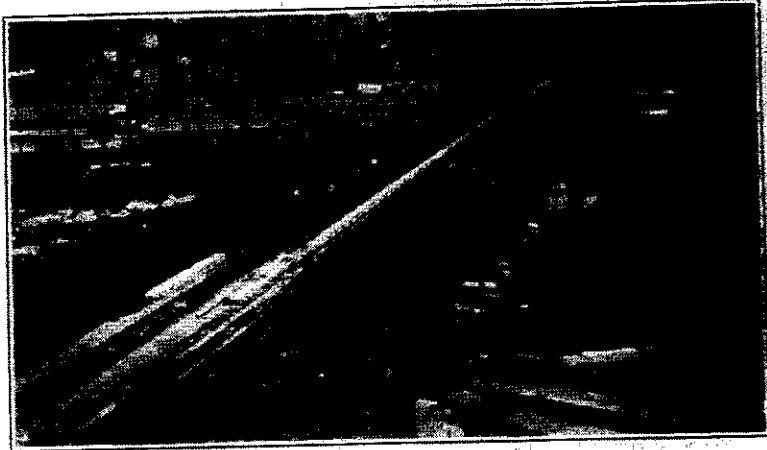


CANADIAN  
PACIFIC DON  
RIVER BRIDGE  
TORONTO

list of the bridges to be replaced, with brief descriptions of the existing structures and the work to be done on each, was given in Canadian Railway and Marine World for April, pg. 183. The work was commenced in May, and is being pushed rapidly to completion.

The five bridges to the east of Toronto which are being renewed are on the Oshawa Subdivision, Trenton Division, and Toronto Terminals Division, and are numbered 101, 102.7, 105.1, 106.15, and 106.2, these figures representing their mileages from Trenton, the eastern limit of the Oshawa subdivision. Bridges 101 and 102.7 are on the Oshawa Subdivision between Agincourt and Leaside, on the north or original track of the double track line. Bridges 105.1, 106.15 and 106.2 are on the Toronto Terminals Division, on the single track line between Leaside and Don, this section of track being operated on the absolute staff system. Don is 2 miles from Toronto union station, Leaside 5.3 miles, and Agincourt, the junction point between the Oshawa and Peterboro Subdivision lines, is 12.3 miles from Toronto union station. The company's line through the north part of Toronto joins the Oshawa Subdivision line at Leaside.

In the renewal of the bridges between Agincourt and Leaside there are no particular difficulties in connection with the continuation of traffic as the south track of the double track line is being used as a single track line during the renewal period, but in the work on bridges 105.1, 106.15 and 106.2, between Leaside and Don, on the single track line, the work is being carried out without interruption to traffic, necessitating thorough preparation in advance of the work and extreme

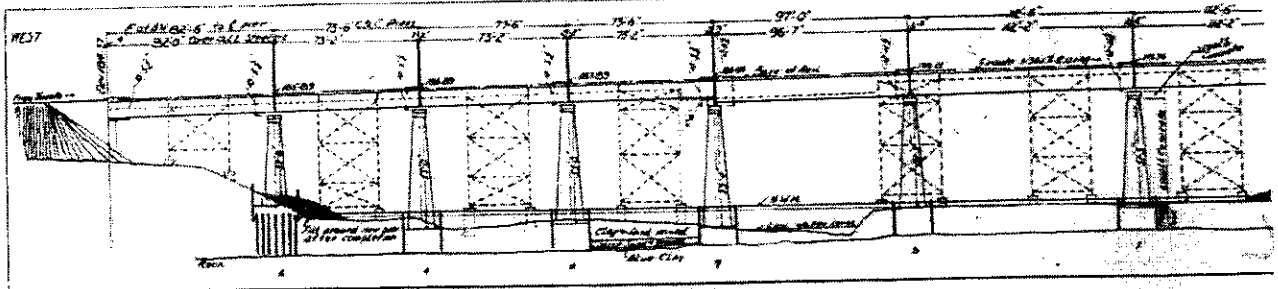


Bridge 105.1, Toronto Terminals Division, Canadian Pacific Ry., before replacement.

