PART 1 - GENERAL

1.1 APPLICABLE REQUIREMENTS

A. All work to be furnished and installed under this Section shall comply with all the requirements of General Conditions, Supplemental Conditions, Division 01 - General Requirements, Section 230500 - Basic Materials and Methods, and other Sections in Division 23 specified herein.

1.2 SCOPE

A. All work to be furnished and installed under this Section shall comply with all the requirements of Division 01, and shall include, but not necessarily be limited to, the following:
1. Self-supporting high temperature chimney, and breechings, including all fittings, structural supports, fastenings, bracing, sealant, shop and field painting, clean-outdoors, ventilated wall, floor or roof thimbles, flashing, rain hood, guy wires, seismic restraints and any related items.
2. Double wall Type B gas vent pipe and fittings including supports, fastenings, bracing, draft hood connector, sealant, rain cap, ventilated wall, floor or roof thimbles, flashing, guy wires, seismic restraints and any related items.
3. Steel gas vent, including all fittings, structural supports, fastenings, bracing, sealant, shop and field painting, roof terminations, flashing, wall terminations, guy wires, seismic restraints and any related items.
4. Calculations and details for vent sizing, seismic and thermal expansion design and associated details.
5. Calculations and details for the engine generator and/or fire pump discharge from the silencer/muffler/precipitator to the final termination point.

1.3 RELATED WORK SPECIFIED ELSEWHERE

A. Division 07: Thermal and Moisture Protection. For coordination of roof curbs, supports and roof penetrations.

B. Section 230500: Basic Materials and Methods

C. Section 235200: Heat Generation

D. Section 235113: Draft Control Devices. For induced draft and mechanical fans and for motorized and barometric dampers.

1.4 SUMMARY

A. This Section includes the following:
1. Listed single wall vents
2. Listed double wall vents.
3. Listed, refractory-lined breechings and stacks.
4. Field-fabricated metal breechings and chimneys.
5. Listed grease ducts.

1.5 SUBMITTALS

A. Provide product data for the following:
   1. Chimney liners.
   2. Type B and BW vents.
   3. Type L vents.
   4. Special gas vents.
   5. Building-heating-appliance chimneys.

B. Submit certified dimensioned shop drawings, construction details, mounting details, hardware and accessories:
   1. Detail equipment assemblies and indicate dimensions, weights, required clearances, methods of field assembly, components, and location and size of each field connection.
   2. Submit seismic support and restraint calculations stamped and signed by a licensed structural engineer.

C. Provide manufacturer chimney and vent draft calculations. Certify that the calculations are based on actual jobsite conditions and are coordinated with “released-for-construction” equipment submittal data, and that the complete stack and breeching systems stack draft range at equipment outlets are within the equipment manufacturer’s recommended range.

1.6 QUALITY ASSURANCE

A. Source Limitations: Obtain listed system components through one source from a single manufacturer.

B. The venting system shall develop a positive flow adequate to exhaust flue gases to the atmosphere without condensation within the vent or flue gas spillage. The design shall compensate for thermal expansion.

C. 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.

1.7 DELIVERY, STORAGE, AND HANDLING

A. Deliver products to the site in containers with manufacturer's stamp or label affixed.

B. Store and protect products against dirt, water, chemical, and mechanical damage. Do not install damaged components. Remove damaged products from project site.

1.8 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. Failures include, but are not limited to, structural failures caused by expansion and contraction.
   1. Warranty Period: 10 years from date of Certificate of Occupancy.

PART 2 - PRODUCTS

2.1 LISTED TYPE B AND BW VENTS

A. Description: Double-wall metal vents tested according to UL 441 and rated for 480ºF (248ºC) continuously for Type B, or 550ºF (288ºC) continuously for Type BW; with neutral or negative flue pressure complying with NFPA 211.

