

SOLICITATION NUMBER: DNR214153

Addendum Number: #2

The purpose of this addendum is to modify the solicitation identified as ("Solicitation") to reflect the change(s) identified and described below.

Applicable Addendum Category:

- Modify bid opening date and time
- Modify specifications of product or service being sought
- Attachment of vendor questions and responses
- Attachment of pre-bid sign-in sheet
- Correction of error
- Other

Description of Modification to Solicitation:

1. To change the bid opening date to August 5, 2014 at 1:30 PM.
2. To provide responses and clarifications to vendor questions. See attached.
3. To provide addendum acknowledgment. This document should be signed and returned with your bid. Failure to sign and return may result in the disqualification of your bid.

Additional Documentation: Documentation related to this Addendum (if any) has been included herewith as Attachment A and is specifically incorporated herein by reference.

Terms and Conditions:

1. All provisions of the Solicitation and other addenda not modified herein shall remain in full force and effect.
2. Vendor should acknowledge receipt of all addenda issued for this Solicitation by completing an Addendum Acknowledgment, a copy of which is included herewith. Failure to acknowledge addenda may result in bid disqualification. The addendum acknowledgement should be submitted with the bid to expedite document processing.

ATTACHMENT A

ADDENDUM #2
McKeever Lodge, Pipestem Resort State Park
Repairs to HVAC Piping and Equipment and Related Improvements
RFQ # DNR214153
July 22, 2014

This Addendum forms a part of the Contract Documents and modifies the original bidding Documents as noted below.

This addendum consists of sixteen (16) pages:

The **BID OPENING DATE** has been changed to **August 5, 2014 at 1:30PM**

See the attached **CLARIFICATIONS AND ANSWERS**, along with its two attached specifications, sections, and Drawing: E101-P7, PHASE 7 ELECTRICAL PLAN.

All herein becomes part of the scope project documents and the scope of project work. Contractor is to acknowledge this as Addendum #2 on the Bid Form.

End of Addendum #2

**Pipestem State Park
HVAC Piping Replacement
ADDENDUM CLARIFICATIONS & QUESTIONS #02- 7/22/2014**

The following items and answers are to clarify the drawings and specifications related to the project and are part of the project documents. Note the following prior to bidding:

Comment:

1. AHU controller installed on the makeup air unit(AC-3) serving the pool will be utilized in a future project which will replace the make-up air unit, therefore MC cable neatly installed will be used to wire all the control points for this unit, the controller location will be determined in the field to ensure coordination with the future make-up air unit location.
2. The control points for the units in alternate #1 & #2 shall have the minimum following points:
 - a. Minimum Required AHU Control points:
 - i. Fan Start/Stop
 - ii. Fan Status
 - iii. DAT Heating Coil
 - iv. DAT Cooling Coil
 - v. RAT Return Air
 - vi. FA Interconnect
 - vii. FreezeStat input for Alarm
 - viii. OA Damper
 - ix. (2)-Extra DI
 - x. (2)- Extra DD
 - xi. (2)- Extra AI
 - xii. (2)- Extra AO
3. Clarification: All air handlers connected to the two-pipe system which have both a heating and cooling coil will provide full isolation of each coil and its accompanying control valve from the two-pipe system such that it can be operated in either the heating coil or cooling coil mode.

Questions:

1. (Question) 232113 – 2.01.B.3 states, "Grooved mechanical joints may be used in accessible locations only" - Where pipe sizes 2-1/2" and larger are located above non-accessible ceilings or in shafts, are the joints to be welded?

(Answer) Grooved mechanical joints are acceptable in all locations.

2. (Question) Is the chilled water and heating water coil detail shown (4/M601) applicable for all fan coil units, air handling units, etc., for the project? What about a piping detail for the boiler?

(Answer) Fan Coil- follow detail taking exception to control valve. (units equipped with internal controls. AHU- Follow detail. Boiler- Pipe with dry thermometer on both supply and return. Install a circuit setter. Install pressure gauges and isolation valves on both HWS & HWR. All existing boilers are to be re-piped completely to the face of boiler.

