Appendix 8B

Incremental Capital Cost Estimates

December 2010

METROLINX

An agency of the Government of Ontario

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Prepared for:

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APPENDIX 8B

INCREMENTAL CAPITAL COST ESTIMATES

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1. INTRODUCTION

Capital cost estimates have been prepared for the six electrification options. The following cost elements considered are consistent with the Metrolinx BCA framework:

- Systems (e.g. Power Systems)
- Track and track elements (for all transit modes considered)
- Site work and special conditions
- Rolling Stock
- Professional services

Capital costs are estimated on a geographic basis, per rail corridor section. This approach allows costs to be accumulated based upon the infrastructure work deployed for that portion of the track. The 316 miles (506 kilometres) of rail corridor were divided into 25 corridor sections and 37 cost sections, to account for varying numbers of track. All costs are estimated in 2010 Canadian dollars and provided as an input to Detailed Evaluation Databook.

The cost categories are:

- Systems
    - Traction power supply
    - Traction power distribution (Overhead Catenary System(OCS), cross bonding, support)
    - Maintenance and layover facilities, maintenance vehicles
    - Control Center
- Track and track elements
    - Overhead structures rework
    - Jacking of bridges
    - Undercutting ballast
    - Replacement of bridges
    - Infrastructure rework
    - Architectural/structural enhancements
    - Modifications of signal bridges
    - Rework at level crossings
    - Signalling modifications, USRC cabling
    - Site Work and Special Conditions
    - Demolition/clearing/earthwork
    - Site utilities, utility relocation
    - Security fencing, retaining walls
    - Temporary facilities
    - Environmental mitigation, hazardous material management
    - Site development, parking
    - Bonding/grounding
- Professional services
    - Captures all services rendered during the design and construction phases of the project

- Rolling Stock
    - Procurement costs of rolling stock required for the rail corridor
        - Tier 4 diesel locomotive
        - Electric locomotive
        - Coach cars
        - Cab cars
        - Electric Multiple Units (EMUs), single-level
        - Diesel Multiple Units (DMUs), single-level

2. BASIS OF ESTIMATE

The capital cost estimates for power systems are based on recent quotes and installation costs by manufacturers and contractors and are representative costs of typical electrification systems. The quantities and equipment sizes are based on the conceptual design of the electrification of the entire network. This cost is then divided, pro-rata, for the corridor sections.

Unit costs for infrastructure capital costs are based on recent conceptual estimate quotes from contractors and vendors. Also, Construction bid board historical data, RS Means database (2010 costs), 2009 Global Construction cost data, Caltrans cost data and previous project experience are used as sources. Unit costs include labour, equipment, material, subcontractor, overhead and profit. Benchmarks from Arup project databases have been used to check costs. Costs have been gauged to suit the scale, scope and location of the project.

3. POWER SYSTEMS

3.1. Methodology

The unit cost estimates are developed for the configurations of substations, autotransformer stations, and switching stations developed in the conceptual design. Further, unit costs (per mile), are developed for single-track and multiple-track OCS. Once the unit costs were developed, the facilities required for each line were identified and the cost for each line was calculated. Finally, the total system cost was summarized.

3.2. Inclusions

- The Metrolinx electrification system cost estimates for traction power supply system and traction power distribution system are based on the conceptual design. They include substations, autotransformer stations and switching stations, utility system modifications and interface, traction power facility real estate and site work.
- Substation electrical equipment, including high voltage circuit breakers and disconnect switches, transformers, autotransformers, medium voltage switchgear, control equipment, communications equipment, auxiliary power equipment, cables, and any special equipment, as required.
- Control center: Interface with feeder, catenary and rail equipment, miscellaneous equipment. The traction power supply and distribution system will be controlled from the Control Center. The Control Center will be manned 24 hours/day and should be adjacent to the Train Operation Control Center.
- Two feeder wires and two static wires are used for the multi-track sections. One feeder and one static wire are used for the single track sections.
- Traction Power Distribution System - Overhead catenary system (OCS), foundations, supports - poles, cantilevers, portal structures, bridge arms, tunnel supports, maintenance shop supports, conductors with hangers and jumpers, conductor terminations, miscellaneous equipment including down guys, mid-point anchors, section insulators and surge arresters, motor and manually-operated disconnect switches
- Land Acquisition costs for substations, switching stations and access roads.
- Layover facilities and maintenance shops: Consists of fixed termination contact wire. Due to the relatively low power demand in these facilities, messenger wire is not required.
- Also included are the following indirect costs:
    - Consultant Design and Manufacturing Support
    - Consultant Construction Management/Support
    - Agency Engineering and Management
    - Agency Construction Inspection
    - Agency Railroad Flagging
    - Contractor Mobilization
    - General Conditions
    - Field Testing and Commissioning
    - Spare Parts

- Special Tools and Equipment
- System Documentation and Manuals
- Agency Staff Training
- Contractor Demobilization
- Contractor Profit and Overhead
- Inflation Escalation to 2010
- Currency Conversion to Canadian Dollars

3.3. Assumptions

- Control center: Sufficient space will be available in Metrolinx existing or future facility to house the equipment and power dispatchers. Existing communications (fiber optic) network can accommodate the requirements of electrical traction control. Rough cost estimate of $2M for control centre (60% for software and 40% for hardware).
- Union Station: Assumed to be 1,200 feet long (0.2 miles) centered at MP 0.0. From MP 0.0, 12 tracks are extending 0.1 miles to the west and 12 tracks are extending 0.1 miles to the east. Additionally, there are 2 by-pass tracks. Beyond the station, eight-track system is considered in the westerly direction to Bathurst Street and six-track system is considered in the easterly direction to Don Yard.
- In the eight-track and six-track territories, OCS is assumed to be auto-tensioned and suspended by portal structures.
- OCS system is assumed to be supported by a combination of poles and portal structures.
- Mainline system: eight-track, five-track, four-track and three-track OCS systems are assumed to be supported by portal structures. Two-track and single track systems are assumed to be supported by side-pole construction. Two feeder wires and two static wires are used for the multi-track sections. One feeder and one static wire is used for the single track sections.
- The OCS system is assumed to be auto-tensioned and equipped with balance weight assemblies at each end of tension length.

4. TRACK AND TRACK ELEMENTS

4.1. Methodology

The estimating method used is a combination of parametric estimating[1] and accumulated unit prices applied to estimated quantifications of work scope. Quantifications for track elements and site work are based mainly on lengths and calculated widths of rail corridors. Refer to Appendix 8B-1 for a summary of corridor infrastructure.

- For overhead structures, the vertical clearances were studied and they were then categorized into three progressive rework categories, level 1, 2, 3 and 4. These categories were defined by the project team with the help of the client. The rework level is based upon the height increase needed to meet the minimum vertical clearance requirements.
    - Level 1: Up to 200mm
    - Level 2: From 200 to 450mm
    - Level 3: From 450 to 750mm
    - Level 4: Greater than 750mm
- The rework categories define the measure of jacking the bridges or undercutting of ballast required to achieve the minimum vertical clearance for electrification. Costs for jacking bridges, undercutting of ballasts and track work are quoted by contractors based on current prices.
- Data for signal bridges was accumulated to determine the number of signal bridges that will need rework and define level of rework.
- For signalling, interlocking and level-crossings have been quantified along the corridor to derive the signalling modification costs and cost of USRC cabling. USRC signalling, now being installed, is assumed to be electrification compatible.

4.2. Inclusions

- Track and track elements include:
    - Overhead Structures rework/rebuilding
    - Infrastructure rework
- Overhead structures rework is to achieve the minimum vertical clearance requirements for electrification. Bridges were identified for rework and accordingly costs were calculated. 51 out of 163 bridges on the rail corridor were considered for rework as they did not meet the vertical clearance requirements defined by the study. Appendix 8B-2 identifies bridges to be reworked.

[1]Parametric estimating: This cost estimating technique is used for early conceptual estimates. A parametric estimate comprises cost estimating relationships and parametric estimating functions that provide logical and repeatable relationships between independent variables such as design parameters or physical characteristics and the dependent variable, cost.)

- Jacking of bridges includes jacking the bridge using hydraulic jacks and the prices vary for the different levels of jacking. The costs include replacement of bearings, finish grading, surfacing and reworking drainage/utilities of the bridge.
- Undercutting ballast: Costs for undercutting of ballasts for the different levels of lowering the track are contractor prices. These are based on productivity of the equipment, mobilization costs and include labor costs. The unit cost is comprised of cost to undercut ballast, remove/replace rail, sleepers, rework of crossovers and switches (wherever present) and drainage/utility work.
- Rebuilding of bridges: The cost elements include removal of the bridge, structural excavation, structural backfill, revisions to the approach supporting structures, mechanical reinforcement of soil, temporary shoring, pile tip (14"), steel piling, drilled caisson, bearing device, CIP Concrete, structural reinforcing steel and indirect costs. Refer to Appendix 8B-2 for bridges to be rebuilt.
- Tunnel construction: Cost elements include cut and cover tunnelling, drill blasting, shotcrete, reinforcing steel, lump sum tunnel cost. These costs are reflective of previous project experience and contractor costs.

