
Part 1 General

1.1 RELATED SECTIONS

- .1 Section 22 05 00 - Common Work Results for Plumbing.
- .2 Section 23 05 00 - Common Work Results for HVAC

1.2 REFERENCES

- .1 American Society of Heating, Refrigeration and Air-Conditioning Engineers (ASHRAE).
 - .1 ASHRAE, Equipment Handbook for Chimney, Gas Vent, and Fireplace Systems, Material Requirements and Design Criteria.
- .2 American Society for Testing and Materials International (ASTM).
 - .1 ASTM A307-07b, Carbon Steel Bolts and Studs Ranging from ¼” through 4” diameter.
- .3 American Welding Society (AWS).
 - .1 AWS, Structural Welding Code for Welder’s Qualifications, Welding Details, and Workmanship Standards.
- .4 Canadian Standards Association (CSA)/CSA International.
 - .1 CAN/CSA-B72-M87, Installation Code for Lightning Protection Systems
 - .2 CAN/CSA-B149.1-05, Natural Gas and Propane Installation Code.
 - .3 CAN/CSA-G40.21-04, Structural Quality Steel.
 - .4 CAN/CSA-S16-01, Limit States Design of Steel Structures.
 - .5 CAN/CSA-W59-01, Welded Steel Construction.
 - .6 CSA B139-04, Installation Code for Oil-Burning Equipment.
- .5 National Fire Protection Association (NFPA).
 - .1 NFPA 37-2006, Installation and Use of Stationary Combustion Engines and Gas Turbines.
 - .2 NFPA 211-2006, Chimneys, Fireplaces, Vents and Solid Fuel Burning Appliances.
- .6 Sheet Metal and Air-Conditioning Contractors National Association (SMACNA).
 - .1 SMACNA, Low Pressure Duct Standards for Fabricated Breeching and Smoke Pipe.
- .7 Underwriters Laboratories (UL).
 - .1 UL, Safety Standards.

- .2 UL-103 Section 22A, Positive Pressure Exhausts System up to 60" Water Column.
- .3 UL -1738, Venting Systems for Gas-Burning Appliances, Categories II, III, and IV.
- .8 Underwriters Laboratories of Canada (ULC).
 - .1 ULC-C959-RD-1.
 - .2 ULC-S636-08, Standard for Type BH Gas Venting Systems.

1.3 SUBMITTALS

- .1 Submit manufacturer's printed product literature, specifications and datasheet in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Product Data:
 - .1 Submit manufacturer's instructions, printed product literature and data sheets for unit heaters and include product characteristics, performance criteria, physical size, finish, and limitations.
- .3 Data sheets:
 - .1 Data sheets must include the following:
 - .1 Methods of sealing sections.
 - .2 Methods of expansion.
 - .3 Details of thimbles.
 - .4 Bases/Foundations.
 - .5 Supports.
 - .6 Guy details.
 - .7 Rain caps.
 - .8 Construction and insulation materials.
 - .9 Complete installation drawings of all the elements that make up the gas exhaust ducts, including scaled drawings of supports, in accordance with the proposed installation.
 - .10 Calculations for the size of the chimney and breeching, by the manufacturer, in accordance with the method indicated by ASHRAE, demonstrating the characteristics of the flow inside the inside wall of the ducts and the compliance with the acceptable pressure loss for the equipment, authenticated by an Engineer in accordance with the authentication method of the "Ordre des ingénieurs du Québec".

1.4 CLOSEOUT SUBMITTALS

- .1 Submit all required documents and items after completion of work for incorporation into manual such as specified in Section 01 78 00 - Closeout Submittals.

- .2 Data Sheets:
 - .1 Operation and Maintenance Data sheet must include the following:
 - .1 A description of the apparatus, including the manufacturer's name, type, model, year of manufacture and the power, flow or containing capacity;
 - .2 The relevant details related to the operation and maintenance;
 - .3 A list of recommended spare parts.

1.5 QUALITY ASSURANCE

- .1 Regulatory Requirements: work performed in accordance with Federal, provincial and municipal requirements.
- .2 The complete system, of the nozzle to the end of the devices must be supplied by a single manufacturer.
- .3 Breeching, chimneys, and stacks must be approved by the ULC.

1.6 HEALTH AND SAFETY

- .1 Take necessary measures to ensure health and safety on construction site, in accordance with Section 01 35 29.06 - Health and Safety Requirements.

1.7 WASTE MANAGEMENT AND DISPOSAL

- .1 Sort waste in order to re-use and recycle in conformity with section 01 74 21 - Waste Management Plan.

1.8 ACCEPTABLE PRODUCTS AND MATERIALS

- .1 Where a particular brand name is stipulated, see Instructions to Bidders for procedure for requesting approval of substitute materials and products.