B. Construction: Inner shell and outer jacket separated by at least 1/4” (6 mm) airspace.

C. Inner Shell: ASTM B 209 aluminum or stainless steel construction with a minimum wall thickness of 0.012”.

D. Outer Jacket: Galvanized, aluminized steel or stainless steel.

E. Vent shall be installed and supported in accordance with the UL Listing, manufacturer’s recommendations and using manufacturer-supplied components.

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. Termination shall be designed to exclude minimum 98 percent of rainfall.

G. Manufacturers: Amerivent, Ecco, M&G DuraVent, Selkirk-SuperPro, or equal.

2.2 LISTED TYPE L VENTS

A. Description: Double-wall metal vents tested according to UL 641 and rated for 570ºF (300ºC) continuously, or 1700ºF (926ºC) for 10 minutes; with neutral or negative flue pressure complying with NFPA 211.

B. Construction: Inner shell and outer jacket separated by at least 1” airspace, or filled with high-temperature, mineral wool insulation.

C. Inner Shell: ASTM A 666 Type 304, Type 316 or Type 444 stainless steel with a minimum wall thickness of 0.012”.

D. Outer Jacket: Galvanized, aluminized steel or stainless steel.

E. Vent shall be installed and supported in accordance with the UL Listing, manufacturer’s recommendations and using manufacturer-supplied components.

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. Termination shall be designed to exclude minimum 98 percent of rainfall.

G. Manufacturers: M&G Dura-Vent, Selkirk-Heatfab, Simpson, or equal.

2.3 LISTED SPECIAL GAS VENTS

A. Description: Double wall metal vents tested according to UL 1738 and rated for 480ºF (248ºF) continuously, with positive or negative flue pressure complying with NFPA 211.

B. Construction: Inner shell and outer jacket separated by at least 1” airspace.

C. Inner Shell: ASTM A 959 Type AL29-4C stainless steel or Type 316L stainless steel.

D. Outer Jacket: Aluminized steel or stainless steel.

E. Vent shall be installed and supported in accordance with the UL Listing, manufacturer’s recommendations and using manufacturer-supplied components.

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. Termination shall be designed to exclude minimum 98 percent of rainfall.

G. Manufacturers: Enervex, Security Chimneys International, Selkirk-Heatfab, or equal.

2.4 GUYING AND BRACING MATERIALS

A. Cable: Multiple galvanized, stranded wires of the following thickness:
1. Minimum Size: 1/4” (6mm) in diameter.
2. 5/16” (8 mm) for vent ID sizes 4” to 15” (100 to 381 mm).
3. 3/8” (9.5 mm) for vent ID sizes 18” to 24” (457 to 610 mm).

B. Angle Iron: Galvanized steel, minimum 2” by 2” by 1/4” (50 by 50 by 6 mm).

PART 3 - EXECUTION

3.1 APPLICATION

A. Listed Type B and BW Vents: Vents for certified gas appliances (Category I and II).

B. Listed Type L Vent: Vents for low-heat appliances (Category I).

C. Listed Special Gas Vent: Condensing gas appliances (Categories II and IV). Or, non-condensing gas appliances with positive pressure in the flue (Category III).

3.2 INSTALLATION OF LISTED VENTS AND CHIMNEYS

A. Comply with UL Listing, Product Listing, Local Codes, Mechanical Code, NFPA 211, or Product Installation Requirements, whichever is most stringent.

B. Roof penetrations shall be suitable for the roof construction shown and shall follow the manufacturer’s installation instructions and local codes.

C. Coordinate exact dimensions and other requirements of floor, roof, wall, and partition penetrations with all other sub-contractors.

D. Whenever pressure relief valves are required, install where indicated on the drawings and where human contact is avoided and away from combustible materials.

E. Seal between sections of positive-pressure vents and grease exhaust ducts

according to manufacturer's written installation instructions, using sealants recommended by manufacturer.

F. Support vents at intervals recommended by manufacturer to support weight of vents and all accessories, without exceeding appliance loading.

G. Lap joints in direction of flow.

H. When applicable, for appliances with more than 83 percent efficiency, slope breechings down in direction of appliance, with condensate drain connection at lowest point piped to nearest drain.

3.3 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