

or to other zones, net positive mechanical intake airflow for the building as a whole reduces infiltration of untreated outdoor air.

5.10 Drain Pans. Drain pans, including their outlets and seals, shall be designed and constructed in accordance with this section.

5.10.1 Drain Pan Slope. Pans intended to collect and drain liquid water shall be sloped at least 0.125 in./ft (10 mm/m) from the horizontal toward the drain outlet or shall be otherwise designed such that water drains freely from the pan whether the fan is ON or OFF.

5.10.2 Drain Outlet. The drain pan outlet shall be located at the lowest point(s) of the drain pan and shall be sized to preclude drain pan overflow under any normally expected operating condition.

5.10.3 Drain Seal. For configurations that result in negative static pressure at the drain pan relative to the drain outlet (such as a draw-through unit), the drain line shall include a P-trap or other sealing device designed to maintain a seal against ingestion of ambient air while allowing complete drainage of the drain pan under any normally expected operating condition, whether the fan is ON or OFF.

5.10.4 Pan Size. The drain pan shall be located under the water-producing device. Drain pan width shall be sized to collect water droplets across the entire width of the water-producing device or assembly. For horizontal airflow configurations, the drain pan length shall begin at the leading face or edge of the water-producing device or assembly and extend downstream from the leaving face or edge to a distance of either

- a. one half of the installed vertical dimension of the water-producing device or assembly or
- b. as necessary to limit water droplet carryover beyond the drain pan to 0.0044 oz/ ft² (1.5 mL/m²) of face area per hour under peak sensible and peak dew-point design conditions, accounting for both latent load and coil face velocity.

5.11 Finned-Tube Coils and Heat Exchangers

5.11.1 Drain Pans. A drain pan in accordance with Section 5.10 shall be provided beneath all dehumidifying cooling coil assemblies and all condensate-producing heat exchangers.

5.11.2 Finned-Tube Coil Selection for Cleaning. Individual finned-tube coils or multiple finned-tube coils in series without intervening access spaces of at least 18 in. (457 mm) shall be selected to result in no more than 0.75 in. wc (187 Pa) combined dry-coil pressure drop at 500 fpm (2.54 m/s) face velocity.

5.12 Humidifiers and Water-Spray Systems. Steam and direct-evaporative humidifiers, air washers, direct-evaporative coolers, and other water-spray systems shall be designed in accordance with this section.

5.12.1 Water Quality. Water purity shall meet or exceed potable water standards at the point where it enters the ventilation system, space, or water-vapor generator. Water vapor generated shall contain no chemical additives other than those chemicals in a potable water system.

Exceptions:

1. Water-spray systems that utilize chemical additives that meet NSF/ANSI Standard 60, *Drinking Water Treatment Chemicals—Health Effects*¹³.
2. Boiler water additives that meet the requirements of 21 CFR 173.310, *Secondary Direct Food Additives Permitted In Food For Human Consumption*¹⁴, and include automated dosing devices.

5.12.2 Obstructions. Air cleaners or ductwork obstructions, such as turning vanes, volume dampers, and duct offsets greater than 15 degrees, that are installed downstream of humidifiers or water spray systems shall be located a distance equal to or greater than the absorption distance recommended by the humidifier or water-spray system manufacturer.

Exception: Equipment such as eliminators, coils, or evaporative media shall be permitted to be located within the absorption distance recommended by the manufacturer, provided a drain pan complying with the requirements of Section 5.10 is used to capture and remove any water that drops out of the airstream due to impingement on these obstructions.

5.13 Access for Inspection, Cleaning, and Maintenance

5.13.1 Equipment Clearance. Ventilation equipment shall be installed with working space that will allow for inspection and routine maintenance, including filter replacement and fan belt adjustment and replacement.

5.13.2 Ventilation Equipment Access. Access doors, panels, or other means shall be provided and sized to allow unobstructed access for inspection, maintenance, and calibration of all ventilation system components for which routine inspection, maintenance, or calibration is necessary. Ventilation system components include air-handling units, fan-coil units, water-source heat pumps, other terminal units, controllers, and sensors.

5.13.3 Air Distribution System. Access doors, panels, or other means shall be provided in ventilation equipment, ductwork, and plenums, located and sized to allow convenient and unobstructed access for inspection, cleaning, and routine maintenance of the following:

- a. Outdoor air intake areaways or plenums
- b. Mixed-air plenums
- c. Upstream surface of each heating, cooling, and heat-recovery coil or coil assembly having a total of four rows or fewer
- d. Both upstream and downstream surface of each heating, cooling, and heat-recovery coil having a total of more than four rows and air washers, evaporative coolers, heat wheels, and other heat exchangers
- e. Air cleaners
- f. Drain pans and drain seals
- g. Fans
- h. Humidifiers

5.14 Building Envelope and Interior Surfaces. The building envelope and interior surfaces within the building envelope shall be designed in accordance with the following subsections.