

PART 1 - GENERAL

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| <u>1.1 REFERENCES</u> | .1 | ASTM International |
| | .1 | ASTM A 653/A 653M-11, Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by Hot-Dip Process. |
| | .2 | Canada Green Building Council (CaGBC) |
| | .1 | LEED Canada 2009 for Design and Construction, LEED Canada 2009 for Design and Construction Leadership in Energy and Environmental Design Green Building Rating System Reference Guide. |
| <u>1.2 ACTION AND INFORMATIONAL SUBMITTALS</u> | .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. |
| | .3 | Sustainable Design Submittals: |
| | .1 | LEED Canada submittals: in accordance with Section 01 35 21 - LEED Requirements. |
| | .2 | Construction Waste Management: |
| | .1 | Submit project Waste Management Plan highlighting recycling and salvage requirements. |
| | .2 | Submit calculations on end-of-project recycling rates, salvage rates, and landfill rates demonstrating that 75% of construction wastes were recycled or salvaged. |
| | .3 | Recycled Content: |
| | .1 | Submit listing of recycled content products used, including details of required percentages or recycled content materials and products, showing their costs and percentages of post-consumer and post-industrial content, and total cost of materials for project. |
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1.2 ACTION AND
INFORMATIONAL
SUBMITTALS
(Cont'd)

- .3 Sustainable Design Submittals: (Cont'd)
 - .4 Regional Materials: submit evidence that project incorporates required percentage 30 % of regional materials and products, showing their cost, distance from project to furthest site of extraction or manufacture, and total cost of materials for project.
 - .5 Construction IAQ Management Plan:
 - .1 Submit Indoor Air Quality (IAQ) Plan for construction and pre-occupancy phases of building.

1.3 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.

1.4 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 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.
- .4 Develop Construction Waste Management Plan related to Work of this Section and in accordance with Section 01 35 21 - LEED Requirements.
- .5 Packaging Waste Management: remove for reuse or return of pallets, crates, padding,

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| 1.4 DELIVERY,
STORAGE AND
HANDLING
(Cont'd) | .5 Packaging Waste Management: (Cont'd)
banding, and packaging materials as specified
in Construction Waste Management Plan in
accordance with Section 01 74 21 -
Construction/Demolition Waste Management and
Disposal and Section 01 35 21 - LEED
Requirements. |
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PART 2 - PRODUCTS

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| 2.1 MULTI-LEAF
DAMPERS | .1 Opposed blade type as indicated. |
| | .2 Extruded aluminum, interlocking blades,
complete with extruded vinyl seals, spring
stainless steel side seals, 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: compatible with damper electrical
actuator. |
| | .6 Performance: |
| | .1 Leakage: in closed position less than 2%
of rated air flow at 500 Pa differential
across damper. |
| | .2 Pressure drop: at full open position
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 653/A 653M. |
| | .2 Disc: insulated spin formed, 1.6 mm thick,
galvanized steel to ASTM A 653/A 653M. |

- 2.2 DISC TYPE
DAMPERS
(Cont'd)
- .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 less than 0.001% of rated air flow at 0.5 kPa pressure differential across damper.
.2 Pressure drop: at full open position less than 25 Pa differential across damper at 10 m/s.
- 2.3 BACK DRAFT
DAMPERS
- .1 Automatic gravity operated, multi leaf, aluminum construction with nylon bearings, centre pivoted and spring assisted counterweighted.

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 in accordance with recommendations of SMACNA and manufacturer's instructions.
 - .2 Seal multiple damper modules with silicon sealant.
 - .3 Install access door adjacent to each damper. See Section 23 33 00 - Air Duct Accessories.
 - .4 Ensure dampers 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 and Section 01 35 21 - LEED Requirements.
 - .1 Remove recycling containers and bins from site and dispose of materials at appropriate facility.