3. (Question) Will the AHU, boiler, etc., require thermometers, pressure gauges, flex connectors, strainers, etc., at their piping connections?

(Answer) Yes, piping installer shall also provide all drywells and pressure taps with ball isolation valves for all BAS temperature & pressure points.

4. (Question) Drawing M106B-P5 indicates 1-1/2" piping run out to a unit at column line F/17 – Is this the correct size?

(Answer) No, pipe size is 1/2"

5. (Question) Drawing M106A-P8 - Please provide sizes and indicate where the HWS/HWR risers are being continued at Column Line N-7

(Answer) 2 1/2" for both hot HWS & HWR

6. (Question) Are there any written specifications available for the Indoor Air Handling Unit?

(Answer) Please see attachment

7. (Question) Are there any written specifications available for the Boiler?

(Answer) Please see attachment

8. (Question) Is ASI an acceptable controls contractor (see attached)

(Answer) Yes. Substituted equipment will not be the basis of any change order request.

9. (Question) 23 2114 Part 2.01 Expansion Tanks – Substitute with Bell & Gossett type B (Bladder) or D (Diaphragm Tank) depending on the size on the drawing. – No change would have to be made. See Attachment A-350C1-Bladder Tanks and A-347A1-Diaphragm Tanks.

(Answer) Substitutions permitted provided that substituted products meet or exceed the performance of the specified equipment. Substituted equipment must utilize grooved connections except for pumps. Flanges will not be permitted. Substituted equipment will not be the basis of any change order request.

10.(Question) 23 2114 Part 2.02 Air Vents – Substitute with Bell & Gossett air vents. No changes would have to be made. See Attachment A-310-Air Vent.

(Answer) See response to question #9.

11.(Question) 23 2114 Part 2.03 Air Separator – Substitute with Bell & Gossett Rolairtrol Air Separator. No Changes would have to be made. See Attachment A-307A1-Air Separator.

(Answer) See response to question #9

12.(Question) 23 2114 Part 2.04 Strainers – Substitute with Metraflex type TS (for Part B) and type TF (for Parts C and D). No changes would have to be made. See Attachments Metraflex Y type Strainer TS and Metraflex Y type Strainer TF.

(Answer) See response to question #9

13.(Question) 23 2114 Part 2.05 Balancing Valves Part A and B - Substitute with Bell & Gossett CB type circuit setters. Please note that valves larger than 4" flange would be a globe style balancing valve. See attachment A-508K-Circuit Setter.

(Answer) See response to question #9

14.(Question) 23 2123 Part 2.03 In-Line Circulators – Substitute with Bell & Gossett Series 60 Pumps. The Series 60 will come with a steel shaft with copper shaft sleeve. This construction has been proven in the field.

(Answer) See response to question #9

15.M105A-P1 What is the item depicted by an oval on piping line in pool area at column line N-11?

(Answer) The symbol in question is an expansion tank that is type ET-2.

16. We have been told no asbestos is expected to be encountered and if it is it will be abated by the owner. Please confirm.

(Answer) That is correct, any incidental asbestos shall be owner abated.

17.M105A-Pa is the piping in the pool area to be run above the existing ceiling or exposed on the wall?

(Answer) The piping in this area is to be run above the existing ceiling.

18.M105B-P1 – Looking at the existing room where Pump P-4 is shown to be installed there is absolutely no ceiling space by which we can get the new piping lines into the room. Is the ductwork in this room to be removed to make room for the piping?

(Answer) The use of this room shall change from its current function to a mechanical service chase. Contractor shall remove existing ceiling and install new piping as high as possible.

19. Also, these lines appear to be depicted as running through the backside of this room and onto the 5th floor mechanical room. However, we have been told this routing is not possible and in fact the lines will have to be ran down to the floor below and then brought back up to the 5th floor. Please review advise.

(Answer) In terms of what any bidder may have been "told" while on site, this is a reminder that all bidders were cautioned by Mr. Leslie to disregard any verbal comments or instructions by Parks. All questions and their answers must be submitted and answered through WV Purchasing, with answers by Addenda. Bidders are again cautioned that verbal comments do not constitute part of the bidding documents and any misunderstanding of the project scope or requirements which might result from such comments will not, under any circumstances, be the basis of a change order request. The riser in the chase that is plan north of this room does come from the level below to approximate ceiling height. The interconnect pipe does have a drop at the bypass down the wall to clear the structure of the stairs, then follow the wall beneath the stairs until clearing the stair area.

