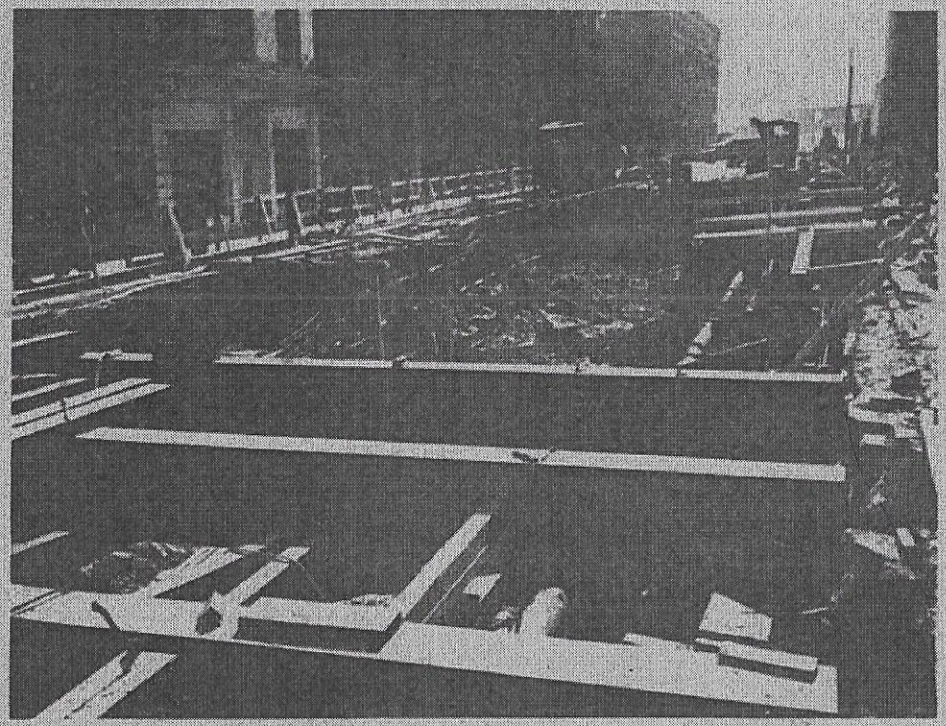
in the following.



Excavation on Yonge Street, South of Wellington Street, with a Start Made on Placing the Girder Beams Which Rest on Steel Piles and Span the Excavation, and Provide Support for the Temporary Street Decking of 12 x 12 in. Timbers.

After laying of the timber decking, the excavation work is continued until the required depth is reached. The pipes and conduits of public utilities are suspended from the girder beams. The photograph from which the above illustration was prepared was taken on October 8.

Toronto Transportation Commission—Local transportation services in Toronto are provided by the Toronto Transportation Commission, which consists of three commissioners appointed by the City Council for a term of three years. The City of Toronto, in 1921, handed over to the Toronto Transportation Commission all its powers, rights, authorities and privileges for the construction, maintenance, operation, control and management of municipal street railways, and this has subse-

such tolls and fares as may be required to make all transportation facilities under its control and management self-sustaining.

If, however, additional capital funds are required to carry out these powers and duties, the Commission must make requisition upon the City of Toronto to issue the necessary bonds. The Commission would then be responsible for the interest and repayment of principal upon such bonds. In actual practice, no such re-financing has been necessary since the initial reconstruction of the system in 1921, and all subsequent im-

systems. The Commission also provides transportation services in 10 adjacent municipalities under cost agreements. The total population in the area served is approximately 1,000,000.

A subsidiary Company, Gray Coach Lines Limited, provides interurban coach service on some 1,200 miles of highway in the region surrounding Toronto, including routes to Hamilton, Buffalo, London, Owen Sound, North Bay, Newmarket, Beaverton, Oshawa and many other intermediate points.

Traffic Conditions in Toronto—In common with many other large cities, the congestion of traffic in Toronto has become intolerable. Topographical conditions force traffic into a few north, south, east and west thoroughfares, all of which have to accommodate public transportation facilities as well as other street traffic. The resultant delay to transit passengers is complicated by the fact that approximately one half of all our passengers must make at least one transfer to another vehicle to reach their ultimate destination.

In 1861, at the time horse cars were started in Toronto, the franchise specified that speed should not exceed six miles per hour, and such are the wonders of scientific progress and human achievement that after nearly 90 years we do not now exceed that speed downtown in the rush hour.

After many years of study, the Commission came to the conclusion that the only practical solution of the traffic problem is to separate public transportation from private transportation on the main arteries in the city.

