west, or about 10 miles from St. Boniface, is the River du Loup. The total length of steel in this structure is 920 ft., made up as follows:—Eight 40 ft. towers, one 55 ft. tower, seven 60 ft. plate girder spans and one 125 ft. pin-connected span. The height from cap to base of rail is 118 ft., and the total weight of steel in the structure 1,423,000 lbs. The eastern side of the valley is very steep, and the soil consists of sand overlying a slippery clay, which showed signs of having previously slid in places into the river. The 125 ft. span was put in to clear this slope, and avoid putting in foundations on it. There are 36 pedestals carried down from 6 to 10 ft. into a hard clay and boulder formation deep enough to be safe from any danger of frost or sliding banks. Four of them are in the river itself, which is very rapid, and falls about 150 ft. almost perpendicularly, a very short distance below the bridge. Considerable difficulty was experienced with these foundations, owing to sudden rises in the water, which drowned the coffer dams and carried away the temporary work. There is a short piece of wooden trestle at each end instead of abutments. Eleven miles further west is the Maskinonge river, which is crossed by a single deck lattice girder of 100 ft. span, on masonry abutments, founded on the solid rock. This bridge presented no unusual features, except that it was situated in very rapid water just at the crest of the falls of Ste. Ursule, where the river plunges down about 175 ft. into the valley below. About 300 ft. further west is the Maskinonge gully, a deep ravine into which the river falls immediately below the railway crossing. This ravine is crossed by a steel viaduct, with a short timber approach at either end, and is, with the exception of the bridge over the Ottawa at Hawkesbury, the most important structure on the line. (An illustration of this appeared in our Feb. issue, p. 53). It consists of alternate 40 ft. towers and 60 ft. plate girder intermediate spans, and has a total length of steel of 1,000 ft., and an extreme height from cap to base of rail of 167 ft. The weight of steel was 1,685,000 lbs., and the time required to erect and complete it about four months. The pedestals were founded on rock or hard clay with one exception, where a bed of fine sand was struck. After going down 15 feet without striking anything better a bed of concrete was put in on this sand and the pedestal built on this. This sand though wet was very hard and a pointed bar was with difficulty driven into it. In some places where the rock came to the surface it was merely levelled off and the cap put in place, holes being drilled to receive the anchor bolts.

The balance of this paper will be published in our next issue. It was read before a recent meeting of the Canadian Society of Civil Engineers.

Fireproof Roundhouses on the C.P.R.

