SECTION 235100 - BREECHINGS, CHIMNEYS, AND STACKS

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Fabricated breechings.

B. Manufactured chimneys for gas fired equipment.

C. Manufactured double wall chimneys for fuel fired equipment.

1.2 REFERENCE STANDARDS

A. ASTM A 653/A 653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process; 2009a.

B. ASTM A 666 - Standard Specification for Annealed or Cold-Worked Austenitic Stainless Steel Sheet, Strip, Plate, and Flat Bar; 2003.

C. NFPA 31 - Standard for the Installation of Oil Burning Equipment; National Fire Protection Association; 2006.

D. NFPA 54 - National Fuel Gas Code; National Fire Protection Association; 2009.

E. NFPA 70 - National Electrical Code; National Fire Protection Association; 2008.

F. NFPA 82 - Standard on Incinerators and Waste and Linen Handling Systems and Equipment; National Fire Protection Association; 2009.

G. NFPA 211 - Standard for Chimneys, Fireplaces, Vents, and Solid Fuel-Burning Appliances; National Fire Protection Association; 2010.

H. SMACNA (DCS) - HVAC Duct Construction Standards - Metal and Flexible; Sheet Metal and Air Conditioning Contractors' National Association; 2005.

I. UL 103 - Factory-Built Chimneys for Residential Type and Building Heating Appliances; Underwriters Laboratories Inc.; Current Edition, Including All Revisions.

J. UL 441 - Standard for Gas Vents; Underwriters Laboratories Inc.; Current Edition, Including All Revisions.

K. UL 641 - Type L Low Temperature Venting Systems; Underwriters Laboratories Inc.; Current Edition, Including All Revisions.

L. UL 959 - Medium Heat Appliance Factory Built Chimneys; Underwriters Laboratories Inc.; Current Edition, Including All Revisions.

1.3 DEFINITIONS

A. Breeching: Vent Connector.

B. Chimney: Primarily vertical shaft enclosing at least one vent for conducting flue gases outdoors.

C. Smoke Pipe: Round, single wall vent connector.

D. Vent: That portion of a venting system designed to convey flue gases directly outdoors from a vent connector or from an appliance when a vent connector is not used.

E. Vent Connector: That part of a venting system that conducts the flue gases from the flue collar of an appliance to a chimney or vent, and may include a draft control device.

1.4 DESIGN REQUIREMENTS

A. Factory built vents and chimneys used for venting natural draft appliances shall comply with NFPA 211 and be UL listed and labeled.

1.5 SUBMITTALS

A. See Section 013300 - Submittal Procedures, for submittal procedures.

B. Product Data: Provide data indicating factory built chimneys, including dimensional details of components and flue caps, dimensions and weights, electrical characteristics and connection requirements.

C. Shop Drawings: Indicate general construction, dimensions, weights, support and layout of breechings. Submit layout drawings indicating plan view and elevations where factory built units are used.

D. Manufacturer's Instructions: Include installation instructions, and indicate assembly, support details, and connection requirements.

E. Manufacturer's Certificate: Certify that refractory lined metal stacks meet or exceed specified requirements.

1.6 QUALITY ASSURANCE

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

B. Installer Qualifications: Company specializing in performing the type of work specified in this section with minimum 3 years of documented experience and approved by manufacturer.

1.7 REGULATORY REQUIREMENTS

A. Conform to applicable code for installation of natural gas burning appliances and equipment.

B. Conform to applicable code for installation of oil burning appliances and equipment.

PART 2 PRODUCTS

2.1 MANUFACTURERS

A. Heatfab by Commercial Products Group of Hart & Cooley, Inc: www.selkirkcorp.com/heatfab.

B. Metal-Fab, Inc: www.mtlfab.com.

C. Selkirk by Commercial Products Group of Hart & Cooley, Inc: www.selkirkinc.com.

D. Substitutions: See Section 016000 - Product Requirements.

2.2 BREECHINGS

A. Breechings Less Than 24 inches (610 mm) in Diameter: Fabricate from hot-dipped galvanized steel sheet, ASTM A653/A653M FS, with G90/Z275 coating; make longitudinal seams using pipe lock or flat lock groove seam and make end joints beaded and crimped.