- Infrastructure rework costs mainly comprise signalling modification costs, architectural/structural enhancements that may be required at stations (lump sum allowance, based on bid history), rework at level crossings and rework of signal bridges.
  - Signalling modification costs include signalling rework costs at level crossing, between-interlocking bonds and special cost of USRC cabling. These costs have been calculated for each corridor and then pro-rated to corridor sections.
  - Signal bridge modification costs include raising of the structure to accommodate the minimum vertical clearance requirement of electrification and an allowance that may be required for reconstruction if raising is not possible.
  - Rework at level crossings: Cost elements comprise excavation/backfill as may be required, foundation rework and repositioning of level crossing.
  - Indirect costs during construction and risk related costs

4.3. Assumptions

- Information for the CN York Subdivision grade separation was unavailable; hence it has been assumed to have sufficient vertical clearance.
- Number of stations, facilities and amount of type of track will remain constant, regardless of technology, as per the reference case
- Contingency has been added for rework of the three overhead structures for which detailed information was unavailable.
- Signal bridge rework on Milton line assumed similar rework requirements as signal bridges on other corridors
- No property acquisition is required for OCS installation.
- Higher contingencies are assumed on infrastructure rework costs, compared to the other cost categories. This is to provide buffer for inadequacy of information, due to the conceptual phase of the project.

5. SITE WORK AND SPECIAL CONDITIONS

5.1. Methodology

The area for site work and special conditions has been identified as that across and along the entire right of way. This is not a green-field project and therefore assumptions have been used to identify areas that may require site work. These assumptions are applied based on previous project experience, due to the conceptual phase of the project. Unit and lump sum costs for each element of site work are calculated for the areas considered.

5.2. Inclusions

- Demolition/clearing/earthwork: Area for demolition, clearing and earthwork across the network is calculated. Unit costs for these elements are then factored by the area calculated to give costs of earthwork.
- Site utilities, utility relocation: The site has existing utilities; rework to these utilities due to electrification is included. The utilities rework elements are storm water drainage, drainage, domestic water, gas, communications and electrical services and distribution. These are quantified based on a linear foot basis and unit costs are calculated for the same. Lump sum allowance has been provided for the Electrical services and distribution. Relocation of utilities is expected and costs are calculated for the same.
- Security fencing, retaining walls
- Temporary facilities required during construction
- Environmental mitigation, hazardous material management: Environmental mitigation, hazardous material management and site development and parking costs are calculated as a percentage of sub-total costs for site work.
- Site development, parking: Includes sidewalks, paths, plazas, landscape, site and station furniture, site lighting, signage, public artwork, bike facilities, permanent fencing, vehicular parking.
- Bonding/grounding: Bonding and grounding for station platforms is calculated based on platform lengths. Due to limited information at this conceptual phase of the project, any grounding outside of the right of way has assumed to be covered by the contingency applied to the final cost.

5.3. Assumptions

- Demolition/clearing/earthwork: Area for demolition, clearing and earthwork across the network has been calculated as 30% of the total corridor area.
- Site utilities/ utility relocation: Due to the linear nature of utilities (pipes etc); rework has been quantified as a third of track length per corridor section. The relocation area for utilities is assumed as 10% of the total area per corridor section.
- Security fencing, retaining walls: Security fencing is considered to be provided on approximately half the corridor section lengths. Retaining walls are considered to be provided on 10% of the track length and are calculated as linear cost elements.

- Temporary facilities: Temporary facilities are assumed to occupy 2% of the total area per corridor section.
- Environmental mitigation, hazardous material management: The sub total costs for site work include earthwork, utilities, utility relocation, security fencing, retaining walls and temporary facilities costs. These are the major costs for site work. Environmental mitigation is calculated as 3% of sub-total costs. Hazardous material management is considered as 5%. These are allowances have been grouped together as lump sum costs, to cover the rework that may be required under these categories.
- Site development, parking: 10% of sub-total costs (sub-total costs discussed above).
- Due to the limited information at this conceptual phase of the project, grounding outside of the ROW has assumed to be covered by the contingency applied to the final cost. Refer to Appendix 8B-3.
- Higher contingency has been assumed on site work and special conditions. This is to provide buffer for inadequacy of information, due to the conceptual phase of the project.

6. PROFESSIONAL SERVICES

Costs for professional services are calculated as percentages of infrastructure capital costs per corridor (excluding power system and rolling stock elements). The professional services for the system and rolling stock costs are incorporated in capital costs for each of these elements. The percentages for professional service costs are based on previous project experience and are as follows:

Table 1: Professional Service Cost Percentages

Professional services	**19%**
Preliminary Engineering	4%
Final design	6%
Project management for design and construction	3%
Construction admin	2%
Insurance	1%
Legal	1%
Surveys, testing, investigation, inspection	1%
Startup	1%

7. RISK AND CONTINGENCY ANALYSIS

7.1. Methodology

Estimate contingency was developed through a compilation of the client's past project experience, the project team's project experience and judgement, and a risk-based Monte Carlo simulation analysis. To capture the variability in potential cost at this early stage of the project, a contingency range was developed.

7.2. Contingency Values Based On Experience

From past project experience the client and project team developed the following point values for contingency for each major cost element.

- Catenary (OCS) System – 40%
- Power Supply System – 40%
- Maintenance & Layover Facilities and Vehicles – 40%
- Overhead Structures Rework – 60%
- Infrastructure Rework Costs – 55%
- Site work & Special Conditions – 70%
- Professional Services – 45%

Application of these contingency values resulted in an overall contingency per option of approximately 50%.

7.3. Verification of Contingency and Development of a Range

Monte Carlo simulation was utilized to verify this overall contingency value and to provide an appropriate range of values. Potential project risk was factored into the simulation via a risk register developed based upon the client's and team members' input

7.4. Development of the Risk Register

Risks were raised by the project team and client and then were commented on by the team. These risks were then categorized based on the probability of likelihood/occurrence as rare, unlikely, likely, possible, and almost certain. Also they are categorized based on the magnitude of consequence/impact as insignificant, minor, moderate, major and catastrophic. Their probability, severity and risk factor are quantified by degree. Further detail on the risk Register may be found in Appendix 8J.

- The categories of risks considered include:
    - Government
    - Operational
    - Reputational
    - Stakeholder
    - Infrastructure
    - Power
    - Operations

- Government
- Human/Social
- Financial
- Safety
- Project
- Technical
- Vehicle
- Stakeholder
- Image and reputation

7.5. Input to the Monte Carlo Simulation

Monte Carlo Simulation is a simulation technique in which repeated random sampling is utilized to determine a probability distribution of expected outcome. Monte Carlo simulation was utilized here to determine the total project cost based on varying project element costs through a range of expected values. The results of the simulation were used to inform the range of contingency appropriate for this project.

The Monte Carlo analysis was based on the risk register and the cost categories shown in the table below. It considered risks in the construction phase of the project. It also included design creep and escalation. The Monte Carlo simulation excludes risks not associated with construction costs of the project, such as political, reputational, human/social.

The following list shows the list of project elements used to breakdown the total project cost.

- Catenary System
- Power Supply System
- Maintenance & Layover Equipment
- Overhead Structures Rework
- Infrastructure Rework
- Sitework & Special Conditions
- Professional Services

Two additional costs were estimated that accommodate first order uncertain costs.