Bridge 105.1, which is 1,150 ft. long and is the longest of the group being replaced, carries the line over the Don River valley, near the Don Valley brick works, and is on the long grade which passes under the Bloor St. viaduct in Toronto, the track being a tangent. The original structure was a steel trestle on masonry piers and abutments, carrying the track at an average height of 75 ft. above the river valley. It was built in 1888. It is being replaced by a deck plate girder structure of 13 spans, on

by replacing the original wood floor by a concrete one, the concrete deck being covered with a membrane waterproofing and mastic top, and rock ballasted. The contract for the steel work was given McGregor and McIntyre, Ltd., Toronto, the business of which was acquired recently by Dominion Bridge Co.; the concrete floor was put in by railway forces. At the time of writing, (Oct. 13), the floor has been renewed, and the steel work is nearing completion.

The replacement of bridge 106.1 is



Bridge 106.1, Toronto Terminals Division, Canadian Pacific Railway.

New structure shown in solid lines and old one in broken lines. See also opposite page.

care and accuracy in carrying it out. The method used in the replacement of the superstructure at bridge 105.1 is described in detail further on in this article.

Bridge 101, a steel structure 900 ft. long and 120 ft. high, on masonry piers and abutments, was built in 1883. At the time of writing, Oct. 13, the substructure work, consisting of replacement of the old masonry pedestals and abutments in concrete, has been completed by railway forces, and the Hamilton Bridge Co., which has the contract for replacement of the superstructure by a deck plate girder structure of 22 spans, on steel towers, is about to begin operations. Bridge 102.7,

concrete abutments and piers. At the time of writing, Oct. 13, the six easterly new spans have been installed by Canadian Bridge Co., contractors for the superstructure.

Bridges 106.15 and 106.2 are smaller structures, both built in 1883, bridge 106.15 carrying the line over Winchester St., Toronto, and bridge 106.2 carrying it over the Don River. The work involves alterations to the substructure, which have been completed by railway forces, and the Canadian Bridge Co., contractors for the superstructure on both bridges, will proceed with that work in the near future. Bridge 106.15, as built originally, is a half deck plate girder structure, and

involving considerable planning and originality in method, as the work on this single track structure is being carried out without undue delay to traffic. An elevation drawing given herewith shows the new bridge, the towers and spans of the original one being shown in dotted lines. In three cases, the new high concrete piers for the new bridge were designed to occupy a position coinciding with the original bridge's steel supporting towers, in which cases the piers were built inside the towers, being completed, with the exception of some concrete work around their tops, this work being left to finish up following removal of the towers, and the temporary caissons not being such

as to affect the strength of the piers. In the other cases, the new piers were designed to be built between the supporting towers of the old structure. The contract for the substructure on this bridge was awarded the Nelson River Construction Co., which took all its materials by truck from its yard at Lennoxville to a depot at the west end of the bridge, thus keeping it on a high level and obviating the necessity of taking its plant into the valley and hauling it out again at the completion of the work. At the west end of the bridge there is a cut, with quite a hill on the south side of the track; the plant was set up on the hillside, and the material hauled by gravity to the track, and thence out along the bridge on a temporary narrow gauge track at the south side of the main track, as shown in one of the accompanying illustrations. From this temporary track, fenced off from the main track, the concrete was dropped through hoppers to the piers below. Work on the substructure was started about May 15, and completed about Aug. 15.

The Canadian Bridge Co. forces started work about Sept. 15, and, utilizing a temporary siding installed about 200 ft. east of the bridge, assembled its plant, and at the time of writing has installed new spans as follows: Sept. 30, the two short easterly spans; Oct. 4, third span from the east; Oct. 7, fourth span; Oct. 10, fifth span; Oct. 14, sixth span. The bridge company's forces are using a derrick car, which works from the west end of the bridge during the actual placing of the spans, and a large travelling crane, shown in one of the illustrations, built specially in the plant at Walkerville for this job, the latter piece of equipment, as is evident, being considerably out of the ordinary, and highly efficient in handling the work for which it was designed. This crane handles the new spans, completely assembled and riveted, from the east end of the bridge.

The new spans are not of the same length as the old ones, so that the opening made to receive the new span is longer than the new span itself. The difficulty

the ties are hoisted to the bridge deck by the derrick, placed and secured in position, and the rails laid and spiked.