20. Are access doors required at each fan coil unit coil piping connection?

(Answer) Yes, All user serviceable items that are located in hard surfaces shall require access doors.

21. Are access doors required at each air vent (top of risers)?

(Answer) See response to question #20

22. Are access doors required at each of the riser drain locations?

(Answer) See response to question #20

23. Specification 23 0719: Please indicate required insulation thickness.

(Answer) Required insulation thickness shall be 1" for less than 1-1/2" pipe, 1-1/2" for less than 2-1/2" pipe and 2" for all sizes above 2-1/2". When working area is limited to less than required thickness consult with engineer prior to installation.

24. Specification 23 2113 – 202 B, 202 B: Is type L copper unacceptable for hydronic piping 2" and smaller in diameter?

(Answer) See Addendum #1 response to question #6

25. Drawing M105A-P7: An online installation manual for the specified HTP ModCon 1700 boiler stack unit indicates the maximum allowable total length of intake and vent piping (added together) is 150 feet, inclusive of all equivalent lengths for fittings. It appears the sum of vertical through-roof vent/intake piping from the boilers plus the horizontal lengths of vent/intake piping shown on drawing M105A-P7 exceeds 150 feet. Please advise

(Answer) The current edition of the installation manual Rev 5.14.14 Part 5.E.2 states "2. The total equivalent length of exhaust vent and intake pipe should not exceed 200 feet."

26. Drawing E101-P7, indicated on the cover page of the drawing set, is not present in the printed or electronic drawing sets we received. Please indicate whether the drawing exists, and furnish as necessary.

(Answer) Please see attachment.

27. Electrical drawings indicate an allowance of \$50,000.00 is to be included "for replacing NM cable above ceiling w/ MC cable." Are there any other allowances that are to be included?

(Answer) This allowance is the only provision of this type.

28. 232113 – 2.01.B.3 states, "Grooved mechanical joints may be used in accessible locations only" - Where pipe sizes 2-1/2" and larger are located above non-accessible ceilings or in shafts, are the joints to be welded?

(Answer) See response to question #1

29. M103B-P6 Enlarged Plan #1 Indicates ET-1 and ET-2 Expansion Tanks for Phase 6 – The Mechanical Equipment Schedule on M601 lists ET-9 and ET-10 - Please clarify.

(Answer) See Addendum #1 response to question #10

30. M105A-P7 Shows one (1) ET-1, one (1) ET-2, and two (2) ET-3 Expansion Tanks – The Mechanical Equipment Schedule on M601 does not indicate such expansion tanks. It does however list WH-6, WH-7, and WH-8 which appear to be expansion tanks. Please clarify.

(Answer) See response to question #29

31. M601 – Mechanical Equipment Schedule lists an ET-11, WH-10 and WH-11 items for Phase 1 – However, none are shown on the floor plans. Please clarify.

(Answer) See response to question #29

32. Are flexible connectors required at the piping connections to pumps?

(Answer) Base mounted pumps do require flexible connectors.

33. Detail #4 on M106A-P7 does not indicate a curb, counter flashing, etc., where the boilers exhaust and intakes pass through the roof. What, if anything, is required?

(Answer) Contractor shall provide and install neoprene pipe boot in accordance with roof manufacturer guidelines to maintain warranty. The roof is a Garland Modified Bitumen.

34. Does all existing piping get removed or is it acceptable to abandon in place?

(Answer) Concealed riser locations may be abandoned in place. All exposed piping and all horizontal main branch piping accessible by removal ceiling tile shall be demolished.

All herein becomes part of the scope project documents and the scope of project work. Contractor is to acknowledge this as Addendum #2 on the Bid Form.

Respectfully submitted this 22nd day of July 2014.



Craig Miller PE
President
Miller Engineering, Inc.



