

SECTION 235100 BREECHINGS, CHIMNEYS, AND STACKS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, apply to this Section.

1.2 SUMMARY

- A. This Section includes the following:
 - 1. Listed special gas vents for Condensing Boilers.
 - 2. Listed building heating appliance chimneys.
- B. Related Sections include the following:
 - 1. Commissioning Requirements as outlined in the Contract Documents.

1.3 SUBMITTALS

- A. Product Data: For the following:
 - 1. Type B and BW vents.
 - 2. Type L vents.
 - 3. Special gas vents.
 - 4. Building-heating-appliance chimneys.
 - 5. Guy wires and connectors.
- B. Shop Drawings: For vents, breechings, chimneys, and stacks. Include plans, elevations, sections, details, and attachments to other work.
 - 1. Detail equipment assemblies and indicate dimensions, weights, loads, required clearances, methods of field assembly, components, hangers and seismic restraints, and location and size of each field connection.
 - 2. For installed products indicated to comply with design loads, include calculations required for selecting seismic restraints and structural analysis data signed and sealed by the qualified professional engineer responsible for their preparation.
- C. Welding certificates.
- D. Manufacturer Seismic Qualification Certification: Submit certification that factory-fabricated breeching, chimneys, and stacks; accessories; and components will withstand seismic forces defined in Division 23 Section "Mechanical Vibration and Seismic Controls." Include the following:

1. Basis for Certification: Indicate whether withstand certification is based on actual test of assembled components or on calculation.
 - a. The term "withstand" means "the unit will remain in place without separation of any parts from the device when subjected to the seismic forces specified and the unit will be fully operational after the seismic event."
2. Dimensioned Outline Drawings of Breeching, Chimneys, and Stacks: Identify center of gravity and locate and describe mounting and anchorage provisions.
3. Detailed description of anchorage devices on which the certification is based and their installation requirements.

E. Warranty: Special warranty specified in this Section.

1.4 QUALITY ASSURANCE

- A. Source Limitations: Obtain listed system components through one source from a single manufacturer.
- B. Welding: Qualify procedures and personnel according to AWS D1.1/D1.1M, "Structural Welding Code--Steel," for hangers and supports and AWS D9.1/D9.1M, "Sheet Metal Welding Code," for shop and field welding of joints and seams in vents, breechings, and stacks.
- C. Certified Sizing Calculations: Manufacturer shall certify venting system sizing calculations.

1.5 COORDINATION

- A. Coordinate size and location of concrete bases. Cast anchor-bolt inserts into bases. Concrete, reinforcement, and formwork requirements are specified in Division 3.
- B. Coordinate installation of roof curbs, equipment supports, and roof penetrations. These items are specified in Division 7 Section "Roof Accessories."

1.6 WARRANTY

- A. Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace components of venting system that fail in materials or workmanship within specified warranty period commencing at the date of substantial completion. Failures include, but are not limited to, structural failures caused by expansion and contraction.
 1. Warranty Period: 15 years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 LISTED SPECIAL GAS VENTS –CONDENSING BOILERS

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
1. Schebler Co. (The).
 2. Heat-Fab, Inc.
 3. Metal-Fab, Inc.
 4. Industrial Chimney Company.
 5. Security Chimneys.
 6. Selkirk.
 7. Or approved equivalent.
- B. Description: Double-wall metal vents tested according to UL 1738 and rated for 550 deg F continuously, with positive or negative flue pressure complying with NFPA 211.
1. Provide Type AL 29-4C stainless steel or Type 444 stainless steel double wall metal as indicated on contract drawings. Engineer shall review material performance during submittal phase.
- C. Construction: Inner shell and outer jacket separated by at least a 1"-inch airspace.
- D. Inner Shell: ASTM A 959, Type AL 29-4C or Type 444 stainless steel, 0.024" minimum thickness.
- E. Outer Jacket:
1. Indoor Venting: Aluminized Steel, 0.034" thickness.
 2. Outdoor Venting: 430 Stainless Steel, 0.030" thickness.
- F. Entire installation shall be double wall with 1" air space. Provide manufacturer's support plate at base of flue. Support plate shall be capable of handling up to 227' of vertical stack. Provide Full Ring guide every 24' of vertical stack, or as per final approved manufacturer's instructions. Provide Half Ring supports every 12' of horizontal stack, or as per final approved manufacturer's instructions. All horizontal stacks shall slope towards appliances at 1/4" per foot. Provide drain section every 25' of horizontal, or as per final approved manufacturer's instructions. Provide condensate neutralization kit at the discharge of every drain location. Provide a minimum of 1" clearance around outside of double wall shell.
- G. Intake Combustion Pipe: Schedule 40 PVC pipe or galvanized sheet metal and fittings, provide wire mesh screen to cover termination opening outdoors.
- H. Accessories: Tees, elbows, increasers, draft-hood connectors, terminations, adjustable roof flashings, storm collars, support assemblies, thimbles, firestop spacers, and fasteners; fabricated from similar materials and designs as vent-pipe straight sections; all listed for same assembly.
1. Termination: Round chimney top designed to exclude minimum 98 percent of rainfall.