The method used in placing the new large spans is similar to that employed in placing the span between new piers 4 and 5, on Oct. 10. Following the passing of the last train, the derrick proceeded to

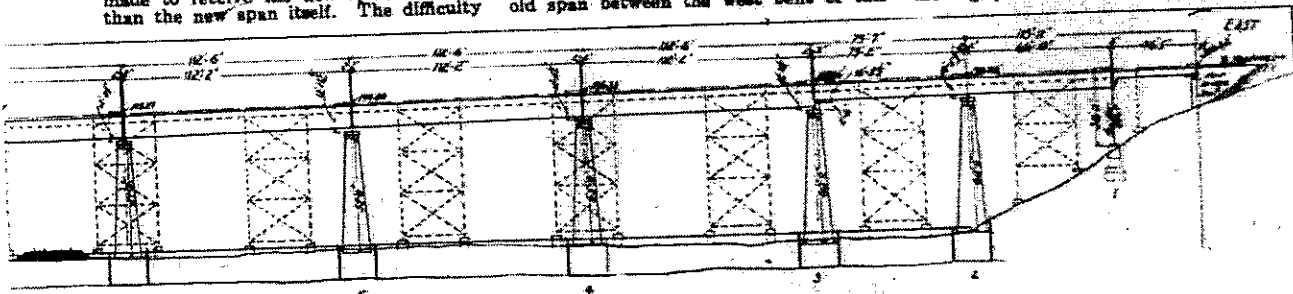
end of the bridge. The derrick then carried the closure, to extend from the old tower west of new pier 5 to the west end of the new span, and the closure was placed in position. The ties were then hoisted out of the valley and placed, the rails laid and spiked, and the bridge was once more ready to handle



Bridge 104-1, Toronto Terminal Division, Canadian Pacific Ry. Travelling crane placing new span.

the west end of the bridge. Lifting of the deck westerly from above pier 4 was followed by removal of the closure adjacent to pier 4 on the west, of the old span between the closure and the east bent of the old tower between piers 4 and 5, of the span between the two bents of this tower, of the upper portions of the two bents of the tower, and of the old span between the west bent of this

traffic. On a work like this, all moves are timed to the minute, and carried out with precision. In the placing of the span referred to, on Oct. 10, the span being 112 ft. 2 in. long, and the total opening to be filled by span and closure 134 ft. 8 in., the travelling crane movements were as follows: 10.15 a.m. to 11.19 a.m., moving span to place it centrally over



Bridge 104-1, Toronto Terminal Division, Canadian Pacific Railway. New structure shown in solid lines and old one in broken lines. See also opposite page.

thus created is being overcome by the use of closures, i.e., temporary steel framed sections, complete with deck, with a short leg at one end and a long one at the other, to fit between an old tower and a new pier, and provide a deck between the west end of a new span and the east end of the next intact old span. These closures were made in advance by the bridge company. In placing the new spans, the short ones are being placed complete with ties, but the longer ones are placed without the ties in position, the ties being left in the valley immediately below

tower and the old tower west of pier 5. This work was facilitated by burning out the rivets in the old tower's upper parts previously and having them replaced by temporary bolting. The old material was hauled from the west by the derrick, which took it to the west end of the bridge and placed it clear of the track. While this was going on, the crane, at the east end of the bridge, was moving the new span into position over the track, and getting it balanced, etc., for movement out on the bridge. On the opening for the new span being completed, it was moved out from the east, placed in

main line track; 11.10 to 11.45, span picked up, hooks adjusted, and span placed ready for movement to bridge; 11.45 to 11.50, span moved to end of bridge; 11.50 to 1.45 p.m., standing by, waiting for derrick to complete opening in bridge; 1.45 to 2.05, placing span in bridge; 2.05 to 2.25, returning to siding and clearing main line. The derrick movements were as follows: 10.19 a.m. to 10.35 a.m., left siding at east end of bridge, assisted in moving new span over main line, then proceeded to west end of bridge; 10.45 a.m., track broken; 10.45 to 1.45 p.m., moved old bridge ties, closure, & old spans and 3 bents of old

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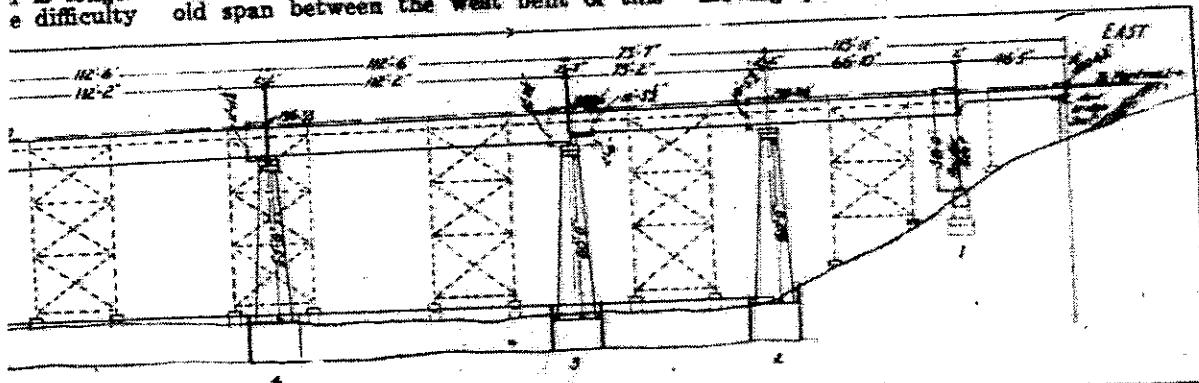