Attachments: Specification Section: Steel Water-Tube Boilers
Specification Section: Modular Central-Station Air-Handling Units
Drawing: E101-P7 PHASE 7 ELECTRICAL PLAN

END OF ADDENDUM CLARIFICATIONS & QUESTIONS #2

SECTION 23 5233.16
STEEL WATER-TUBE BOILERS

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Boilers.
- B. Controls and boiler trim.
- C. Indoor/outdoor reset controller.
- D. Hot water connections.
- E. Fuel burning system and connection.

1.02 RELATED REQUIREMENTS

- A. Section 03 3000 - Cast-in-Place Concrete.
- B. Section 23 2114 - Hydronic Specialties.
- C. Section 26 2717 - Equipment Wiring: Electrical characteristics and wiring connections.

1.03 REFERENCE STANDARDS

- A. ANSI Z21.13 - American National Standard for Gas-Fired Low-Pressure Steam and Hot Water Boilers; 2012.
- B. ASME BPVC-I - Boiler and Pressure Vessel Code, Section I - Rules for Construction of Power Boilers; The American Society of Mechanical Engineers; 2013.
- C. ASME BPVC-IV - Boiler and Pressure Vessel Code, Section IV - Rules for Construction of Heating Boilers; The American Society of Mechanical Engineers; 2013.
- D. HI BTS-2000 - Testing Standard, Method to Determine Heating Efficiency of Commercial Space Heating Boilers; The Hydronics Institute of AHRI; 2007.
- E. NEMA 250 - Enclosures for Electrical Equipment (1000 Volts Maximum); National Electrical Manufacturers Association; 2008.
- F. NFPA 54 - National Fuel Gas Code; National Fire Protection Association; 2012.
- G. NFPA 70 - National Electrical Code; National Fire Protection Association; Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.

1.04 PERFORMANCE REQUIREMENTS

- A. Performance rating shall be in accordance with Hydronics Institute BTS-2000.
- B. Capacity:
 - 1. Fluid: Hot water.
 - 2. Input at sea level: 850,000 Btu/hr.

1.05 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements, for submittals procedures.
- B. Warranty: Submit manufacturer warranty and ensure forms have been completed in Owner's name and registered with manufacturer.

1.06 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Company specializing in manufacturing the type of products specified in this section, with minimum three years of documented experience.

1.07 REGULATORY REQUIREMENTS

- A. Conform to applicable code for internal wiring of factory wired equipment.
- B. Conform to ASME BPVC-I for construction of boilers.

1.08 WARRANTY

- A. See Section 01 7800 - Closeout Submittals, for additional warranty requirements.
- B. Provide a five year warranty to include coverage for heat exchanger.

PART 2 PRODUCTS

2.01 MANUFACTURERS

- A. ModCon; Model 1700M and associated sensors..
- B. Substitutions: See Section 01 6000 - Product Requirements.

2.02 MANUFACTURED UNITS

- A. Factory assembled, factory fire-tested, self-contained, readily transported unit ready for automatic operation except for connection of water, fuel, electrical, and vent services.
- B. Unit: Steel membrane wall water tube boiler on integral structural steel frame base with integral forced draft burner, burner controls, boiler trim, tankless water heater, refractory, insulation, and jacket.
- C. Electrical Characteristics:
 - 1. 120 volts, single phase, 60 Hz.

2.03 BOILER SHELL

- A. Construct applicable ASME Boiler and Pressure Vessels Code for allowable working pressure of 125 psi water.
- B. Provide adequate tappings, observation ports, removable panels and access doors for entry, cleaning, and inspection.
- C. Insulate casing with readily removable glass fiber blanket insulation covered by sectional performed sheet metal jacket.
- D. Factory paint boiler, base, and other components with hard finish silicone enamel.

2.04 HOT WATER BOILER TRIM

- A. Low Water Cut-off: With drain valve and manual reset to automatically prevent burner operation whenever boiler water falls below safe level.
- B. Temperature Controls:
 - 1. Auto reset type shall control burner on-off to maintain temperature.
 - 2. Auto reset type shall control burner firing rate to maintain temperature.
 - 3. Manual reset type shall control burner to prevent boiler water temperature from exceeding safe system water temperature.
- C. Pressure Control: Fixed setting type shall control burner to ensure minimum operating pressure.
- D. Blend Pump: Mounted between supply and return connections ensures minimum continuous circulation through boiler.
- E. ASME rated pressure relief valves.
- F. Combination pressure and thermometer gage.

