The size of the main sewer from the building to the city sewer is generally not less than 6 in.

Where sewers are combined, or where the sanitary sewer is less than 4 ft. below the basement floor, back water valves are installed to protect basement fixtures and areas. For combined sewers the roof water is separated, so far as possible, from the sanitary drainage.

A cleanout manhole is installed on the main sewer line just inside the basement wall to facilitate testing and cleaning the connection to the city sewer. If the center line of main sewer is more than 30 in. below the floor, cleanout manholes are made 22 x 40 in.

The minimum size of water service for any building is 1¼ in. without fire hose, and 2 in. with fire hose. All fire risers are 2 in. No meters are installed, but outlets are provided for same. Connections for fire lines are taken off just inside the main shut-off valve on street side of meter outlets.

HOT WATER HEATERS AND STORAGE TANKS

In the smaller buildings 20 gal. in the storage tank is allowed for each shower bath, 10 gal. for each sink and 5 gal. for each lavatory. This works out on an average in these buildings as a 65 gal. tank, a cast-iron water heater with 12 in. grate and an indirect type of heating element connected below the water line of the heating boiler.

In the larger buildings the storage tank is usually about 36 in. diameter by 8 ft. long, contains 424 gal. and has a copper steam coil of 36 lin. ft. 2 in. diameter tubing. The cast-iron water heater has an 18 in. grate.

DRINKING WATER

Consideration is not given to the installation of mechanically refrigerated drinking water systems in any building with less than 2,500,000 cu. ft. contents, nor where there are fewer than 20 drinking fountains or less than 500 occupants for the reason that from October 1, to April 1, iced-drinking water is not furnished in buildings located north of the 37th parallel of latitude. South of that line it is furnished the year around. The average cost of the ice purchased throughout the United States is 55 cents per 100 lb. and the consumption averages, north of the 37 parallel, in summer, 1½ lb. per day per occupant for the period of 180 days. No labor can be saved by mechanical refrigeration when fewer than 20 drinking fountains are to be iced daily.

In the smaller post offices and court houses the following rule is used:

Drinking fountains on the basis of one fountain for each 50 employees are to be installed in all large and small post-office workrooms. A drinking fountain is also to be installed in each corridor on upper floors in the smaller buildings. One pint of refrigerated drinking water per hour is allowed for each occupant.

HEATING

One-pipe steam distribution is used for small and medium sized buildings except where there is a central heating service, when the system in the building is so designed that the outside service can be used.

Boilers generally in the smaller buildings are single pass and in the larger buildings double pass firebox portable type. Care is taken to see that the architect provides a stack of ample size and height. In general, a fire-brick lined stack 21 x 21 in. inside is provided for the smaller buildings.

Fuel rooms are provided on a basis of 1 sq. ft. for each 1000 cu. ft. gross cubic contents of the building and are in no case less than 500 sq. ft. in floor area.

Mechanical ventilation is installed for court rooms and, sometimes, for other assembly rooms in larger buildings.

The ratio of direct steam radiation to the architectural cubic contents of the building will average 1 to 110.

CONDUIT AND WIRING

Ceiling lighting outlets in post-office working spaces are spaced approximately 10 ft. on centers. Each screen window has a bracket outlet. Lock box and similar screen sections have bracket outlet spaced approximately 3 ft. apart.

One city telephone per each 1200 sq. ft. of net floor area is about the average which must be provided for.

The illumination, exclusive of furniture lighting, is figured on the basis of one watt per square foot for all post-office working spaces, swing rooms, lobbies and office rooms and ¾ watt per square foot for corridors, toilets and similar rooms. Court rooms are figured at two watts per square foot. Boiler rooms and basement storage rooms are supplied with drop cord outlets, using 25 watt lamps, spaced approximately 15 ft. apart. One drop cord outlet is installed for gage light on the boiler. Fuel rooms have one drop cord outlet at the entrance.

ELEVATORS

Regularly, one passenger elevator is allowed for each 40,000 gross floor area above the first floor, and as a check against this, one elevator for every 300 occupants of the building above the first floor is used.

Elevators are located as close as possible to the entrances to the building. Not more than six elevators are placed in any one bank.

Elevator conditions in Federal Buildings are very different from those obtained in high class office buildings—the service will not be so frequent.

MARINE HOSPITALS

None of the foregoing rules apply to Marine Hospitals. In fact, few rules can be established for the design of the mechanical equipment of these establishments. Data for the equipment of a hospital recently designed by the Office of the Supervising Architect are as follows:

The kitchen is provided with hoods over the ranges, steam kettles, etc. Motor-driven fans exhaust from these hoods, giving 12 air changes per hour.

The main diet kitchen is equipped with a gas range about 30 in. long, a large refrigerator with brine coils supplied from the central refrigerating plant, and a steel table having mounted thereon a motor-driven fruit juice extractor and a small motor-driven mixing machine.