat
- Pump Delay Relay
- Intake Air Filter
- Two Thermometers
- Self Diagnostic Flame Safeguard Control
- Manual Reset High Limit
- Barometric Damper (Standard Category 1 Vent—Type B)

**Supply and install:**

One (1) 600 Gallon ASME Hot water storage tank that shall include

- a potable water internal lining
- Exterior Insulation
- Manway Inspection Port
- Anode
- Temperature and Pressure Relief Valve
- Temperature and Pressure Gauge
- Horizontally or vertically mounted mounting configuration shall be determined upon job site inspection and allowable space

## **JOB SPECIFIC DETAILS (PERFORMANCE SPECIFICATIONS)**

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1. Contractor shall be responsible for the removal of existing Bryan Boiler.
2. Contractor shall be responsible for proper piping method to comply with the specified boiler manufacturer. Primary Secondary piping is required on heating boiler.
3. Contractor shall be responsible to provide all required installation materials:
  - Pipe Fittings
  - Support Systems
  - Flue Material as well as any additional controls or components for a “Turn Key” installation
  - All materials provided shall be in compliance with the boiler manufacturer as well as U.M.C., U.P.C., A.G.A., C.S.A., U.E.C.
4. Contractor shall provide factory authorize start up and owner training and shall provide a combustion print out as well as a factory start up sheet.
5. Contractor shall assist the City of Menlo Park with the PG&E Rebate Incentive Program
6. Contractor will be required to obtain a business license and pay fee. Contractor will be required to obtain a building permit and meet building permit requirements which shall be included in the cost of the bid. Building Permit fees shall be paid for by the City of Menlo Park, however inspections & necessary corrections (if any) shall be the responsibility of the awarded contractor.

## **SPECIFICATION FOR RBI FUTERA II BOILER**

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### **PART 1 - GENERAL**

#### 1.2 SUMMARY

- A. This Section includes gas fired, finned copper water tube boilers for heating hot water as well as the domestic hot water boiler.

#### 1.3 SUBMITTALS

- A. Product Data: Include rated capacities; shipping, installed, and operating weights; furnished specialties; and accessories for each model indicated.
- B. Shop Drawings: Detail equipment assemblies and indicate dimensions, required clearances, and method of field assembly, components, and location and size of each field connection.
  - 1. Wiring Diagrams: Detail wiring for power, signal, and control systems and differentiate between manufacturer installed and field installed wiring.
- C. Source Quality Control Tests and Inspection Reports: Indicate and interpret test results for compliance with performance requirements before shipping.
- D. Field Test Reports: Indicate and interpret test results for compliance with performance requirements.
- E. Maintenance Data: Include in the maintenance manuals specified in Division 1. Include parts list, maintenance guide, and wiring diagrams for each boiler.

#### 1.4 QUALITY ASSURANCE

- A. Listing and Labeling: Provide electrically operated components specified in this Section that are listed and labeled.
  - 1. The Terms “Listed” and “Labeled”: As defined in NFPA 70, Article 100.
  - 2. Listing and Labeling Agency Qualifications: A “Nationally Recognized Testing Laboratory” as defined in OSHA Regulation 1910.7.
- B. ASME Compliance: Boilers shall bear ASME “H” stamp and be National Board listed.
- C. CSD-1 Compliance: Control devices and control sequences according to requirements of CSD-1.
- D. FM Compliance: Control devices and control sequences according to requirements of FM.
- E. Comply with NFPA 70 for electrical components and installation.

## **SPECIFICATION FOR RBI FUTERA II BOILER**

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### 1.5 COORDINATION

- A. Coordinate size and location of concrete bases if needed. Concrete, reinforcement, and formwork requirements are specified in Division 3 Section "Cast-in-Place Concrete" in State std. specifications.

### 1.6 WARRANTY

- A. General Warranty: The special warranty specified in this Article shall not deprive the Owner of other rights the Owner may have under other provisions of the Contract Documents and shall be in addition to, and run concurrent with, other warranties made by the Contractor under requirements of the Contract Documents. Installing contractor shall provide one year of warranty parts and labor.
- B. Special Warranty: Submit a written warranty, executed by the contractor for the heat exchanger.
  - 1. Warranty Period: Manufacturer's standard, but not less than 10 years from date of Substantial Completion on the heat exchanger. Warranty shall be non-prorated and not limited to thermal shock. Additional 21 year thermal shock warranty on heat exchanger.

