

(17) An "occupied area" is any room, area or enclosure used by one or more persons.

(18) "Outdoor openings" may be doors, windows or skylights located in outside walls or roof and can be opened to provide natural ventilation to the occupied space. Natural ventilation is permitted through window openings arranged in conformance with Wis. Adm. Code section Ind 52.02.

(19) An "outlet" or supply opening is an opening, the sole purpose of which is to deliver air into any space to provide heating, ventilation or air conditioning.

(20) A "return" or exhaust opening is any opening the sole purpose of which is to remove air from any space being heated, ventilated or air conditioned.

(21) A (gravity or circulating type) "space heater" is a vented, self-contained free standing or wall recessed heating appliance using liquid or gas fuels.

*Note:* See definition for "jacketed stove"

(22) "Tempered outside air". Outside air heated before distribution.

(23) "Tempered air". Air transferred from heated area of building.

(24) A "unit heater". (Direct-fired low and high static type).  
(a) Low static type is a direct-fired suspended, self-contained automatically controlled, vented heating appliance, having integral means for circulation of air by means of a propellor fan or fans.

(b) High static pressure type is a direct-fired suspended or floor standing, self-contained, automatically controlled and vented, heating appliance having an integral means for circulation of air against 0.2 inch or greater static pressure.

(25) "Ventilation" is the process of supplying or removing air by natural or mechanical means, to or from any space.

**History:** Cr. Register, January, 1965, No. 109, eff. 2-1-65.

**Ind 59.20 Drawings, specifications and data.** (1) DESIGN AND PREPARATION OF DRAWINGS. All drawings and data for the installation of heating, ventilating and air conditioning equipment shall be designed and prepared to satisfy the requirements of this code.

(a) All drawings and design data to be submitted for review and approval under the provision of this code for buildings greater than 50,000 cubic feet shall be sealed or stamped by an engineer, architect, or designer registered in accordance with the laws of Wisconsin.

*Note:* Laws regulating the practice of engineering and architecture are found in chapter 443, Wis. Stats.

(2) APPROVAL OF DRAWINGS AND SPECIFICATIONS. Where heating, ventilating and air conditioning equipment is required, complete drawings, specifications, and data sheets shall be submitted to the department of industry, labor and human relations for approval. Approval shall be obtained before affected work is commenced and all work shall be executed according to the approved drawings and specifications.

*Note:* To expedite approval of drawings the heating and ventilation drawings should be submitted for approval with the building drawings.

*Note:* Approval is not required for the installation of air cooling equipment when added to an approved heating and ventilating system.

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(a) Drawings for installations within the city limits of Milwaukee shall be submitted to the Inspector of Buildings, Milwaukee for examination and approval.

(b) The replacement of major apparatus is subject to department of industry, labor and human relations approval.

(c) A statement in triplicate, showing capacities of old and new equipment may be submitted instead of data required in subsection (7).

(3) NUMBER OF DRAWINGS AND SPECIFICATIONS. One copy of specifications and 3 complete sets of drawings shall be submitted for approval.

*Note:* Extra copies of drawings may be filed for an approval and shall be submitted with the original submittal.

(4) APPROVAL OF CHANGES ON DRAWINGS. When it is necessary to change approved heating and ventilating drawings or specifications, revised drawings shall be approved before installation is commenced.

(5) APPROVED DRAWINGS KEPT AT BUILDING. A complete set of approved drawings shall be kept available at the job site.

(6) INFORMATION REQUIRED ON DRAWINGS AND IN SPECIFICATIONS. The lines, data and information shown on drawings for heating, ventilating and air conditioning systems submitted for approval shall be permanent, clear, legible and complete, and shall include all details and data necessary for review of the proposed installation, such as:

(a) Name of the owner of the building.

(b) Complete address of the building.

(c) Architect, engineer or designer's name shall appear on the title sheet.

(d) A floor plan for each floor where equipment is installed shall be furnished as part of the set of drawings.

(e) A room schedule, indicating the intended use of all rooms.

(f) Description of the construction for walls, floor, ceiling, and roof.

(g) Elevation and sectional plans to illustrate and clarify equipment arrangements.

(h) Location, size and type of all principal units of equipment.

(i) Size and continuity of all ducts and vents.