Rapid Transit Proposal—In 1943, the Commission created a Rapid Transit Department and retained Mr. Norman D. Wilson as a consulting engineer to study the entire problem. Subsequently, the firm of LeLeuw, Cather and Company of Chicago, who had great experience in subway construction, were engaged as technical advisers. As a result of these investigations, the Com-

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mission prepared plans to separate public transportation service from other traffic on two major routes by the construction of two rapid transit lines, viz., (a) A north and south subway under and near Yonge Street extending from the Union Station on Front Street to the corner of Eglinton and Yonge Streets, a distance of 4.56 miles; (b) An east and west subway under and near Queen Street extending from Trinity Park in the west to a point east of Broadview Avenue in the east, a distance of 4.50 miles.

Estimates of probable traffic indicate that, to start with, the total one-way movement during the maximum period on the Yonge Street Subway will be about 18,000 passengers per hour and on the Queen Street subway about 10,000 passengers per hour. At the present time, traffic on Yonge Street in the rush hour period sometimes reaches a peak of about 13,000 passengers per hour and is far beyond the capacity of a surface transportation system. The new subways are designed for an ultimate capacity of 40,000 passengers per hour in one direction.

Publicity—An extensive campaign of education was undertaken by the Commission to advise the public of the plans. An illustrated brochure was prepared giving the reasons for the proposal, and a centrally located exhibit room was set up which contained plans, artists' sketches, and models to show the route, stations and other details of the subway, the nature of the traffic problem, and the advantages which would be achieved by the rapid transit.

Groups of business men, service clubs, church groups and other similar organizations were invited to view the exhibits, and addresses were delivered throughout the city to ensure that the plans received wide publicity.

This plan was submitted to the ratepayers by referendum at the municipal elections in January, 1946, and carried the citizens of Toronto were in full accord with the rapid transit scheme.

Financing—The estimated cost made at that time was $28,850,000.00 for the Yonge Street Subway and $19,300,000.00 for the Queen Street Subway. Since that time construction costs have risen and it is probable that the actual cost will be considerably higher.

The proposed contribution from the Dominion Government was contingent on certain Dominion-Provincial arrangements which fell through; and also on the work being carried out when required as a relief measure for depressed employment conditions which have not yet occurred.

At the present time the Commission is financing the work out of its own reserves, but, if necessary, the City will eventually be asked to issue bonds on the Commission's behalf to cover the completion of the project.

The subway is, in effect, an underground street, and its construction will materially increase the surface capacity of Yonge Street and Bay Street for normal traffic. The benefits of the subway construction will, therefore, be shared by all forms of traffic.

It seems equitable, therefore, that the capital cost of constructing the subway should be borne by the citizens as a whole and not solely by the transit system.

Unfortunately, this view has not been accepted by the City of Toronto, and even a suggestion that the City should pay for the cost of the right-of-way required has not been favorably considered.

In these circumstances, the City of Toronto will not bear any part of the cost of the work, and the Commission will, therefore, have to pay for it out of the revenues secured from its passengers, which is contrary to the practice in other cities where subways have been built.

It may be of interest to note that [illegible] mately $1,000,000.00 before construction work was commenced in September. The engineering staff on Rapid Transit alone now numbers approximately 80, and will be materially increased. The total cost of engineering alone will be well over $2,000,000.00.

Yonge Street Subway

The Yonge Street Subway will extend under the surface of Front Street and Yonge Street from the Union Station to Alexander Street, at which point it will swing off onto a private right-of-way about 150 ft. to 200 ft. east of Yonge Street, and continue in tunnel to a point north of Davenport Road, where it will emerge and continue in open cut to St. Clair Avenue, with a short section of subway under the Canadian Pacific Railway. From St. Clair Avenue it will swing diagonally across underneath Yonge Street in tunnel, emerging on the west side of Yonge Street in the Muir Memorial Gardens, and will continue north in open cut immediately west of Yonge Street to an underground terminus at Eglinton Avenue.

The total length of the Yonge Street Subway will be 4.56 miles, of which 3.2 miles will be in subway construction and 1.36 miles in open cut.

The subway structure will be kept as close as possible to the surface consistent with the provision of necessary coverage for water pipes and other utilities below the street level. The minimum depth between the surface and the top of the subway structure will be approximately six feet and the maximum depth will be about 20 feet.

Design of the Structure—The general alignment of the subway has been laid out with long tangents and easy curves, the only curve of significant magnitude is the curve between Front Street and Yonge Street which has a radius of 400 ft. The gradients are also moderate, and the maximum gradient, for short

Groups of business men, service clubs, church groups and other similar organizations were invited to view the exhibits, and addresses were delivered throughout the city to ensure that the plans received wide publicity.

