

ESQUIMALT
AND
NANAIMO
RAILWAY

C. H. RIFF

Esquimalt and Nanaimo Railway Mechanical Terminal Facilities at Victoria, B.C.

The recently completed group of buildings forming the Esquimalt and Nanaimo Ry. terminal plant at Victoria West, B.C., comprises a locomotive house, machine shop, car repair shop, boiler and engine houses, store, etc.

The locomotive house has 10 stalls, each 13 ft. 7 in. at the front, 26 ft. 5 in. at the back, and 90 ft. deep. The walls are of 13 in. brickwork on strong concrete foundations, and the roof is of timber construction covered with felt and gravel. The usual locomotive pits are provided, together with one drop pit 7½ ft. wide. The walls of these are of 10 in. concrete, to which is fastened, by means of anchor bolts, the 4 by 13 in. timbers carrying trackage. For a width of 3 ft. all around the pit, 3 in. planking is spiked, the intervening floor space being finished off with cinders.

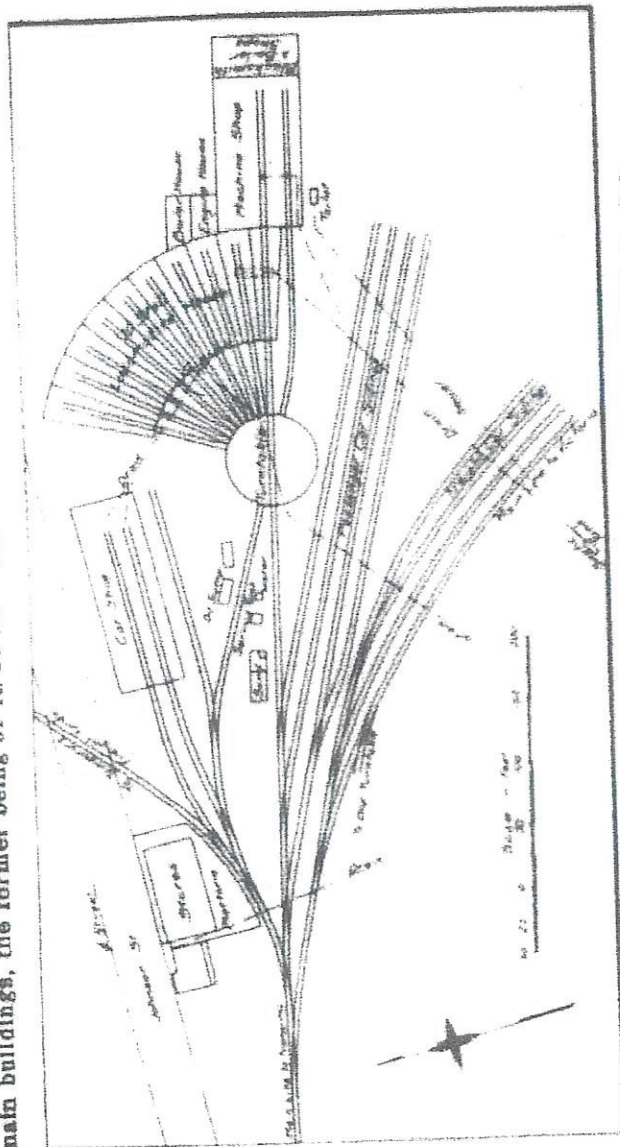
The machine shop is 68 by 112 ft., and 18 ft. high to the under side of roof truss, and is provided with two locomotive pits and one drop pit similar in construction to those in locomotive house. The shops abut end on to the back of the locomotive house, one track entering from the end stall, and one from the outside of the locomotive house, thus providing outgoing and incoming tracks over turntable. The roof is pitched and is carried by six timber trusses at 16 ft. centres; these are supported on brick piers standing out 4½ ins. from the 18 in. walls. Good lighting has been secured by three large skylights on the roof, together with ample sidelights, two windows being fixed in each bay. Bench accommodation has been supplied for the fitters, and the whole floor has been planted over. A width of about 36 ft. extending the length of the building, has been reserved for the installation of machinery tools, which are now being fixed, and include:—18 ft. wheel lathe, 16 ft. Bertram lathe, Bertram gap lathe, 20 ft. gap lathe,

the usual features necessary for the economical handling of repair work.

