Special care must be taken in thoroughly bonding the edge of the waterproofing course into the vertical edge of the concrete curb.

The sidewalk slab shall be waterproofed by the use of hydrated lime mixed with granolithic concrete of the veneer surfacing of the slabs, as specified under "sidewalk surface."

The materials for concrete were brought to the bridge site in car-load lots over the Belt Line Railway and unloaded by the side of the track convenient to the mixer on the east side of the bridge and on the creek side of the railway track.

The cement was unloaded from the cars to the storage shed by a twin car gravity system.

Concrete was placed in the piers and abutments by means of a tower equipped with two hoppers at different heights, so located as to permit gravity distribution of the cement by chuting to the various parts of the work. The slope of the chutes and the consistency of the concrete was such as to prevent segregation of the component materials of the concrete.

Fig. 6 gives a good idea of the tower and chute. This view also shows the dredging outfit which was used in excavating the north pier and abutment.

Fig. No. 11.—Waterproofing the Roadway and Track Allowance

Fig. 7 shows the footing of the west wing of the north abutment in place, also the bent reinforcement rods in position in the counterparts. The chute may be noted placed ready to pour the main abutment.

Fig. 9 shows centering for the centre and north arches, also piers and north abutment stripped.

The arched slabs forming the deck of the bridge and the sidewalk brackets and slabs were placed from two buggies travelling on parallel tracks, running the length of the bridge and at an elevation of 8 feet above the roadway level. These tracks were laid on stringers supported on bents resting at first on the arch centering and as the work progressed, on the completed portions of the superstructure.

The buggies were filled by the tower chutes and provided a very flexible method of placing the concrete exactly where it was required with the minimum amount of handling and segregation of materials. The adjustable gates provided in the buggies enabled the operator to control the flow of concrete with great precision.

The above-mentioned superstructure was placed in seven longitudinal sections each of which was placed complete in one day's operation. The sections were placed alternately and by this means considerable formwork was avoided. This is clearly shown in Fig. 8, looking north from the cemetery, which shows forms in place for alternate sections. In the foreground of the picture may be observed sections of the pre-cast top rail for the balustrade.

The aviator's view, taken from the tower (Fig. 10), shows the top of the arch forms for the south and middle arches, the sidewalk bracket forms, the steel reinforcement in place, two longitudinal sections of the floor cast and the tracks for the concrete buggies.

Fig. 11 shows the street railway tracks in place and the waterproofing being applied on the track allowance and on a portion of the roadway. The north end of the east balustrade and the pre-cast lamp-posts may also be observed in this illustration. The bottom sections of the balustrade were cast in place, the panels and the small intermediate vertical sections and the top rails were precast and then set in place and cemented. Finally, the main posts were cast in place.

Fig. 5 shows the site of the bridge at the commencement of operation, looking north from the cemetery.

Fig. 1 is a view of the completed structure.

The structure was designed and the construction superintended by the Toronto Department of Works, R. C. Harris, commissioner, and G. A. McCarthy, engineer of railways and bridges. C. J. Townsend, of Toronto, carried out the contract for the construction.

CANADIAN SOCIETY OF CIVIL ENGINEERS ELECTIONS AND TRANSFERS

At a meeting of the council of the Canadian Society of Civil Engineers held December 28th, the following elections and transfers were announced:—

Bonnycastle, William Robinson, of Vancouver, B.C., elected member. Mr. Bonnycastle was born at Louisville, Ky., U.S.A., 1874; educated at Washington and Lee University, 1891-93, taking an electrical engineering course at Massachusetts Institute of Technology from 1893-97. He was engineer with R. S. Masson, Los Angeles, in charge of design and water power construction developments in Azusa, Mentone and Kern River from 1902-05, and was in complete charge of the Kern River development of 15,000 horse-power, and 125 miles at 67,500 volts. In 1907 he was electrical engineer with Stave Lake Power Co., and two years hydraulic and electrical designing engineer with Western Canada Power Co. (Stave Lake Power Co.); 1912, engineer for Smith, Kerry & Chace until Mr. Smith's death; since then to present time, in private practice as consulting hydro-electrical engineer, specialty, water power development; engineer for the Bridge River Power Co., and Indian River Power Co., of British Columbia.

Bourgoing, Silvio, of Montreal, Que., transferred from student to associate member. Mr. Bourgoing was born at Tadoussac, Que., December 25th, 1884, and is a B.Sc. of Queen's University, class of 1909. He is at present assistant engineer to the city of Montreal, supervising construction of sewers for western division under S. Howard.

Buck, Cameron Alexis, of Toronto, Ont., transferred from student to junior member. Mr. Buck was born at Fonthill, Ont., April 28th, 1892, and is a B.Sc. of Alberta University, class of 1916. He is at present Brinell testing