(j) Description and location of chimney.

(k) Specifications shall be properly identified with and completely supplement the drawings.

(7) DATA REQUIRED. All drawings submitted for approval shall be accompanied by sufficient data and information for the department of industry, labor and human relations to judge if the capacity of the equipment and the performance of the system will meet the requirements of this code. The following data shall be submitted:

(a) Heat loss calculated in BTU per hour.

(b) Calculated air volume at design temperature for each occupied area.

(c) Calculated direct and indirect radiation required for each occupied area.

(d) Calculations for ventilation requirements.

(e) Summation of total heating and ventilation requirements.

*Note:* Cross reference: The department of industry, labor and human rela-

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tions will accept the method and standards recommended by the Mechanical Contractors' Association of America, American Society of Heating, Refrigeration and Air Conditioning Engineers, National Warm Air Heating and Air Conditioning Association and Institute of Boiler and Radiator Manufacturers as the basis for calculations and design data.

(8) **FUNDAMENTAL DATA REQUIRED.** When requested, additional data pertaining to design and operation of a heating and ventilating system shall be filed for approval with the department of industry, labor and human relations by the architect, engineer, designer or manufacturer before such equipment is installed or used.

(9) **APPROVAL OF MATERIAL AND EQUIPMENT.** The use of materials, equipment, devices and methods of installation not mentioned in this code is subject to approval in writing by the department of industry, labor and human relations. Sufficient test data and descriptive information shall be submitted to prove its use.

**History:** Cr. Register, January, 1965, No. 109, eff. 2-1-65; am. (1), Register, May, 1966, No. 125, eff. 6-1-66; am. (1), Register, October, 1967, No. 142, eff. 11-1-67; r. and recr. (1), Register, June, 1968, No. 150, eff. 7-1-68; am. (1) and (2) intro. par., Register, December, 1970, No. 180, eff. 1-1-71; r. and recr. Register, March, 1971, No. 183, eff. 4-1-71.

**Ind 59.21 Accident prevention and fire protection. (1) GUARDS.** All mechanical apparatus shall be guarded to comply with Wis. Adm. Code, chapter Ind 1.

(2) **FIRE PROTECTION.** All installations under this code shall comply with the precautionary requirements of the department of industry, labor and human relations to reduce fire hazards.

*Note:* Refer to the building code and electrical code for additional safety and fire protection requirements:

Masonry chimneys, construction---Wis. Adm. Code section Ind 52.10  
Metal smoke stacks, construction---Wis. Adm. Code section Ind 52.11  
Smoke pipes-----Wis. Adm. Code section Ind 52.12  
Steam and hot water pipes,  
protection-----Wis. Adm. Code section Ind 52.13  
Vertical duct shaft, construction---Wis. Adm. Code section Ind 52.14  
Boiler and furnace rooms-----Wis. Adm. Code sections Ind 54.13,  
Ind 55.29, 56.15, 57.20, 57.50  
Heating and ventilating equipment and  
wiring-----Wis. Adm. Code section E 1-E 900

**Ind 59.22 Design. (1) INSTALLATION OF EQUIPMENT.** All heating, ventilating and air conditioning installations shall be designed and installed to provide the service and results required by this code.

*Note:* Compliance with this code shall not constitute assurance of proper installation or operation of the heating, ventilating and air conditioning system. This code is not to be used as a design manual but it is established as a minimum standard for safety, health and general welfare of the public.

(2) **CAPACITY AND ARRANGEMENT.** The calculated capacity and the arrangement of all installations for required heating and ventilating shall be based upon simultaneous service to all parts of the building, unless otherwise provided in this code.

(3) **OUTSIDE TEMPERATURE DESIGN CONDITIONS.** In the accompanying map, the state of Wisconsin has been divided into 3 zones. The maximum heat losses for a heating system shall be calculated on the basis of the temperatures indicated in Table 1 with reference to location of the project in each respective zone.

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**TABLE 1**  
**MAP OF WISCONSIN SHOWING DESIGN TEMPERATURE ZONES**



Zone 1 - - - - - 30° Below Zero F.  
 Zone 2 - - - - - 25° Below Zero F.  
 Zone 3 - - - - - 15° Below Zero F.

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