SENATE . . . . No. 534

The Commonwealth of Massachusetts

SPECIAL REPORT OF THE DEPARTMENT OF PUBLIC WORKS RELATIVE TO THE ABOLITION OF CERTAIN RAILROAD GRADE CROSSINGS IN THE CITIES OF CHELSEA AND MEDFORD AND THE TOWNS OF BELMONT, READING AND WAKEFIELD.

Department of Public Works,
Office of the Commissioner,
100 Nashua Street, Boston 14, December 6, 1950.

To the Honorable Senate and House of Representatives of the Commonwealth of Massachusetts.

In accordance with the provisions of chapter 30, Resolves of 1950, the Department of Public Works presents herewith its report on its investigations relative to the abolition of certain railroad grade crossings in the cities of Chelsea and Medford, and the towns of Belmont, Reading and Wakefield.

Chapter 30, Resolves of 1950, reads as follows: —

Resolve providing for an Investigation and Study by the Department of Public Works relative to the Abolition of Certain Railroad Grade Crossings and the Construction of Certain Overpasses and Underpasses.

Resolved, That the department of public works is hereby authorized and directed to make an investigation and study relative to the abolition of certain railroad grade crossings and the construction of certain overpasses and underpasses. Said department shall, in the course of its investigation and study, consider the subject matter of current

senate document numbered 70, authorizing the department of public works to abolish the grade crossing over the Boston and Maine Railroad at Trapelo road and Lexington street in the town of Belmont; current senate document numbered 152, authorizing the department of public works to construct an underpass through the existing location of the Boston and Maine Railroad in the town of Wakefield; current senate document numbered 462 providing for the abolition of a certain grade crossing in the town of Reading and the construction of an underpass at the location thereof; current house document numbered 287 authorizing the construction of an overpass over the railroad crossing at Everett avenue in Chelsea; current house document numbered 288 authorizing the construction of an overpass over the railroad crossing at Eastern avenue in Chelsea; current house document numbered 647 providing for the abolition of the West Medford square grade crossing in the city of Medford; and the current house documents numbered 738 providing for the construction of an overpass on Main street in the town of Reading. Said department shall report to the general court the results of its investigation and study and its recommendations, if any, together with estimate of cost, and drafts of legislation necessary to carry such recommendations into effect, by filing the same with the clerk of the senate on or before the first Wednesday of December in the current year.

The Senate and House documents specified in the resolve list the following crossings: Belmont, Trapelo Road and Lexington Street; Wakefield, Prospect Street; Reading, Main Street; Chelsea, Everett Avenue and Eastern Avenue; and Medford, West Medford Square or High Street.

Of these crossings the following are on the Boston and Maine Railroad: Belmont, Trapelo Road and Lexington Street; Wakefield, Prospect Street; Reading, Main Street; Chelsea, Eastern Avenue; and Medford, West Medford Square or High Street. Chelsea, Everett Avenue, is on the Boston and Maine Railroad and the Boston and Albany Railroad.

Belmont, Trapelo Road and Lexington Street.

The Department of Public Works has programmed this crossing for abolition to be financed by the 1950 bond issue, chapter 685.

WAKEFIELD, PROSPECT STREET.

This bill calls for an underpass only. An underpass would involve a bridge carrying the railroad over Prospect Street and over North Avenue. It would involve dead ending Elm Street, Cedar Street and Emerson Street. Elm Street and that portion of Cedar Street north of Prospect Street can be brought to Prospect Street by a new road to the north. Emerson Street and that portion of Cedar Street to the south of Prospect Street has a connection to the west which can be used.

The design studied consists of two bituminous concrete roadways each 28 feet wide, a 6-foot granolithic median strip with curbing, and a 9-foot bituminous concrete sidewalk with curbing, on the outside edge of each roadway; a bituminous concrete service road 28 feet wide with a 6-foot bituminous concrete sidewalk on the westerly side connecting Cedar Street with Prospect Street on the north side of Prospect Street; a bituminous concrete service road 20 feet wide with a 6-foot bituminous concrete sidewalk on the southerly side from North Avenue easterly for the houses on the southerly side of Church Street; and a bituminous concrete service road 24 feet wide, with an 8-foot bituminous concrete sidewalk on the northerly side from Cedar Street westerly in the rear of the houses on the southerly side of Prospect Street.

The cost of the underpass will be about $1,110,000, including property damage of about $75,000.

The profile for the underpass has the following objectionable features: On one approach a grade of 6.38 per cent will be necessary, and on the other, a grade of 7.93 per cent, both of which are too steep for safety and convenience. Also, the elevation of the underpass under the tracks at North Avenue will be about 10 feet below the water level in Lake Quannapowitt, which is very close, so that an automatic pumping system will be needed.

