CANADIAN PACIFIC RAILWAY COTE ST LUC YARD, MONTREAL 1949 JANUARY 1949

Transportation

C.P.R. Hump-Retarder Yard Near Montreal

One year after the beginning of work, the Canadian Pacific Ry. large and modern freight yard at Cote St. Luc, on the Montreal outskirts, is progressing favorably, with much of the excavation and train filling done, 20 miles of track laid, and construction well under way on six buildings.

(Editor's Note.—The information in the following, in regard to the large and thoroughly modern yard being built for the C.P.R. in the Montreal area, was provided by W. F. Koehn, General Superintendent, Ontario District, C.P.R., and previously Superintendent, Montreal Terminals Division, in an address before the Quebec Division of the Canadian Industrial Traffic League, at Montreal.)

THE new yard facilities, when in operation, will comprise a complete new terminal freight yard, equipped to perform the classification of trains by means of a hump and electrically operated retarders. The new facilities are located between the westerly limits of the Blue Bonnets Race Track and a junction point known as Ballantyne. The distance from the entrance of the yard to the departure end is 3.6 miles. One of the unique features of the location is that it is not crossed by any highway or public road; neither is there any severance of property, nor has it been necessary to displace a built-up area.

The new facility really consists of five yards, with central operation, the individual yards being as follows:—

Receiving Yard—This yard contains 15 tracks, the longest of which will accommodate 100 cars and the shortest 50. The yard has a total capacity of 1,197 cars. This is the yard into which all trains arrive for the Montreal Terminals area.

Classification Yard—This yard consists of 40 tracks grouped in five groups of eight tracks each; the longest track will accommodate 58 cars and the shortest 23. The total capacity of this yard is 1,552 cars.

Departure and Storage Yard—The departure yard contains 35 tracks, the longest of which will accommodate 100 cars and the shortest 35 cars. This yard has a total capacity of 1,720 cars.

Car Repair Yard—This yard will consist of 13 tracks, to have capacity of 299 cars.

Car Cleaning Yard—This yard will consist of eight tracks, to accommodate 144 cars.

Quantities Involved

There are to be 80 miles of track in the complete yard, with 339 switches. The undertaking will require 13,000 tons of rail, 240,000 track ties, 925,000 cubic yards of filling and 200,000 cubic yards of ballast.

Description of Hump Yard

A hump yard is, as the word implies, one with a hump located at the beginning of the incline on the entrance to the classification yard. The hump is necessary in order that the slack in the train line couplings may be bunched, to permit the pulling of the uncoupling lever, to release the car and allow it to run down the opposite side of the hump by gravity.

The advantage of a hump yard is that the switching is carried out by gravity and through the momentum of the car itself; in flat switching, the momentum has to be given to the car by the locomotive.

There are two types of hump yard, viz., the rider hump and the retarder hump. The rider type of yard is one in which men ride each individual cut of cars down the hump and control same by applying hand brakes. This type of yard has not been successful due to the occasional defective hand brake resulting in heavy impact when the moving car couples with a standing one, often with consequent damage to lading.

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very efficient, due to their availability for service as compared with the steam engine.

Repair Yard

The modern repair yard, complete with all new mechanical devices and concrete runways, will permit the quick repairing of defective cars. This yard will be equipped with cranes, gasoline tractors, welding circuits, and air lines for operation of pneumatic jacks and pneumatic tools.

Shop and Engine Facilities

The engine facilities will consist of a 35-stall engine house for the housing of steam locomotives and a two-stall Diesel shop for the housing of the Diesel engines operating in the yard. The engine house will be supplied with a 110 ft. turntable, which will take care of the largest locomotives and will provide for any possible future increase in length of locomotives.

A 400-ton, three-track concrete coaling plant will be provided for the fueling of steam locomotives, as well as a depressed, three-track, mechanical chain pan, underfeed cinder plant. This type of plant consists of hoppers located in the center of the track, wherein the cinders from the locomotives are dumped and carried from the hoppers and elevated, so that they are automatically dumped into waiting cars.

The engine house will be equipped with direct steaming arrangement for the lighting up of locomotives. This means that locomotives will not be standing in the shop under fire, but that the fire will be killed as the loco-

Icing of Cars

In a terminal such as Montreal, a considerable amount of icing of refrigerator cars, containing perishable commodities, takes place. It is proposed to install two icing tracks with a capacity of approximately 40 cars, and located between these tracks will be an elevated platform with a conveyor through the entire length. A third track with platform and conveyer will serve nine cars. This will permit the conveying of the ice to the various re-

consist of the train and will know exactly what cars, with their destinations, are contained in the train. This will permit the yardmaster to know what track he chooses to yard this train on. He will, therefore, advise the towerman at the entrance of the yard, the track that this train is to enter upon. As soon as the train arrives in the yard, the conductor's way bills will be taken to the yard office, where the staff will check the bills and note the cars for diversion and cars for weighing and

Building the Hump in the C.P.R. New Yard at Cote St. Luc, near Montreal.
A trainload of gravel fill is being dumped, in the course of the work of forming the hump for gravity switching. The grade of the hump is indicated by the vertical curve in the string of ballast cars.

