1346.0603 SECTION 603 DUCT CONSTRUCTION AND INSTALLATION.

Subpart 1. [Repealed, 34 SR 537]

Subp. 2. **Table 603.4.** IMC Table 603.4 is amended to read as follows:

Table 603.4 Duct Construction Minimum Sheet Metal Thicknesses for Single Dwelling Units

	GALVANIZED		ALUMINUM MINIMUM THICKNESS Gauge
DUCT SIZE	Minimum thickness (in.)	Equivalent galvanized gauge no.	
Round ducts and enclosed rectangular ducts			
14 inches or less	0.013	30	26
Over 14 inches	0.016	28	24
Exposed rectangular ducts			
14 inches or less	0.016	28	24
Over 14 inches	0.019	26	22

For SI: 1 inch = 25.4 mm, 1 inch water gauge = 249 Pa.

Subp. 2a. **Section 603.4.** IMC section 603.4 is amended to read as follows:

603.4 Metallic ducts. All metallic ducts shall be constructed as specified in the SMACNA HVAC Duct Construction Standards - Metal and Flexible.

Exception: Ducts installed within a single dwelling unit shall have a minimum thickness as specified in IMC Table 603.4 as amended in this part.

603.4.1 Minimum fasteners. Round metallic ducts shall be mechanically fastened by means of at least three sheet metal screws or rivets spaced equally around the joint.

Exception: Where a duct connection is made that is partially inaccessible, three screws or rivets shall be equally spaced on the exposed portion so as to prevent a hinge effect.

603.4.2 Elbows. Radius elbows with velocities exceeding 1,000 feet per minute (fpm) (5 m/sec) shall have an inside radius not less than the width of the duct or shall have turning

vanes. Square throat elbows with velocities exceeding 1,000 feet per minute (fpm) (5 m/sec) shall have turning vanes.

Exception: Ducts installed within a single dwelling unit.

603.4.3 Transition fittings. Transition fittings shall be constructed with a maximum slope of 45 degrees.

603.4.4 Obstructions. Where a pipe or other obstruction passes through a duct, a streamlined sleeve must be constructed equal in type and gage to the duct. The area of the duct, at the point of obstruction, must be increased by an amount equal to the area of the streamlined sleeve.

Subp. 3. **Section 603.7.** IMC Section 603.7 is amended to read as follows:

603.7 Rigid duct penetrations. Duct system penetrations of walls, floors, ceilings, and roofs and air transfer openings in any of those building components shall be protected as required by IMC Section 607. Ducts in a private garage and ducts penetrating the walls or ceilings separating a dwelling from a private garage shall be continuous and constructed of minimum 26 gage (0.48 mm) galvanized sheet metal and shall have no openings into the garage. Fire and smoke dampers are not required in such ducts passing through the wall or ceiling separating a dwelling from a private garage, unless required by International Building Code Chapter 7.

Subp. 4. **Section 603.8.** IMC Section 603.8 is amended to read as follows:

603.8 Underground ducts. Ducts shall be approved for underground installation. Metallic ducts not having an approved protective coating shall be completely encased in a minimum of 2 inches (51 mm) of concrete.

Subp. 5. **Section 603.8.1.** IMC Section 603.8.1 is amended to read as follows:

603.8.1 Slope. Ducts shall slope to allow drainage to a point provided with access for inspection and cleaning at each low point of the duct system.

Subp. 6. **Section 603.8.2.** IMC Section 603.8.2 is amended to read as follows:

603.8.2 Sealing. Ducts shall have a polyethylene vapor retarder of at least 4 mils (0.102 mm) thickness installed around the outside. Where encased in concrete, the ducts shall be sealed and secured prior to pouring the concrete encasement.

Subp. 7. **Section 603.8.3.** IMC Section 603.8.3 is amended to read as follows:

603.8.3 Plastic ducts and fittings. Plastic ducts shall be constructed of PVC or high-density polyethylene having a minimum pipe stiffness of 8 psi (55 kPa) at 5-percent deflection when tested in accordance with ASTM D2412. Plastic duct fittings shall be constructed of either PVC or high-density polyethylene. Plastic duct and fittings shall be utilized in underground

installations only. The maximum design temperature for systems utilizing plastic duct and fittings shall be 150°F (66°C).

Subp. 8. **Section 603.8.** IMC Section 603.8 is amended by adding a subsection to read as follows:

603.8.4 Drainage and insulation.

Underground ducts shall be insulated in accordance with amended IMC Section 604.1 and provided with drain tile around the perimeter of the duct system to prevent water intrusion. The top of the drain tile shall be installed at an elevation lower than the bottom of the underground duct system. The building official may approve an alternate drainage system if soil conditions are adequate.

Subp. 9. **Section 603.9.** IMC section 603.9 is amended to read as follows:

603.9 Joints, seams, and connections. All longitudinal and transverse joints, seams, and connections in metallic and nonmetallic ducts shall be constructed as specified in SMACNA HVAC Duct Construction Standards - Metal and Flexible and NAIMA Fibrous Glass Duct Construction Standards. All joints, longitudinal and transverse seams, and connections in ductwork shall be securely fastened and sealed with welds, gaskets, mastics (adhesives), mastic-plus-embedded-fabric systems, liquid sealants, or tapes. Closure systems used to seal ductwork listed and labeled in accordance with UL 181A shall be marked "181A-P" for pressure-sensitive tape, "181 A-M" for mastic, or "181 A-H" for heat-sensitive tape. Closure systems used to seal flexible air ducts and flexible air connectors shall comply with UL 181B and shall be marked "181B-FX" for pressure-sensitive tape or "181B-M" for mastic. Duct connections to flanges of air distribution system equipment shall be sealed and mechanically fastened. Mechanical fasteners for use with flexible nonmetallic air ducts shall comply with UL 181B and shall be marked "181B-C." Closure systems used to seal metal ductwork shall be installed in accordance with the manufacturer's installation instructions. Pressure-sensitive tape shall not be used as the primary sealant on ducts, unless it has been certified to comply with UL-181A or UL-181B by a nationally recognized testing laboratory and the tape is used in accordance with that certification. Unlisted duct tape is not permitted as a sealant on any duct.

Exception: Continuously welded and locking-type longitudinal joints and seams in ducts operating at static pressures less than 2 inches of water column (500 Pa) pressure classification shall not require additional closure systems.

Subp. 10. **Section 603.18.** IMC section 603.18 is amended by adding a subsection to read as follows:

603.18.3 Adjustment of volume dampers. Volume dampers shall be adjusted to the required airflow of the system and locked in place. In finished or inaccessible locations, a friction-type register box may be used.

Statutory Authority: *MS s 16B.59; 16B.61; 16B.64; 326B.02; 326B.101; 326B.106; 326B.13*

History: *15 SR 71; 29 SR 299; L 2007 c 140 art 4 s 61; art 13 s 4; 34 SR 537; 39 SR 690*

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