B. Minimum Metal Thicknesses:

1. Sizes up to 12 inches (300 mm): 18 gage (1.2 mm).
2. Sizes 13 to 24 inches (325 to 600 mm): 16 gage (1.5 mm).

C. Provide adjustable self-actuating barometric draft dampers, where indicated, full size of breeching.

D. Provide cleanout doors of same gage as breeching, where indicated on Drawings.

E. Reinforcing: Provide angle frames for rectangular breeching and flanged girth joints or angle frames for round breeching, at following intervals:

1. Sizes up to 30 inches (750 mm): No reinforcing required.

F. Fabricate breeching fittings to match adjoining breechings. Fabricate elbows with center-line radius equal to breeching width. Limit angular tapers to 20 degrees maximum.

2.3 TYPE B DOUBLE WALL GAS VENTS

A. Fabrication: Inner pipe of sheet aluminum, and outer pipe of galvanized sheet steel, tested in compliance with UL 441.

2.4 DOUBLE WALL METAL STACKS

A. Provide double wall metal stacks, tested to UL 103 and UL listed, for use with building heating equipment, in compliance with NFPA 211.

B. Fabricate with 1 inch (25 mm) minimum air space between walls. Construct inner jacket of 20 gage (0.9 mm) ASTM A666, Type 304 stainless steel. Construct outer jacket of aluminum coated steel 24 gage (0.6 mm) for sizes 10 inches to 24 inches (250 mm to 600 mm) and 20 gage (0.9 mm) for sizes 28 inches to 48 inches (700 mm to 1200 mm).

C. Accessories, UL labeled:

1. Ventilated Roof Thimble: Consists of roof penetration, vent flashing with spacers and storm collar.
2. Exit Cone: Consists of inner cone, and outer jacket, to increase stack exit velocity 1.5 times.
3. Stack Cap: Consists of conical rainshield with inverted cone for partial rain protection with low flow resistance.

PART 3 EXECUTION

3.1 INSTALLATION

A. Install in accordance with manufacturer's instructions.

B. Install in accordance with NFPA 54.

C. Install breechings with minimum of joints. Align accurately at connections, with internal surfaces smooth.

D. Support breechings from building structure, rigidly with suitable ties, braces, hangers and anchors to hold to shape and prevent buckling. Support vertical breechings, chimneys, and stacks at 12 foot (4 m) spacing, to adjacent structural surfaces, or at floor penetrations. Refer to SMACNA HVAC Duct Construction Standards - Metal and Flexible for equivalent duct support configuration and size.

E. Install concrete inserts for support of breechings, chimneys, and stacks in coordination with formwork.

F. Pitch breechings with positive slope up from fuel-fired equipment to chimney or stack.

G. Insulate breechings in accordance with Section 220716.

H. For Type B double wall gas vents, maintain UL listed minimum clearances from combustibles. Assemble pipe and accessories as required for complete installation.

I. Install vent dampers, locating close to draft hood collar, and secured to breeching.

J. Assemble and install stack sections in accordance with NFPA 82, industry practices, and in compliance with UL listing. Join sections with acid-resistant joint cement. Connect base

section to foundation using anchor lugs.

K. Level and plumb chimney and stacks.

L. Clean breechings, chimneys, and stacks during installation, removing dust and debris.

M. At appliances, provide slip joints permitting removal of appliances without removal or dismantling of breechings, breeching insulation, chimneys, or stacks.

N. Provide maximum 2 feet (maximum 600 mm) of breeching to connect appliance to chimney. Provide Type B chimney continuously from appliances.

END OF SECTION