Since an underpass has these obvious disadvantages we have considered an overpass. The overpass would be the same in plan except that the service road between

Cedar Street and Prospect Street on the south would not be needed.

In profile we could obtain much better grades than the underpass, and the property damage would be about the same. The cost in total would be somewhat less, being about $850,000.

The train movement is 78 trains daily and the crossing is now protected by gates. The vehicular traffic is only moderate, being about 2,380 vehicles daily. To the south of Prospect Street and a short distance away, there are two other grade crossings, one at Chestnut Street and one at Albion Street. Albion Street is part of the existing Route 128, and is the main route from Wakefield to Stoneham with heavier traffic than Prospect Street. Between Albion Street and Chestnut Street is the Boston & Maine depot for Wakefield. These crossings would still exist even if we eliminated Prospect Street.

We have also studied depressing the Boston and Maine tracks and leaving Prospect Street as it is. This would necessitate the lowering of about $1\frac{1}{3}$ miles of track and would involve highway bridges at Prospect Street, Chestnut Street and Albion Street. It would also involve considerable changes and possibly a new depot at Wakefield. It would also involve dead-ending Broadway, which would hinder local traffic badly. An approximate cost of this would be about $3,100,000.

The accident records from the Wakefield Police Department show 1 accident at Prospect Street, with no personal injuries; 6 at Chestnut Street, with no personal injuries; and 27 at Albion Street, with 3 personal injuries over a three-year period from 1947 to 1950.

There are many grade crossings in eastern Massachusetts more deserving of elimination than this one because they have more vehicular traffic and heavier train movement, also worse accident records. We do not believe the benefit to be desired from the elimination of this grade crossing is worth its cost.

READING, MAIN STREET.

In our study for an overpass we have taken into consideration two profiles: Scheme 1, gradients of 5.83 per cent and 5.91 per cent on the approaches, and Scheme 2, gradients of 4.00 per cent and 4.42 per cent on the approaches.

The design studied consists of two bituminous concrete roadways each 28 feet wide, a 5-foot granolithic median strip with curbing, and an 8-foot bituminous concrete sidewalk with curbing on the outside edge of each roadway. A service road of tarred gravel 15 feet wide for the florist will be constructed from the southerly end of the southerly approach parallel to Main Street on the easterly side, to and around the greenhouses. Ash Street and Washington Street will be dead-ended. A new street 24 feet wide with two 8-foot sidewalks will be constructed, parallel to Main Street, an extension of Ash Street on the west side of Main Street from Washington Street southerly to the railroad, and a new street 24 feet wide with two 8-foot sidewalks will be constructed, parallel to Main Street on the easterly side, from Green Street southerly across Washington Street to Bolton Street in the rear of the houses on the easterly side of Main Street.

Scheme 1 occasions a considerable amount of property damage. These gradients are quite steep, and since this is a locality where there is always trouble in the winter with snow and ice and slippery conditions, they are not desirable.

An approximate estimate of the cost of this scheme would be about $800,000 of which $230,000 would be for property damage.

A rough estimate of Scheme 2 would be about $1,000,000 of which $395,000 would be for property damage.

The damage of this scheme would bear more heavily on the town of Reading than the difference in the cost shows, since more valuable property is included and would, we believe, lead to more opposition for the second scheme than the first.

We have made a study, also, for an underpass which would have the advantage of causing less property damage than an overpass, but would, we believe, be sufficiently low to get into water to a detrimental extent.

An approximate cost of this would be $900,000 of which about $180,000 would be for property damage. In this study the approach gradients would be 4.00 per cent.

In all of the above we have contemplated little or no changes in the track grades because any extensive changes made in the track grades complicated by the fact of other near-by grade crossings, the Reading Depot and the freight yard would make the cost prohibitive.

The train movement here is 78 trains per day, and the average daily highway traffic is 14,527 vehicles. A grade separation here in place of the existing crossing at grade would be very beneficial and desirable.

However, the Route 28 by-pass of Stoneham and Reading which has been under consideration for many years would, if constructed, reduce materially the importance of this crossing.

Chelsea, Everett Avenue.

This grade crossing is close to the business area and within the industrial area of the city of Chelsea and is on the main line of the Eastern Division of the Boston and Maine Railroad and the Grand Junction branch of the Boston and Albany Railroad.

It is also on the present northwesterly auto and truck connection with the Mystic River toll bridge.

