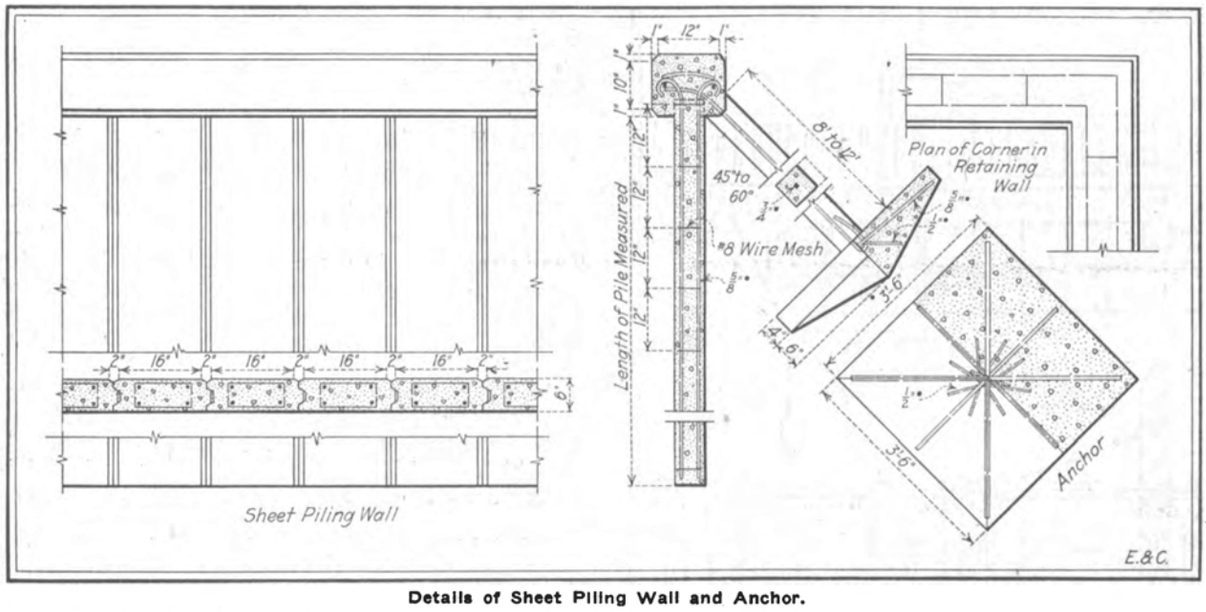
sand and gravel storage piles, on which the cold would sometimes produce a frozen crust of a foot or more, hampering the operation of the excavating bucket. This was overcome by using steam pokers, consisting of 1¼-in. steam pipe, about 10 ft. long, pointed at one end and having a few small holes. Two or three of these would be worked into the storage pile over night near its base, its surface being covered with tarpaulins. The expenditure of a very small amount of steam would heat by morning all the material within several feet of the pokers, and melt all the adjacent frozen crust.

A 4,700 FT. CONCRETE BRIDGE.

Bids were opened last month for the construction of probably the longest concrete bridge built up to the present time in the South. The structure will extend across Charlotte Harbor, between the towns of Charlotte Harbor and Punta Gorda, Florida. It will form a very important link in one of the principal highways of the state—the Tamana Trail—which connects the east and west coasts by a road across the southern portion of Florida through the Everglades, the route originating at Tampa and terminating at Miami. The wall will be tied to anchors located 10 ft. to 20 ft. c. to c., depending upon the height of the wall. The sheet piling will be driven to a depth of approximately 3 ft. to 5 ft. below the ground level.

The depth of water at the point of crossing for the bridge proper ranges from 5 ft. to 7 ft. below low tide. For the causeway portion the depth ranges from 0 to 3 ft. The supporting piles will be driven to a depth of approximately 10 ft. to 12 ft. below the bed of the channel.

A typical cross section of the bridge is shown in the illustration. The piles will be spaced 7 ft. centers and each bent will be 25 ft. in length. The plans for this bridge were prepared by the H. S. Jaudon Engineering Co., Savannah, Ga., and the work is being handled from their Barlow, Fla., office. The structure is to be built for the Charlotte Harbor Special Road and Bridge District of De Soto County, Florida.