2.05 FUEL BURNING SYSTEM

- A. General: Forced draft automatic burner integral with front head of boiler designed to burn No. 2 oil and natural gas and maintain fuel-air ratios automatically.
 - 1. Blower: Statically and dynamically balanced to supply combustion air, direct connected to motor.
- B. Gas Burner: Forced draft, high radiant multiport power burner with electric ignition modulating with low fire ignition position.

2.06 CONTROL PANEL

- A. Mount NEMA 250, Type 1 hinged metal panel on boiler, containing electronic combustion control, blower motor starter, low fire hold timer, automatic-manual firing selection switch, oil-gas selector switch, and control switches.
- B. Electronic combustion control to control ignition, starting and stopping of burner, and provide both pre-combustion purge and post combustion purge. Burner to shut down in event of ignition, pilot, or main flame failure. Interlock to shut down burner upon combustion air pressure drop.
- C. Electronic detector to prevent negative pressure primary fuel valves from opening until pilot flame is established.

PART 3 EXECUTION

3.01 INSTALLATION

- A. Install in accordance with manufacturer's instructions.
- B. Install boiler and provide connection of natural gas service in accordance with requirements of NFPA 54 and applicable codes.
- C. Provide piping connections and accessories as indicated; refer to Section 23 2114.
- D. Pipe relief valves to nearest floor drain.
- E. Provide for connection to electrical service. Refer to Section 26 2717.

3.02 SYSTEM STARTUP

- A. Provide the services of manufacturer's field representative for starting and testing unit. Startup will include setting of fuel rail pressures and complete combustion analysis to be witnessed by the Engineer. Provide startup report to Engineer and Owner, leave one additional copy in boiler room.

END OF SECTION

SECTION 23 7313

MODULAR CENTRAL-STATION AIR-HANDLING UNITS

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Factory fabricated assembly of modular sections consisting of housed centrifugal or plenum fans with belt or direct drives, coils, filters, and other necessary modules to perform one or more of the functions of circulating, cleaning, heating, cooling, humidification, dehumidification, and mixing of air with construction suitable for indoor or outdoor applications.

1.02 RELATED REQUIREMENTS

- A. Section 22 0548 - Vibration and Seismic Controls for Plumbing Piping and Equipment.
- B. Section 23 0548 - Vibration and Seismic Controls for HVAC Piping and Equipment.
- C. Section 23 3300 - Air Duct Accessories: Flexible duct connections.
- D. Section 23 3416 - Centrifugal HVAC Fans.
- E. Section 23 4000 - HVAC Air Cleaning Devices.
- F. Section 23 8200 - Convection Heating and Cooling Units: Air Coils.

1.03 REFERENCE STANDARDS

- A. ABMA STD 9 - Load Ratings and Fatigue Life for Ball Bearings; American Bearing Manufacturers Association, Inc.; 1990 (Reapproved 2008).
- B. AHRI 410 - Standard for Forced-Circulation Air-Cooling and Air-Heating Coils; Air-Conditioning, Heating, and Refrigeration Institute; 2001 (R2011).
- C. AMCA 99 - Standards Handbook; Air Movement and Control Association International, Inc.; 2010.
- D. AMCA 210 - Laboratory Methods of Testing Fans for Aerodynamic Performance Rating; Air Movement and Control Association International, Inc.; 2007 (ANSI/AMCA 210, same as ANSI/ASHRAE 51).
- E. AMCA 300 - Reverberant Room Method for Sound Testing of Fans; Air Movement and Control Association International, Inc.; 2008.
- F. ASHRAE Std 52.2 - Method of Testing General Ventilation Air-Cleaning Devices for Removal Efficiency by Particle Size; 2012.
- G. ASHRAE Std 62.1 - Ventilation For Acceptable Indoor Air Quality; 2013.
- H. NFPA 90A - Standard for the Installation of Air-Conditioning and Ventilating Systems; 2012.
- I. SMACNA (DCS) - HVAC Duct Construction Standards; Sheet Metal and Air Conditioning Contractors' National Association; 2005.