This crossing handles about 70 scheduled passenger trains per day of the Boston and Maine Railroad and a great number of regular freight and shifting movements of both the Boston and Maine Railroad and the Boston and Albany Railroad. All freight to the East Boston-Revere industrial and oil farm area passes through this crossing.

The daily vehicular traffic over this crossing based on an October, 1950, count is estimated at an average daily volume of 13,058 vehicles.

Vehicular traffic is seriously hampered by the frequent closing of the manually operated gates at the crossing and long traffic tie-ups are a common daily occurrence. These tie-ups contribute toward a serious fire hazard for local property since the fire fighting equipment stationed on Everett Avenue at Fourth Street about 800 feet from the crossing frequently has great difficulty in answering an alarm promptly, because of the long lines of stopped vehicles waiting for the railroad gates to be opened.

At the morning and evening hours when commuter trains in and out of Boston are operating on a close schedule, three or four minutes apart, traffic tie-ups are unable to clear, consequently they frequently extend over long periods of time.

Everett Avenue at present has a layout width of 60 feet, two 10-foot sidewalks and a 40-foot traveled way with abandoned double street car tracks at the center.

Underground structures consist of a New England Telephone and Telegraph Company conduit, two Edison Electric conduits, a 6-inch gas main, an 8-inch gas main, a 6-inch water main, a 15-inch sewer of the city of Chelsea and a 48-inch steel water main of the Metropolitan District Commission Water Division.

The design studied for the elimination of this grade crossing consists of an overpass. The approaches will be a bituminous concrete roadway 40 feet wide with granite curbing and a 10-foot granolithic sidewalk each side of the roadway. The bridge will have the necessary horizontal and vertical clearance necessary to meet the requirements of five tracks as requested by the railroads; the bridge would have a 40-foot pavement and two 10-foot sidewalks, and a passing sight distance of 400 feet. It is not possible to lower the grade of the railroad tracks, consequently all clearances are based on the grade of the present tracks.

It will be necessary to dead-end Vale and Maple streets at these intersections with Everett Avenue because of the height of the proposed bridge approaches at this point, but access to Vale and Maple streets is available over interconnecting city streets.

Trackless trolleys are in operation here and it will be necessary to provide for the continuation of this service during the construction of the overpass.

To meet the requirements of the Metropolitan District Commission Water Division, it has been necessary to include in the estimate of cost, the cost to replace the 48-inch steel water main outside the proposed bridge and fill, similarly the city of Chelsea has requested that its 6-inch water main and 15-inch sewer be replaced.

The present-day cost of the design is roughly estimated as follows:

Construction, including bridge	$650,000
Publicly owned utility changes	150,000
Property damage	700,000
Total	$1,500,000

CHELSEA, EASTERN AVENUE.

This grade crossing is located within an industrial section of the city of Chelsea and is on the main line of the Eastern Division of the Boston and Maine Railroad. Eastern Avenue at this point is a state highway.

This crossing handles about 70 scheduled passenger trains per day of the Boston and Maine Railroad and a great number of regular freight movements and shifting movements for this industrial area and adjacent freight yards of the Boston and Maine Railroad.

The daily vehicular traffic over this crossing based on an October, 1950, count is estimated at an average daily volume of 5,401 vehicles.

Vehicular traffic is frequently interrupted by the closing of the manually operated gates and at certain times the traffic tie-ups are quite long.

Eastern Avenue at present has a total layout width of 66 feet, a 40-foot paved surface and two 10-foot sidewalks.

Underground structures consist of an 8-inch gas main, a 12-inch gas main, a 6-inch water main, a 20-inch water main, and an 18-inch sewer of the city of Chelsea, a 42-

inch brick sewer and a 48-inch brick and concrete sewer of the Metropolitan District Commission.

Overhead there are pole lines on either side carrying telephone, electricity, police and fire signal wires.

The design studied for the elimination of this grade crossing consists of an overpass. The approaches will be a bituminous concrete roadway 40 feet wide with granite curbing, a 2-foot grass plot and a 5-foot bituminous concrete sidewalk each side of the roadway. The bridge is designed to span four tracks as requested by the railroad, there being three tracks at present. The bridge will have a 40-foot pavement and two 10-foot sidewalks, and a passing sight distance of 450 feet. It is not possible to lower the grade of the railroad tracks because of the poor drainage condition in this area, consequently it has been estimated to raise the tracks 6 inches to help this condition.