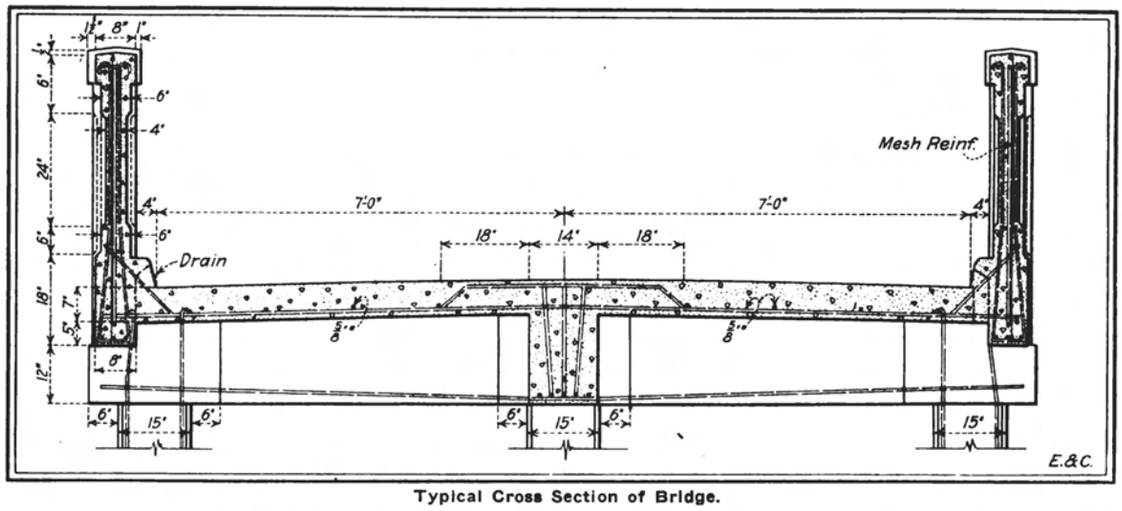


Details of Sheet Piling Wall and Anchor.

The bridge will be a reinforced concrete structure of the monolithic beam and slab type supported on concrete piles. It will be approximately 4,700 ft. long with a roadway width of 14 ft., and parapet walls about 4 ft. high. It will have a draw span giving a 50-ft. clean opening for the passage of boats. The bridge will be connected to the main land by 2,100 lin. ft. of 80-ft. wide causeway. This latter will be a hydraulic fill protected by reinforced concrete sheet piling wall. Details of the sheet piling called for by the plans are shown in the accompanying sketch.

CONCRETING PLANT FOR CONSTRUCTION OF ROSALIA, WASH., BRIDGES OF C., M. & ST. P. RY.

The Chicago, Milwaukee & St. Paul Ry., last year, completed two single track reinforced concrete viaducts near Rosalia, Wash., thereby replacing a 60-ft. high, 2,100-ft. long frame trestle. The two bridges are separated by 334 ft. of embankment. The easterly structure is composed of a 107½-ft. reinforced concrete trestle abutment, a 100-ft. spandrel arch span and a 79½-ft. reinforced concrete trestle abutment. The westerly structure consists of a 77-ft. reinforced concrete abutment, three 77½-ft. and one 68⅓-ft. spandrel arches, one 58½-ft. encased steel girder and a combination trestle and U-abutment. The following description of the concreting plant used on this

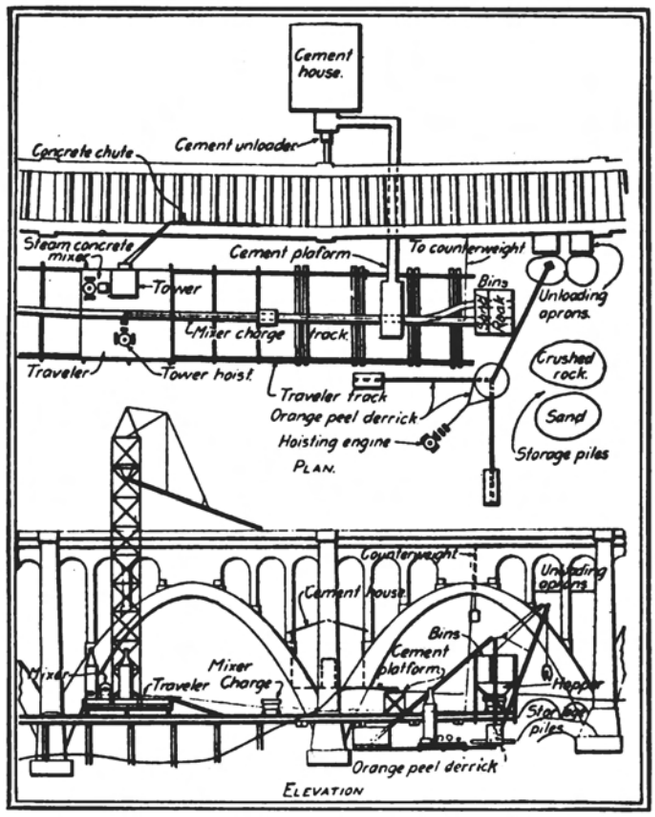


Typical Cross Section of Bridge.

work is taken from the report "Efficient Methods of Handling Work and Men," submitted on Oct. 17 at the annual meeting of the American Railway Bridge and Building Association:

It was impracticable to place the plant on the track grade, and, accordingly, it was located under the westerly bridge, the layout being as shown in the accompanying cut. The crushed rock and sand were delivered in hopper bottom cars and unloaded through chutes to the ground below, and then placed in storage piles by a stiff-leg derrick fitted with 60-ft. boom and orange peel bucket. This derrick was so located as to handle the materials to the storage piles and from there to hoppers for loading in small cars for transportation to the mixer. The derrick was operated by a double drum engine fitted with a Dake swinging gear connected to a bullwheel on the base of the mast.

