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**PART 1 GENERAL**

**1.1 SUMMARY**

- .1 Section Includes:
  - .1 Operating dampers for mechanical forced air ventilation and air conditioning systems.

**1.2 RELATED SECTIONS**

- .1 Section 01 33 00 – Submittal Procedures.
- .2 Section 01 45 00 – Quality Control.
- .3 Section 01 74 21 – Construction/Demolition Waste Management and Disposal.
- .4 Section 01 78 00 – Closeout Submittals.

**1.3 REFERENCES**

- .1 American Society for Testing and Materials International (ASTM)
  - .1 ASTM A 653/A653M-04a, Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by Hot-Dip Process.
- .2 Health Canada/Workplace Hazardous Materials Information System (WHMIS)
  - .1 Material Safety Data Sheets (MSDS).

**1.4 SUBMITTALS**

- .1 Product Data:
  - .1 Submit manufacturer's printed product literature, specifications and datasheet in accordance with Section 01 33 00 - Submittal Procedures. Include product characteristics, performance criteria, and limitations.
    - .1 Submit two copies of Workplace Hazardous Materials Information System (WHMIS) Material Safety Data Sheets (MSDS) in accordance with Section 01 33 00 - Submittal Procedures.
  - .2 Indicate the following:
    - .1 Performance data.
    - .2 Specifications
- .2 Quality assurance submittals: submit following in accordance with Section 01 33 00 - Submittal Procedures.
  - .1 Certificates: submit certificates signed by manufacturer certifying that materials comply with specified performance characteristics and physical properties.

- .2 Instructions: submit manufacturer's installation instructions.
- .3 Closeout Submittals:
  - .1 Provide maintenance data for incorporation into manual specified in Section 01 78 00 - Closeout Submittals

## **1.5 QUALITY ASSURANCE**

- .1 Certificates:
  - .1 Catalogue or published ratings those obtained from tests carried out by manufacturer or those ordered by manufacturer from independent testing agency.

## **1.6 DELIVERY, STORAGE, AND HANDLING**

- .1 Packing, shipping, handling and unloading:
  - .1 Deliver, store and handle in accordance with manufacturer's written instructions and Section 01 61 00 - Common Product Requirements.
  - .2 Deliver, store and handle materials in accordance with manufacturer's written instructions.
- .2 Waste Management and Disposal:
  - .1 Construction/Demolition Waste Management and Disposal: separate waste materials for reuse and recycling in accordance with Section 01 74 21 - Construction/Demolition Waste Management and Disposal.

## **PART 2 PRODUCTS**

### **2.1 MULTI-LEAF DAMPERS**

- .1 Opposed or parallel blade type as indicated.
- .2 Structurally formed steel or extruded aluminum, interlocking blades, complete with extruded vinyl seals, spring stainless steel side seals, structurally formed and welded galvanized steel or extruded aluminum frame.
- .3 Pressure fit self-lubricated bronze bearings.
- .4 Linkage: plated steel tie rods, brass pivots and plated steel brackets, complete with plated steel control rod.
- .5 Operator: to Section 25 30 02 – EMCS: Field Control Devices.
- .6 Performance:
  - .1 Leakage: in closed position to be less than 2% of rated air flow at 500 Pa differential across damper.

- .2 Pressure drop: at full open position to be less than 25 Pa differential across damper at 10 m/s.
- .7 Insulated aluminum dampers:
  - .1 Frames: insulated with extruded polystyrene foam with RSI factor of 5.0.
  - .2 Blades: constructed from aluminum extrusions with internal hollows insulated with polyurethane or polystyrene foam, RSI factor of 5.0.

## **2.2 DISC TYPE DAMPERS**

- .1 Frame: insulated brake formed, welded, 1.6 mm thick, galvanized steel to ASTM A 653M.
- .2 Disc: insulated spin formed, 1.6 mm thick, galvanized steel to ASTM A 653M.
- .3 Gasket: extruded neoprene, field replaceable, with 10 year warranty.
- .4 Bearings: roller self lubricated and sealed.
- .5 Operator: compatible with damper, linear stroke operator, spring loaded actuator, zinc-aluminum foundry alloy casting cam follower.
- .6 Performance:
  - .1 Leakage: in closed position to be less than 2 % of rated air flow at 500 Pa pressure differential across damper.
  - .2 Pressure drop: at full open position to be less than 25 Pa differential across damper at 10 m/s.

## **2.3 BACK DRAFT DAMPERS**

- .1 Automatic gravity operated, multi leaf, aluminum or steel construction with nylon bearings, centre pivoted, spring assisted or counterweighted.

## **2.4 RELIEF DAMPERS**

- .1 Automatic multi-leaf steel or aluminum dampers with ball bearing centre pivoted and counter-weights set to open as indicated.

## **PART 3 EXECUTION**

### **3.1 INSTALLATION**

- .1 Install where indicated.
- .2 Install in accordance with recommendations of SMACNA and manufacturer's instructions.
- .3 Seal multiple damper modules with silicon sealant.

- .4 Install access door adjacent to each damper. See Section 23 33 00 – Air Duct Accessories.
- .5 Ensure dampers are observable and accessible.

### **3.2 CLEANING**

- .1 Proceed in accordance with Section 01 74 11 - Cleaning.
- .2 Upon completion and verification of performance of installation, remove surplus materials, excess materials, rubbish, tools and equipment.

**END OF SECTION**