- Design Creep
- Escalation

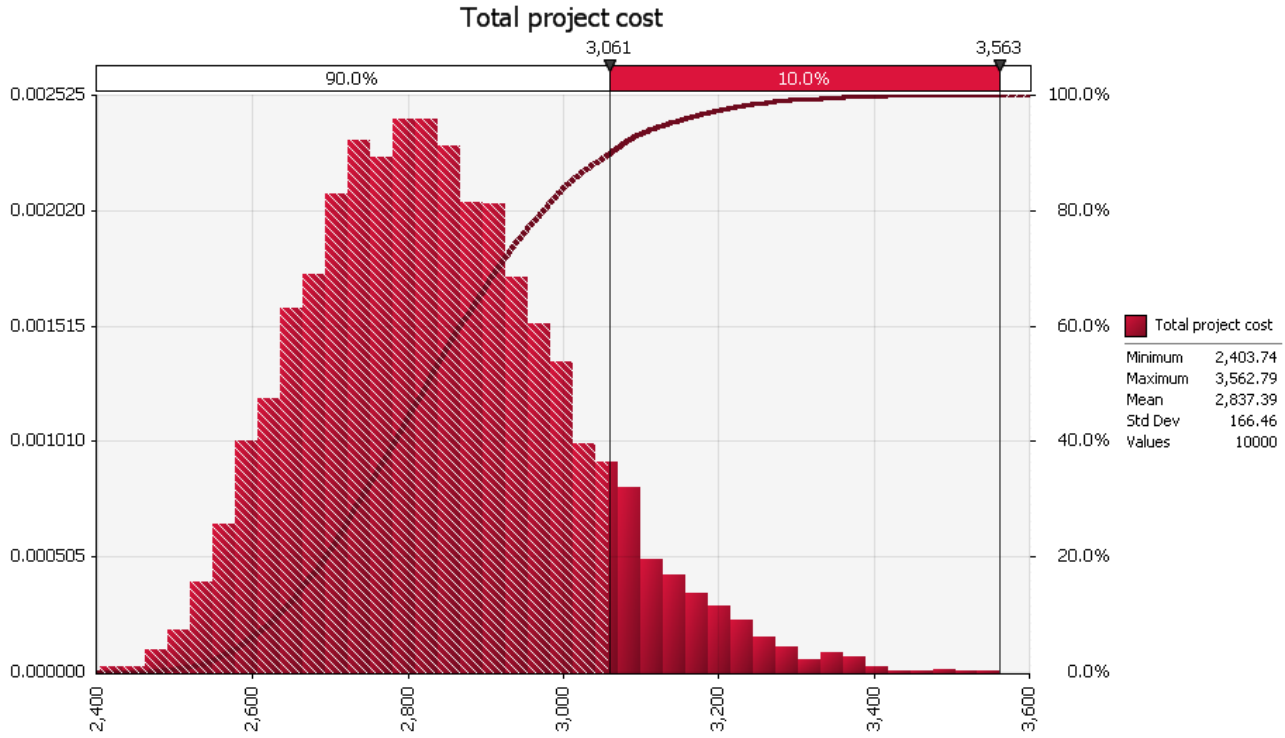
The baseline case was assumed to be the 'most likely' case based on the detailed project estimate. Expert judgement and experience, along with a review of the Project Team's risk registry, was used to determine the minimum and maximum that is possible for each element. The following table details the ranges utilized and the reasoning behind each range.

Table 2: Monte Carlo Simulation Range

Cost elements	Minimum	Most Likely	Maximum	Explanation of Range
Design Creep	50%	100%	250%	Given a fixed scope as determined by the assumptions of 506 miles used to generate the most likely base estimate – the most likely design creep assumes an additional 2% in track mileage. The minimum or optimistic view is then that the mileage increases only 1% and the maximum or pessimistic view is that it increases 25 miles or 5% of the total miles. A 1% decrease in mileage equates to a 50% decrease in the cost of design creep. A 5% increase in mileage equates to a 250% increase of design creep costs.
Catenary System	90%	100%	125%	Given a fixed scope as determined by the assumptions of the stated design and miles the entire scope of catenary work can be optimistically improved by 10% and can overrun by 25%. The system is above grade and tied to the miles closely with limited opportunity for change.
Power Supply System	90%	100%	175%	Same as above with a slightly wider pessimistic percentage increase of 75% due to variation in system certainty or lack thereof, integration, start up etc.
Maint & Layover Facilities, Vehicles	90%	100%	150%	Limited improvement and 50% overrun.
Overhead Structures Rework	90%	100%	300%	Limited improvement and significant overrun due to uncertainty of underground cost elements and limited information regarding clearance issues.
Infrastructure Rework Costs	90%	100%	200%	Limited improvement and large overrun due to uncertainty of underground cost elements and limited information regarding clearance issues.
Sitework & Special Conditions	90%	100%	200%	Same as above
Professional Services	90%	100%	300%	Same as above
Escalation on Fixed Assets	50%	100%	200%	A most likely value of escalation assumes a year on year increase of 2.4% based on 100 year data with an optimistic value of half that and a pessimistic value of twice that.

Using these range values, the Monte Carlo simulation was conducted with 10,000 trials. The results are a probability distribution of expected values for the total project cost. From this distribution the associated cost at various confidence levels can be determined. For example, at a 90% confidence level the project cost was determined to be $3.061 Billion. This means that there is a 90% chance that the project cost will be not exceed $3.061 Billion. The following graph shows the simulation results.

Figure 1: Monte Carlo Simulation



It is important to note that the contingency values calculated in the Monte Carlo simulation above are reflective only of items included in the estimate baseline. Potential additional cost items such as land acquisition and grounding requirements outside of the project right of way have not been included. Such costs are difficult to quantify at this early stage of the project and are dependent on project planning and many other unknown factors.

7.6. Conclusion

The Monte-Carlo simulation identified that the level of contingency to achieve a 90% confidence level was 37% for the Option 18 Entire Network cost, while the maximum confidence level was around 59%, as illustrated below.

Table 3: Option 18 Entire Network Cost Contingency Level

	90%	Max
Monte Carlo Result	3,061	3,563
Most Likely Estimate	2,236	2,236
Implied Contingency	37%	59%

Due to the conceptual nature of the study and the fact that there are several significant third party risks, an overall contingency range of 35%-55% was selected.

7.7. Summary Infrastructure Capital Costs per Option

Table 4: Summary Infrastructure Capital Costs Per Option

Infrastructure Capital Costs ($ in 2010 prices)									Total Capital Cost Estimate Range		
Option	Catenary System	Power Supply System	Maintenance & Layover Facilities, vehicles	Overhead structures rework	Infrastructure rework costs	Sitework & special conditions	Professional services	Sub-Total cost	Total (35 % Contingency)		Total (55 % Contingency)
OPTION 1 - Georgetown	$158,035,485	$71,232,228	$54,356,334	$ 15,708,050	$ 45,607,410	$ 135,169,020	$ 37,379,171	*$ 517,487,699*	*$ 699,000,000*	*to*	*$ 802,000,000*
OPTION 2 - Lakeshore	$263,703,457	$118,860,551	$71,674,486	$ 25,119,400	$45,852,169	$ 181,746,420	$ 48,016,418	*$ 754,972,901*	*$ 1,019,000,000*	*to*	*$ 1,170,000,000*
OPTION 3 - Georgetown & Lakeshore	$365,102,492	$164,564,712	$87,945,174	$ 26,872,100	$57,472,108	$ 287,490,980	$ 70,695,806	*$ 1,060,143,372*	*$ 1,431,000,000*	*to*	*$ 1,643,000,000*
OPTION 11 - Georgetown, Lakeshore, Milton	$414,859,640	$186,992,033	$94,692,412	$ 26,872,100	$69,572,480	$ 334,883,460	$ 81,999,448	*$ 1,209,871,572*	*$ 1,633,000,000*	*to*	*$ 1,875,000,000*
OPTION 15 - Georgetown, Lakeshore, Milton & Barrie	$507,683,106	$228,830,879	$108,913,100	$ 28,523,700	$98,266,666	$ 437,215,400	$ 107,208,216	*$ 1,516,641,066*	*$ 2,047,000,000*	*to*	*$ 2,351,000,000*
OPTION 18 - Georgetown	$615,169,852	$277,278,989	$136,145,682	$ 311,675,900	$126,469,298	$ 576,479,130	$ 192,890,228	*$ 2,236,109,079*	*$ 3,019,000,000*	*to*	*$ 3,466,000,000*

8. ROLLING STOCK

8.1. Methodology

This section describes the derivation of rolling stock capital cost per corridor and per electrification option for each candidate technology. Capital costs for each vehicle type were compiled by reviewing the industry for recent sales of comparable equipment. The process considered Metrolinx requirements as compared to the most recently awarded North American procurements and, at times, confidential knowledge of on-going and future vehicle negotiations. In some cases, direct comparisons could be found. In others, extrapolations had to be made.

LTK, a member of the JV consultant team, maintains a database of equipment procurements and prices. Great effort is taken to discriminate between new procurements, option orders, and remanufactured equipment. Each order is logged by date, scope of work, country of origin, and inclusion of items such as spare parts and training. A key component is the ability to compensate for inflation, currency fluctuations, and variations in labor and materials prices.

Though based on the best data available, as described below, rolling stock prices are constantly changing. Variations of at least 10% should be expected.

Diesel Locomotive - estimate based on GO Transit's purchase of Motive Power Industries (MPI) MP40PH-3C locomotives in 2008, plus an up-charge for Tier 4 compliant engine(s), cooling system modifications, exhaust after treatment elements, component packaging, and engineering.

Electric Locomotive - estimate based on average of New Jersey Transit's (NJ Transit) purchase of Bombardier ALP-46A locomotives in 2008 and Amtrak's purchase of Siemens ACS64 locomotives in 2010.

Bi-Level Coach Cars - estimate based on Utah Transit Authority's (UTA) purchase of Bombardier bi-level coach cars in 2007.

Bi-Level Cab Cars - estimate based on UTA's purchase of Bombardier bi-level cab cars in 2007.

