

**Part 1            General**

**1.1                RELATED REQUIREMENTS**

- .1            Section 23 05 00 – Common Work Result for HVAC

**1.2                REFERENCES**

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

**1.3                ACTION AND INFORMATIONAL SUBMITTALS**

- .1            Submit in accordance with Section 01 33 00 - Submittal Procedures.
- .2            Product Data:
  - .1            Submit manufacturer's instructions, printed product literature and data sheets for air duct accessories and include product characteristics, performance criteria, physical size, finish and limitations.
  - .2            Indicate:
    - .1            Flexible connections.
    - .2            Duct access doors.
    - .3            Guide vanes.
    - .4            Instrument test ports.

**1.4                MATERIAL/PRODUCT REPLACEMENT**

- .1            Where materials or products are specified by their trademark, consult the Instructions to Bidders document for the procedures to follow regarding the request for approval for materials or product replacement.
- .2            Material/Product Replacement
  - .1            Providing material/equipment maintenance required in accordance with Section 01 78 00 – Closeout Submittals.
  - .2            Provide a list of spare parts recommended by each manufacturer, a list of suppliers where one can obtain spare parts, and a list of special tools necessary to adjust, repair and replacement of these parts, and add them in the maintenance manual.

**1.5                DELIVERY, STORAGE AND HANDLING**

- .1            Deliver, store and handle materials in accordance with Section 01 61 00 - Common Product Requirements with manufacturer's written instructions.
- .2            Delivery and Acceptance Requirements: deliver materials to site in original factory packaging, labelled with manufacturer's name and address.

- .3 Storage and Handling Requirements:
  - .1 Store materials off ground, ideally indoors or in a clean, dry, well ventilated area and in accordance with manufacturer's recommendations.
  - .2 Store and protect air duct accessories from nicks, scratches, and blemishes.
  - .3 Replace defective or damaged materials with new.

## **Part 2 Products**

### **2.1 GENERAL**

- .1 Manufacture in accordance with SMACNA - HVAC Duct Construction Standards.

### **2.2 FLEXIBLE CONNECTIONS**

- .1 Flanges: elements in galvanized steel sheet to which the flexible connections are connected via dual stapled type .
- .2 Flexible connections
  - .1 Neoprene coated glass fabric, fireproof, self-extinguishing, can withstand temperatures ranging from -40 degrees Celsius to 90 degrees Celsius, with a density of 1.3 kg / m<sup>2</sup>.
  - .2 Maximum length 150 mm.
- .3 Flanges and flexible connections manufactured and assembled in the factory.

### **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 thick rigid glass fibre insulation.
- .3 Access door for low pressure ducts.
  - .1 Same material as that of the ventilation ducts.
  - .2 Thickness of 0.9 mm and frame of 1.2 mm thick.
- .4 Access door for high pressure pipes.
  - .1 Same material as that of the ventilation ducts.
  - .2 3 mm thickness and frame of 3 mm thick.
- .5 Gaskets: neoprene.
- .6 Hardware:
  - .1 Up to 300 x 300 mm: two sash locks complete with safety chain.
  - .2 301 to 450 mm: four sash locks complete with safety chain.
  - .3 451 to 1000 mm: piano hinge and minimum two sash locks.
  - .4 Doors over 1000 mm: piano hinge and two handles operable from both sides.

- .5 Hold open devices.

## **2.4 INSTRUMENT TEST**

- .1 1.6 mm thick steel zinc plated after manufacture.
- .2 Cam lock handles with neoprene expansion plug and handle chain.
- .3 28 mm minimum inside diameter. Length to suit insulation thickness.
- .4 Neoprene mounting gasket.
- .5 Maximum operating pressure of 275 kPa and a maximum temperature of 85 degrees Celsius.

## **Part 3 Execution**

### **3.1 EXAMINATION**

- .1 Verification of Conditions: verify that conditions of substrate previously installed under other Sections or Contracts are acceptable for air duct accessories installation in accordance with manufacturer's written instructions.
  - .1 Visually inspect substrate in presence of Departmental Representative.
  - .2 Inform Departmental Representative of unacceptable conditions immediately upon discovery.
  - .3 Proceed with installation only after unacceptable conditions have been remedied and after receipt of written approval to proceed from Departmental Representative.

### **3.2 INSTALLATION**

- .1 Flexible Connections:
  - .1 Install in following locations:
    - .1 Inlets and outlets to supply air units and fans.
    - .2 Inlets and outlets of exhaust and return air fans.
    - .3 As indicated.
  - .2 Length of connection: 150 mm.
  - .3 Allow movement of 100 mm (4") for high pressure fans, and 50 mm (2") for the low pressure fans.
  - .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 Doors and Viewing Panels:
  - .1 Size:
    - .1 600 x 600 mm for access doors.

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- .2 Construction
    - .1 Single wall of the same material used for duct construction having a 0.9 mm (20 gauge) thickness and a frame of 1.2 mm 18 gauge thickness.
    - .2 Built with metallic angles of 25 mm (1 inch).
    - .3 Insulation equivalent to the duct insulation see Section 23 07 13 – Duct Insulation.
  - .3 Locations:
    - .1 Where required to allow access to discharge registers of the exhaust smoke and fire dampers.
    - .2 Where required to allow access to the airflow adjustment registers.
    - .3 Where required to allow access to devices requiring a periodic maintenance.
    - .4 Where required according to the code requirements.
    - .5 Where required to allow access to the heating batteries, ionization detectors, humidifiers nozzles.
    - .6 Upstream of all square elbows having guide vanes.
    - .7 Other designated places and on the details and types of discharge connections required for special installations.
    - .8 Upon extraction systems fumes and cooking vapors, installed on top or on the side of the ducts at every 3.6 m (12 ') and on the concave side of all elbows.
    - .9 Install all doors required to allow adequate cleaning of ducts.
  - .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 Ducted inlets to roof and wall exhausters.
        - .2 Inlets and outlets of other fan systems.
        - .3 Main and sub-main ducts.
        - .4 And as indicated.
      - .2 For temperature readings:
        - .1 At outside air intakes.
        - .2 In mixed air applications in locations as approved by Departmental Representative.
        - .3 At inlet and outlet of coils.
        - .4 Downstream of junctions of two converging air streams of different temperatures.

- .5 And as indicated.
- .4 Guide Vanes:
  - .1 Install in accordance with recommendations of SMACNA and as indicated.

### **3.3 CLEANING**

- .1 Progress Cleaning: clean in accordance with Section 01 74 11 - Cleaning.
  - .1 Leave Work area clean at end of each day.
- .2 Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment in accordance with Section 01 74 11 - Cleaning.
- .3 Waste Management: separate waste materials for reuse recycling in accordance with Section 01 74 21 - Construction/Demolition Waste Management and Disposal.
  - .1 Remove recycling containers and bins from site and dispose of materials at appropriate facility.

**END OF SECTION**