The store is one story and basement, the walls of the former being 13 in. brickwork, and of the latter of 18 in. concrete. On the ground floor a space of 33 by 56 ft. is reserved for the store proper and is equipped with a hand power elevator to serve the basement, and also shelving for the reception of supplies. At the east end of this floor there are three rooms, the outer two being offices for the Master

be located the steam hammer, two circular and one oblong forges, together with one set of shears and one set of rolls. This building is 32 by 68 ft.

The engine room and boiler room are located in the angle formed by the two main buildings, the former being 31 ft. 10 in.



Esquimalt and Nanaimo Ry.'s Mechanical Terminal Layout at Victoria, B.C.

by 20½ ft. and the latter 45½ ft. by 19½ ft. The engine provided is 76 h.p. and of the tandem compound type. The air compressor is of the Imperial cross compound steam driven type X, made by the Ingersoll-Rand Co. Two 100 h.p. standard C.P.R. locomotive type boilers, carrying 130 lbs. pressure, are being installed. They are equipped for fuel oil, which will be pumped to the burners from a 4 by 6 ft. circular auxiliary tank, located underground outside the building. This tank, in turn, will be

Mechanic and Storekeeper respectively, while the centre one is intended to house seven Howser self registering oil pumps. The different varieties of oil to be used will be stored in 2 by 4 by 12 ft. oblong tanks, made of 3-16 in. plate. These are located in the basement in a reinforced concrete fireproof chamber, 15½ by 24½ ft., the feed piping leading direct therefrom to the Howser pumps above. The remainder of the basement floor is intended for the storage of heavy material brought

Panoramic View Equipment and Nanaimo Railway Mechanical Terminal.

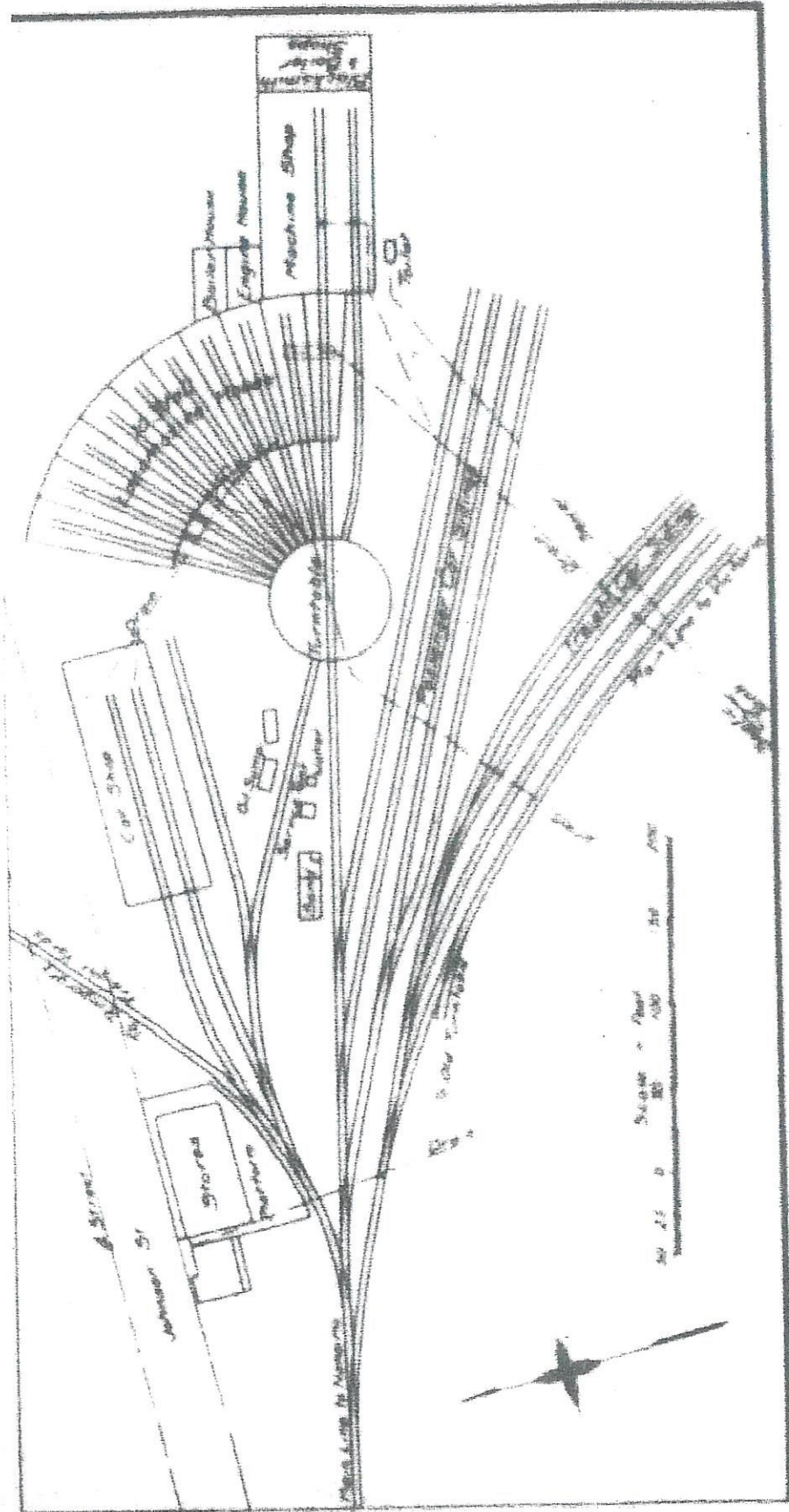
3 ft. screwing machine, small Bertram lathe, a large and a small drill, wheel press, planer, and shaper. The main shafting will be bracket fixed to the brick pier, and the counter shafting to the underside of the roof trusses.