Part 2 Products

2.1 CHIMNEY AND BREECHING CONNECTED TO CONDENSING UNITS, CATEGORIES II AND IV

- .1 This section specifies the special double walls exhaust ducts for gas units of Categories II and IV.
- .2 Maximum continuous working temperature of 288°C.
- .3 Chimney and breeching must resist to the corrosion caused by the condensation of the combustion gases at low temperature.

- .4 Exhaust ducts must be in stainless steel AL29-4C, positive pressure:
 - .1 The factory manufactured products must be manufactured in accordance with NFPA211. The system shall be designed and installed to form a gas leakproof unit. It shall be UL tested and approved in accordance with standard UL1738 and ULC-S636.
 - .2 The product must be tested and approved to resist to a positive pressure up to 3.75 kPa, and must be labelled with the UL approval. This system must be designed to counterbalance the thermal expansion due to the gas flow. A 50 mm high temperature insulant must place between the interior wall and the exterior wall of the duct. Clearances concerning the combustible materials are specified in the installation instruction.
 - .3 The joint assembly must be male/female type, with an edge jointing and tie band (AB). An insulating band must be installed at the joint level. An exterior finishing band (FB) must be used to cover the internal joint and the insulation.
 - .4 The double wall product shall include an internal stainless steel of AL29-4C type and 0.6070 mm wall (24 gauges), while the external wall shall be made of 304 type stainless steel and 0.6070 mm wall (24 gauges). The materials and construction of modular sections shall be in accordance with the UL certification of the product.
- .5 Acceptable Products:
 - .1 Cheminée Lining,E Inc., HEPL2 Series;
 - .1 Lengths:
 - .1 Lengths and furnitures shall be prefabricated assembly.
 - .2 Straight lengths: model HEPL2-XXL.
 - .3 Tees "Y": model HEPL2-T45.
 - .4 Elbows of 45°: model HEPL2-E45.
 - .5 Reducers-Enlargers: model HEPL2-I.
 - .6 Adjustable lengths with assembly flanges and finishing flanges will be used for final adjustment of the breeching: model HEPL-AL.
 - .2 Accessories:
 - .1 Starting adapter: model HEPL2-SA.
 - .2 Galvanized suspension flanges: model HEPL2-SB.
 - .3 Suspension flanges and half-moon brackets in order to support the breeching on all its length: model HEPL2-HB.
 - .4 Tee caps: model HEPL2-TC.
 - .5 Assembly flanges: model HEPL2-BA.
 - .6 Finishing flanges: model HEPL2-FB.
 - .7 Anchor plate: model HEPL2-AP.
 - .8 Roof supports de toit: model HEPL2-RS.

- .9 Any other required equipment for the complete furnace flue installation, such as guy line, vented flashing, and rain caps.
- .2 Selkirk;
- .3 Cheminées Sécurité;
- .4 Replacement materials or products: approved by addendum according to Instructions to bidders.
- .6 The diameter of the breeching can vary according to the boiler manufacturer. The Contractor will make the modifications without any additional charge.

2.2 CHIMNEY AND BREECHING CONNECTED TO A GENERATOR

- .1 Ducts with the ULC label that can withstand a rated temperature of 760°C in a continuous operation and 925°C in a peak operation and suitable for all types of fuel.
- .2 Prefabricated ducts, double wall segments with 50 mm thick ceramic fibre insulation and appropriate connectors and couplings.
 - .1 Interior lining: stainless steel type 316, 1.27 mm thick (18 gauge), with plasma welded longitudinal joints.
 - .2 Exterior envelope: stainless steel type 304, 0.95 mm thick (20 gauge) with plasma welded longitudinal joints.
 - .3 Section joints sealed using high-temperature silicone cement, including companion flanges.
 - .4 Explosion valve, start adaptor, expansion joints and guides, in accordance with manufacturer's recommendations.
- .3 Acceptable products:
 - .1 Cheminée Lining.E Inc., model IPPL2F:
 - .1 Rain caps: model IPPL2F-RSH.
 - .2 Horizontal exit: model IPPL2F-MS.
 - .3 Wall guides: model IPPL2F-WG.
 - .4 Floor guides: model IPPL2F-FG.
 - .5 Expansion joints: model IPPL2F-EJ.
 - .6 Adapter of departure: model IPPL2F-SA.
 - .7 Explosion valve: model IPPL2F-EV.
 - .2 Selkirk;
 - .3 Cheminées Sécurité;
 - .4 Replacement materials or products: approved by addendum according to Instructions to bidders.

