

Umbrella Roofs at C.P.R. Stations at Montreal and Quebec.

The C.P.R. has completed recently umbrella roofs over four of its passenger platforms at Place Viger Station, Montreal, three being each 496 ft. long and one 403 ft. long. The baggage platforms which occur between each passenger platform are not covered. The umbrella roofs consist of reinforced concrete throughout. The posts are symmetrical 2-armed units,

face and gives a very pleasing effect from below.

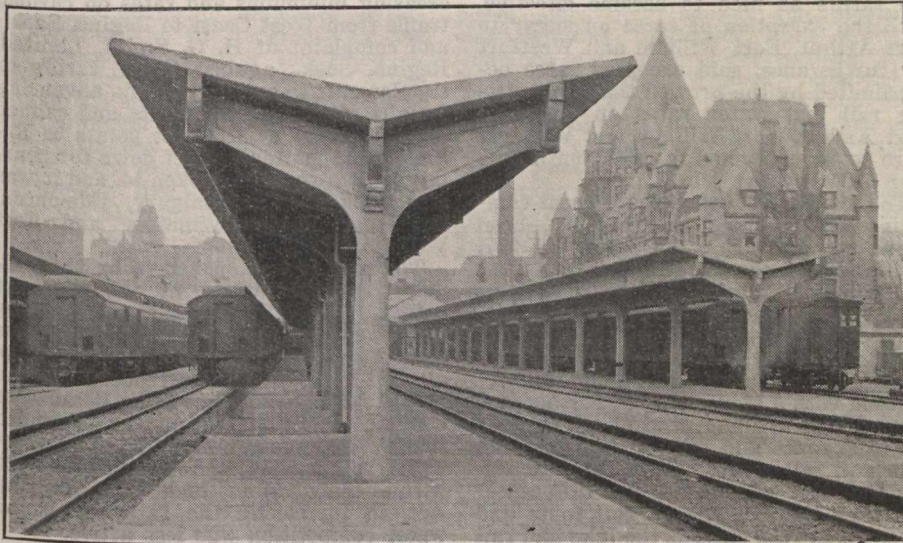
Where down pipes occur in the roof, the Siegwart beams were made of shorter length and trap castings were cast into a small section of solid concrete poured on the work. The rain water pipes are of Toncan metal and are located at every second panel, 62 ft. c. to c., and connect

was done immediately the forms were taken off, by rubbing down with sand and wooden floats. The structural steel hangers were manufactured previously in a structural shop, and after erection they were painted to match the general color of the concrete.

The wiring for the whole structure is laid in standard conduit work, with the necessary outlet boxes. The conduits pass through pre-cast holes in the posts, and two lights per panel are attached to fixtures on the lower side of the centre purlins. This gives ample light at night, and the fact that the outer edges of the roof slabs are 18 in. above the top of cars, provides ample light during the day, even when both tracks adjacent to a platform are occupied by trains.

Similar work was carried out at the Union Station, Quebec, in substantially the same manner as described above for Place Viger, with a few exceptions, one of which was that a few of the posts were poured on their sides, and were lifted up later and grouted into the pockets already referred to in the pedestals. Generally, however, the posts were cast in a vertical position, after the reinforcement had been put together and stood up in its final vertical position. This method was found more convenient, from the point of view of maintenance of traffic on platforms. The roof slabs are of mill construction, 3 in. thick timber instead of Siegwart beams as at Place Viger.

The accompanying illustrations show the general appearance of the finished work, including the connection of the new platform covers with the existing midway space at Place Viger station. This consists of 1½ in. mortar work, floated on expanded metal reinforcement attached to the existing structural steel work, which gives a pleasing appearance, as can be seen from the illustrations, from both inside and outside of the midway.



Umbrella Roofs, Place Viger Station, Canadian Pacific Railway, Montreal.