The blacksmith and boiler shop is a continuation of the machine shop, partitioned therefrom by a 9 in. brick wall. In it will

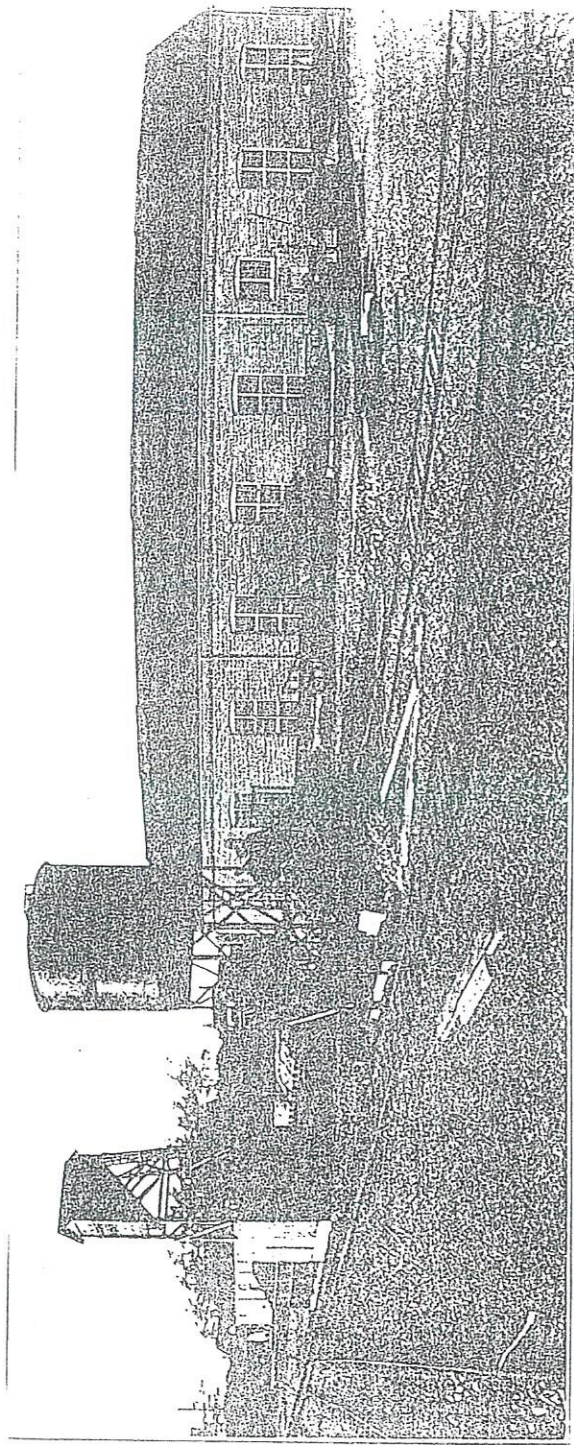
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down by the elevator. A platform has been erected round three sides of the building to facilitate the handling of deliveries from the track and street.

