

M1308.3 Foundations and supports. Foundations and supports for outdoor mechanical systems shall be raised at least 3 inches (76 mm) above the finished grade, and shall also conform to the manufacturer's installation instructions.

Exception: Exterior air conditioning condensing units may be supported upon an adequately sloped grade level concrete pad or slab, such-as a patio, driveway, RV pad or sidewalk.

Chapter 14 Heating & Cooling Equipment

M1411.3.1 Auxiliary and secondary drain systems. In addition to the requirements of Section M1411.3, a secondary drain or auxiliary drain pan shall be required for each cooling or evaporator coil where damage to any building components will occur as a result of overflow from the equipment drain pan or stoppage in the condensate drain piping. Such piping shall maintain a minimum horizontal slope in the direction of discharge of not less than 1/8 unit vertical in 12 units horizontal (1-percent slope). Drain piping shall be a minimum of 3/4-inch (19.1 mm) nominal pipe size. One of the following methods shall be used:

1.
2.
3.
4. A water level detection device conforming to UL 508 shall be provided that will shut off the equipment served in the event that the primary drain is blocked. The device shall be installed in the primary drain line, the overflow drain line or in the equipment-supplied drain pan, located at a point higher than the primary drain line connection and below the overflow rim of such pan.

M1411.4 Auxiliary drain pan. Category IV condensing appliances shall have an auxiliary drain pan where damage to any building component will occur as a result of stoppage in the condensate drainage system. These pans shall be installed in accordance with the applicable provisions of Section M1411.3.

Exception: Fuel-fired appliances that automatically shut down operations in the event of a stoppage in the condensate drainage system.

HVAC Condensate Level Switches

Water-activated switches designed for condensate return systems in HVAC systems. These condensate float switches can be used for the in an air conditioning condensate line or to give a signal to a pump or compressor control when water is detected in the drain pan.



Chapter 15 Exhaust Systems

M1501.7 Length limitation Duct length. The maximum length of a clothes dryer exhaust duct shall not exceed 25 feet (7620 mm) from the dryer location to the wall or roof termination. The maximum length of the duct shall be reduced 2.5 feet (762 mm) for each 45-degree (0.79 rad) bend and 5 feet (1524 mm) for each 90-degree (1.6 rad) bend. The maximum length of the exhaust duct does not include the transition duct.

Exceptions:

1. Where the make and model of the clothes dryer to be installed is known and the

~~1. Where a clothes dryer booster fan is installed and listed and labeled for the application, the maximum length of the exhaust duct, including any transition duct, shall be permitted to be in accordance with the booster fan manufacturer's installation instructions. Where a clothes dryer booster fan is installed and not readily accessible from the room in which the dryer is located, a permanent identifying label shall be placed adjacent to where the exhaust duct enters the wall. The label shall bear the words "This dryer exhaust system is equipped with a remotely located booster fan".~~

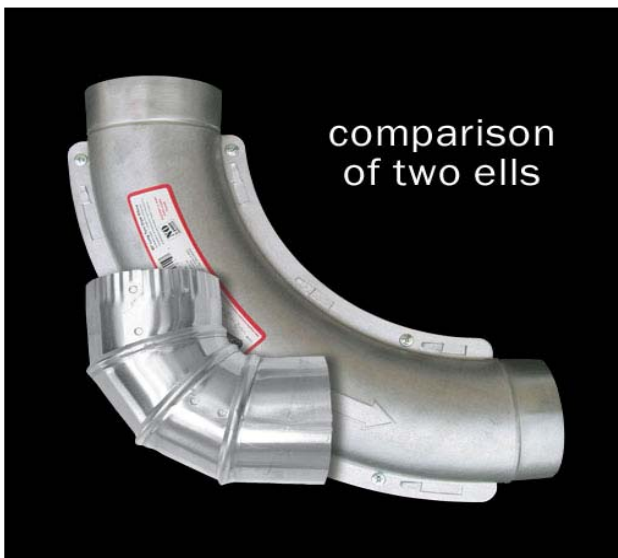
~~2. Where large-radius 45-degree (0.8 rad) and 90-degree (1.6 rad) bends are installed, determination of the equivalent length of clothes dryer exhaust duct for each bend shall be per fitting manufacturer's installation instructions. By engineering calculations in accordance with ASHRAE Fundamentals Handbook shall be permitted.~~





