

of floor area, while a charwoman (working five hours per day) is expected to keep clean 3000 sq. ft.

The average cost per square foot of net floor area for all items of maintenance and operation, both material and labor (except repairs), is about 25 cents in the new buildings and 30 cents in buildings of the older and more antiquated type.

The average cost of fuel and labor to heat the buildings, using bituminous coal (at approximately \$5.33 per ton) is $\frac{1}{4}$ cent per cubic foot per annum.

TABLE 4. YEARLY COSTS OF REPAIRS TO THE MECHANICAL EQUIPMENT IN 1400 U. S. TREASURY DEPARTMENT BUILDINGS

Plumbing repairs, including new brass water piping.....	\$148,753
Heating and ventilating apparatus.....	250,171
Elevator repairs and new elevators.....	102,221
Conduit and wiring.....	46,890
Pneumatic tubes.....	1,965
	\$550,000

An analysis of all the Federal Buildings for which steam is purchased shows that north of Richmond, Va., approximately 5 lb. of steam is used per cubic foot per season for heating the buildings. This, of course, varies widely due to local conditions, winds, building construction, manner of operation, etc. In fact, in the north we will get, in the same State, variations running from 3 lb. of steam per cubic foot for one building to 7 lb. for another building.

Generally-speaking, an isolated electric generating plant begins to be feasible in a Federal Building when the full connected load is 150 k.w. or more, the annual current consumption 200,000 k.w.h. or more and

TABLE 5. YEARLY COSTS OF OPERATING SUPPLIES FOR 1400 U. S. TREASURY DEPARTMENT BUILDINGS

136,871 tons of bituminous coal, at an average cost of \$5.33 delivered in the bunkers.....	\$730,010
23,100 barrels of fuel oil, at an average cost of \$1.42 per barrel delivered at building.....	32,802
Central Station Steam 294,625 thousand pounds.....	256,876
Natural gas for use as fuel in heating boilers, 97,777,000 cu. ft. at an average cost of 34.8 cents per thousand cubic feet.....	34,000
(It is found that 25,000 cu. ft. of natural gas is equivalent to one ton of good bituminous coal, and that on the average $6\frac{1}{2}$ cu. ft. of natural gas is burned per cubic foot of building content.)	
Water for these buildings (average water consumption 25 gal. daily per employees, except in marine hospitals, where it runs up to 200 gal. daily)	200,000
Electric light bulbs.....	72,114
(Approximately one new electric light bulb is required for each electric light socket in the building per annum. The light is used on an average in all these buildings about 1500 hours per annum.)	
Electricity for light and power for all purposes 26,800,000 k.w.h., at an average cost of 4.07 cents.....	1,090,828
Oil, waste, engineers' supplies, ice, soap, brooms, janitor's supplies, etc.....	594,870
	\$3,011,500

TABLE 6. YEARLY COSTS OF REPAIRS TO THE 1400 BUILDINGS UNDER THE CONTROL OF THE U. S. TREASURY DEPARTMENT

BUILDING REPAIRS REMODELING, PAINTING, ETC.	NEW VAULTS AND REPAIRS TO OLD ONES	NEW FURNITURE, FURNITURE REPAIRS, CARPETS, LIGHTING FIXTURES, ETC.
\$930,000.00	\$100,000.00	\$775,000.00

ISOLATED ELECTRIC PLANTS

TABLE 7. DATA RELATING TO ISOLATED ELECTRIC GENERATING PLANT U. S. TREASURY DEPARTMENT BUILDINGS

Pounds of steam figured per square foot of direct radiation per year, north of Richmond, Va.....	500
Pounds of steam figured per cubic foot of net heated contents of building.....	5
Equivalent of 1 ton (2000 lb.) of run of mine bituminous coal.....	4 bbls. fuel oil 25,000 cu. ft. of natural gas.
Kilowatt-hour per day for elevators.....	Average 5 k.w.h. per car mile. Car miles per day in small buildings 5 and in large buildings 10 miles a day per elevator is the average.
Steam for heating domestic hot water.....	10 per cent of steam used for heating.
Kilowatt-hours per year of electric current for all purposes per square foot of total floor area.....	24 hour large buildings with Post Office, 2.5 8 hour large buildings without Post Office, 1.5 24 hour smaller buildings, 0.8

the cost of current from the central plant four cents per kilowatt-hour or more.

In arriving at the monthly consumption of steam the following table is used:

October.....	6%
November.....	10%
December.....	18%
January.....	18%
February.....	18%
March.....	15%
April.....	10%
May.....	5%

The average demand for steam per hour for heating and ventilating equals the annual consumption divided by 5000 (the number of hours in the average heating season).

The maximum demand for steam per hour for heating and ventilating is two and one-half times the average demand. This maximum demand figure divided by 30 gives the maximum boiler horsepower.

If the heating surface is known, the fan blast coils are reduced to the