2.2 LISTED BUILDING-HEATING-APPLIANCE CHIMNEYS

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
1. American Metal Products; MASCO Corporation.
 2. Cleaver-Brooks; Div. of Aqua-Chem Inc.
 3. FAMCO.
 4. Hart & Cooley, Inc.
 5. Heat-Fab, Inc.
 6. Industrial Chimney Company.
 7. LSP Products Group, Inc.
 8. Metal-Fab, Inc.
 9. Schebler Co. (The).
 10. Selkirk Inc.; Selkirk Metalbestos and Air Mate.
 11. Simpson Dura-Vent Co., Inc.; Subsidiary of Simpson Manufacturing Co.
 12. Tru-Flex Metal Hose Corp.
 13. Van-Packer Company, Inc.
 14. Or approved equivalent.
- B. Description: Double-wall metal vents tested according to UL 103 and rated for 1000 deg F continuously, or 1700 deg F for 10 minutes; with neutral or negative flue pressure complying with NFPA 211.
- C. Construction: Inner shell and outer jacket separated by at least a 1-inch annular space filled with high-temperature, ceramic-fiber insulation.
- D. Inner Shell: ASTM A 666, Type 316 stainless steel.
- E. Outer Jacket: Stainless steel.
- F. Accessories: Tees, elbows, increasers, draft-hood connectors, terminations, adjustable roof flashings, storm collars, support assemblies, thimbles, firestop spacers, and fasteners; fabricated from similar materials and designs as vent-pipe straight sections; all listed for same assembly.
1. Termination: Round chimney top designed to exclude minimum 98 percent of rainfall.

2.3 GUYING AND BRACING MATERIALS

- A. Support vents, breeching, chimneys and stacks per manufacturer's requirements.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine areas and conditions for compliance with requirements for installation tolerances and other conditions affecting performance of work. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 APPLICATION

- A. Listed Special Gas Vent: Condensing gas appliances.
- B. Listed Building-Heating-Appliance Chimneys: Dual-fuel boilers, oven vents, water heaters, and exhaust for engines. Fireplaces and other solid-fuel-burning appliances.

3.3 INSTALLATION OF LISTED VENTS AND CHIMNEYS

- A. Install all intake and exhaust vents, breeching, chimneys and stacks per the manufacturer's guidelines.
- B. Locate to comply with minimum clearances from combustibles and minimum termination heights according to product listing or NFPA 211, whichever is most stringent.
- C. Seal between sections of positive-pressure vents and grease exhaust ducts according to manufacturer's written installation instructions, using sealants recommended by manufacturer.
- D. Support vents at intervals recommended by manufacturer to support weight of vents and all accessories, without exceeding appliance loading.
- E. Slope breechings down in direction of appliance, with condensate drain connection at lowest point piped to nearest drain.
- F. Lap joints in direction of flow.

3.4 CLEANING

- A. After completing system installation, including outlet fittings and devices, inspect exposed finish. Remove burrs, dirt, and construction debris and repair damaged finishes.
- B. Clean breechings internally, during and after installation, to remove dust and debris. Clean external surfaces to remove welding slag and mill film. Grind welds smooth and apply touchup finish to match factory or shop finish.
- C. Provide temporary closures at ends of breechings, chimneys, and stacks that are not completed or connected to equipment.

END OF SECTION 235100