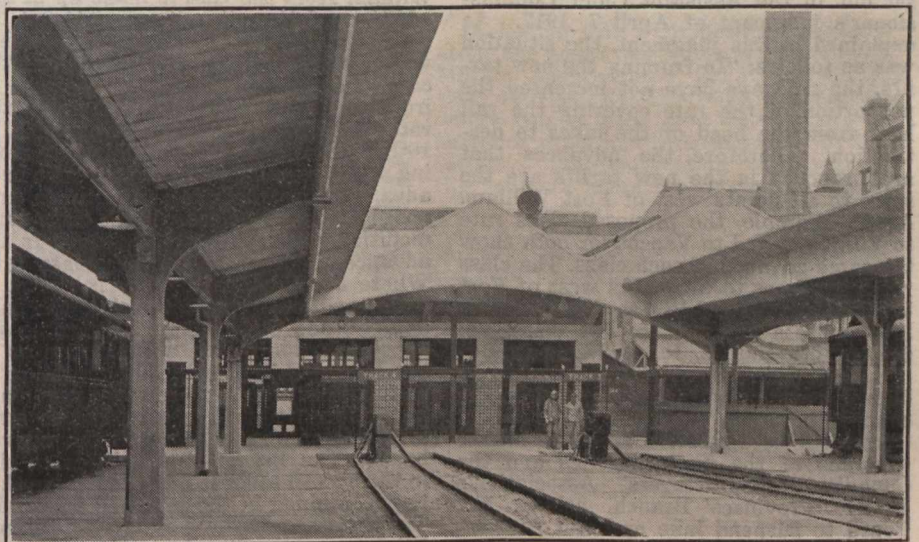
on which are supported reinforced concrete purlins, which in turn support the reinforced concrete roof slabs, which are waterproofed with the usual membrane and asphalt covering. This unit system of construction, constitutes a very interesting, and what is believed to be, an original method of construction.

The actual method of construction was as follows: The pedestals were first built in their proper locations, an oblong pocket 1 ft. x 1 ft. 10 in. being left in them for the reception of the posts, which were intended to be manufactured as units, and later to be inserted and grouted into the pockets. It was found, however, in some cases, more economical to erect the reinforcement as units in the pockets, clamp the forms around them, and then, when all adjustments had been made, to pour the concrete from a travelling crane platform. After the forms had been removed, the structural steel slings were put in place. In the meantime the purlins had been cast as units in the yard and they were erected from the same traveller. This having been accomplished, the reinforced concrete roof slabs were laid as if they were ordinary mill construction of wood work. All reinforcement of the posts and purlins consisted of rails, bent where necessary, and securely attached to one another. This construction lent itself readily to a systematic and speedy erection. It allowed the work to be proceeded with without interfering with passenger traffic on the platforms, or with train operation on the tracks.

When the skeleton was erected the roof slabs were lifted up into place from the deck of a flat car by a light travelling crane. These roof slabs are of special construction known as Siegwart beams, a Belgian design. They are 4 x 12½ in. wide. They were specially manufactured with one end closed and all lower edges had a ½ in. chamfer, which gives the impression of a series of V joints 12½ in. apart. This served to break up the sur-

face with the existing drainage system in the yard.

The roof covering consists of a membrane, composed of 5 ply roofing felt, laid in pitch, with a continuous galvanized iron reinforcing piece along the edge of the roof; the function of this reinforcing piece being to keep the membrane in contact with the end of the roof slab and prevent a tendency to curl up. In addition to



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this it provides a uniform drip edge which extends ¾ ins. below the lower surface of the slab. Details of the manner in which the first layer of roofing material was folded back and attached to the upper side of the membrane are clearly shewn on the plans. The upper surface of the membrane is protected against abrasion by snow shovelling, by a layer of asphalt. The surface finish of the whole work

The work at both Montreal and Quebec was executed under the supervision of J. M. R. Fairbairn, Assistant Chief Engineer, the designs being made by P. B. Motley, Engineer of Bridges, and the work was carried out by J. E. Beatty, District Engineer. The Atlas Construction Co. were the contractors for the Montreal work, and the Byers Construction for the Quebec work.