Bridge 105.1, Toronto Terminal Division, Canadian Pacific Ry., Travelling crane placing new span.

the west end of the bridge. Lifting of the deck westerly from above pier 4 was followed by removal of the closure adjacent to pier 4 on the west, of the old span between the closure and the east bent of the old tower between piers 4 and 5, of the span between the two bents of this tower, of the upper portions of the two bents of the tower, and of the old span between the west bent of this

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On a work like this, all moves are timed to the minute, and carried out with precision. In the placing of the span referred to, on Oct. 10, the span being 112 ft. 2 in. long, and the total opening to be filled by span and closure 134 ft. 8 in., the travelling crane movements were as follows: 10.15 a.m. to 11.10 a.m., moving span to place it centrally over the



Bridge 105.1, Toronto Terminal Division, Canadian Pacific Railway.  
New structure shown in solid lines and old one in broken lines. See also opposite page.

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main line track: 11.10 to 11.45, span picked up, hooks adjusted, and span placed ready for movement to bridge; 11.45 to 11.50, span moved to end of bridge; 11.50 to 1.45 p.m., standing by, waiting for derrick to complete opening in bridge; 1.45 to 2.05, placing span in bridge; 2.05 to 2.25, returning to siding and clearing main line. The derrick movements were as follows: 10.10 a.m. to 10.35 a.m., left siding at east end of bridge, assisted in moving new span over main line, then proceeded to west end of bridge; 10.45 a.m., track broken; 10.45 to 1.45 p.m., moved old bridge ties, closure, 3 old spans and 3 bents of old towers to west end of bridge and clear



Bridge 105.1, Toronto Terminals Division, Canadian Pacific Ry. Location of new piers with relation to old towers.

of main line; 1.45 to 2.10, brought closure from west end of bridge and placed in position; 2.10 to 3.25, hoisting ties for track; 3.25 to 4.30, waiting for completion of track and getting in to clear on siding at east end of bridge. The span was decked between 2.10 and 3.25 p.m., and the track laid and spiked between 3.25 and 4.30 p.m. The next train passed over the bridge at 5.25 p.m. The lower portions of the old towers will be removed when all the new spans have been placed.

The new bridges were designed in the company's Engineering Department at Montreal, under the direction of John M. R. Fairbairn, D.Sc., M.E.I.C., Chief Engineer, by Phillips B. Motley, M.E.I.C., Engineer of Bridges. The replacing work is being done under the general charge of H. C. Grout, General Superintendent, Ontario District, under the supervision of Lt.-Col. Blair Ripley, C.B.E., D.S.O., M.E.I.C., District Engineer, Ontario District, L. S. Rudder, Division Engineer, Trenton Division, being in direct charge of the work on bridges 101 and 102.1, and V. A. G. Dey, M.E.I.C., Division Engineer, Toronto Terminals, being in direct charge of the work on bridges 105.1, 106.15 and 106.2, and the Keele St. subway.

#### Branch Line Construction, Canadian Pacific Railway.

The following statement was issued from the C.P.R. Western Lines headquarters in Winnipeg recently:—Work on the branch line construction programme for 1928 is progressing favorably. In Saskatchewan, the new line from Asquith to Sonningdale, about 30 miles, was completed and put into operation on July 23. The 18 miles from Melfort to Edenbridge was turned over to the Operating Department on Sept. 9, and the line from Maxstone to Wood Mountain, 28 miles, was ready to carry traffic by the latter part of September. Traffic was carried on the line from Cassils to Scandia, Alta., 23 miles, on July 1, and the line from Clondonald to Willingdon in Northern Alberta, approximately 65 miles, was put into operation Sept. 19.

13 miles, the work is going on and will probably be completed early next summer.