The 27-stall Locomotive House at the New Yard near Montreal, under Construction.
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tarders consist of two brake shoes, one on each side of the rail, which squeeze against the wheels of the car as it is passing through. In both types of machines, there are four positions of retardation, or four intensities, the last of which is capable of stopping a car in the length of the retarders. Retarders vary in length, depending on the grade and their location in the set-up on the hump, from 27 ft. to 115 ft.

The electro-pneumatic retarder is operated by means of compressed air supplying cylinders which apply the brake shoes. The control of the air to these cylinders is by means of electro-pneumatic valves.

Floodlighting

The lighting of this entire yard will be taken care of by means of batteries of floodlights, erected on the top of steel towers varying from 80 ft. to 120 ft. in height. These floodlights are to be arranged very much the same way as the floodlighting system used in the ball parks for night games of baseball. The intention is that the floodlighting will enable employees to read switch lists, etc., during the night, in any portion of the yard, as clearly as in the daytime.

Power Operated Switches

Electrically operated switches with push button control are being provided

immediately behind the crest of the hump. The cars to be weighed will pass over the scale without stopping and will be weighed automatically. This type of scale is known as a plate fulcrum scale. Likewise, entire trains can be weighed as a means of checking outside manual weighing points without any delay. Furthermore, the placing of this scale on the hump will permit cars to be weighed and handled without delays; with the manual type of scale, cars are switched onto a weigh track and then weighed in groups, with resulting delay to these cars. In the new unit yard, this will be avoided.

Teletype Machines

There will be a local set of teletype machines, used to make up switch lists of the trains arriving in the terminal. These switching lists show the train number, its arrival time, and, in the following order, the position of the car in the train, numerically starting from the head end; the car initial; the car number; its contents; weight and destination. These switch lists will be teletyped from main yard office to the yardmaster's office, to the hump office and to the retarder tower. It is from this list that the cars are switched over the hump into the classification yard, and the weight of the car is shown on this list in order that the retarder operator may be in a position to judge the amount of retardation which is

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All yard engines operating in this yard will be equipped with two-way radio communication between yard masters and hump master, to provide full control of all movements.

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Inspection of Cars

This inspection is carried out first in the receiving yard, and as the car moves forward over the hump, oil is applied under pressure to the journal boxes. This can be done in two ways, either manually, or by means of an automatic machine which applies a predetermined quantity of oil to each box.

In addition to the inspection carried on in the receiving yard, it is proposed to provide a depressed inspection pit for examination and inspection of the underside of the cars as they pass over the hump. This inspection pit will consist of a small concrete chamber wherein the car inspector will sit, and, by means of floodlights, will have a clear view of the underside of the car. By this means, he can readily detect split sills, cracked bolsters, defective draw-bar pockets, and many other defects which are difficult to be seen from the side of a car. Noting these defects, he will have a telephone connecting with the hump master, and car will be routed onto repair track.

Type of Power to be Used

It is proposed to use 1,000 h.p. Diesel switch engines on all the internal operations in the yard. These engines are

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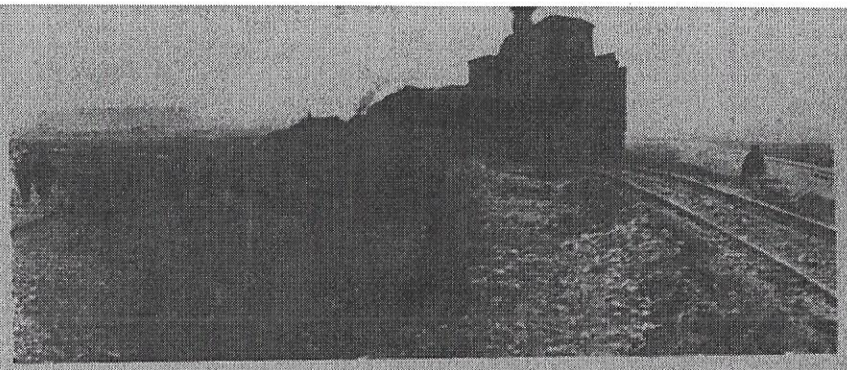
The engine house will be equipped with direct steaming arrangement for the lighting up of locomotives. This means that locomotives will not be standing in the shop under fire, but that the fire will be killed as the locomotive comes onto the cinder plant and will again be lit up before the locomotive is dispatched. The direct steaming means that before the locomotives moves out of the engine house, steam is admitted to the boiler and pressure built up in same. This results in the engine leaving with a full head of steam for the lighting-up plant, where the lighting-up is carried out by means of oil torches.