Eight feet from the centre of one of the tracks leading across the turntable is the concrete fuel oil storage tank, 22 by 8 by 10 ft. high, which is entirely underground. The walls are 10 in. thick with a 13 in.



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The blacksmith and boiler shop is a continuation of the machine shop, partitioned therefrom by a 9 in. brick wall. In it will

be supplied by gravity from the service tank located near the turntable.

The car repair shop is 60 by 150 ft., and of 13 in. brickwork. The roof is pitched and covered with corrugated iron, the whole being carried by eight timber trusses at 16 ft. centres. Here, as in the other buildings described, car pits of concrete construction are provided, together with

See opposite page.

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March, 1914.]

CANADIAN

roof, the latter being strongly reinforced with T iron and expanded metal to ensure the safe carrying of trackage above. Near the storage tank, and equidistant between the two tracks crossing the turntable, stands an 8,000 gal. circular steel service tank, supplied by pump from the storage tank, from which the oil proceeds by gravity to the auxiliary tank near the boiler house. Locomotives will also receive their supply of fuel here by means of two sway pipes which radiate from the bottom of the tank, one to each track. Close by is the water standpipe, so that when taking oil, locomotives can also receive their water supply without change of position. A sand plant has been built 20 ft. from the water standpipe along the same track. The erection is of timber construction and of standard C.P.R. design. Generally speaking, the whole plant as above described is of an up to date character, all buildings are lit throughout by electricity, and are also equipped with water hydrants for fire protection.

The buildings are located to the extreme northwest of the ground, being allotted for terminal purposes. The layout of the freight yards, sheds and passenger station has not been completed, but the accompanying plan indicates the general scheme, so far as the shop layout is concerned.

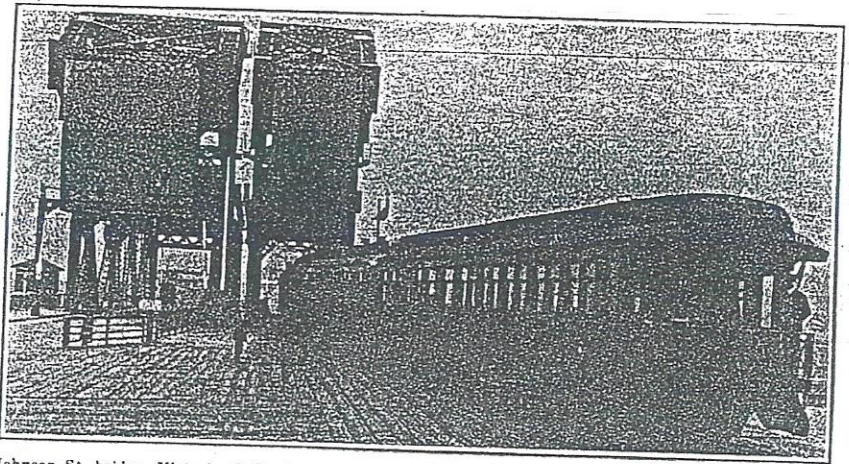
The work of erection commenced April, 1913, and has been carried out by the contractor, E. R. Doe, of Victoria, B.C., under the direction of R. A. Bainbridge, Division Engineer, with A. L. Kennedy as Engineer in Charge. We are indebted to H. E. Beasley, General Superintendent, for the foregoing information.

Railway and Highway Bridges at Victoria, B.C.