## **SPECIFICATION FOR RBI FUTERA II BOILER**

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### **PART 2 - PRODUCTS**

#### **2.1 MANUFACTURERS**

- A. Available Manufacturers: Manufacturer shall be a company specializing in manufacturing the products specified in this section with minimum ten (10) years experience. Subject to compliance with requirements, manufacturers offering boilers that may be incorporated into the Work include, but are not limited to, the following:
- B. Design: Boilers shall be CSA design certified and shall not release any condensate during operation. Boilers shall be designed for operation with natural or propane and have a CSA certified input rating and a thermal efficiency rating of 85%.
- C. Service Access: The boilers shall be provided with access covers for easily accessing all serviceable components. The boilers shall not be manufactured with large enclosures, which are difficult to remove and reinstall. All accesses must seal completely as not to disrupt the sealed combustion process. All gas train components and blower motor must be accessible and able to adjust without the removal of covers or cabinet components.
- D. Indicating Lights: Each boiler shall include a diagnostic control panel indicating power on, operator, high limit, low water, low air, trial for ignition, main burner, flame failure, and inlet/outlet temperatures incorporated into the boiler. Access to the controls shall be through a control access door leaving diagnostic panel intact and not disrupted.
- E. Manufacturers: RBI (a Mestek company) is the basis of design.
  - 1. RBI (a Mestek company) – Futera II Series or equivalent subject to approval by the City Of Menlo Park.

#### **2.2 COMPONENTS**

- A. Combustion Chamber: The combustion chamber shall be constructed of stainless steel. An access door shall be provided for ease of service and inspection of the heat exchanger. Chamber shall be air-cooled and not require additional insulation.
- B. Heat Exchanger: The heat exchanger shall be inspected and bear the A.S.M.E. Section IV seal of approval. The heat exchanger shall be a four-pass heat exchanger with a maximum working pressure of 160 psi. The heat exchanger's vertical design shall provide equal amounts of heat transfer throughout the entire heating surface. Each heat exchanger shall have copper tubes, with an integral copper finned tube of 7/8" I.D., .064" minimum wall thickness, 7 fins per inch, with a fin height of 3/8". Each end of the water tubes shall be strength rolled into the header. The heat exchanger shall be gasket less. Each individual tube can be retubed without the disturbance of the surrounding tubes. A pressure relief valve of 50 lb/sq in shall be equipped with the boiler and factory mounted. The headers shall be of bronze construction only; cast iron shall not be acceptable.
- C. Jackets: 18 gauge galvanized steel with factory applied baked enamel. Brushed stainless steel (optional).

## **SPECIFICATION FOR RBI FUTERA II BOILER**

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- D. Gas Burner: The burner shall be constructed of low alloy steel and nickel-plated. The burner flame shall burn vertically and be of the power type with a forced draft fan. Burner shall fire to produce a full 360° flame pattern to provide equal distribution of heat throughout the entire heat exchanger. The burner shall be easily removed for maintenance without disruption of any other major component of the boiler. A window view port shall be provided for visual inspection of the flame during firing.
- E. Rated Capacity: The boiler shall be capable of operating at rated capacity with pressures as low as 5" W.C. at the inlet to the burner pressure regulator.
- F. The burner shall be capable of 85% efficiency without exceeding a NOx reading above 10 ppm.
- G. The burner and gas train shall be provided with the following trim and features:
  - 1. Burner Firing: On/off
  - 2. Burner Ignition: Intermittent spark
  - 3. Safety Controls: Energize ignition, limit time for establishing flame, prevent opening of gas valve until pilot flame is proven, stop gas flow on ignition failure, and allow gas valve to open.
  - 4. Flue Gas Collector: Enclosed combustion chamber with integral combustion air blower and single venting connection.
  - 5. Gas Train: Manual gas valves (2), redundant main gas valves (solenoid/diaphragm, motorized), firing valve, 'B' valve, pilot gas pressure regulator, and automatic pilot gas valve. All components to be factory mounted.
  - 6. Safety Devices: Optional high/low gas pressure switches, air flow switch, and blocked flue detection switch. All safeties to be factory mounted.