1.04 ADMINISTRATIVE REQUIREMENTS

- A. Coordination: Coordinate the installation of AHU with size, location and installation of service utilities.
- B. Coordinate the work with other trades for installation of roof mounted air handling units on roof curbs.
- C. Preinstallation Meeting: Conduct a preinstallation meeting one week prior to the start of the work of this section; require attendance by all affected installers.
- D. Sequencing: Ensure that utility connections are achieved in an orderly and expeditious manner.

1.05 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
- B. Product Data:
 - 1. Published Literature: Indicate dimensions, weights, capacities, ratings, gages and finishes of materials, and electrical characteristics and connection requirements.

MODULAR CENTRAL-STATION AIR-HANDLING UNITS

23 7313 - 1 of 5

(c) Miller Engineering, Inc.

2. Filters: Data for filter media, filter performance data, filter assembly, and filter frames.
 3. Fans: Performance and fan curves with specified operating point clearly plotted, power, RPM.
 4. Sound Power Level Data: Fan outlet and casing radiation at rated capacity.
 5. Electrical Requirements: Power supply wiring including wiring diagrams for interlock and control wiring, clearly indicating factory-installed and field-installed wiring.
- C. Shop Drawings: Indicate assembly, unit dimensions, weight loading, required clearances, construction details, field connection details, and electrical characteristics and connection requirements.
- D. Manufacturer's Instructions: Include installation instructions.
- E. Maintenance Data: Include instructions for lubrication, filter replacement, motor and drive replacement, spare parts lists, and wiring diagrams.
- F. Maintenance Materials: Furnish the following for Owner's use in maintenance of project.
1. See Section 01 6000 - Product Requirements, for additional provisions.
 2. Extra Fan Belts: One set for each unit.
 3. Extra Filters: One set for each unit.

1.06 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Company specializing in manufacturing the type of products specified in this section, with minimum three years of documented experience.

1.07 REGULATORY REQUIREMENTS

- A. Products Requiring Electrical Connection: Listed and classified by Underwriters Laboratories Inc. as suitable for the purpose specified and indicated.

1.08 DELIVERY, STORAGE, AND HANDLING

- A. Accept products on site in factory-fabricated protective containers, with factory-installed shipping skids and lifting lugs. Inspect for damage.
- B. Store in clean dry place and protect from weather and construction traffic. Handle carefully to avoid damage to components, enclosures, and finish.
- C. Do not operate units until ductwork is clean, filters are in place, bearings lubricated, and fan has been test run under observation.

PART 2 PRODUCTS

2.01 SEE SECTION 01 6000 FOR ADDITIONAL REQUIREMENTS.

2.02 MANUFACTURERS

- A. Carrier Corporation; _____: www.carrier.com.
- B. Trane Inc; _____: www.trane.com.
- C. York by Johnson Controls Inc; _____: www.johnsoncontrols.com.

2.03 GENERAL DESCRIPTION

- A. Components:
1. Casing construction.
 2. Fan section.
 3. Coil section.
 4. Filter and air cleaner section.
- B. Fabrication: Conform to AMCA 99 and AHRI 430.
- C. Performance: Sea level conditions:
1. As scheduled

2.04 CASING CONSTRUCTION

- A. Full Perimeter Base Rail:
1. Construct of galvanized steel.

MODULAR CENTRAL-STATION AIR-HANDLING UNITS

23 7313 - 2 of 5

(c) Miller Engineering, Inc.

