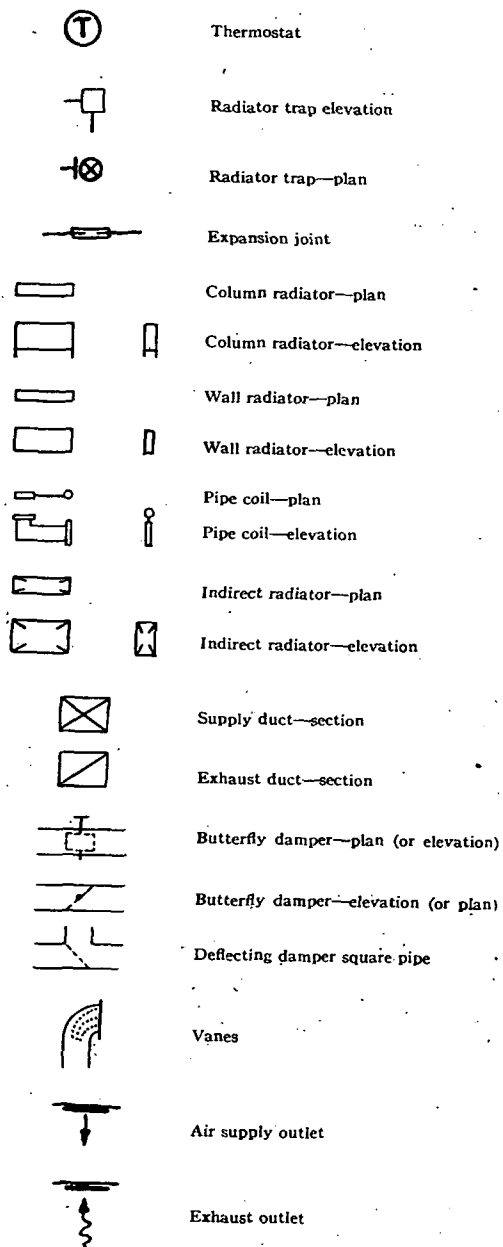


CHAPTER I

HEAT LOSSES FROM BUILDINGS

THE procedure to be followed in determining the heat loss from any building can be divided into seven consecutive steps, as follows:

1. Determine on the inside air temperature, at the breathing line, which is to be maintained in the building during the coldest weather.
2. Determine on an outside air temperature for design purposes, based on the minimum temperatures recorded in the locality in question, which will provide for all but the most severe conditions. Such conditions as may exist for only a few consecutive hours are readily taken care of by the heat capacity of the building itself.
3. Select or compute the heat transmission coefficients for outside wall and glass, also for floor, or top-floor ceiling, if these are next to unheated space. Include roof if next to heated space.
4. Measure up net outside wall, glass and roof next to heated spaces, as well as any cold floor or ceiling next to unheated space. Such measurements are made from building plans.
5. Compute the heat transmission losses for each kind of wall, glass, floor, ceiling and roof in the building by multiplying the heat transmission coefficient in each case by the area of the surface in square feet and the temperature difference between the inside and outside air. (See paragraphs 1 and 2 above.)
6. Select unit values and compute the heat equivalent of the infiltration of cold air taking place around outside doors and windows. These unit values depend on kind or width of crack and wind velocity, and when multiplied by the length of crack and the temperature difference between the inside and outside air, the result expresses the heat required to warm up the cold air leaking into the building per hour.
7. The sum of the heat losses by transmission (paragraph 5) through the outside wall and glass, as well as through any cold floors, ceilings or roof, and the heat equivalent (paragraph 6) of the cold air entering by infiltration is the total heat required for warming any building.

INSIDE TEMPERATURE

The inside air temperature which must be maintained within a building, and which should always be stated in the heating specifications, is understood to be the temperature at the breathing line 5 ft. above the floor and not less than 3 ft. from the outside walls. Inside air temperatures usually specified vary in accordance with the use to which the building is to be put, and Table 1 presents values which are in conformity with good practice.

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