### 2.3 BOILER TRIM

- A. Safety Relief Valve: ASME rated, factory set to protect boiler and piping.
- B. Gauge: Combination water pressure and temperature shipped loose for field installation. Inlet/outlet temperature gauges to be an integral part of the front boiler control panel to allow for consistent easy monitoring of temperatures factory mounted and wired.
- C. Low Water Cutoff and Outlet Flow Switch: Prevent burner operation when water falls below a safe level or when water flow is low. Flow switch shall be factory mounted and wired. Provision for installation of a low water cut off shall be provided.
- D. Operating Controls: Boiler shall be provided with a Honeywell RM7800 series digital flame safe guard. The flame safeguard shall be capable of prepurge cycles.

## **SPECIFICATION FOR RBI FUTERA II BOILER**

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- E. Operating Temperature Control: Shall be a manual probe type controller adjustable from 120°F to 240°F, 49°C to 116°C. Control shall be factory mounted and sense the inlet temperature of the boiler through a dry well.
- F. High Limit: Temperature control with manual reset limits boiler water temperature in series with the operating control. High limit shall be factory mounted and sense the outlet temperature of the boiler through a dry well.
- G. PROVIDE THE FOLLOWING STANDARD TRIM:
  - 1. Bronze headers
  - 2. Low air pressure switch
  - 3. Blocked flue detection switch
  - 4. Flow switch (factory mounted and wired)
  - 5. Operating aquastat
  - 6. Temperature/pressure gauge
  - 7. Manual reset high limit
  - 8. Air inlet filter
  - 9. Inlet/outlet thermometers (factory mounted and wired)
  - 10. FM and CSD-1 gas train
- H. PROVIDE THE FOLLOWING JOB SPECIFIC TRIM AND FEATURES
  - 1. Bronze fitted circulator provided by the manufacturer (shipped loose)
  - 2. Air Inlet hood for exterior termination of air intake pipe (shipped loose)
  - 3. Vent termination hood for exterior termination of vent pipe (shipped loose)
  - 4. FM or IRI controls and gas train
  - 5. CSD-1 controls
  - 6. Probe type low water cut off, manual reset (shipped loose)
  - 7. Motorized gas valves

## **SPECIFICATION FOR RBI FUTERA II BOILER**

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8. Diagnostic keyboard display for RM7800 series control

9. Barometric damper

### **2.4 MOTORS**

A Boiler Blower Motor: Open drip-proof motors where satisfactorily housed or remotely located during operation. There shall be no requirement to remove gas train components to remove the blower motor. Blower motor shall not exceed 3/4 HP and not require more than 12 amps.

### **2.5 SOURCE QUALITY CONTROL**

A. Test and inspect boilers according to the ASME Boiler and Pressure Vessel Code, Section IV. Boilers shall be test fired in the factory with a report attached permanently to the exterior cabinet of the boiler for field reference.

## **SPECIFICATION FOR RBI FUTERA II BOILER**

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### **PART 3 - EXECUTION**

#### **3.1 EXAMINATION**

- A. Examine area to receive boiler for compliance with requirements for installation tolerances and other conditions affecting boiler performance. Do not proceed with installation until unsatisfactory conditions have been corrected.

#### **3.2 INSTALLATION**

- A. Install boilers level and plumb, according to manufacturer's written instructions and referenced standards.
- B. Install gas fired boilers according to NFPA 54.
- C. Support boilers on 4 in (100 mm) thick concrete base, 4 in (100 mm) larger on each side than base of unit.
- D. Install electrical devices furnished with boiler, but not specified to be factory mounted.
- E. Install a 1" drain valve on the outlet piping prior to the first shut off valve.

#### **3.3 CONNECTIONS**

- A. Connect gas piping full size to boiler gas train inlet with union.
- B. Connect hot water piping to supply and return boiler tapings with shutoff valve and union or flange at each connection.
- C. Install piping from safety relief valves to nearest floor drain.
- D. Connect breeching to boiler outlet, full size of outlet. The boiler shall operate under negative stack pressure and Category I vent material according to ANSI standards (AGA) (standard vertical venting). The boiler shall operate on positive stack pressure and Category III vent material. A listed stainless steel vent must be used. (Through the wall horizontal venting)
- E. Ground equipment.
  - 1. Tighten electrical connectors and terminals according to manufacturer's published torque-tightening values. If manufacturer's torque values are not indicated, use those specified in UL 486A and UL 486B.