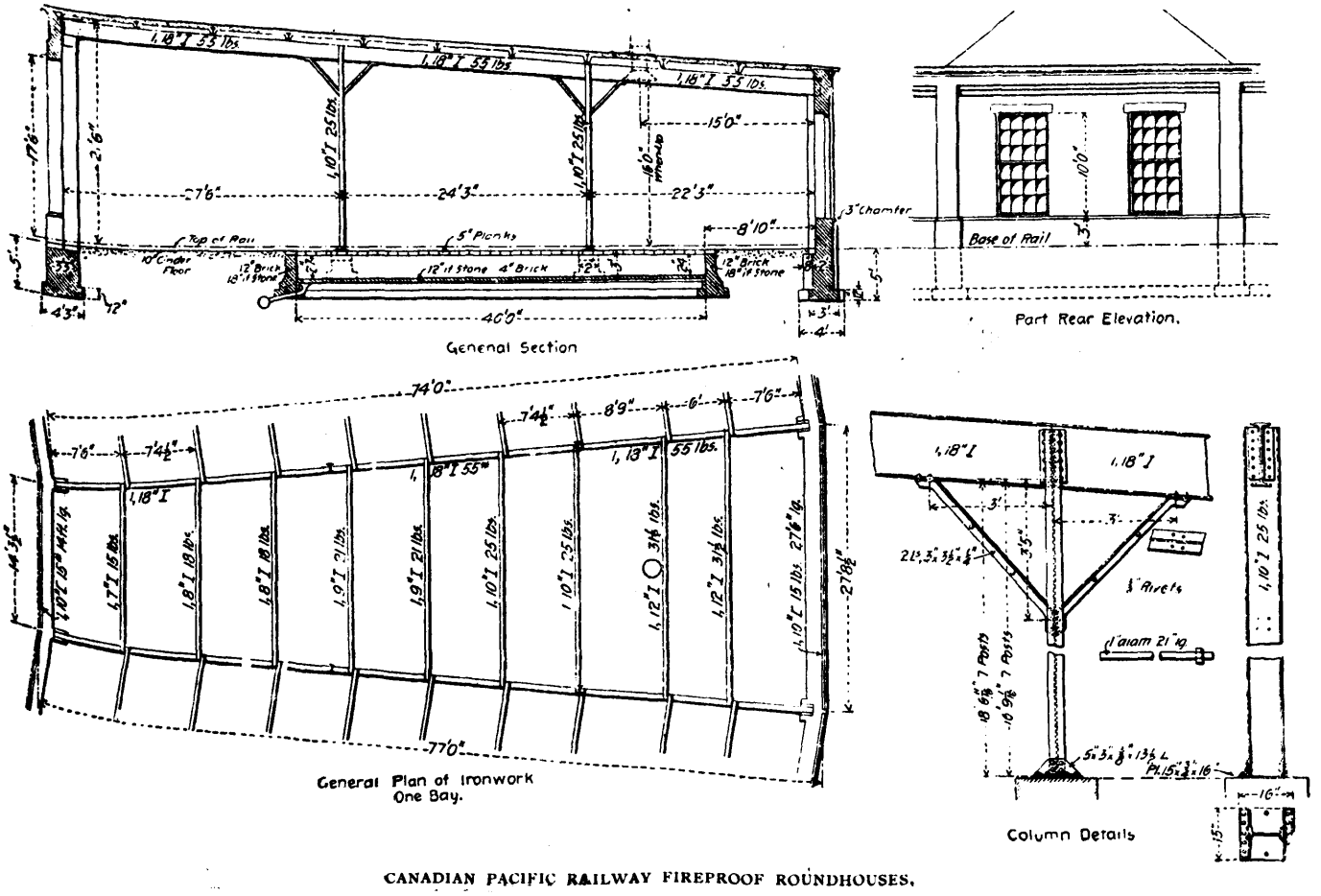
On pages 87 and 89 are drawings of the new fireproof construction for roundhouses adopted by the C.P.R. There is no wood about the building except the 5-in. plank floor at the pits, and the mouldings at the edges of the roof; it is therefor really fireproof. This particular house has eight stalls, but the same construction would apply to larger ones. The foundations are of stone, and the pits may be of either stone or brick. If of stone the pit walls are 18 ins., and if of brick 12 ins. Either brick or stone may be used also for the outer walls.

Large sections of rolled shapes are used for the posts and roof beams, and upon these the roof of fireproofing is laid and covered with 4-ply tar-and-gravel roofing. In the detail drawings the construction is clearly shown. It will be noticed that the roof-members resting on the 18-in. I-beams are 7-in. I-beams at the turntable end of each section of the building, and increased to 12 ins. at the outside, where the span is longer. Tile pipe is used for the top portions of the smoke jacks, the lower portions, which are telescopic and movable, being of riveted sheets mounted on counterbalanced levers with three locations of the fulcrums to accommodate different lifts. A damper is placed near the bottom of the movable portion, and the arm attached to the spindle engages with the roof casting, or a bracket suitably placed on the roof. Except at the pits the floor is of cinders 10 ins. deep. The pits are 40 ft. long, and extend to within 8 ft. of the outer wall.—American Engineer and Railroad Journal.

Railway Route to the Yukon.

During 1898, 1899 and 1900, surveying parties have been engaged, under the Department of Railways, endeavoring to find a feasible route for a railway, on Canadian territory entirely, to give communication with the Yukon district from a point on an existing Canadian railway, and also from a Canadian port on the Pacific coast and the approximate cost of such a line. J. L. O'Dwyer, engineer in charge, has presented a lengthy report to the Minister dealing with the explorations made, indicating a feasible route and furnishing estimates of the cost of construction and equipment.

Starting from Edmonton, the present northerly terminus of the Calgary and Edmonton Ry. (leased to the C.P.R.), a point distant 192 miles north of Calgary on the main line of that company, a feasible route has been found to Lake Teslin. The distance to the head (southerly end) of this lake is 1,240 miles, and the estimated cost of construction at prices for similar work in the eastern section of Canada is set down at $22,908,609; to this estimate, the Chief Engineer adds, for the difference between eastern and western prices, 60%, making the estimate for construction $36,653,774; the cost of equipment is estimated at $1,866,000, making the total estimate



CANADIAN PACIFIC RAILWAY FIREPROOF ROUNDHOUSES.