This plan was submitted to the ratepayers by referendum at the municipal elections in January, 1946, and carried by a majority of ten to one, with the proviso that the Dominion Government contribute 20% of the cost.

This vote imposed no legal restriction on the Commission, which had full powers in any case to proceed with the work, but it did serve to indicate that

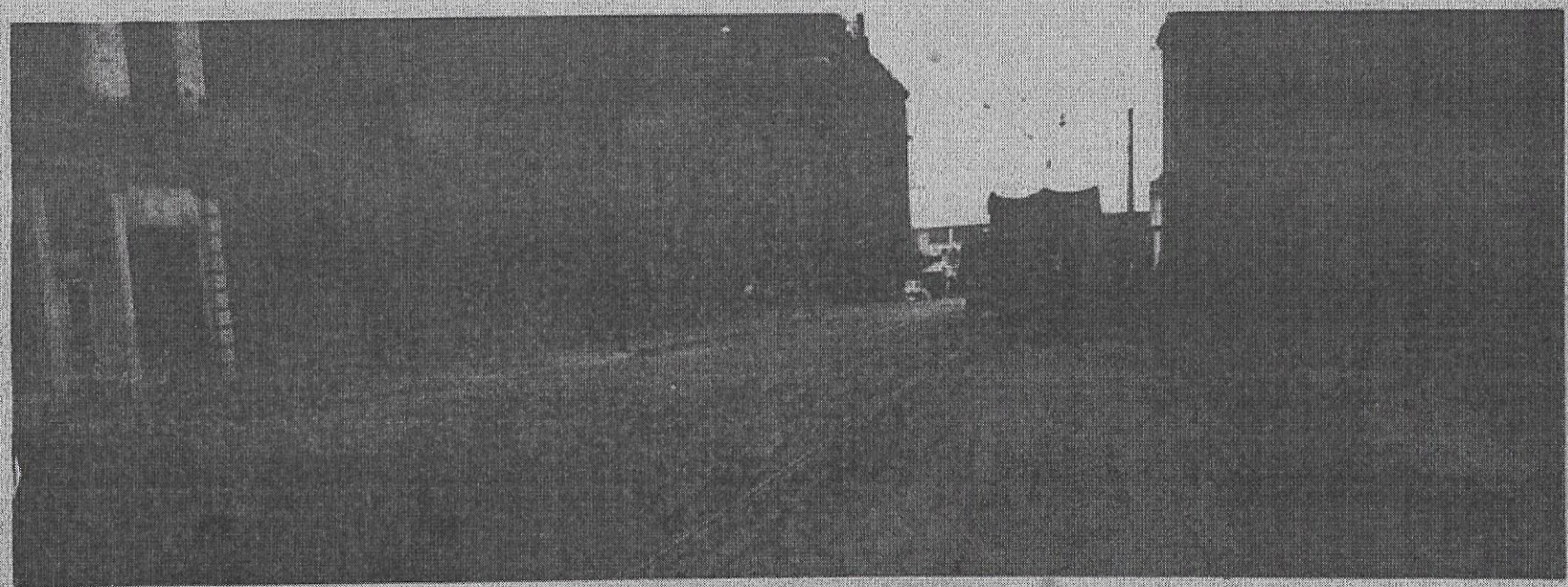
In these circumstances, the City of Toronto will not bear any part of the cost of the work, and the Commission will, therefore, have to pay for it out of the revenues secured from its passengers, which is contrary to the practice in other cities where subways have been built.

It may be of interest to note that the cost of the preliminary investigations which led to the development of the Rapid Transit plan was in the neighbourhood of $200,000.00, and that the actual expenditure on planning and designing carried out by the Commission's own staff of engineers reached approxi-

maximum depth will be about [illegible]

Design of the Structure—The general alignment of the subway has been laid out with long tangents and easy curves, the only curve of significant magnitude is the curve between Front Street and Yonge Street which has a radius of 400 ft. The gradients are also moderate, and the maximum gradient, for short distances south of St. Clair Avenue and south of Davisville Avenue, is 3.5%.

The subway structure will have a 2-track box section of reinforced concrete. The typical subway section between stations has an over-all width of 32 feet 6 inches, an over-all depth of 18 feet 8



View of Yonge Street South of Wellington Street, showing the Temporary Decking of 12 x 12 in. Timbers in Place and with Temporary Electric Railway Tracks Laid

The photograph from which the above illustration was prepared was taken on November 7.