

- 10598—May 16—Authorizing the Quebec Railway, Light and Power Company to construct a branch line of railway from Quebec towards Sillery.
- 10599—May 2—Authorizing the C.N.O.R. to construct its railway across the public road between Lots 8 and 9, Concession 1, Township of Brighton, County Northumberland, Ontario.
- 10600—May 2—Authorizing the C.N.O.R. to construct its railway across the public road between Lots 30 and 31, Concession "B," Township of Brighton, County Northumberland, Ont.
- 10601—May 16—Approving the location of the C.N.O.R. through the Townships of Hamilton and Hope, Counties of Northumberland and Durham, mileage 176.86 to 180.64, from Ottawa.
- 10602—May 2—Authorizing the C.N.O.R. to construct its railway across the public road between Townships Haldimand and Cramahe, Ontario.
- 10603—May 16—Approving location of a portion of the Calgary and Edmonton Railway Company's branch from Strathcona to Edmonton.
- 10604—May 13—Authorizing the Bell Telephone Company to erect aerial wires across the track of the C.P.R. at public crossing 150 yards east of station, Vankleek Hill, Ont.
- 10605-606—May 13—Authorizing the corporation of the city of St. Thomas, to erect wires for the transmission of electric power and energy across the telephone lines of the Bell Telephone Company at Kains St., and St. Catharine St., St. Thomas, Ontario.
- 10607-608-609—May 13—Authorizing the corporation of the city of St. Thomas to erect wires for the transmission of electric power and energy across the telegraph lines, and across the track of the G.T.R. at three different points on Flora Street, St. Thomas, Ontario.
- 10610—May 16—Directing the Michigan Central Railroad Company to install a Whyte Signal Electric Bell at the crossing of the Moote Road, and the M.C.R., in Township of Canboro, Ontario.

### REINFORCED CONCRETE STORAGE BUILDING FOR THE PIERCE-ARROW MOTOR CAR COMPANY.

There was recently completed for the Pierce-Arrow Motor Car Company at Buffalo, N.Y., a four-storey reinforced concrete warehouse, covering a ground area of 24,200 square feet, which was placed under roof in less than three months after the signing of the contract, though the work was continually hampered by adverse weather conditions, and was completely suspended for one period of three weeks.

The building has a skeleton reinforced concrete frame, with brick curtain walls, and mushroom floors designed for live loads of 150 pounds per square foot. It was placed near the existing manufacturing and assembly buildings, and the former was extended 25 feet and the latter 24 feet to close the gap between them and the new structure. The new bay of the manufacturing building is of the one-storey, saw-tooth roof type, similar to the rest of that structure, while the addition to the assembly building is one storey high, serving as a covered passageway between the buildings.

The area of the main part of the new building is 308 x 62 feet, and has a 102 x 50-foot wing extending toward the assembly building. The storey heights are as follows: Ground floor, 16.29 feet; second and third floors, 14 feet; fourth floor, maximum, 15 feet 8½ inches; minimum, 14 feet 5¾ inches. The floors are built in square panels, 20½ feet in each direction, and are supported by square columns. The column reinforcement consists of vertical round rods, the number depending upon the load, with ¾-inch hoops on 12-inch centres for the full height. The column heads begin to flare as a support for the mushroom top at a distance of 2 feet 3 inches from the bottom of the flat floor slab. The radial reinforcing rods of the mushroom head are of 1-inch round steel, placed vertically in the columns, and extending down into them for a depth of 4 feet beneath the bottoms of the floor slabs. Eight of them are used for each mushroom, and are bent at somewhat more than a right angle over a 5/8 x 2-inch band placed just above the bottom of the floor slab. From this band the rods flare radially into the slab and extend outward for a distance of about 3 feet 9 inches, so that their ends are on the circumference of a circle about 8 feet in diameter. Resting upon these radial bars are two circles of steel rod with diameters of 8 feet 4 inches and 4½ feet. One-inch rods are used in the larger circle and ¾-inch in the smaller. These are wired to the radial bars at intersections, and across them are strung the right-angled and diagonal bars of the mushroom slab system.

The flaring tops of the columns are octagonal in shape, with sides 6 feet apart.

The floor slabs are 8 inches thick, and are reinforced with strips of seventeen ½-inch bars, 8 feet wide, running at right angles, parallel with the lines of columns, and also diagonally thereto. In the ground and first floors the 8-inch structural slab is covered with a 1-inch granolithic finish made of one part of cement, one part sand and one part granite dust. On the structural slab in the two upper floors is a wooden floor. Nailing strips of 3 x 4-inch lumber with bevelled edges are laid across the building on 16-inch centres, 1-16 x 1 x 12-inch steel strips being securely fastened to the under side every 12 inches, the spaces between them filled with 1:3:6 concrete, and 1-inch maple top flooring laid upon them.

The roof is covered with standard five-ply felt and slag roofing. Provision was made in concreting the floors for the attachment of shafting and trolley hangers. U-bolts, with both ends threaded, were hung over the slab rods, with the threaded ends projecting below the concrete.

The building is provided with two elevators and two stairways. The elevators and one stairway are in a fireproof tower in a corner adjacent to the assembly building, and the other stairway is in an interior tower at the other end of the building. Toilet rooms are placed in exterior stacks, so located on the outside of the building that they will form part of the future extensions, and thus be able to serve these wings as well as the main building.

The contract for this building was placed with the Aberthaw Construction Co., of Boston, Mass., September 24th, 1909, and excavation commenced immediately. There followed three weeks of almost continual rain, so that actual building operations did not commence until October 15th.

The rapidity with which the construction was carried, on from this date is best illustrated by the accompanying photographs.

The building was ready for occupancy January 15, 1910. The arrangement of the construction plant and the methods of handling materials are of considerable interest.

A spur track from the main line of the railroad was paralleled by an industrial track carried on trestles about the height of the car body. Except for stock piles of aggregate for use in case of car shortage, all sand, gravel and stone was unloaded from freight cars directly into Koppel dump-cars running on the industrial track to a switch, which turned into the platform above the mixer mouth.

An elevator tower was located as shown in the photograph, and a Smith mixer, with a capacity of 46 cubic yards per hour was placed at the bottom.

The cement shed was located between the elevator and the railroad siding, the cement being unloaded directly from the cars into the shed at one end taken out of the other end on to the mixer platform. The aggregate was dumped from the Koppel cars directly into the mixer-mouth along with the cement. A tipping water barrel was used to put in the water.

The steel was unloaded into stock piles, sorted as to size and separated as to position in the building.

When wanted, this was carried to the foot of the elevator tower, hoisted to the proper floor level by a derrick seated on the elevator tower.

The bars were then dragged into place by hand, spaced evenly and wired together into sections, so as to remain rigidly in place when concreting.

The forms were of very simple design, and made in units that could readily be handled by two men. The units were made of a few boards cleated together, and they were intended to remain as a unit, and to be transferred to the