

lie across two railway rails forming a truck. On the bottoms of the skids where they rest on the rails are steel plate shoes which are fitted with clamp butts for anchoring the tower to the rails. The tower is also guyed, the guys running through blocks at the deadmen.

The horizontal spouting is made of heavy galvanized iron 10 in. by 10 in., open at the top, and is set on a light frame steel truss. The steel truss and spouts are all supported by a 40-foot boom which is rigged from top of tower and held in place by steel blocks and cable running to a winch. The winch is secured to side of tower so that the boom spout and loose leg may be raised or lowered or swung in a semi-circle, giving a wide range of work and placing concrete anywhere within a radius of 95 feet.

The steel tower is made up of 6-foot sections, sections being composed of steel angles and channels. The tower



Fig. 2.—View of Steel Tower, Showing Concrete Chute in Position.

rests on heavy wooden skids that have steel liners, which rest on railroad rails, making the whole rigging easy to move.

After the concrete has been placed in one section the tower is drawn back along the rails by means of the hoisting engine of the tower. This operation is accomplished by loosening the guy wires and a change of 60 feet can be made in about four hours time. Then they are ready to distribute again.

The concrete is mixed by a concrete mixer which is situated about 600 feet away from the tower on account of having the mixer near the storage bins which are on a railroad siding. The mixer discharges into cars which are conveyed to the tower, and the concrete is dumped in the bucket of the elevator and hoisted to the top of the tower where it is automatically dumped into the receiving hopper. This

receiving hopper has a gate which is operated by a man standing on a platform at the top, and he regulates the flow of the concrete through the spouts.

The roundhouse is being built on a piece of ground which was formerly swampy, and the new floor will be some 5 or 6 feet above the former level of the ground. The footings for the foundations of the walls and engine pits were carried 22 feet below track grade. This work was done by hand in trenches. The work was in sand and close sheeting was necessary as was also the use of several small pumps. After the concrete was carried to ground level forms for the walls of the engine pits and for the outside walls were built. These forms carried the work several feet above the general level and the distance over which the work was spread, made the use of wheelbarrows or carts impracticable, so the chuting system was adopted. The roundhouse is about 800 feet long, measuring along the circumference. The steel tower was erected on a track running through the centre of the house and at a point within 95 feet of one end. After all the concrete up to the floor level had been placed the tower was moved back 95 feet and another set of forms was poured so that after three moves had been made, half of the concrete was poured. The tower was then "snaked" down to within 95 feet of the other end of the roundhouse and proceeded to pour the concrete there, being "snaked" backward toward the centre as the work progressed. Before the tower was moved to the last half of the work it was necessary to turn it around so that the spout would run in the opposite direction. Turning the tower about, was accomplished as follows: A pit was dug in the sand just ahead of the tower and cribbing was placed in it, with a platform and track on top so that the tower could be pulled onto it. A 40-ton hydraulic jack was arranged on the cribbing underneath so that it would operate against the platform and raise the tower about half an inch. Supported on the hydraulic jack the tower was turned around by means of a crowbar, short distances at a time, while three men at each guy line shifted them to new positions until the tower was reversed. Three men were required to a guy line as the cable and tackle block were quite heavy, and as the weight of the tower with its boom and spout is considerably unbalanced caution was exercised in shifting the guys.

The number of men required to run the plant consists of 1 foreman, 17 laborers and 2 engineers. The number may vary but this is an average crew. They are divided as follows:—

1 foreman at \$4.00	\$ 4.00
5 men unloading cars	16.00
3 men hauling sand and stone	9.60
1 man on cement	3.20
1 mixer engineer	6.00
1 man charging and dumping mixer....	3.20
2 men on concrete car	6.40
1 man at top of tower.....	3.20
1 tower engineer	6.00
3 men handling spout	9.60

Total per day \$67.20

A portion of this daily cost will be eliminated for the last portion of the work when the tower will be located at the mixer. The average day's run of concrete may be taken at about 120 cu. yds. The maximum has been 147 cu. yds., but the minimum full day's run has been about 100 cu. yds. The work has been arranged so that 400 cu. yds. is run for every move of the tower. The moving of the tower requires about 4 hours, but the necessary track relaying, and the building of a new incline for carrying the concrete car high enough to dump into the hoist, requires about a day.