

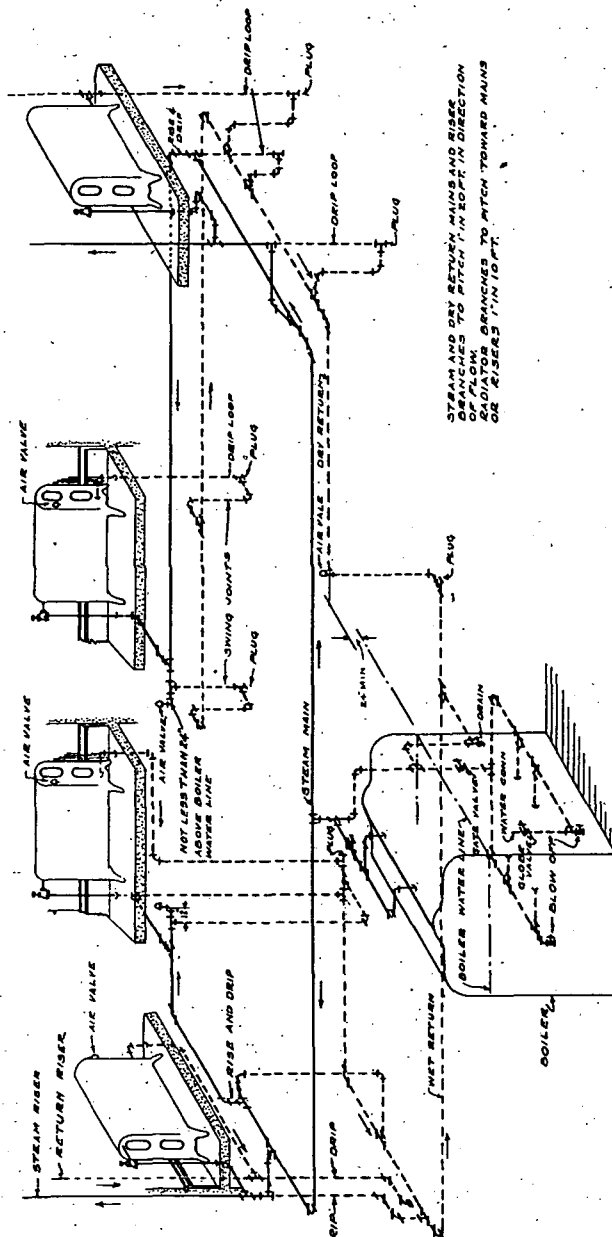


FIG. 18. TWO-PIPE GRAVITY RETURN SYSTEM

imum load under running conditions. Allowances should be made for this extra demand, but inasmuch as the steam supply and the demand are somewhat self-regulating, so that if the demand is greater than the supply the pressure will drop and the supply be automatically reduced, the allowance generally made is considerably under 300 per cent. It is more economical to allow for a certain amount of overloading of the system during the heating-up periods and to allow a little more time for heating up than would otherwise be required.

In the matter of initial pressure and return conditions it is undoubtedly true that with a constant initial pressure (such as is produced by a high pressure supply by means of a pressure reducing valve, or from the boiler direct where the pressure is maintained constant), somewhat higher drops in pressure and correspondingly smaller pipe may be successfully used. It is also undoubtedly true that, with a mechanical return line system where a constant vacuum of any desired degree of from 5 to 15 in. of mercury may be maintained, the factor of fluctuations in initial pressure and the difficulties from high velocities and re-evaporation are reduced, so that the pressure drops may also be higher and the pipe sizes smaller.

Unusual Conditions

Under this heading are the character and class of the building, the periodicity of use and the degree of normal temperature to be attained at the beginning of each period of use.

In public buildings, schools, offices, places of assemblage, and such buildings (where the occupants are normally at rest) the building should be heated to its normal temperature at the beginning of each period of use. In some buildings (especially offices, schools and public buildings), the time between heating periods is relatively short; whereas, in others (such as churches, places of assemblage, etc.); these periods are comparatively long. In commercial buildings such as factories, warehouses, etc., where the occupants are normally exercising, it is not necessary for the building to be heated to normal temperature at the beginning of its period of use. These facts should be taken into consideration in the matters of allowances which are to be made in the capacity of the system.

GENERAL DATA ON PIPE SIZE TABLES

The following pipe size tables have been compiled for use in designing steam heating systems, and may be used, by those experienced in the profession, with satisfactory results. The following general principals should be observed:

1. The initial pressure should not exceed 16 oz. gage.
2. The drop in pressure in the mains and riser to the farthest radiator should not exceed 1 oz. per 100 ft. of straight pipe or its equivalent length, with a lower rate of drop for systems with long runs.
3. The total drop in pressure from the source of supply to the farthest radiator, should not exceed 2 oz. to 8 oz. and should not exceed one-half the boiler pressure.