## **SPECIFICATION FOR RBI FUTERA II BOILER**

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### **3.4 FIELD QUALITY CONTROL**

- A. Manufacturer's Field Service: Engage a factory authorized service representative to supervise the field assembly of components and installation of boilers, including piping and electrical connections. Report results in writing.
  - 1. Test and adjust controls and safeties. Replace damaged and malfunctioning controls and equipment.
- B. Manufacturer's representative shall supply a factory authorized service technician to start up the boilers.

### **3.5 CLEANING**

- A. Flush and clean boilers on completion of installation, according to manufacturer's written instructions.
- B. After completing boiler installation, including outlet fittings and devices, inspect exposed finish. Remove burrs, dirt, and construction debris and repair damaged finishes including chips, scratches, and abrasions with manufacturer's touchup paint.

### **3.6 COMMISSIONING**

- A. Engage a factory authorized service representative to provide startup service. Start up to be performed only after complete boiler room operation is field verified to offer a substantial load, and complete system circulation. One year warranty shall be handled by factory authorized tech.
- B. Verify that installation is as indicated and specified.
  - 1. Verify that electrical wiring installation complies with manufacturer's submittal and installation requirements. Do not proceed with boiler startup until wiring installation is acceptable to equipment Installer.
- C. Complete manufacturer's installation and startup checklist and verify the following:
  - 1. Boiler is level on concrete base.
  - 2. Flue and chimney are installed without visible damage.
  - 3. No damage is visible to boiler jacket, refractory, or combustion chamber.
  - 4. Pressure reducing valves are checked for correct operation and specified relief pressure. Adjust as required.

## **SPECIFICATION FOR RBI FUTERA II BOILER**

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5. Clearances have been provided and piping is flanged for easy removal and servicing.
  6. Heating circuit pipes have been connected to correct ports.
  7. Labels are clearly visible.
  8. Boiler, burner, and flue are clean and free of construction debris.
  9. Pressure and temperature gauges are installed.
  10. Control installations are completed.
- D. Ensure pumps operate properly.
- E. Check operation of pressure reducing valve on gas train, including venting.
- F. Check that fluid level, flow switch, and high temperature interlocks are in place.
- G. Start pumps and boilers, and adjust burners to maximum operating efficiency.
1. Fill out startup checklist and attach copy with Contractor Startup Report.
  2. Check and record performance of factory provided boiler protection devices and firing sequences.
  3. Check and record performance of boiler fluid level, flow switch, and high temperature interlocks.
  4. Run-in boilers as recommended or required by manufacturer.
- H. Perform the following tests for each firing rate for high/low burner. Adjust boiler combustion efficiency at each firing rate. Measure and record the following:
1. Inlet gas pressure.
  2. Gas pressure on manifold.
  3. Flue gas temperature at boiler discharge.
  4. Flue gas carbon dioxide and oxygen concentration.
  5. Natural flue draft.

## **SPECIFICATION FOR RBI FUTERA II BOILER**

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- I. Measure and record temperature rise through each boiler.

### **3.7 DEMONSTRATION**

- A. Engage a factory authorized service representative to train Owner's maintenance personnel as specified below:
  1. Operate boiler, including accessories and controls, to demonstrate compliance with requirements.
  2. Train Owner's maintenance personnel on procedures and schedules related to startup and shutdown, troubleshooting, servicing, and preventive maintenance.
  3. Review data in the maintenance manuals. Refer to Division 1 Section "Contract Closeout."
  4. Review data in the maintenance manuals. Refer to Division 1 Section "Operation and Maintenance Data."
  5. Schedule training with Owner with at least 7 days advance notice.

### **Notes:**

- A. Asbestos removal (if any) shall be the responsibility of the City of Menlo Park
- B. Pipe insulating shall be outsourced by the City of Menlo Park, following the completion of the project.