These lines are being built in accordance with the C.P. policy of constructing branch lines in the opening up of new territory and the improvement of service in districts where there is now partial settlement. The lines are all being built through agricultural districts.

Next summer will see the completion of the following mileages in southern Saskatchewan; from Aikins northerly, approximately 20 miles; from Coderre east, about 12 miles; from Hattan north-easterly 18 miles and from Pennant southwesterly 24 miles. In central Saskatchewan a line is being projected from Foam Lake southwesterly 27 miles; from Rosetown to Perdue 45 miles, and from Unwin westerly 20 miles. Northern Saskatchewan will benefit by the 10 miles northeasterly from Lloydminster.

The Traffic Club of Montreal opened its autumn and winter season on Oct. 12 by an evening meeting at the Windsor Hotel, at which C. C. Bonter, Passenger Traffic Manager, Canada Steamship Lines Ltd., spoke on the handling of freight and passenger traffic by steamships, which was followed by moving pictures of transportation from Niagara Falls to the Saguenay River.

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Bridge 105.1, Toronto Terminal Division, Canadian Pacific Ry. Location of new piers with relation to old piers.

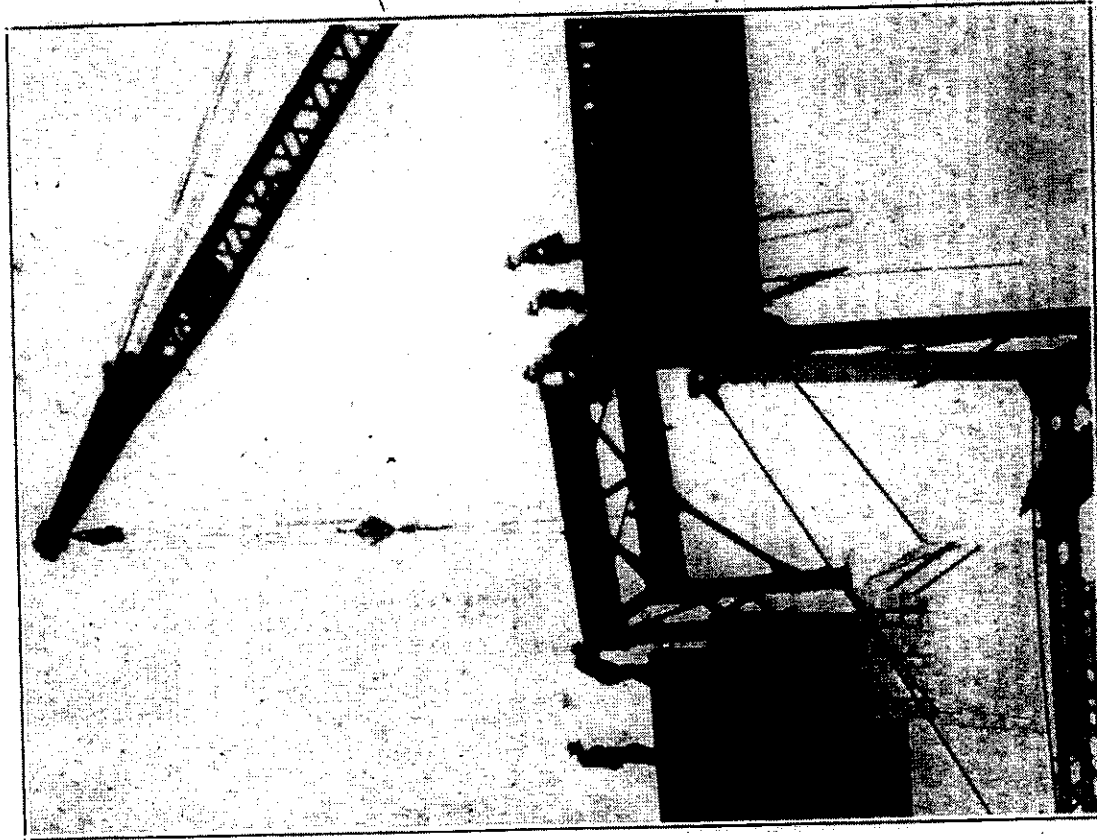
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of main line: 1.45 to 2.10, brought closure from west end of bridge and placed in position; 2.10 to 3.25, hoisting ties for track; 3.25 to 4.30, waiting for completion of track and getting in to clear on siding at east end of bridge. The span was decked between 2.10 and 3.25 p.m., and the track laid and spiked between 3.25 and 4.30 p.m. The next train passed over the bridge at 5.25 p.m. The lower portions of the old towers will be removed when all the new spans have been placed.