DMU (ARL) - Price based on recent bids received by Sonoma Marin Area Rail Transit (SMART) in 2010 for single-level DMU's. Metrolinx has subsequently started direct talks with the low-bid proposer to purchase DMU's for ARL service as options to the SMART procurement. The estimated ARL DMU price is based on the SMART vehicle plus an up-charge for minor design changes including interior finishes, seating arrangement, and exterior graphics. Because of the current nature of vehicle procurement discussions, Metrolinx advised that the estimated vehicle cost was firm and thus the vehicle cost uncertainty contingency factor was set at 0%. DMU's are assumed to be configured as married pairs.

EMU (ARL) - Price based on LTK engineering estimates, South-eastern Pennsylvania Transportation Authority's (SEPTA) purchase of Silver liner V single-level Emu's in 2007, and Denver Regional Transportation District's (RTD) contract for single-level Emu's in 2010. Emu's are assumed to be configured as married pairs.

Fleet capital costs were calculated as the value of all rolling stock, including spares, required to be added to the existing fleet to meet the future service demands and rolling stock technology selection, by corridor, in 2010 Canadian dollars. The value of existing equipment and spares was distributed across all corridors of compatible technology in proportion to the number of revenue train sets required. The cost

estimate includes a 2% provision for the special tools and equipment required for the maintenance of the electrical rolling stock.

8.2. Determining Rolling Stock Requirements

In order to determine the incremental impacts of electrifying one or more corridors of the GO network in the future, the Reference Case schedule was developed with Metrolinx for comparative purposes. The Reference Case represents an ambitious but realistic view of the level of service offered by GO in the medium term future if electrification was not implemented.

The increase in service levels specified would require the fleet size to increase by 55 (from 52 to 107) bi-level trains (of 10-passenger-car consists, hauled by a Tier 4 diesel locomotive). The Study assumes that if GO pursued electrification on one or more corridors, the number of new electric locomotives to operate that corridor would be ordered in place of diesel locomotives and make up the total fleet required to operate the Reference Case.

Each electrification option requires a unique fleet composition – some corridors are assumed to be electrified while others remained diesel. If a corridor is electrified, diesel trains currently operated on that corridor would be cascaded to another corridor. The total fleet (including spares) was calculated by vehicle type and compared to the fleet required to operate the Reference Case schedule. This process showed the additional electric and diesel vehicles required to be purchased. The Study also assumes that if the Georgetown corridor was electrified, the 6 ARL train sets (a total of 12 DMU) would be converted to EMUs.

The number of total operational (revenue-earning) vehicles was calculated for each corridor as part of thei fleet operating plan. Spares were considered to be a fleet-wide pool. Electrification Options created a pool of spare diesel equipment and a pool of spare electric equipment. The fleet-wide pool of spare vehicles for both technologies was always rounded up to a whole number of vehicles, and in some cases the total fleet size would require 108 locomotives due to the rounding up of both technologies.

If an option requires more than 55 new electric locomotives, it means that no new diesel locomotives would be required to meet the Reference Case service levels. However, it would also mean that existing diesel locomotives would also become surplus to requirement. For Options 11, 15, and 18, a surplus of diesel locomotives was noted. These were assumed sold for residual value.

Figure 2 illustrates the mix of existing diesel locomotives (that will be converted to Tier 4), future Tier 4 diesel locomotives as part of the reference case and electric locomotives. Where the total number of locomotives exceed the red line, existing locomotives will be surplus to requirements and sold off. Table 51 summarizes this per option.

Figure 2 Number of Locomotives Required/Surplus by Option

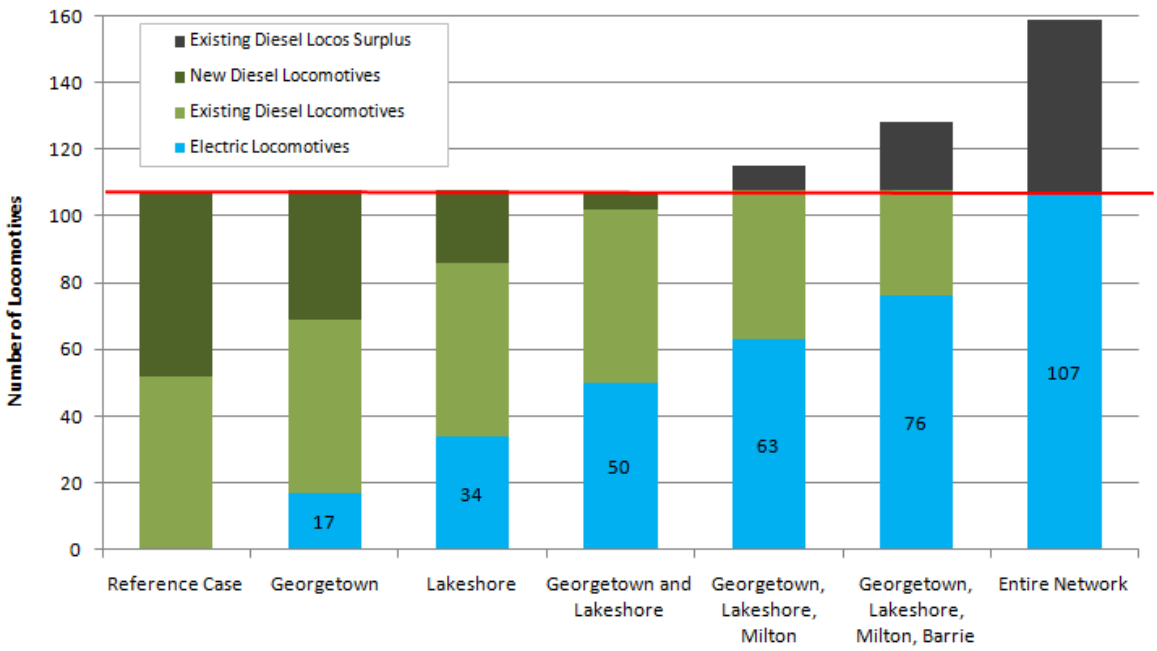


Table 5 Rolling Stock Requirements by Option (Including Spares)

Technology	Option						
	1	**2**	**3**	**11**	**15**	**18**	**Reference Case**
Electric Locomotives	17	34	50	63	76	107	0
Existing Diesel Locomotives	52	52	52	52	52	52	52
New Tier 4 Diesel Locomotive	39	22	5	0	0	0	56
Existing Diesel Locomotives to be sold off	0	0	0	-7	-20	-52	0
Total Locomotives	***107***	***108***	***108***	***107***	***108***	***107***	***108***
DMU to EMU conversion (ARL)	12	0	12	12	12	12	12

8.3. Inclusions

- Capital costs reflect new vehicle purchases over and above the Reference Case fleet
- The breakdown of the number of revenue train sets required is:
    - Lakeshore East and West - 37
    - Hamilton St. James - Bowmanville - 29
    - St. Catherine - Union Station - 4
    - Hamilton TH&B - Union Station - 4
    - Barrie - 11
    - Stouffville - 12
    - Milton - 11
    - Richmond Hill - 7
    - Georgetown – 14
- The total fleet size is 92 trains plus 15 spare trains for GO Commuter revenue operations and 12 EMUs for the ARL (6 pairs).
- Spares: All rolling stock types will require spare equipment to support scheduled and unscheduled maintenance, failures, general scheduling and logistics. For planning, spares are typically calculated as a percentage of the required revenue fleet. The National Transit Database (NTD, United States) recommends a spares ratio of 20% for small and new-start operations. Larger fleets need a healthy number of spares, but typically less than 20%.
- Metrolinx operations staff will consider spare rolling stock as a fleet-wide pool, to be used as and where needed. Each individual corridor does not need a minimum number of spares.

- Each unique type of rolling stock will require a minimum number of spares. While calculating spares as a percentage of the total fleet, the number of units required is always rounded up to the nearest whole vehicle. In addition, general maintenance requires a minimum number of spares – typically three units or two married pairs. This minimum number only affects very small fleets such as the ARL.
- Cab cars have more equipment than coach cars – inherent in the operator cab design. This creates a higher need for scheduled maintenance and a greater chance for unscheduled maintenance. Further, as leading units on trains, cab cars are more likely to suffer heavy damage during grade-crossing accidents. The net result is the need for more spare cab cars than coach cars. Typically, cab cars can be configured to operate as coach cars but coach cars cannot operate as cab cars.
- The following parameters were used while calculating the fleet-wide pool of spares:
    - Spares Ratio for Diesel Locomotives: 16.0%
    - Spares Ratio for Electric Locomotives: 16.0%
    - Spares Ratio for Combined Coach and Cab Cars: 8.6%
    - Spares Ratio for Cab Cars: 21.0%
    - Minimum Spares for Locomotives and Cabs: 3
    - Spares Ratio for DMUs and EMUs: 20.0%
    - Minimum Spares for DMU's and EMU's: 4 cars, configured as two married pairs
- The required spares vary by electrification Option, but total fleet requirements, including spares are 107 or 108 locomotive-hauled train sets and 12 DMUs or EMUs.

