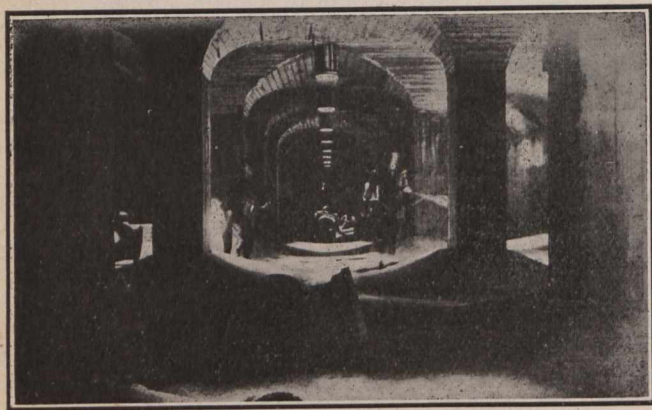


**Coagulating Basins.**—There are two of these basins, each 120 ft. by 96 ft., with three sets of concrete baffles and two skimming weirs. These basins have a flat concrete roof supported by 126 concrete columns.

**Gate House.**—The location of this building is over the entire length and width of the centre passage. Here are located the controllers in connection with the valves that control the flow of water in the mixing chamber, coagulating basins and centre passage. This building is of brick construction with a cinder concrete roof covered with slate.

**Filters.**—The filters are twelve in number, each 28 ft. by 53 ft., situated six on either side of a pipe gallery. These filters and gutters are of concrete reinforced with  $\frac{5}{8}$  steel. The mixture is a 1:2:4, and cost \$10 per cubic yard. The filters are divided into two sections with a 2-ft. 6-in. centre gutter running north and south with lateral gutters running east and west supported on the 6-inch centre gutter walls. The water flows into the centre gutter. At elevation 310.50 it passes into the lateral gutters and sprays on to the filter beds below. Each filter has a filtering capacity of three and a quarter million gallons per day. The water, after passing through the filtering medium, passes into the pipe arrangement below, through a rate controller into the clear water basins or to the clear water reservoir.

**Filtering Mediums.**—The filtering mediums consist of three grades of gravel and one grade of sand. The gravel is of four grades, as follows: The bottom layer is three inches thick, composed of pebbles. These pebbles pass through a screen of one inch mesh, and are retained on a screen of  $\frac{5}{8}$  inch mesh. The second layer is two inches thick; the grains pass through a screen of  $\frac{5}{8}$  inch mesh and are retained upon a screen of  $\frac{3}{8}$  inch mesh. The third layer is  $1\frac{3}{4}$  inches thick, pass through a screen of  $\frac{3}{8}$  in., and are retained upon a screen of 5/16 mesh. The top layer is  $1\frac{1}{4}$  inches thick, pass through a screen of 5/16 in. mesh, and are retained upon a screen having 10 meshes per lineal inch No. 20 wire. This gravel is of hard and durable rounded particles, with a high specific gravity, free from thin or flat pieces, washed and screened, and free from



View of Groin Arches, After Removal of Forms.

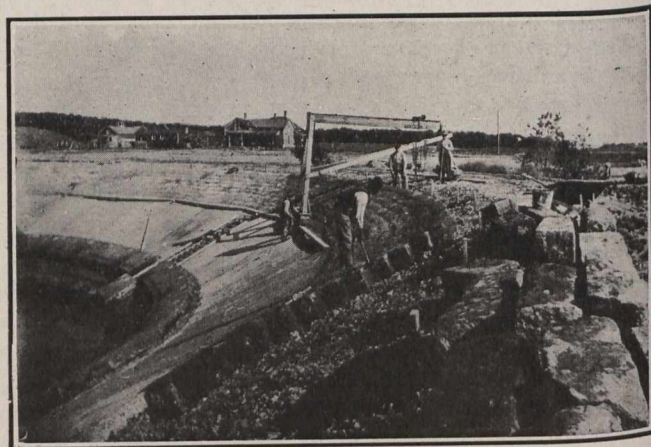
sand, loam, dirt and organic impurities. This gravel, without being ground or crushed, is digested for 24 hours in cold, strong hydrochloric acid, and 95% must remain insoluble.

The filter sand is placed above the gravel, separated by a wire screen, to a depth of thirty inches, and is of a hard and durable kind, free from clay, loam, organic matter and flat particles, and stands up to a similar test as the gravel above. This sand has an effective size of not less than .35 or more than .44 of a millimeter, and a uniform coefficient of not more than 1.65. Not more than 1% is finer than

.25 of a millimeter, and 90% is finer than .8 of a millimeter. The diameter of the sand grains is computed on the spheres of equal volumes, and all percentages are calculated by weight.

**Clear Water Basins.**—These are two in number, situated below the filters, and are 151 ft. 6 in. by 53 ft., with a concrete groin roof that supports the filters. This groin roof is supported by 26-inch concrete columns at 14-foot centres.

**Pipe Gallery.**—This pipe gallery is situated between the clear water basins and the filters, in which are situated the hydraulic valves, influent pipe, wash water pipe and wash water drain.



The Concrete and Stone Addition to Settling Basin to Increase Storage Capacity from 45,000,000 to 75,000,000 Gallons.

**Operating Gallery.**—The operating gallery is situated above the pipe gallery and extends out over part of the filters. This is of brick construction with a cinder concrete transept arch roof, covered with slate. Here are situated all the operating tables and devices for controlling the hydraulic valves, motors and all mechanical devices in connection with the chemicals, filters and pumps.

**Pipes.**—The total weight of piping in connection with the filters is 150 tons; influent, wash water and drain pipes, 365 tons; 48-inch pipe line from reservoir to Central Avenue, one and a quarter miles, 2,550 tons. Lead used, 80 tons; bolts, 6,500, assorted, for flange joints.

**Clear Water Reservoir.**—This is an immense covered concrete tank with a concrete groin roof supported by 960 20-in. concrete columns at 18-ft. centres. The length of the clear water reservoir is 877 ft. 6 in. by 413 ft. 6 in. by 24 ft. deep, with a capacity of storage of 47 million gallons. The total amount of concrete in this roof and columns was 15,000 cubic yards, put in at the following cost:—

Cement .....	\$2.00
Crushed stone .....	1.35
Sand .....	.28
Mixing, transporting, placing .....	.82
Form building, 2c. per sq. ft. ....	.10
Wrecking and placing .....	1.40

Total per cubic yard ..... \$5.95

**Wash Water Tower.**—This wash water tower is circular in construction, 46 ft. in diameter, built of concrete from grade 296 to grade 369. Elevation 296 to 340 is used for storage rooms, and elevation 340 to 353 is for water storage. The outside facing above the grade of fill is of brickwork. This wash water tower is for the purpose of water storage with sufficient pressure for an upward wash to the filters.