**2.3 CHIMNEY AND BREECHING CONNECTED TO CONDENSING UNITS,
TYPE B**

- .1 Chimney labeled ULC which can support a maximum continuous working temperature of 288°C, atmospheric vent type, for condensing boilers. It shall be UL tested and approved in accordance with standard UL1738 and ULC-S636.
- .2 Size of the chimney according to the condensing boilers manufacturer, CH1-CBT-A00 & CH2-CBT-A00.
- .3 The system shall be designed and installed to form a gas leakproof unit.
- .4 Prefabricated single wall chimney to insert into an existing masonry chimney.
 - .1 Chimney liner must be in type AL29-4C stainless steel.
 - .2 Tungsten arc welded or laser welded.
- .5 Prefabricated insulated double wall chimney having a thickness of 25 to 50 mm.
 - .1 Insulated chimney from the condensing boiler to the existing masonry chimney.
 - .2 Inner liner must be in type AL29-4C stainless steel.
 - .3 Outer casing must be in type 430 stainless steel.
 - .4 Both are Tungsten Arc Welded or laser welded.
- .6 Accessories:
 - .1 Rain cap;
 - .2 Flashing and storm collar;
 - .3 Single wall TEE with detachable nozzle;
 - .4 TEE cap drain;
 - .5 Double to single wall adapter;
 - .6 Horizontal drain section;
 - .7 Support(s) installed according to the manufacturer's recommendations;
 - .8 Firestop for passage through wall with high temperature rated caulking;
 - .9 Supply with all necessary accessories required for a functional system.
- .7 Acceptable Products:
 - .1 Cheminée ICC;
 - .2 Chimney Selkirk;
 - .3 Sécurité cheminée;
 - .4 Cheminée Lining;
 - .5 Replacement materials or products: approved by addendum according to Instructions to bidders.
- .8 Chimney and breeching must resist to the corrosion caused by the condensation of the combustion gases at low temperature.

2.4 ACCESSORIES

- .1 Cleanout Openings: bolted, sealed garniture, one section with the flue.
- .2 Barometric Louvers: double action, occupying 70% of the total breeching section.
- .3 Supports and Suspensions: in accordance with SMACNA Recommendations.
- .4 Rain caps.
- .5 Expansion Sleeves: caulked with heat-resistant product and held in place according to indications.

2.5 SEISMIC-RESISTANT SYSTEM

- .1 The combustion gas exhaust system must be seismic resistant.

Part 3 EXECUTION

3.1 MANUFACTURER'S INSTRUCTIONS

- .1 Compliance: comply with manufacturer's written recommendations or specifications, including product technical bulletins, handling, storage and installation instructions, and datasheet.

3.2 INSTALLATION - GENERAL

- .1 Install factory manufactured components in accordance with manufacturer's and SMACNA recommendations.
- .2 Support flues using suspensions installed at 1.5 m centre to centre and at each joint.
- .3 Attach chimneys at the base to the roof and at intermediate locations according to indications.
- .4 For horizontal course, install chimney with a slope, according to manufacturer's recommendation, in order to permit condensate flow.
- .5 Position sleeves at roof, floor and ceiling crossing points, as well as where a flue is inserted into a masonry chimney. Fill the annular space using a heat-resistant caulking product.
- .6 Position flashing around the chimneys, where it crosses the roof, according to indications.
- .7 Install rain-proof cap and cleanout openings according to indications.

3.3 INSTALLATION

- .1 Freestanding Chimney:
 - .1 Chimney must be delivered, provided and installed with all the accessories needed to its erection and its functioning, such as flashing, counterflashing, anchor bolts, structural supports at the base, the walls, the roof, seating ring, drain opening at the base of the chimney, etc.
 - .2 Execute all general works needed to allow the erection of the temporary exhaust ducts.
 - .3 The ducts must be supported by required pipe hangers, guides, guy lines or structural supporting falseworks.
 - .4 Ducts must be insulated where they cross the building walls. Respect all the clearances needed for combustible materials, as recommend by NFPA 211.
 - .5 Fix securely the chimney by its base, at the roof, and at intermediate level, as the case may be.
 - .6 Plan the horizontal and vertical hangers needed for the implementation of the flue and the chimney.
- .2 All arcs welding must be performed in accordance with CSA/CAN-W59 and strength welds must be in compliance with CSA/CAN-W55.2 and ASME Section 9.
- .3 All end-to-end joint welds must be full penetration.
- .4 Provide sealant where exterior walls overlap to ensure a tight seal.
- .5 The chimney must be built in accordance with the specifications of CSA-S16-01 and ASME, Boiler and Pressure Vessel Code.
- .6 Lighting protection must be in accordance with CAN/CSA-B72, see Division 26.
- .7 Installation of double wall connectors, exhaust ducts:
 - .1 The system shall be installed in accordance with the manufacturer's installation instructions. Jointing of sections must be done using interior and exterior bands supplied by the manufacturers and appropriate high-temperature sealant. The combustible holes in walls and attics must be protected by parts manufactured and designed for that purpose by the manufacturer.
 - .2 When installed in compliance with the manufacturer's instructions, the vertical exhaust duct and support system must be designed to support 1.5 times their weight by linear foot of duct.

END OF SECTION