

## **PART 1 - GENERAL**

### **1.1 REFERENCES**

- .1 Unless otherwise indicated, all the works must be done in accordance with the in force edition of the "Code de construction du Québec"
- .2 Furthermore, the works will be done in accordance with any other code or standard having jurisdiction, as per the latest edition, notably including, but not limited to:
  - .1 Health Canada/Workplace Hazardous Materials Information System (WHMIS).
    - .1 Material Safety Data Sheets (MSDS).
  - .2 Sheet Metal and Air Conditioning Contractors' National Association (SMACNA).
    - .1 SMACNA - HVAC Duct Construction Standards - Metal and Flexible, 95.
  - .3 National Fire Protection Association (NFPA).
    - .1 NFPA 90A-2009, Installation of Air Conditioning and Ventilating Systems.
    - .2 NFPA 90B-2009, Installation of Warm Air Heating and Air Conditioning Systems.
  - .4 Underwriters Laboratories of Canada (ULC).
    - .1 CAN/ULC-S110-M86(R2001), Fire Tests for Air Ducts.
    - .2 UL 181-1996, Factory Made Air Ducts and Connectors

### **1.2 SUBMITTALS**

- .1 Submit documents and samples required.
  - .2 Product Data.
    - .1 Submit manufacturer's printed product literature, specifications, and data sheet. Indicate the following:
      - .1 Flexible connections.
      - .2 Duct access doors.
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- .3 Turning vanes.
- .4 Instrument test ports.
- .2 Submit Material Safety Data Sheets (MSDS).
- .3 Test Reports: Submit independent laboratory test reports in order to certify that the products and materials satisfy the performance criteria.
  - .1 Technical data provided by the manufacturer must be reliable and confirmed by tests performed by the manufacturer or by independent laboratories in order to certify their compliance to the standards.
- .4 Certificates: Submit documents signed by the manufacturer in order to certify that the products and materials satisfy the performance criteria.
- .5 Instructions: Submit manufacturer's installation instructions.
- .6 On-field Manufacturer Inspection: Submit reports for these inspections.
- .7 Closeout Submittals: Submit maintenance data sheets and attach them to the "Operating and Maintenance Manual".

### **1.3 DELIVERY, STORAGE, AND HANDLING**

- .1 Waste Management and Disposal.
  - .1 Remove from site and dispose of packaging materials at appropriate recycling facilities.
  - .2 Collect and separate for disposal packaging material in appropriate on-site bins for recycling, in accordance with Waste Management Plan.
  - .3 Divert unused metal materials from landfill to recycling facility as approved by Departmental Representative.

## **PART 2 - PRODUCTS**

### **2.1 GENERAL**

- .1 Accessories to be manufactured in accordance with SMACNA - HVAC Duct Construction Standards.
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## **2.2 FLEXIBLE CONNECTIONS**

- .1 Frame: Galvanized sheet metal frame 1.3 mm (0.05 in) thick with fabric clenched by means of double locked seams.
- .2 Material.
  - .1 Fire resistant, self extinguishing, neoprene coated glass fabric, temperature rated at minus 40°C to plus 90°C, density of 1.3 kg/m<sup>2</sup>.
  - .2 Asbestos fibre cloth, treated with acrylic resin, incombustibles, meeting environment protection standards requirements, rated for temperature up to 900°F, complying with ASTM AAAA category, with 0.92kg/m<sup>2</sup> (0.189 lb/ft<sup>2</sup>), ULC listed (S109).

## **2.3 ACCESS DOORS IN DUCTS**

- .1 Non-Insulated Ducts: Sandwich construction of same material as duct, one sheet metal thickness heavier, minimum 0.6 mm thick complete with sheet metal angle frame.
- .2 Insulated Ducts: Sandwich construction of same material as duct, one sheet metal thickness heavier, minimum 0.6 mm thick complete with sheet metal angle frame and 25 mm (1 in) thick rigid glass fibre insulation.
- .3 Gaskets: Neoprene, 20 mm x 10 mm.
- .4 Hardware.
  - .1 Doors, up to 1,000 mm height: One continuous piano type hinge and at least two locks, Duro Dyne SL-1.
  - .2 Doors, over 1,000 mm height: One continue piano type hinge and three handles operable from both inside and outside.
  - .3 Door holder: Device to keep doors in open position.

## **2.4 TURNING VANES**

- .1 Factory or shop fabricated single or double thickness, to recommendations of SMACNA and as indicated.

## **2.5 INSTRUMENT TEST**

- .1 1.6 mm thick steel zinc plated after manufacture.
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- .2 Cam lock handles with neoprene expansion plug and handle chain.
- .3 28 mm minimum inside diameter. Length suitable to insulation thickness.
- .4 Neoprene mounting gasket.
- .5 Acceptable Products: IP1 or IP2 by Duro-Dyne.

## **PART 3 - EXECUTION**

### **3.1 INSTALLATION**

- .1 Flexible Connections.
  - .1 Install in following locations:
    - .1 Inlets and outlets to supply air units and fans.
    - .2 Length of connection: 150 mm (6 in).
    - .3 Minimum distance between metal parts when system in operation: 75 mm.
    - .4 Install in accordance with recommendations of SMACNA.
    - .5 When fan is running:
      - .1 Ducting on sides of flexible connection to be in alignment.
      - .2 Ensure slack material in flexible connection.
  - .2 Access Door Duct.
    - .1 Size:
      - .1 610 x 1,520 mm for person size entry.
      - .2 460 x 460 mm for handhole.
      - .3 300 x 200 mm for viewing.
      - .4 As indicated.
    - .2 Locations:
      - .1 Fire and smoke and control dampers.

- .2 Devices requiring maintenance.
  - .3 Required by Code.
  - .4 Reheat coils, one on each side.
  - .5 Elsewhere as indicated.
  - .3 Handhole location:
    - .1 Located to give access to the smoke evacuation dampers and fire dampers
    - .2 Located to give access to balancing dampers.
    - .3 Located to give access to devices requiring periodical maintenance.
    - .4 Located as required by Standards.
    - .5 Located to give access to both sides of a coil.
    - .6 Located where indicated.
  - .3 Instrument Test Ports.
    - .1 General.
      - .1 Install in accordance with recommendations of SMACNA and in accordance with manufacturer's instructions.
    - .2 Locate to permit easy manipulation of instruments.
    - .3 Install insulation port extensions as required.
    - .4 Locations.
      - .1 For traverse readings.
        - .1 Inlets and outlets of other fan systems.
        - .2 Main and sub-main ducts.
        - .3 As indicated.
      - .2 For temperature readings:
        - .1 At outside air intakes.
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- .2 On mixing boxes as approved by the Departmental Representative.
  - .3 At inlet and outlet of coils.
  - .4 Downstream of junctions of two converging air streams of different temperatures.
  - .5 As indicated.
- .4 Turning vanes.
- .1 Install in accordance with recommendations of SMACNA and as indicated.

### **3.2 CLEANING**

- .1 Once installation work is completed, clear the job site of all surplus material, waste, tools, and safety barriers.

**END OF SECTION**

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