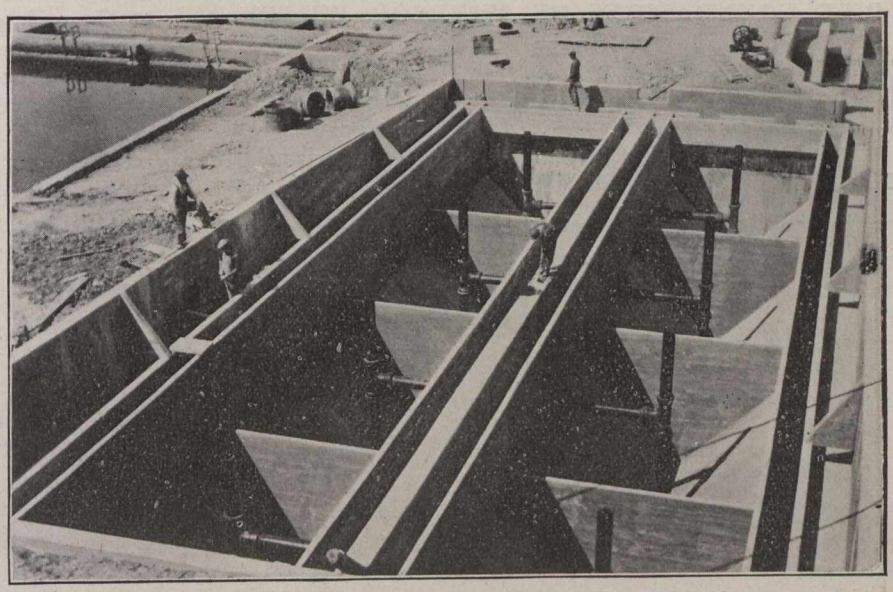
1:2:4 mix of concrete. The interior walls being reinforced vertically with ¾ round iron spaced 9-inch centres inside and out, and horizontally spaced 2 feet centres. The aprons, partition, walls and channels are built of a 1:1:2 concrete and reinforced with No. 10 mesh expanded metal.

The upper or sedimentation portion of the tank has a capacity of 132,000 gallons and a flow through a period of approximately one hour. The lower or sludge-receiving chambers have a capacity of 85,000 gallons and will be drawn off four times a year.

From the sedimentation tank the sewage is run to a low-level storage tank, from which it is raised some sixteen feet by an electrically driven centrifugal pump aided by a gasoline-driven auxiliary pump each of an 850 Imperial gallons per minute capacity, to a high-level storage tank. From this tank the sewage is delivered by gravity over filter beds of graded crushed stone 4½ feet deep. The sprinklers are of the Columbus type and are spaced at 15-foot centres. The beds are so arranged that any one or all may be in operation at once. By means of underdrains the effluent is collected and carried to the river. The general design of the tanks is clearly shown in the illustrations.



Sedimentation Tank Newly Added to Sewage Disposal Works.

We are indebted to Mr. A. B. Manson, B.A.Sc., city engineer, for the information and views of the plant.

PENNSYLVANIA RAIL SPECIFICATIONS.

The following are the sections relating to chemical composition of the revised specifications for 100-lb. carbon steel rails of the Pennsylvania Railroad:—

Chemical Composition of Rail Steel.—4. The chemical composition of the rails rolled from each melt of steel, shall be within the following limits.

Elements.	Bessemer Process.	Openhearth Process.
Carbon	0.45 to 0.55%	0.60 to 0.75%
Phosphorus...not to exceed	0.10%	not to exceed 0.04%
Manganese ...	0.80 to 1.10%	0.60 to 0.90%
Silicon	0.05 to 0.20%	0.10 to 0.30%

Note 1—In the event of nickel and chromium being present to the extent of 1% and 0.35% respectively, these elements will be considered as the equivalent of 0.07% of carbon in the above requirements.

Note 2—When the analyses for carbon by the mill chemists and by the railroad chemists do not agree, a tolerance of two points below the minimum or two points above the maximum will be allowed to cover such variation before condemnation.

5. It is desired that the percentage of carbon in an entire order of rails shall average as high as the mean percentage between the upper and lower limits specified.

Analyses of Rail Steel.—6. In order to ascertain whether the chemical composition is in accordance with the requirements, analyses shall be furnished as follows:

(*a*) For Bessemer process, the manufacturer shall furnish to the inspector, daily, carbon determination for each melt before the rails are shipped, and two chemical analyses every 24 hours, representing the average of the elements, carbon, manganese, silicon, phosphorus and sulphur, contained in the steel, one for each day and night turn respectively. The analyses shall be made on drillings taken from the ladle test ingot not less than ⅛ in. beneath the surface.

(*b*) For openhearth process, the makers shall furnish the inspectors with a chemical analysis of the elements, carbon, manganese, silicon, phosphorus and sulphur, for each melt.

(*c*) For openhearth process, a check analysis will be made by the purchaser of a piece of rail representing a melt, after the rails from that melt have passed the physical requirements. On request of the inspector, and in his presence, the manufacturer shall furnish from one of the drop-test pieces representing the melt, drillings satisfactory to the inspector, taken with a ⅝-in. flat drill, parallel to the axis of the rail, at a point one-third of the distance from the upper corner to the centre of the head (designated as point "O"). The analysis from these drillings shall conform to the chemical requirements specified in Section 4, and failure to meet these requirements shall be sufficient cause for the rejection of the entire melt.

(*d*) For openhearth process, after the rail has passed the physical requirements, additional drillings will be taken from the same rail, and in the same manner as specified in Section 6 (*c*), at the junction of the head and web (designated as point "M"). The carbon determination from these drillings (Note 2, Sec. 4) shall be within 12 per cent. of the amount found at location "O." If the test from the top rail fails to meet this requirement, all the top rails from the melt shall be rejected, and a similar determination shall be made from location "M" of a second rail. If this test fails, all the second rail from the melt shall be rejected, and a similar determination shall be made from location "M" of a third rail. If this test fails, all the remaining rails shall be rejected.

(*e*) If, however, the segregation found at location "M" in any rail in a rolling exceeds 25 per cent., when determined as provided for in 6 (*d*), the progressive testing of the second and third rails will not be permitted on any subsequent melts; but on such melts the failure of the top rail to pass the requirements provided for in 6 (*d*) will cause the rejection of the entire heat.