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**Part 1            General**

**1.1            RELATED REQUIREMENTS**

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

**1.2            REFERENCES**

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

**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 dampers and include product characteristics, performance criteria, physical size, finish and limitations.
  - .2            Construction IAQ Management Plan:
    - .1            Submit Indoor Air Quality (IAQ) Plan for pre-occupancy phases of building.
    - .2            During construction meet or exceed the requirements of SMACNA IAQ Guideline for Occupied Buildings Under Construction.

**1.4            CLOSEOUT SUBMITTALS**

- .1            Submit in accordance with Section 01 78 00 - Closeout Submittals.
- .2            Operation and Maintenance Data: submit operation and maintenance data for dampers for incorporation into manual.

**1.5            DELIVERY, STORAGE AND HANDLING**

- .1            Deliver, store and handle materials in accordance with Section 01 61 00 - Common Product Requirements and 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, indoors, in dry location and in accordance with manufacturer's recommendations in clean, dry, well-ventilated area.
  - .2            Store and protect dampers from nicks, scratches, and blemishes.
  - .3            Replace defective or damaged materials with new.

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**Part 2            Products**

**2.1                GENERAL**

- .1      Manufacture to SMACNA standards.

**2.2                SINGLE BLADE DAMPERS**

- .1      Fabricate from same material as duct, but one sheet metal thickness heavier. V-groove stiffened.
- .2      Size and configuration to recommendations of SMACNA, except maximum height 100 mm.
- .3      Locking quadrant with shaft extension to accommodate insulation thickness.
- .4      Inside and outside bronze end bearings.
- .5      Channel frame of same material as adjacent duct, complete with angle stop.

**2.3                MULTI-BLADED DAMPERS**

- .1      Factory manufactured of material compatible with duct.
- .2      Opposed blade: configuration, metal thickness and construction to recommendations of SMACNA.
- .3      Maximum blade height: 100 mm.
- .4      Bearings: pin in bronze bushings self-lubricating.
- .5      Linkage: shaft extension with locking quadrant.
- .6      Channel frame of same material as adjacent duct, complete with angle stop.
- .7      Maximum leakage : 2%.

**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 damper 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 Install where indicated in drawings and showed at details “DETAIL OF BALANCING DAMPERS IN A LOW PRESSURE SUPPLY SYSTEM” and “DETAIL OF BALANCING DAMPERS IN AN AIR RETURN SYSTEM”.
- .2 Install in accordance with recommendations of SMACNA and in accordance with manufacturer's instructions.
- .3 Runouts to registers and diffusers: install single blade damper located as close as possible to main ducts.
- .4 Dampers: vibration free.
- .5 Ensure damper operators are observable and accessible.

### **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 and 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**