2. Provide base rail of sufficient height to raise unit for external trapping of condensate drain pans.
- B. Casing:
 1. Construct of one piece, insulated, double wall panels.
 2. Provide mid-span, no through metal, internal thermal break.
 3. Construct outer panels of galvanized steel and inner panels of galvanized steel.
 4. Casing Air Pressure Performance Requirements:
- C. Access Doors:
 1. Construction, thermal and air pressure performance same as casing.
 2. Provide surface mounted handles on hinged, swing doors. Removable panels on vertical units
- D. Unit Flooring: Construct with sufficient strength to support expected people and equipment loads associated with maintenance activities.
- E. Casing Leakage: Seal all joints and provide airtight access doors so that air leakage does not exceed one percent of design flow at the specified casing pressure.
- F. Insulation:
 1. Provide minimum thermal thickness of 12 R throughout.
 2. Completely fill all panel cavities in all directions preventing voids and settling.
 3. Comply with NFPA 90A.
- G. Drain Pan Construction:
 1. Provide cooling coil, humidifier, and _____ sections with an insulated, double wall, stainless steel drain pan complying with ASHRAE 62.1 for indoor air quality and sufficiently sized to collect all condensate.
 2. Slope in two planes to promote positive drainage and eliminate stagnate water conditions.
 3. Locate outlet of sufficient diameter at lowest point of pan to prevent overflow at normal operating conditions.
 4. Provide threaded drain connections constructed of drain pan material, extended sufficient distance beyond the base to accommodate field installed, condensate drain trapping.
- H. Finish:
 1. Indoor Units:
 - a. Provide exterior, galvanized steel panels without paint.

2.05 FAN SECTION

- A. Type: Forward curved, double width, double inlet, centrifugal type fan. Refer to Section 23 3416.
- B. Performance Ratings: Determined in accordance with AMCA 210 and labeled with AMCA Certified Rating Seal.
- C. Sound Ratings: AMCA 301; tested to AMCA 300 and label with AMCA Certified Sound Rating Seal.
- D. Bearings: Self-aligning, grease lubricated, with lubrication fittings extended to exterior of casing with plastic tube and grease fitting rigidly attached to casing.
- E. Mounting: Locate fan and motor internally on welded steel base coated with corrosion resistant paint. Factory mount motor on slide rails. Provide access to motor, drive, and bearings through removable casing panels or hinged access doors. Mount base on vibration isolators; refer to Section 23 0548.
- F. Motor Wiring Conduit: Factory wire fan motor wiring to the unit mounted starter-disconnect
- G. Flexible Duct Connections: For separating fan and coil, and adjacent sections; refer to Section 23 3300.
- H. Drives:
 1. Bearings: Heavy duty pillow block type, ball bearings, with ABMA 9 L-10 life at 50,000 hours.

2. Shafts: Solid, hot rolled steel, ground and polished, with key-way, and protectively coated with lubricating oil.
3. V-Belt Drive: Cast iron or steel sheaves, dynamically balanced, bored to fit shafts, and keyed. Variable and adjustable pitch sheaves for motors 15 hp and under selected so required rpm is obtained with sheaves set at mid-position; fixed sheave for 20 hp and over, matched belts, and drive rated as recommended by manufacturer or minimum 1.5 times nameplate rating of the motor.
4. Belt Guard: Fabricate to SMACNA HVAC Duct Construction Standards; 0.106 inch thick, 3/4 inch diamond mesh wire screen welded to steel angle frame or equivalent, prime coated. Secure to fan or fan supports without short circuiting vibration isolation, with provision for adjustment of belt tension, lubrication, and use of tachometer with guard in place.

2.06 COIL SECTION

- A. Casing: Provide access to both sides of coils. Enclose coils with headers and return bends exposed outside casing. Slide coils into casing through removable end panel with blank off sheets and sealing collars at connection penetrations.
- B. Air Coils: Certify capacities, pressure drops, and selection procedures in accordance with AHRI 410. Refer to Section 23 8200.
- C. Fabrication:
 1. Tubes: 5/8 inch OD seamless copper expanded into fins, brazed joints.
 2. Fins: Aluminum.
 3. Casing: Die formed channel frame of galvanized steel.
- D. Water Heating Coils:
 1. Headers: Cast iron, seamless copper tube, or prime coated steel pipe with brazed joints.
 2. Configuration: Drainable, with threaded plugs for drain and vent; serpentine type with return bends on smaller sizes and return headers on larger sizes.
- E. Water Cooling Coils:
 1. Headers: Cast iron, seamless copper tube, or prime coated steel pipe with brazed joints.
 2. Configuration: Drainable, with threaded plugs for drain and vent; threaded plugs in return bends and in headers opposite each tube.