The new railway and highway bridges at Johnson St., Victoria, B.C., completed recently, at a total cost of \$918,000, by the city, were under construction for over three years, and mark an important stage of the development of the Soughees Indian Reserve and other industrial areas of Victoria West and Victoria City. The original bridge was entirely a railway structure, built and owned by the Esquimalt and Nanaimo Ry., but with the development of the port's business, and of the industrial area round the harbor, brought about by the opening of the Soughees Indian reserve some years ago, the necessity for a bridge for general traffic purposes became apparent. After somewhat protracted negotiations an arrangement was made between the city council and the Canadian Pacific Ry., which had acquired the Esquimalt and Nanaimo Ry., for the building of bridges for both railway and general traffic purposes. The C.P.R. gave \$100,000, that being the estimated cost of a new railway bridge for the E. and N. Ry., and the British Columbia Government gave \$200,000, the city providing the balance. The necessary bylaw was approved by the city voters and by the Legislature in 1920, and arrangements were made for going on with construction. The substructure was put in by the City Engineers Department at a cost of \$206,086, some 10,000 cubic yards of material being used, and a contract was let to Canadian Bridge Co., for the superstructure, the Bascule span being built under the Strauss Bascule Bridge Co's direction.

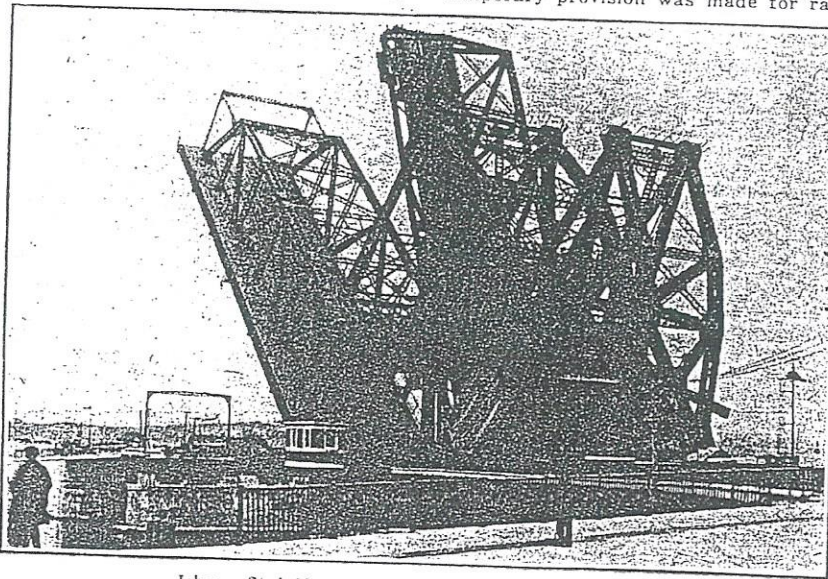
For construction reasons the bridge was built in two portions, owing to the proximity of an old swing bridge, and the necessity of keeping both the rail-

4% gradient from that point. The highway portion of the bridge provides an 8-ft. sidewalk, and a 30-ft. roadway, with double tracks for electric railway traffic, and the railway portion is 20 ft. wide, in order to give facility to the railway company for unloading passen-



Johnson St. bridge, Victoria, B.C., showing lift span closed. Highway bridge at left, railway bridge at right.

gers, the tracks being offset for this purpose. The effect of this is that the superstructure really consists of two bridges, a railway one and a general traffic one, erected side by side, the railway bridge costing \$318,000 and the highway one \$600,000; new railways and approaches costing between \$80,000 and \$90,000 in addition. The main portion of the superstructure was completed in 1922, and temporary provision was made for rail-



Johnson St. bridge, Victoria, B.C., showing lift span open.

way traffic upon it and the harbor traffic under way. Commencing from the easterly side each bridge consists of one 110-ft. girder span, one 54-ft. tower span, one 150 Strauss bascule span and one 73-ft. plate girder span. The quantity of steel in the superstructure is about 1,000 tons. In order to obtain an under crossing for the roadway under the railway on the westerly side, the grades are split at the rest pier, and the roadway portion of the bridge drops on a

way traffic, when the old bridge was taken down in 1923 for the erection of the bascule spans. The work was completed at the end of 1923, and the bridge was officially opened for traffic, Jan. 11.