

TABLE 7. HOT WATER REQUIREMENTS FOR APARTMENT BUILDINGS

CLASS	HOT-WATER FIXTURES PER APARTMENT						GALLONS HOT WATER PER APARTMENT PER MAXIMUM HOUR
	Lavatories	Bath Tubs	Showers Over Tubs	Kitchen Sinks	Laundry Trays	Separate Showers	
A	1	1	1	1	2	0	25
A	2	2	1	1	2	0	30
A	2	2	2	1	2	0	35
A	2	1	1	1	2	1	55
B	1	1	0	1	2	0	20
C	1	1	0	1	1	0	15

Note.—The quantity of hot water required per day is usually about 10 times the maximum hour requirement.

TABLE 8. HOT WATER REQUIREMENTS FOR HOTELS

CLASS	GALLONS		ADD FOR KITCHENS PER MEAL CAPACITY		ADD FOR LAUNDRY		
	Hot Water per H. W. Fixture per Day	Per H. W. Fixture per Maximum Hour	Per Day	Per Maximum Hour	Per Piece per Day	Per Washer per Day	Per Washer per Maximum Hour
High-class transient.....	85	6.8	3.0	1.0	1.0	1200	250
Medium-class transient.....	70	6.5	2.5	0.80	1.0	1000	200
Apartment hotels.....	50	5.0	2.0	0.60	1.0	1000	200

Note.—Instantaneous demand rate for laundry washers from 25 to 50 gal. per minute.

TABLE 9. HOT WATER REQUIREMENTS FOR OFFICE BUILDINGS

CLASS	HOT WATER PER HOT-WATER FIXTURE	
	Per Day	Per Maximum Hour
Having hot water in public toilets only.....	50	5.0
Having hot water in private offices as well as in public toilets.....	30	3.0
For self-closing hot-water fixtures deduct.....	40%	25%

TABLE 10. HOT WATER REQUIREMENTS FOR HOSPITALS

	Hot Water	Hot Water
	Per Patient	Per Fixture
Gallons used per average day.....	82	48
Gallons used per maximum day.....	127	65
Average maximum rate of flow for 15 min. in gallons per hour.....	11	7
Maximum rate of flow for 15 min. in gallons per hour.....	19	8

Note.—The above values are based on *Utility Demands of a Modern Hospital*, by Larson, Nelson and Rose. See JOURNAL, AMERICAN SOCIETY OF HEATING AND VENTILATING ENGINEERS, January 1928.

Note.—The hot water used is 25 per cent of total water requirements. The above requirements are for a hospital without a laundry.

fixtures can be taken from Tables 5 and 6. On the top story it will be necessary to use a 1½-in. branch to carry 60 gal. per minute with a pressure drop of 30 lb. but that at 30 ft. vertically from the supply, a 1¼-in. branch pipe will carry 60 gal. per minute; therefore 1¼-in. pipe could be selected for this branch. Assuming that the pressure drop in the main riser is 10 lb. per 100-ft. run and the pressure drop on the top story in the branch does not exceed 15 lb. in all and the static head for building 100 ft. as given in column 2 of Table 6 is 43.31 lb., making a total of 58.31 lb.; it will be seen that 75 lb. — 58.31 lb., which equals 16.69 lb., is the amount of pressure over and above that required, and that this pressure can be utilized to overcome the friction drop in the main feed line running from the source of supply to the base of the riser.

From Table 2 it is found that 240 gal. per minute will flow at the first story, and assuming that this water supply is to be carried in a main 300 ft. long, a 3½-in. supply would be necessary according to Table 5.

TABLE 11. WATER REQUIREMENTS FOR HOSPITALS^a

	TOTAL WATER	TOTAL WATER USED EX- CLUSIVE OF AMOUNT USED IN TOILETS, SLOP SINKS, SOUTHERN FLUSH- ING AND REFRIGERATION COOLING		COLD WATER USED EX- CLUSIVE OF AMOUNT USED IN TOILETS, SLOP SINKS, SOUTHERN FLUSH- ING AND REFRIGERATION COOLING	
		Per Patient ^b	Per Fixture	Per Patient	Per Fixture
Gallons used per average day.....	366	77	275	104	193
Gallons used per maximum day.....	527	116	423	174	296
Average maximum rate of flow for 15 min. in gallons per hour.....	29	7	25	8	14
Maximum rate of flow for 15 min. in gallons per hour.....	50	12	44	16	30

^aThe values given are based on *Utility Demands of a Modern Hospital* by Larson, Nelson and Rose. See JOURNAL, AMERICAN SOCIETY OF HEATING AND VENTILATING ENGINEERS, January 1928. (No laundry included.)

^bThe items in this column, include water used for flushing softeners and refrigeration condenser.

Example: What pressure is required in the water supply main to give 15 lb. pressure at the uppermost fixture in a building where the riser is 100 ft. high and is located 75 ft. from the water main in a horizontal direction, when the other fixtures within the building are in use to their estimated average capacity?

The answer; according to Table 5, is found to be 75.8 lb. at the intersection of 100 ft. vertical height and 75 ft. horizontal run.

Note.—If only 10 lb. be required at the uppermost fixture, then 70.8 lb. would be the answer.

WHEN THE HOUSE TANK IS ON THE ROOF

If the tank is elevated above the highest fixture, similar computations will apply for branch connections and main risers except that the main riser will have its greatest diameter at the top. It will be seen that an elevation of 35 ft. or more will give the necessary 15 lb. pressure at the highest fixture and that the pressure drop may be made equal to the static head from the top fixtures down, or 40 lb. per 100.