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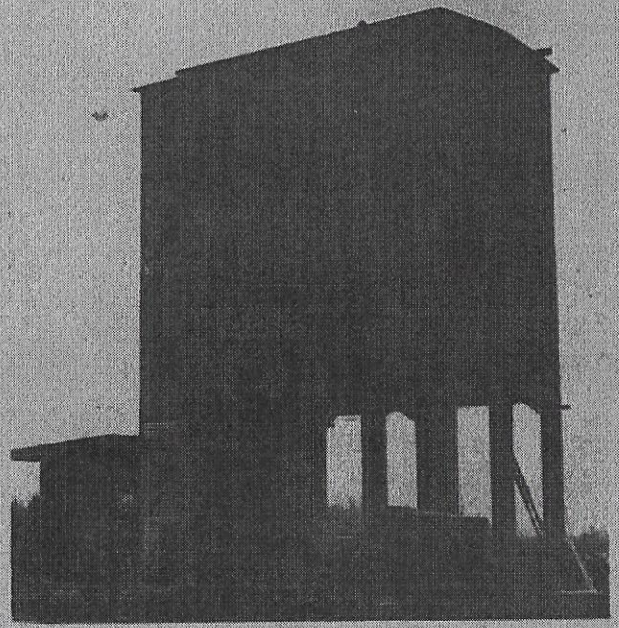
frigerator cars. In order to supply this ice, a 10,000-ton mechanically cooled ice house is proposed, as well as a 200-ton per day artificial ice manufacturing plant.

Operation of Train Entering Yard

Before a train arrives at the yard, those in charge will have received a



New Coaling Plant under Construction.

icing, and will compile a switch or cut list so that the train can be switched. Immediately this has been done, a copy of this list will be teletyped to the yardmaster, hump office and the retarder tower. While this has been taking place, the road engine which brought the train in has been cut off and sent to the engine house. Likewise, a staff of car inspectors in the receiving yard have been inspecting the train and marking off any cars with defects which require to be placed on the repair track. A card is applied to the side of the car, stating the defect. All the journal boxes have been opened and inspected for signs of heating, defective brasses and any other defects.

This train is now ready to be switched and the hump engine is now placed behind same and the train is pushed up on the hump. Here, the hump foreman, in possession of the switch list, directs the pin puller to make the necessary cuts as the cars move down over the hump. Likewise, the car retarder operators, also in possession of a copy of this switch list, line up the switches to which track these cars are to be switched, and control their speed through the hump. As already stated, there are to be 40 classification tracks in this yard, but the classification in the Montreal terminals run well over 100, and it would be impossible to provide a track for each classification. Therefore, the

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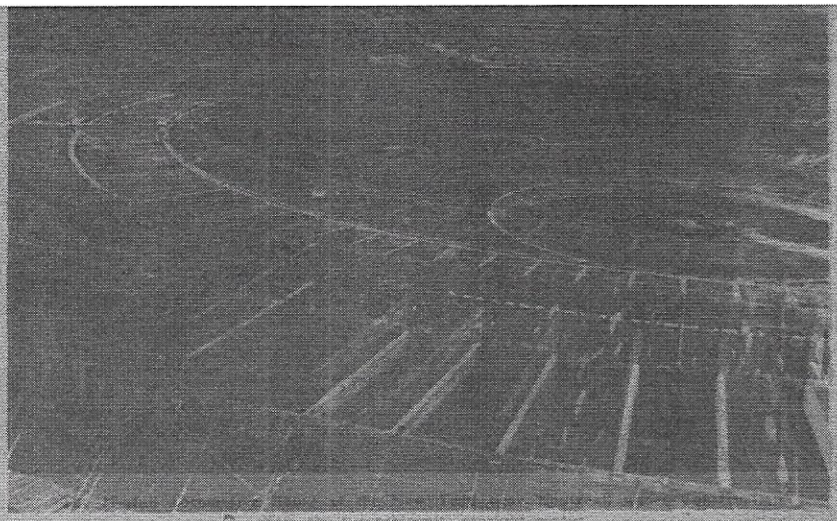