8.4. Assumptions

- It was assumed that the 2020 fleet of 52 T4 MP40s, 468 coach cars, and 52 cab cars had already been purchased
- Canac's Operating plan estimated the total fleet size through detailed system scheduling and route travel modelling to be 107 Locomotives, 828 coach cars and 107 cab cars. Their optimized plan assumed:
    - Lake Shore East and West are through-routed
    - Lake Shore West has three circuits:
        - Hamilton St. James – Bowmanville
        - St. Catherine – Union Station
        - Hamilton TH&B – Union Station
    - All other corridors are separate with train sets only serving individual routes
- Any cab car coupled to an electric locomotive was assumed to have a modification charge of $15k to upgrade cab controls and monitoring
- All costs include spare rolling stock, assumed as a communal "pool" and distributed across all corridors of common technology in proportion to the number of required revenue service locomotives
- Options 11, 15, and 18 created surplus diesel locomotives; these units were assumed sold for a residual value of $1.0M.

  - For Options 11 and 15, the residual diesel locomotive values applied to remaining diesel corridors
  - For Option 18, the residual diesel locomotive values applied to all corridors

- Train set makeup will vary by service type.
  - The GO Commuter Trains: One locomotive, ten passenger cars including one cab car.
  - Airport Rail Link (ARL): Four two-car DMU or EMU train sets. DMUs and EMUs are easily formed into a married-pair configuration where two carbodies are semi-permanently coupled to form a two-car consists. The married-pair has an operator's cab at each end and is capable of bi-directional operation in a service.

- The cost for all new and spare electric locomotives was assigned to Georgetown together with the cost of converting 17 cabs to be compatible with electric locomotives at a cost assumed of $15,000 per cab car.

The following table states the assumed train set make-ups by technology:

Table 6: Rolling Stock Components

Vehicles per	Diesel Loco	Electric Loco	Coaches	Cab Cars	DMU	EMU
Diesel Train	1		9	1		
Electric Train		1	9	1		
DMU Train					2	
EMU Train						2

8.5. Summary of Rolling Stock Unit Costs

The following rolling stock unit capital costs and contingencies were estimated for this study:

Table 7: Rolling Stock Capital Costs and Contingencies

		Capital Costs per Vehicle			
Vehicle Type	Year of purchase	Base Cost[1] ($CAN, Year of Purchase)	Extended Cost[2] ($CAN, 2010)	Vehicle Cost Contingency	Residual Value[3] ($CAN, 2010)
Diesel Locomotive, (Converted MP40 to Tier 4)	2008	6,020,000	7,820,000	10%	1,000,000
Electric Locomotive	2010	9,180,000	11,200,000	7%	NA
BL Coach Car	2007	2,240,000	2,740,000	5%	NA
BL Cab Car	2007	2,450,000	3,060,000	8%	NA
Single-Level DMU	2010	3,570,000	4,030,000	0%	NA
Single-Level EMU	2010	3,880,000	4,650,000	5%	NA
DMU + Conversion to EMU		4,860,000	5,580,000	8%	NA

Notes:

[1]Base cost is the nominal cost per vehicle as made public at the time of contract award.

[2]Extended cost is the base cost adjusted for:

- Consultant Design and Manufacturing Support
- Consultant Construction Management/Support
- Agency Engineering and Management
- Agency Railroad Flagging
- Spare Parts
- Special Tools and Equipment
- Agency Staff Training
- Inflation Escalation to 2010
- Contingency for Vehicle Cost Uncertainty
- Currency Conversion to Canadian Dollars

[3]Residual value is discussed under Fleet Size below.

Incremental rolling stock capital costs are shown in Table 8.

Table 8: Total Incremental Rolling Stock Capital Costs by Option ($m 2010 prices)

Option	Incremental Rolling Stock Capital Costs ($M 2010 prices)
Option 1 - Georgetown	84
Option 2 – Lakeshore	123
Option 3 – Georgetown & Lakeshore	188
Option 11 – Georgetown, Lakeshore & Milton	288
Option 15 - Georgetown, Lakeshore, Milton & Barrie	421
Option 18 – Entire Network	736

8.5.1. Example Calculations

Example – Option 1 (Electrify Georgetown)

- Reference Case
    - 107 locomotives (52 existing + 55 new) and 12 multiple units for the network
    - Georgetown corridor requires 14 operational and 3 spare locomotives (17 in total)
    - One of the spares is shared with another corridor in the reference case, we would require an extra spare diesel locomotive (total of 108 network locomotives)
    - ARL 12 single level DMUs would be converted to EMUs
    - Tier 4 Locomotive = $7.8M
    - DMU = $4/coach
- Electrify Georgetown
    - Electric locomotive = $11.2m/loco
    - DMU conversion to EMU is an additional $1.6m. (over the $4M DMU) = $5.6M
    - Cost of Reference Case: $180M = 17x$7.8M (diesel loco)+ 12x$4M (DMU)
    - Cost of GT Option: $264M = 17x$11.2 (electric loco) + 1x$7.8M (extra spare diesel) + 12x$5.6M (EMU)
    - Incremental rolling stock cost is $264M-$180M = **$84M**

Example – Option 18 (Electrify the Entire Network)

- Reference Case
    - 107 locomotives (52 existing + 55 new) and 12 multiple units for the network

- ARL 12 single level DMUs would be converted to EMUs
- Tier 4 Locomotive = $7.8M
- DMU = $4M/coach

- Electrify Entire Network
  - Electric locomotive = $11.2M/loco
  - DMU conversion to EMU is an additional $1.6M. (over the $4M DMU) = $5.6M
  - Salvage value of existing locomotives assumed $1M by 2020
- Cost of Reference Case: $477M = 55x$7.8M (diesel loco)+ 12x$4M (DMU)
  - Cost of Entire Network Option: $1,213M = 107x$11.2 (electric locos) + 12x$5.6M (EMU) - 52x$1M (salvage value of current diesel locos)
- Incremental rolling stock cost is $1,213M-$477M = **$736M**

8.6. Total Capital Cost Estimate Range

The total capital cost estimate range (infrastructure and rolling stock) is shown in Table 9.

Table 9: Total Capital Cost Estimate Range (Infrastructure and Rolling Stock)

Option	Total Capital Cost Estimate Range (Infrastructure and Rolling Stock) ($m 2010 prices)		
OPTION 1 - Georgetown	$783	to	$886
OPTION 2 - Lakeshore	$1,142	to	$1,293
OPTION 3 - Georgetown & Lakeshore	$1,619	to	$1,831
OPTION 11 - Georgetown, Lakeshore, Milton	$1,921	to	$2,163
OPTION 15 - Georgetown, Lakeshore, Milton & Barrie	$2,468	to	$2,772
OPTION 18 - Georgetown	$3,755	to	$4,202

APPENDIX 8B-1: CORRIDOR INFRASTRUCTURE SUMMARIES

Option 1

Corridor Section	Cost Section	No. of Tracks	Section Route Length (miles)	Section Track Length (miles)	Owner	Heavy Freight	Reference Case Off-Peak Service Level	No. of Overhead Bridges	No. of Overhead Structures Requiring Rework	No. of Overhead Structures Requiring Rebuild	No. of Signal Bridges	No. of Stations	No. of Level Crossings	No. of TPS	No. of SS	No. of AT	No. of Layover Faciltiy	No. of Maintenance Facility
UN1	0	14	0.2	2.8	GO		13					1						
UW1	1	8	1.0	8.0	GO		9	7	1						1		1	
UW2	11	8	1.9	15.2	GO		7	1			2		1					
UW3	12	6	1.8	10.8	GO		6	2			1	1				1		
LW1	3	5	0.9	4.5	GO		2	1	1		3	1	1					
	4	4	5.8	23.2	GO		2	7	1	3	8	1	1	1				1
GT1	15	4	8.7	34.8	GO		5	13	1		2	2	3			1		
	16	3	3.5	10.5	GO		1	2			3	1	2					
	17	3	0.5	1.5	CN	YES	1	1				1						
	18	2	3.8	7.6	CN	YES	1	5	1		2	1	2	1				
GT2	19	2	8.1	16.2	CN	YES	1	5	1		5	2	12				2	
GT3	20	1	0.6	0.6	CN	YES	Nil	1	1		2				1			
	21	1	32.6	32.6	CN		Nil	6	1			4	47	1		1	1	
ARL	37	2	1.9	3.8	GO		4											
			71.3	**172.1**				**51**	**8**	**3**	**28**	**15**	**69**	**3**	**2**	**3**	**4**	**1**