28 gauge
aluminized steel

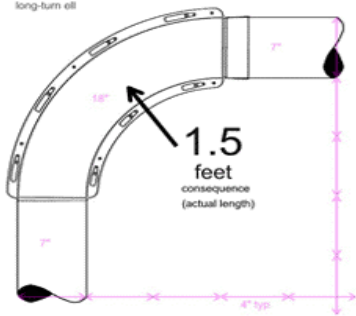
Long turn
90 degree elbow



comparison
of two ells

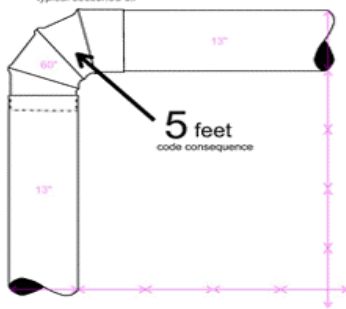
Elbow Comparison
Exact same starting and ending points

10" Radius
long-turn ell



2' 8" Net Total Duct Run

4" Radius
typical sectioned ell

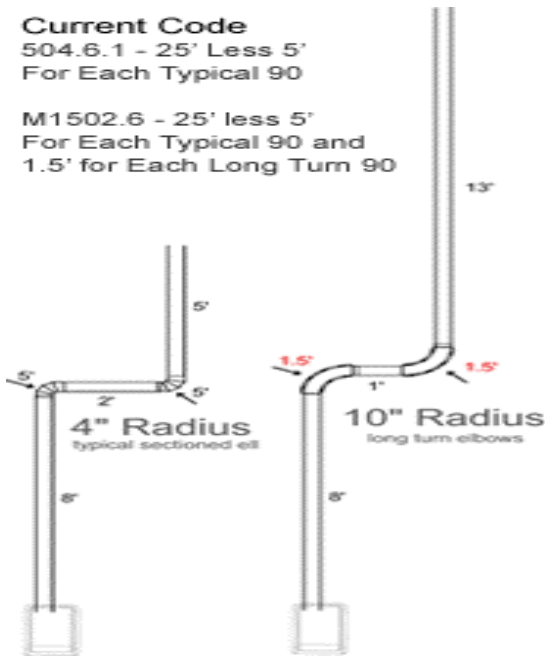


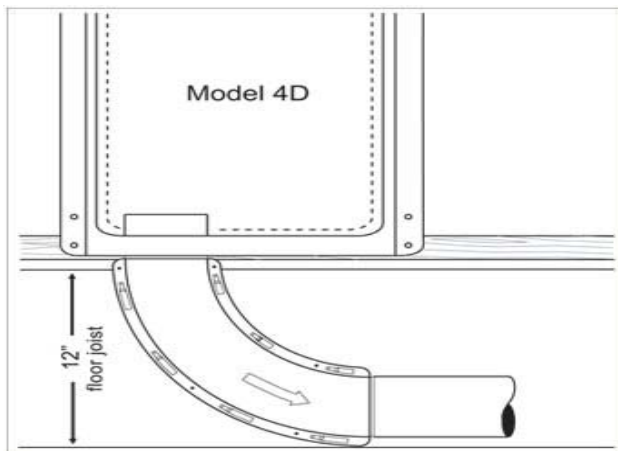
7' 2" Net Total Duct Run

4' 6" Net Savings
When using a 10" radius Long-Turn Elbow
in lieu of the typical 4" radius ell

Current Code
504.6.1 - 25' Less 5'
For Each Typical 90

M1502.6 - 25' less 5'
For Each Typical 90 and
1.5' for Each Long Turn 90





M1507.3 Ventilation rate. Ventilation system's shall be designed to have the capacity to exhaust the minimum air flow rate determined in accordance with Table M1507.3. Exhaust flow ratings for source specific ventilation systems shall be in accordance with Home Ventilating Institute (HVI) or Air Movement and Control Association (AMCA) residential ventilation standards.