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Bridge 105.1, Toronto Terminal Division, Canadian Pacific Ry. Derrick placing spans.

## Bridge Replacements, Ontario District, Canadian Pacific Railway.

The Canadian Pacific Ry. Ontario District programme of betterments for 1928 includes the replacement of five bridges to the east of Toronto and one in the western part of the city by heavier and stronger structures, in order to permit the operation of the heaviest locomotives on the company's lines. A list of the bridges to be replaced, with brief descriptions of the existing structures and the work to be done on each, was given in Canadian Railway and Marine World for April, pg. 183. The work was commenced in May, and is being pushed rapidly to completion.

The five bridges to the east of Toronto which are being renewed are, on the Oshawa Subdivision, Trenton Division, and Toronto Terminals Division, and are numbered 101, 102.7, 105.1, 106.15, and 106.2, these figures representing their mileages from Trenton, the eastern limit of the Oshawa subdivision. Bridges 101 and 102.7 are on the Oshawa Subdivision between Agincourt and Leaside, on the north or original track of the double track line. Bridges 105.1, 106.15 and 106.2 are on the Toronto Terminals Division, on the single track line between Leaside and Don, this section of track being operated on the absolute staff system. Don is 2 miles from Toronto union station, Leaside 5.3 miles, and Agincourt, the junction point between the Oshawa and Peterboro Subdivision lines, is 12.8 miles from Toronto union station. The company's line through the north part of Toronto joins the Oshawa Subdivision line at Leaside.

In the renewal of the bridges between Agincourt and Leaside there are no particular difficulties in connection with the continuation of traffic as the south track of the double track line is being used as a single track line during the renewal period, but in the work on bridges 105.1, 106.15 and 106.2, between Leaside and Don, on the single track line, the work is being carried out without interruption to traffic, necessitating thorough preparation in advance of the work and extreme

also built in 1883, a steel trestle 810 ft. long and 106 ft. high, is being replaced by a deck plate girder structure of 13 spans; new concrete abutments and pedestals have been installed by railway forces, and the Hamilton Bridge Co., contractor for the superstructure, will carry on operations here simultaneously with those on bridge 101.

will be replaced by a heavier similar structure. This bridge is 34 1/2 ft. long. Bridge 106.2, a through deck plate girder structure 253 ft. long, is being replaced by a heavier structure of similar type.

The Keele St. subway, on the Galt Subdivision, London Division, is being renewed by replacing the girders, under the 6 tracks carried, by heavier ones, and

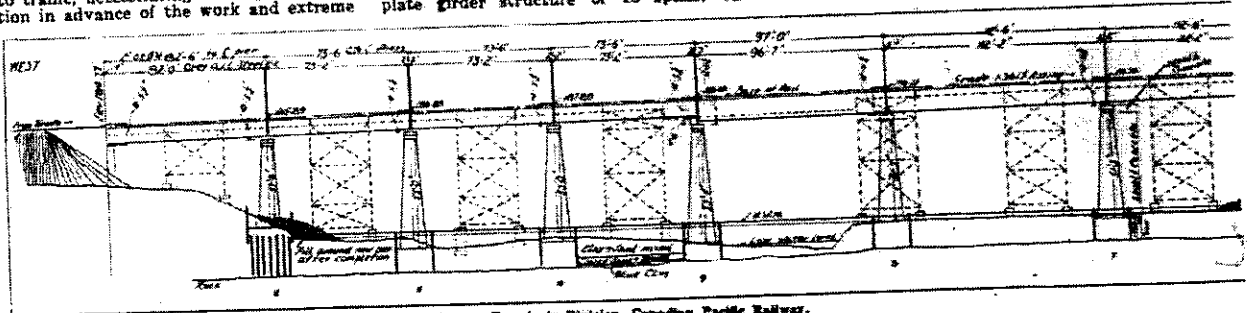


Bridge 105.1, Toronto Terminals Division, Canadian Pacific Ry., before replacement.

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The replacement of bridge 105.1 is



Bridge 105.1, Toronto Terminals Division, Canadian Pacific Railway.  
New structure shown in solid lines and old one in broken lines. See also opposite page.

care and accuracy in carrying it out. The method used in the replacement of the superstructure at bridge 105.1 is described in detail further on in this article.

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