The mixer and tower were placed on a traveling platform that could be moved along the north side of the bridge. Most of the concrete was spouted in this way directly into the forms. The concrete was elevated and the



Layout of Rosalia, Wash., Concreting Plant.

cars containing the dry material were hauled by a hoisting engine on the traveling platform. The empty cars were pulled back to the loading hoppers by a counterweight fastened to the bridge. The cement was unloaded into a storage house immediately underneath the south of the bridge by means of an endless belt with a friction brake which enabled the lowering of the cement at slow speed to prevent damage to sacks by tearing or burning. The cement was then wheeled directly to the cars as they left the loading hoppers.

The same plant was used to mix the concrete for the easterly bridge. In this case, however, the concrete was hoisted into small cars on a narrow-gage track on the north side of the main line and hauled by a gasoline locomotive. Concrete was mixed and placed in the easterly bridge for as low as 34 ct. per cu. yd. in this way, although the average was considerably above this on account of the inability to make continuous runs while concreting.

The steel reinforcement was all cut and bent on the platform at the west end of the westerly bridge and lowered into place from the track level. Portable forms were also built at the same point and handled in the same way. Water was obtained from city mains and in this way the necessity of installing a pump was avoided.

The organization of the forces was as follows:

	Per mo.
One general foreman	$150.00
One timekeeper	75.00
	Per 10 hours.
One carpenter foreman	$ 3.50
One blacksmith	3.25
One labor-foreman	3.00
Two sub-foremen	3.25
Twenty-six carpenters	3.00
Two engineers	3.00
One engineer (gasoline)	2.50
One fireman	2.50
Ten carpenter helpers	2.25
Twenty-four laborers	2.00

The size of the crew varied considerably on account of the difficulty in obtaining men and on account of some delay in obtaining material at various times. During the progress of the work the average traffic was eight passenger and about twelve freight trains per 24 hours. There was an average of four passenger and four freight trains on the Northern Pacific track under the easterly bridge; eight passenger and four freight trains on the Spokane & Inland Empire tracks under the westerly bridge and heavy team and automobile travel on the state highway, so that it was necessary to provide special falsework in each case to avoid blocking traffic.

The total amount of concrete placed was 5,924 cu. yd., the average cost per cubic yard for labor and material being $7.56. The total amount of reinforcing placed was 960,000 lb. at $1.80 per 100 lb.

SOME DETAILS OF NEW STREET LIGHTING SYSTEM OF POCATELLO, IDAHO.

The city of Pocatello, Idaha, awarded a contract last month for the construction of a street lighting system. The installation, in general, will follow standard practice. Some of the details, however, are of particular interest.

The system is arranged in three circuits, and series burning, rather than multiple, was decided on as better adapted to local conditions.

Alternate proposals were asked on cast iron ornamental standards, and those with pressed steel shafts. The successful contractor bid on the pressed steel only. The post on which the bid of this contractor was based is manufactured by the Union Metal Manufacturing Co. of Canton, O.

A height of 12 ft. from sidewalk to center of globe is specified for the post. This is rather less than in many other installations, but the streets of Pocatello are only 60 ft. wide, building line to building line, with 40-ft. roadways, and the 12-ft. post was decided on as being in proportion with these widths. As the primary object of the installation is to illuminate the streets and sidewalks, the acorn-shaped outer enclosing globe was selected, as giving the best diffusion of light.

It is proposed to try out lights of different candle powers, until the best results are obtained. To this end the "Mogul" sockets were specified. Absolute cutouts, while not considered absolutely essential to the successful operation of the system, were adopted as providing an additional precaution.

Discussion has brought out the fact that many cities are finding that their street lighting is being outshined to some extent by the brilliant advertising signs and outside illumination of the business houses and theaters. For a city of the size of Pocatello (17,000) there is quite a bit of this, and it is proposed for the present to use no greater candle power than is necessary for police protection and general utility after the advertising illumination is turned off for the night. Pocatello is essentially a railroad town, with many trains arriving between midnight and morning, and all night burning is proposed for the new installation. It is figured that this lesser candle power will amply meet the needs of the residential district, and will cost much less in current supplied.

The lighting system will require 355 ornamental lamp posts of the design shown in Fig. 1. These posts will be installed on and along the curb line, and connected with the underground cable system fed by constant current 6.6 ampere aerial supply circuits. The electricity