M1507.3.1 Sound ratings for fans in rooms containing bathing and spa facilities.

M1507.3.1.1 Continuous ventilation fans. Continuous ventilation fans shall be rated for sound at a maximum of 1.0 sone.

M1507.3.1.2 Intermittent fans. Intermittent fans shall be rated for sound at a maximum of 3 sone, unless their maximum rated airflow exceeds 400 cfm (200 L/s).

M1507.3.1.3 Remote fans. Remotely installed fans that are at least 4 feet (1220 mm) away from the inlet grill are exempt from the sone rating requirements of M1507.3.1.1 and M1507.3.1.2.

M1507.4 Rooms with bathing or spa facilities. All rooms containing bathing or spa facilities shall be provided with a mechanical ventilation system controlled by a de-humidistat, timer or similar means of automatic control.

**TABLE M1507.3
EXHAUST RATES FOR
RESIDENTIAL DWELLINGS**

Domestic Kitchens	
Range hoods/ downdraft exhaust.	Min. 150 cfm intermittent or 25 cfm continuous
Bathrooms –Toilet Rooms	
Rooms containing bathing and spa facilities. (Static pressure shall be rated @ 0.10 inch water gauge for intermittent fans.)	Min. 80 cfm intermittent or 20 cfm continuous
Toilet rooms without bathing or spa facilities, when not provided with natural ventilation per R303.3.2.	Min. 50 cfm

Chapter 21

Hydronic Piping

SECTION M2103 FLOOR HEATING SYSTEMS

M2103.1 Piping materials. Piping for embedment in concrete or gypsum materials shall be standard-weight steel pipe, copper tubing, cross-linked polyethylene/aluminum /cross-linked polyethylene (PEX-AL-PEX) pressure pipe, chlorinated polyvinyl chloride (CPVC) or polybutylene, cross-linked polyethylene (PEX) tubing or polypropylene (PP) with a minimum rating of 100 psi at 180⁰F (68.9 kPa at 146⁰C).

M2103.2 Piping joints. Piping joints that are embedded shall be installed in accordance with the following requirements:

1. Steel pipe joints shall be welded.
2. Copper tubing shall be joined with brazing material having a melting point exceeding 1,000⁰F (538⁰C).
3. Polybutylene pipe and tubing joints shall be installed with socket-type, heat-fused polybutylene fittings.
4. CPVC tubing shall be joined using solvent cement joints.
5. Polypropylene pipe and tubing joints shall be installed with socket-type heat-fused polypropylene fittings.
6. Cross-linked polyethylene (PEX) tubing shall be joined using cold expansion, insert or compression fittings.

M2103.3 Testing. Piping or tubing to be embedded shall be tested by applying a hydrostatic pressure of not less than 100 psi (68.9 kPa). The pressure shall be maintained for 15 minutes, during which all joints shall be visually inspected for leaks.

Exception: Continuous loop systems using PEX or PP tubing may be tested with an air pressure test of 100 psi (689 kPa) for 30 minutes with no observed leaks.

M2103.4 Pressurizing during installation. Piping to be embedded in concrete shall be pressure tested prior to pouring concrete in accordance with M2103.3. During pouring, the piping shall be maintained at the proposed operating pressure.

G2419.1 Sediment trap. Where a sediment trap is not incorporated as a part of the gas utilization equipment, a sediment trap shall be installed downstream of the equipment shutoff valve as close to the outlet of the equipment as practical. The sediment trap shall be either a tee fitting with a capped nipple in the bottom opening of the run of the tee or other device approved as an effective sediment trap. Illuminating appliances, ranges, clothes dryers, decorative appliances and outdoor grills need not be so equipped unless specifically required by the appliance manufacturer's installation instructions.