		Total
25.7	113.6	GO
45.6	58.5	CN
		CP

Option 2

Corridor Section	Cost Section	No. of Tracks	Section Route Length (miles)	Section Track Length (miles)	Owner	Heavy Freight	Reference Case Off-Peak Service Level	No. of Overhead Bridges	No. of Overhead Structures Requiring Rework	No. of Overhead Structures Requiring Rebuild	No. of Signal Bridges	No. of Stations	No. of Level Crossings	No. of TPS	No. of SS	No. of AT	No. of Layover Faciltiy	No. of Maintenance Facility
UN1	0	14	0.2	2.8	GO		13					1						
UW1	1	8	1.0	8.0	GO		9	7	1						1		1	
UE1	2	6	1.3	7.8	GO		4				4					1	1	
LW1	3	5	0.9	4.5	GO		2	1	1		3	1	1					
	4	4	5.8	23.2	GO		2	7	1	3	8	1	1	1				1
	5	4	13.6	54.4	CN		2	2	2		14	4	8		1			
LW2	6	3	15.5	46.5	CN	YES	2	7	6		15	4	6	1				
	7	2	0.4	0.8	CN		2						1					
	8	2	2.0	4.0	CN		2	3	1			1						
UE2	27	4	6.8	27.4	CN		3	6		1	8	1	1					
LE1	31	3	11.7	35.1	CN		2	4	1		5	4	14	1	1			
	32	2	1.0	2.0	GO		2	2	1		1	1						
LE2	33	2	9.6	19.3	GO		2	6	1		2	2	1				1	1
	34	2	1.4	2.8	GO	YES	2							1				
	35	2	4.3	8.6	CP	YES	2	7	4			2	3					
LE3	36	1	6.7	6.7	CP	YES	2	1				2	8				2	
			82.3	**253.8**				**53**	**19**	**4**	**60**	**24**	**44**	**4**	**3**	**1**	**5**	**2**

		Total
21.24	70.38	GO
50.03	168.13	CN
11.01	15.32	CP

Option 3

Corridor Section	Cost Section	No. of Tracks	Section Route Length (miles)	Section Track Length (miles)	Owner	Heavy Freight	Reference Case Off-Peak Service Level	No. of Overhead Bridges	No. of Overhead Structures Requiring Rework	No. of Overhead Structures Requiring Rebuild	No. of Signal Bridges	No. of Stations	No. of Level Crossings	No. of TPS	No. of SS	No. of AT	No. of Layover Faciltiy	No. of Maintenance Facility
UN1	0	14	0.2	2.8	GO		13					1						
UW1	1	8	1.0	8.0	GO		9	7	1						1		1	
UE1	2	6	1.3	7.8	GO		4				4					1	1	
LW1	3	5	0.9	4.5	GO		2	1	1		3	1	1					
	4	4	5.8	23.2	GO		2	7	1	3	8	1	1	1				1
	5	4	13.6	54.4	CN		2	2	2		14	4	8		1			
LW2	6	3	15.5	46.5	CN	YES	2	7	6		15	4	6	1				
	7	2	0.4	0.8	CN		2						1					
	8	2	2.0	4.0	CN		2	3	1			1						
UW2	11	8	1.9	15.2	GO		7	1			2		1					
UW3	12	6	1.8	10.8	GO		6	2			1	1				1		
GT1	15	4	8.7	34.8	GO		5	13	1		2	2	3			1		
	16	3	3.5	10.5	GO		1	2			3	1	2					
	17	3	0.5	1.5	CN	YES	1	1				1						
	18	2	3.8	7.6	CN	YES	1	5	1		2	1	2	1				
GT2	19	2	8.1	16.2	CN	YES	1	5	1		5	2	12				2	
GT3	20	1	0.6	0.6	CN	YES	Nil	1	1		2				1			
	21	1	32.6	32.6	CN		Nil	6	1			4	47	1		1	1	
UE2	27	4	6.8	27.4	CN		3	6		1	8	1	1					
LE1	31	3	11.7	35.1	CN		2	4	1		5	4	14	1	1			
	32	2	1.0	2.0	GO		2	2	1		1	1						
LE2	33	2	9.6	19.3	GO		2	6	1		2	2	1				1	1
	34	2	1.4	2.8	GO	YES	2							1				
	35	2	4.3	8.6	CP	YES	2	7	4			2	3					
LE3	36	1	6.7	6.7	CP	YES	2	1				2	8				2	
ARL	37	2	1.9	3.8	GO		4											
			145.7	**387.4**				**89**	**24**	**4**	**77**	**36**	**111**	**6**	**4**	**4**	**8**	**2**

		Total
39.04	145.48	GO
95.63	226.63	CN
11.01	15.32	CP

Option 11

Corridor Section	Cost Section	No. of Tracks	Section Route Length (miles)	Section Track Length (miles)	Owner	Heavy Freight	Reference Case Off-Peak Service Level	No. of Overhead Bridges	No. of Overhead Structures Requiring Rework	No. of Overhead Structures Requiring Rebuild	No. of Signal Bridges	No. of Stations	No. of Level Crossings	No. of TPS	No. of SS	No. of AT	No. of Layover Faciltiy	No. of Maintenance Facility
UN1	0	14	0.2	2.8	GO		13					1						
UW1	1	8	1.0	8.0	GO		9	7	1						1		1	
UE1	2	6	1.3	7.8	GO		4				4					1	1	
LW1	3	5	0.9	4.5	GO		2	1	1		3	1	1					
	4	4	5.8	23.2	GO		2	7	1	3	8	1	1	1				1
	5	4	13.6	54.4	CN		2	2	2		14	4	8		1			
LW2	6	3	15.5	46.5	CN	YES	2	7	6		15	4	6	1				
	7	2	0.4	0.8	CN		2						1					
	8	2	2.0	4.0	CN		2	3	1			1						
UW2	11	8	1.9	15.2	GO		7	1			2		1					
UW3	12	6	1.8	10.8	GO		6	2			1	1				1		
MI1	13	2	18.3	36.6	CP		1	5				6	9			2		
MI2	14	2	8.1	16.2	CP		1	2				2	6			1	1	
GT1	15	4	8.7	34.8	GO		5	13	1		2	2	3			1		
	16	3	3.5	10.5	GO		1	2			3	1	2					
	17	3	0.5	1.5	CN	YES	1	1				1						
	18	2	3.8	7.6	CN	YES	1	5	1		2	1	2	1				
GT2	19	2	8.1	16.2	CN	YES	1	5	1		5	2	12				2	
GT3	20	1	0.6	0.6	CN	YES	Nil	1	1		2				1			
	21	1	32.6	32.6	CN		Nil	6	1			4	47	1		1	1	
UE2	27	4	6.8	27.4	CN		3	6		1	8	1	1					
LE1	31	3	11.7	35.1	CN		2	4	1		5	4	14	1	1			
	32	2	1.0	2.0	GO		2	2	1		1	1						
LE2	33	2	9.6	19.3	GO		2	6	1		2	2	1				1	1
	34	2	1.4	2.8	GO	YES	2							1				
	35	2	4.3	8.6	CP	YES	2	7	4			2	3					
LE3	36	1	6.7	6.7	CP	YES	2	1				2	8				2	
ARL	37	2	1.9	3.8	GO		4											
			172.1	**440.2**				**96**	**24**	**4**	**77**	**44**	**126**	**6**	**4**	**7**	**9**	**2**

		Total
39.04	145.48	GO
95.63	226.63	CN
37.41	68.12	CP

Option 15

Corridor Section	Cost Section	No. of Tracks	Section Route Length (miles)	Section Track Length (miles)	Owner	Heavy Freight	Reference Case Off-Peak Service Level	No. of Overhead Bridges	No. of Overhead Structures Requiring Rework	No. of Overhead Structures Requiring Rebuild	No. of Signal Bridges	No. of Stations	No. of Level Crossings	No. of TPS	No. of SS	No. of AT	No. of Layover Faciltiy	No. of Maintenance Facility
UN1	0	14	0.2	2.8	GO		13					1						
UW1	1	8	1.0	8.0	GO		9	7	1						1		1	
UE1	2	6	1.3	7.8	GO		4				4					1	1	
LW1	3	5	0.9	4.5	GO		2	1	1		3	1	1					
	4	4	5.8	23.2	GO		2	7	1	3	8	1	1	1				1
	5	4	13.6	54.4	CN		2	2	2		14	4	8		1			
LW2	6	3	15.5	46.5	CN	YES	2	7	6		15	4	6	1				
	7	2	0.4	0.8	CN		2						1					
	8	2	2.0	4.0	CN		2	3	1			1						
UW2	11	8	1.9	15.2	GO		7	1			2		1					
UW3	12	6	1.8	10.8	GO		6	2			1	1				1		
MI1	13	2	18.3	36.6	CP		1	5				6	9			2		
MI2	14	2	8.1	16.2	CP		1	2				2	6			1	1	
GT1	15	4	8.7	34.8	GO		5	13	1		2	2	3			1		
	16	3	3.5	10.5	GO		1	2			3	1	2					
	17	3	0.5	1.5	CN	YES	1	1				1						
	18	2	3.8	7.6	CN	YES	1	5	1		2	1	2	1				
GT2	19	2	8.1	16.2	CN	YES	1	5	1		5	2	12				2	
GT3	20	1	0.6	0.6	CN	YES	Nil	1	1		2				1			
	21	1	32.6	32.6	CN		Nil	6	1			4	47	1		1	1	
BA1	22	2	38.5	77.0	GO		1	9	4			9	46	1		1		
BA2	23	1	18.0	18.0	GO		Nil	1	1			2	26			1	1	
	24	1	3.5	3.5	GO		Nil	1	1			1	2			1	1	
UE2	27	4	6.8	27.4	CN		3	6		1	8	1	1					
LE1	31	3	11.7	35.1	CN		2	4	1		5	4	14	1	1			
	32	2	1.0	2.0	GO		2	2	1		1	1						
LE2	33	2	9.6	19.3	GO		2	6	1		2	2	1				1	1
	34	2	1.4	2.8	GO	YES	2							1				
	35	2	4.3	8.6	CP	YES	2	7	4			2	3					
LE3	36	1	6.7	6.7	CP	YES	2	1				2	8				2	
ARL	37	2	1.9	3.8	GO		4											
			232.1	**538.7**				**107**	**30**	**4**	**77**	**56**	**200**	**7**	**4**	**10**	**11**	**2**