It will be necessary to dead-end Crescent Avenue on both sides of Eastern Avenue, also Webster Avenue at its intersection with Eastern Avenue because of the height of the proposed bridge approach. Access to these streets is possible over other inter-connecting streets. Cresent Avenue on the easterly side of Eastern Avenue is not surfaced at the present time, therefore it has been estimated to surface the same as far as Hooper Street to provide satisfactory access for the properties now having direct access to Eastern Avenue. A service road 30 feet wide of tarred gravel will be necessary southerly of the crossing on the easterly side of Eastern Avenue to provide access to the properties otherwise cut off by the proposed raised bridge approaches.

To meet the requirements of the Metropolitan District Commission it has been necessary to include in the estimate of cost, the cost to bridge the old 42-inch brick sewer and the old 48-inch brick and concrete sewer as protection from the proposed fill, similarly the city of Chelsea has requested that its 18-inch sewer, 6-inch water main and 20-inch water main be replaced or adjusted.

The present day cost of the design is roughly estimated as follows:

Construction, including bridge	$635,000
Publicly owned utility changes	225,000
Property damages	390,000
Total	$1,250,000

MEDFORD, HIGH STREET.

At present the grade crossing of High Street in West Medford with the Boston and Maine Railroad is protected by gates. The train movement is very heavy and so is the vehicular traffic and there are always delays.

The matter of eliminating the grade crossing is complicated by the fact that it is directly in a business center. There are two streets, Playstead Road and Harvard Avenue, approximately parallel to the tracks and very near them, especially Playstead Road. There are also several other entering streets that would be affected. Both the property damage and the treatment of these streets will be costly.

The design studied consists of two bituminous concrete 28-foot roadways, 6-foot granolithic median strip with curbing and a 9-foot bituminous concrete sidewalk with curbing on the outside edge of each roadway. A bituminous concrete service road parallel to High Street on the north side 15 feet wide with a 6-foot bituminous concrete sidewalk on the north side for entrances to Brook Street, Warren Street and Playstead Road and a bituminous concrete service road parallel to High Street on the south side 15 feet wide with a 6-foot bituminous concrete sidewalk on the south side for entrance to Harvard Avenue are provided.

We have considered two schemes:

1. A highway overpass leaving the tracks as they are.
2. A highway underpass leaving the tracks as they are.

The highway overpass would extend for a length of about 1,600 feet and would, of course, require a bridge over the railroad. It would cost about $1,700,000 of which $635,000 would be for property damages.

The highway underpass would extend for a length of about 1,200 feet and would involve retaining walls. It would cost about $1,750,000 of which $635,000 would be for property damages.

Either of these schemes would wipe out the existing business center of West Medford. Also, there is a large amount of pedestrian traffic crossing these tracks, both to reach the West Medford depot which is near by and to get from one part of the business center to the other. It would be a hardship on these pedestrians to require them to use either the overpass or the underpass even with stairs up or down.

The depot would still be there, and while the business center would be largely eliminated, there would still be much pedestrian traffic wishing to cross the tracks.

It is impossible to state with reasonable accuracy at this time what should be done about this, but a pedestrian underpass, for instance, should be considered in any future design and in our estimate we have allowed $100,000 for either a pedestrian overpass or underpass.

We do not believe that either of these schemes would be satisfactory to the city, particularly in view of the heavy property damage, and the loss of business premises and taxable property.

Such being the case we have considered lowering the Boston and Maine tracks, leaving the present streets just as they are. This would involve highway bridges for High Street, Canal Street, and possibly at the Mystic Valley Parkway.

The railroad work would extend for about one mile, and there would be changes to the Medford depot, but the property damages otherwise would be comparatively slight. An approximate estimate for the whole would be $2,900,000 of which $1,500,000 would be for lowering the tracks and the balance for highway work and bridges.

This scheme is the most costly of these considered, but it has the merit of leaving the business center of West Medford substantially as it is now and should be much more agreeable to the city than either of the other schemes.

The accident record is not high. A report from the Medford Police Department shows that there have been two accidents in 1948, one in 1949 and none in 1950. The Police report that 10 or 12 motorists have driven through the gates in the past several years.

The train movement here is 87 trains daily and the average daily highway traffic is 8,813 vehicles. There is no question that the elimination of this grade crossing would be very desirable.

Conclusion.

The Department does not recommend legislation for the elimination of any of the crossings covered by this report. If sufficient appropriations are made by the various parties involved, the provisions of general laws are ample without additional legislation.

The estimates of cost appearing in this report are very approximate and are not based on any detailed plans but on the best available sources of information without plans; first, because no appropriation was made to cover the cost of the necessary engineering, and second, because of the short time allowed between passage of the legislation and filing of this report.

Respectfully submitted,

DEPARTMENT OF PUBLIC WORKS,

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Commissioner of Public Works.

B. H. Grout,
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