2.07 FILTER AND AIR CLEANER SECTION

- A. General: Provide filter sections with filter racks, minimum of one access door for filter removal, and filter block-offs to prevent air bypass.
- B. Permanent Filters:
 1. Media: 2 inch, all-metal, viscous-impingement type, consisting of layers of cleanable wire mesh capable of operating up to a maximum of 625 fpm without loss of efficiency and holding capacity.
 2. Frame: Construct of galvanized steel.
 3. Minimum Efficiency Reporting Value: 2 MERV when tested in accordance with ASHRAE 52.2.
 4. Refer to Section 23 4000.
- C. Pleated Media Filters:
 1. Media: 2 inch, 100 percent synthetic fibers, continuously laminated to a grid with water repellent adhesive, and capable of operating up to a maximum of 625 fpm without loss of efficiency and holding capacity.
 2. Frame: Steel wire grid.
 3. Minimum Efficiency Reporting Value: 5 MERV when tested in accordance with ASHRAE 52.2.
 4. Refer to Section 23 4000.
- D. Differential Pressure Gage:
 1. Provide factory installed dial type differential pressure gage, flush mounted with casing outer wall, and fully piped to both sides of each filter to indicate status.

2. Maintain plus/minus 5 percent accuracy within operating limits of 20 degrees F to 120 degrees F.

PART 3 EXECUTION

3.01 INSTALLATION

- A. Install in accordance with manufacturer's instructions.
- B. Bolt sections together with gaskets.
- C. Isolate fan section with flexible duct connections.
- D. Install flexible duct connections between fan inlet and discharge ductwork and air handling unit sections. Ensure that metal bands of connectors are parallel with minimum one inch flex between ductwork and fan while running.
- E. Install assembled unit on vibration isolators. Install isolated fans with resilient mountings and flexible electrical leads. Install restraining snubbers as indicated. Refer to Section 22 0548. Adjust snubbers to prevent tension in flexible connectors when fan is operating.
- F. Provide variable sheaves then replace with fixed sheaves required after final air balance.
- G. Make connections to coils with unions or flanges.
- H. Hydronic Coils:
 1. Hydronic Coils: Connect water supply to leaving air side of coil (counterflow arrangement).
 2. Provide shut-off valve on supply line and lockshield balancing valve with memory stop on return line.
 3. Locate water supply at bottom of supply header and return water connection at top.
 4. Provide manual air vents at high points complete with stop valve.
 5. Ensure water coils are drainable and provide drain connection at low points.

END OF SECTION

ADDENDUM ACKNOWLEDGEMENT FORM
SOLICITATION NO.: DNR214153

Instructions: Please acknowledge receipt of all addenda issued with this solicitation by completing this addendum acknowledgment form. Check the box next to each addendum received and sign below. Failure to acknowledge addenda may result in bid disqualification.

Acknowledgment: I hereby acknowledge receipt of the following addenda and have made the necessary revisions to my proposal, plans and/or specification, etc.

Addendum Numbers Received:

(Check the box next to each addendum received)

- | | |
|---|--|
| <input type="checkbox"/> Addendum No. 1 | <input type="checkbox"/> Addendum No. 6 |
| <input type="checkbox"/> Addendum No. 2 | <input type="checkbox"/> Addendum No. 7 |
| <input type="checkbox"/> Addendum No. 3 | <input type="checkbox"/> Addendum No. 8 |
| <input type="checkbox"/> Addendum No. 4 | <input type="checkbox"/> Addendum No. 9 |
| <input type="checkbox"/> Addendum No. 5 | <input type="checkbox"/> Addendum No. 10 |

I understand that failure to confirm the receipt of addenda may be cause for rejection of this bid. I further understand that any verbal representation made or assumed to be made during any oral discussion held between Vendor's representatives and any state personnel is not binding. Only the information issued in writing and added to the specifications by an official addendum is binding.

Company

Authorized Signature

Date

NOTE: This addendum acknowledgement should be submitted with the bid to expedite document processing.

Revised 6/8/2012