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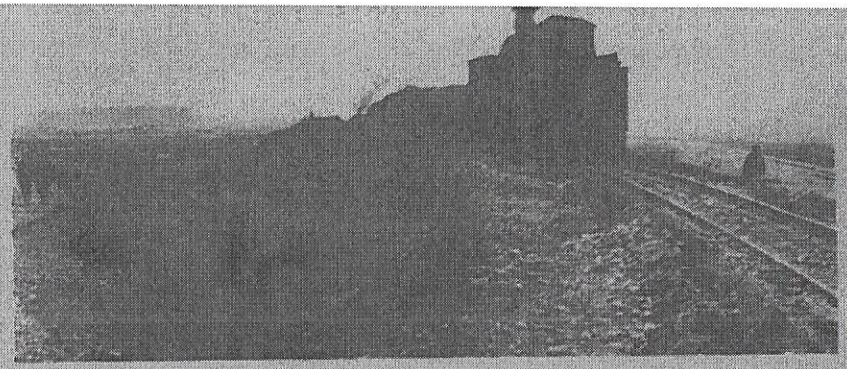
in length of locomotives.

A 400-ton, three-track concrete coaling plant will be provided for the fueling of steam locomotives, as well as a depressed, three-track, mechanical chain pan, underfeed cinder plant. This type of plant consists of hoppers located in the center of the track, wherein the cinders from the locomotives are dumped and carried from the hoppers and elevated, so that they are automatically dumped into waiting cars.

The engine house will be equipped with direct steaming arrangement for the lighting up of locomotives. This means that locomotives will not be standing in the shop under fire, but that the fire will be killed as the locomotive comes onto the cinder plant and will again be lit up before the locomotive is dispatched. The direct steaming means that before the locomotives moves out of the engine house, steam is admitted to the boiler and pressure built up in same. This results in the engine leaving with a full head of steam for the lighting-up plant, where the lighting-up is carried out by means of oil torches.

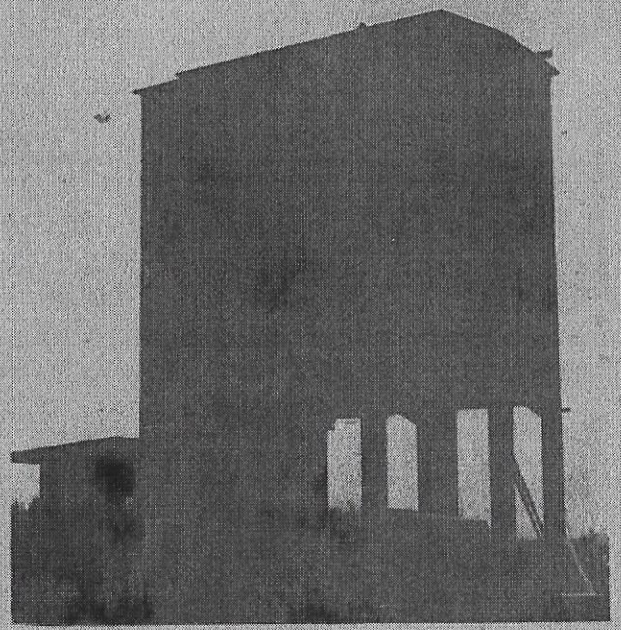


Building the Hump in the C.P.R. New Yard at Cote St. Luc, near Montreal.
A trainload of gravel fill is being dumped, in the course of the work of forming the hump for gravity switching. The grade of the hump is indicated by the vertical curve in the string of ballast cars.

frigerator cars. In order to supply this ice, a 10,000-ton mechanically cooled ice house is proposed, as well as a 200-ton per day artificial ice manufacturing plant.

Operation of Train Entering Yard

Before a train arrives at the yard, those in charge will have received a



New Coaling Plant under Construction.

icing, and will compile a switch or cut list so that the train can be switched. Immediately this has been done, a copy of this list will be teletyped to the yardmaster, hump office and the retarder tower. While this has been taking place, the road engine which brought the train in has been cut off and sent to the engine house. Likewise, a staff of car inspectors in the receiving yard have been inspecting the train and marking off any cars with defects which require to be placed on the repair track. A card is applied to the side of the car, stating the defect. All the journal boxes have been opened and inspected for signs of heating, defective brasses and any other defects.

This train is now ready to be switched and the hump engine is now placed behind same and the train is pushed up on the hump. Here, the hump foreman, in possession of the switch list, directs the pin puller to make the necessary cuts as the cars move down over the hump. Likewise, the car retarder operators, also in possession of a copy of this switch list, line up the switches to which track these cars are to be switched, and control their speed through the hump. As already stated, there are to be 40 classification tracks in this yard, but the classification in the Montreal terminals run well over 100, and it would be impossible to provide a track for each classification. Therefore, the