		Total
99.04	243.98	GO
95.63	226.63	CN
37.41	68.12	CP

Option 18

Corridor Section	Cost Section	No. of Tracks	Section Route Length (miles)	Section Track Length (miles)	Owner	Heavy Freight	Reference Case Off-Peak Service Level	No. of Overhead Bridges	No. of Overhead Structures Requiring Rework	No. of Overhead Structures Requiring Rebuild	No. of Signal Bridges	No. of Stations	No. of Level Crossings	No. of TPS	No. of SS	No. of AT	No. of Layover Faciltiy	No. of Maintenance Facility
UN1	0	14	0.2	2.8	GO		13					1						
UW1	1	8	1.0	8.0	GO		9	7	1						1		1	
UE1	2	6	1.3	7.8	GO		4				4					1	1	
LW1	3	5	0.9	4.5	GO		2	1	1		3	1	1					
	4	4	5.8	23.2	GO		2	7	1	3	8	1	1	1				1
	5	4	13.6	54.4	CN		2	2	2		14	4	8		1			
LW2	6	3	15.5	46.5	CN	YES	2	7	6		15	4	6	1				
	7	2	0.4	0.8	CN		2						1					
	8	2	2.0	4.0	CN		2	3	1			1						
LW3	9	1	2.9	2.9	CP		Nil	9	1	6		1				1	1	
LW4	10	1	31.9	31.9	CN		Nil	8	1			3	52			2	2	
UW2	11	8	1.9	15.2	GO		7	1			2		1					
UW3	12	6	1.8	10.8	GO		6	2			1	1				1		
MI1	13	2	18.3	36.6	CP		1	5				6	9			2		
MI2	14	2	8.1	16.2	CP		1	2				2	6			1	1	
GT1	15	4	8.7	34.8	GO		5	13	1		2	2	3			1		
	16	3	3.5	10.5	GO		1	2			3	1	2					
	17	3	0.5	1.5	CN	YES	1	1				1						
	18	2	3.8	7.6	CN	YES	1	5	1		2	1	2	1				
GT2	19	2	8.1	16.2	CN	YES	1	5	1		5	2	12				2	
GT3	20	1	0.6	0.6	CN	YES	Nil	1	1		2				1			
	21	1	32.6	32.6	CN		Nil	6	1			4	47	1		1	1	
BA1	22	2	38.5	77.0	GO		1	9	4			9	46	1		1		
BA2	23	1	18.0	18.0	GO		Nil	1	1			2	26			1	1	
	24	1	3.5	3.5	GO		Nil	1	1			1	2			1	1	
RH1	25	2	19.6	39.2	CN	YES	1	31	7	1		4	8			1		
RH2	26	1	7.5	7.5	CN	YES	Nil					2	11			1	1	
UE2	27	4	6.8	27.4	CN		3	6		1	8	1	1					
ST1	28	2	10.3	20.7	GO		1	10	2			4	15					
	29	1	5.0	5.0	GO		Nil					3	9			1		
ST2	30	1	6.9	6.9	GO		Nil					2	17			1	1	
LE1	31	3	11.7	35.1	CN		2	4	1		5	4	14	1	1			
	32	2	1.0	2.0	GO		2	2	1		1	1						
LE2	33	2	9.6	19.3	GO		2	6	1		2	2	1				1	1
	34	2	1.4	2.8	GO	YES	2							1				
	35	2	4.3	8.6	CP	YES	2	7	4			2	3					
LE3	36	1	6.7	6.7	CP	YES	2	1				2	8				2	
ARL	37	2	1.9	3.8	GO		4											
			316.2	**652.8**				**165**	**41**	**11**	**77**	**75**	**312**	**7**	**4**	**17**	**16**	**2**

		Total
121.3	**276.5**	GO
154.6	**305.2**	CN
40.3	**71.0**	CP

APPENDIX 8B-2: LIST OF BRIDGES TO BE REWORKED OR REBUILT

Reworks by Option

Option 1 — 8 Structures to be Reworked

GO Line	Subdivision	Mileage	Owner	Crossing Description	GO Clearance	No. of Electrified Tracks	Corridor Section	Cost Section	Delta (Normal)	Rework or Rebuild
Georgetown	USRC	0.69	GO	Spadina Avenue	21' 11.77"	8	UW1	1	-318	Rework
Lakeshore West	Oakville	1.57	GO	Strachan Ave.	22' 8"	5	LW1	3	-109	Rework
Lakeshore West	Oakville	5.61	GO	Q.E.W (two track)	22' 10"	4	LW1	4	-60	Rework
Georgetown	Weston	13.5	GO	Hwy. No. 427	22' 10.5"	4	GT1	15	-45	Rework
Georgetown	Halton	14.56	CN	Trueman St. Pedestrian Bridge	22' 5"	2	GT1	18	-185	Rework
Georgetown	Halton	18.16	CN	Hwy. No. 7	22' 8"	2	GT2	19	-109	Rework
Georgetown	Halton	24.09	CN	Main Street	22' 6"	1	GT3	20	-160	Rework
Georgetown	GEXR Guelph	62.44	CN	Margaret Ave.	22' 1"	1	GT3	21	-288	Rework

Option 2 — 19 Structures to be Reworked

GO Line	Subdivision	Mileage	Owner	Crossing Description	GO Clearance	No. of Electrified Tracks	Corridor Section	Cost Section	Delta (Normal)	Rework or Rebuild
Georgetown	USRC	0.69	GO	Spadina Avenue	21' 11.77"	8	UW1	1	-318	Rework
Lakeshore West	Oakville	1.57	GO	Strachan Ave.	22' 8"	5	LW1	3	-109	Rework
Lakeshore West	Oakville	5.61	GO	Q.E.W (two track)	22' 10"	4	LW1	4	-60	Rework
Lakeshore West	Oakville	9.41	CN	Brown's Line	22' 3"	4	LW1	5	-237	Rework
Lakeshore West	Oakville	18.77	CN	Royal Windsor Dr. (HWY. No.122)	22' 9"	4	LW1	5	-84	Rework
Lakeshore West	Oakville	31.28	CN	Drury Lane Pedestrian Bridge	22' 5"	3	LW2	6	-185	Rework
Lakeshore West	Oakville	32.71	CN	Q.E.W.	22' 5"	3	LW2	6	-185	Rework
Lakeshore West	Oakville	35.35	CN	Lemonville Rd.	22' 11"	3	LW2	6	-32	Rework
Lakeshore West	Oakville	36.37	CN	Snake Rd.	22' 8"	3	LW2	6	-109	Rework
Lakeshore West	Oakville	36.63	CN	Plains Rd. West	22' 7"	3	LW2	6	-136	Rework
Lakeshore West	Oakville	36.67	CN	Spring Garden RD.	22' 9"	3	LW2	6	-84	Rework
Lakeshore West	Oakville	39.3	CN	James St.	23' 3"	2	LW2	8	-237	Rework
Lakeshore East	Kingston	322.51	CN	Markham Hwy No. 48	22' 6"	3	LE1	31	-160	Rework
Lakeshore East	GO Sub	0.35	GO	York Sub	22' 5"	2	LE1	32	-188	Rework
Lakeshore East	GO Sub	1.92	GO	Brock Rd.	22' 9.6"	2	LE2	33	-69	Rework
Lakeshore East	Belleville	175.08	CP	Stevenson Rd. S.	22' 9.5"	2	LE2	35	-69	Rework
Lakeshore East	Belleville	174.04	CP	Simcoe St. S.	22' 5"	2	LE2	35	-191	Rework
Lakeshore East	Belleville	173.94	CP	Albert St.	22' 4'	2	LE2	35	-221	Rework
Lakeshore East	Belleville	172.75	CP	Farewell St.	22'	2	LE2	35	-313	Rework

Option 3 — 24 Structures to be Reworked

GO Line	Subdivision	Mileage	Owner	Crossing Description	GO Clearance	No. of Electrified Tracks	Corridor Section	Cost Section	Delta (Normal)	Rework or Rebuild
Georgetown	USRC	0.69	GO	Spadina Avenue	21' 11.77"	8	UW1	1	-318	Rework
Lakeshore West	Oakville	1.57	GO	Strachan Ave.	22' 8"	5	LW1	3	-109	Rework
Lakeshore West	Oakville	5.61	GO	Q.E.W (two track)	22' 10"	4	LW1	4	-60	Rework
Lakeshore West	Oakville	9.41	CN	Brown's Line	22' 3"	4	LW1	5	-237	Rework
Lakeshore West	Oakville	18.77	CN	Royal Windsor Dr. (HWY. No.122)	22' 9"	4	LW1	5	-84	Rework
Lakeshore West	Oakville	31.28	CN	Drury Lane Pedestrian Bridge	22' 5"	3	LW2	6	-185	Rework
Lakeshore West	Oakville	32.71	CN	Q.E.W.	22' 5"	3	LW2	6	-185	Rework
Lakeshore West	Oakville	35.35	CN	Lemonville Rd.	22' 11"	3	LW2	6	-32	Rework
Lakeshore West	Oakville	36.37	CN	Snake Rd.	22' 8"	3	LW2	6	-109	Rework
Lakeshore West	Oakville	36.63	CN	Plains Rd. West	22' 7"	3	LW2	6	-136	Rework
Lakeshore West	Oakville	36.67	CN	Spring Garden RD.	22' 9"	3	LW2	6	-84	Rework
Lakeshore West	Oakville	39.3	CN	James St.	23' 3"	2	LW2	8	-237	Rework
Lakeshore East	Kingston	322.51	CN	Markham Hwy No. 48	22' 6"	3	LE1	31	-160	Rework
Lakeshore East	GO Sub	0.35	GO	York Sub	22' 5"	2	LE1	32	-188	Rework
Lakeshore East	GO Sub	1.92	GO	Brock Rd.	22' 9.6"	2	LE2	33	-69	Rework
Lakeshore East	Belleville	175.08	CP	Stevenson Rd. S.	22' 9.5"	2	LE2	35	-69	Rework
Lakeshore East	Belleville	174.04	CP	Simcoe St. S.	22' 5"	2	LE2	35	-191	Rework
Lakeshore East	Belleville	173.94	CP	Albert St.	22' 4'	2	LE2	35	-221	Rework
Lakeshore East	Belleville	172.75	CP	Farewell St.	22'	2	LE2	35	-313	Rework
Georgetown	Weston	13.5	GO	Hwy. No. 427	22' 10.5"	4	GT1	15	-45	Rework
Georgetown	Halton	14.56	CN	Trueman St. Pedestrian Bridge	22' 5"	2	GT1	18	-185	Rework
Georgetown	Halton	18.16	CN	Hwy. No. 7	22' 8"	2	GT2	19	-109	Rework
Georgetown	Halton	24.09	CN	Main Street	22' 6"	1	GT3	20	-160	Rework
Georgetown	GEXR Guelph	62.44	CN	Margaret Ave.	22' 1"	1	GT3	21	-288	Rework

Reworks by Option

Option 11 — 24 Structures to be Reworked

GO Line	Subdivision	Mileage	Owner	Crossing Description	GO Clearance	No. of Electrified Tracks	Corridor Section	Cost Section	Delta (Normal)	Rework or Rebuild
Georgetown	USRC	0.69	GO	Spadina Avenue	21' 11.77"	8	UW1	1	-318	Rework
Lakeshore West	Oakville	1.57	GO	Strachan Ave.	22' 8"	5	LW1	3	-109	Rework
Lakeshore West	Oakville	5.61	GO	Q.E.W (two track)	22' 10"	4	LW1	4	-60	Rework
Lakeshore West	Oakville	9.41	CN	Brown's Line	22' 3"	4	LW1	5	-237	Rework
Lakeshore West	Oakville	18.77	CN	Royal Windsor Dr. (HWY. No.122)	22' 9"	4	LW1	5	-84	Rework
Lakeshore West	Oakville	31.28	CN	Drury Lane Pedestrian Bridge	22' 5"	3	LW2	6	-185	Rework
Lakeshore West	Oakville	32.71	CN	Q.E.W.	22' 5"	3	LW2	6	-185	Rework
Lakeshore West	Oakville	35.35	CN	Lemonville Rd.	22' 11"	3	LW2	6	-32	Rework
Lakeshore West	Oakville	36.37	CN	Snake Rd.	22' 8"	3	LW2	6	-109	Rework
Lakeshore West	Oakville	36.63	CN	Plains Rd. West	22' 7"	3	LW2	6	-136	Rework
Lakeshore West	Oakville	36.67	CN	Spring Garden RD.	22' 9"	3	LW2	6	-84	Rework
Lakeshore West	Oakville	39.3	CN	James St.	23' 3"	2	LW2	8	-237	Rework
Lakeshore East	Kingston	322.51	CN	Markham Hwy No. 48	22' 6"	3	LE1	31	-160	Rework
Lakeshore East	GO Sub	0.35	GO	York Sub	22' 5"	2	LE1	32	-188	Rework
Lakeshore East	GO Sub	1.92	GO	Brock Rd.	22' 9.6"	2	LE2	33	-69	Rework
Lakeshore East	Belleville	175.08	CP	Stevenson Rd. S.	22' 9.5"	2	LE2	35	-69	Rework
Lakeshore East	Belleville	174.04	CP	Simcoe St. S.	22' 5"	2	LE2	35	-191	Rework
Lakeshore East	Belleville	173.94	CP	Albert St.	22' 4'	2	LE2	35	-221	Rework
Lakeshore East	Belleville	172.75	CP	Farewell St.	22'	2	LE2	35	-313	Rework
Georgetown	Weston	13.5	GO	Hwy. No. 427	22' 10.5"	4	GT1	15	-45	Rework
Georgetown	Halton	14.56	CN	Trueman St. Pedestrian Bridge	22' 5"	2	GT1	18	-185	Rework
Georgetown	Halton	18.16	CN	Hwy. No. 7	22' 8"	2	GT2	19	-109	Rework
Georgetown	Halton	24.09	CN	Main Street	22' 6"	1	GT3	20	-160	Rework
Georgetown	GEXR Guelph	62.44	CN	Margaret Ave.	22' 1"	1	GT3	21	-288	Rework

Option 15 — 30 Structures to be Reworked

GO Line	Subdivision	Mileage	Owner	Crossing Description	GO Clearance	No. of Electrified Tracks	Corridor Section	Cost Section	Delta (Normal)	Rework or Rebuild
Georgetown	USRC	0.69	GO	Spadina Avenue	21' 11.77"	8	UW1	1	-318	Rework
Lakeshore West	Oakville	1.57	GO	Strachan Ave.	22' 8"	5	LW1	3	-109	Rework
Lakeshore West	Oakville	5.61	GO	Q.E.W (two track)	22' 10"	4	LW1	4	-60	Rework
Lakeshore West	Oakville	9.41	CN	Brown's Line	22' 3"	4	LW1	5	-237	Rework
Lakeshore West	Oakville	18.77	CN	Royal Windsor Dr. (HWY. No.122)	22' 9"	4	LW1	5	-84	Rework
Lakeshore West	Oakville	31.28	CN	Drury Lane Pedestrian Bridge	22' 5"	3	LW2	6	-185	Rework
Lakeshore West	Oakville	32.71	CN	Q.E.W.	22' 5"	3	LW2	6	-185	Rework
Lakeshore West	Oakville	35.35	CN	Lemonville Rd.	22' 11"	3	LW2	6	-32	Rework
Lakeshore West	Oakville	36.37	CN	Snake Rd.	22' 8"	3	LW2	6	-109	Rework
Lakeshore West	Oakville	36.63	CN	Plains Rd. West	22' 7"	3	LW2	6	-136	Rework
Lakeshore West	Oakville	36.67	CN	Spring Garden RD.	22' 9"	3	LW2	6	-84	Rework
Lakeshore West	Oakville	39.3	CN	James St.	23' 3"	2	LW2	8	-237	Rework
Lakeshore East	Kingston	322.51	CN	Markham Hwy No. 48	22' 6"	3	LE1	31	-160	Rework
Lakeshore East	GO Sub	0.35	GO	York Sub	22' 5"	2	LE1	32	-188	Rework
Lakeshore East	GO Sub	1.92	GO	Brock Rd.	22' 9.6"	2	LE2	33	-69	Rework
Lakeshore East	Belleville	175.08	CP	Stevenson Rd. S.	22' 9.5"	2	LE2	35	-69	Rework
Lakeshore East	Belleville	174.04	CP	Simcoe St. S.	22' 5"	2	LE2	35	-191	Rework
Lakeshore East	Belleville	173.94	CP	Albert St.	22' 4'	2	LE2	35	-221	Rework
Lakeshore East	Belleville	172.75	CP	Farewell St.	22'	2	LE2	35	-313	Rework
Georgetown	Weston	13.5	GO	Hwy. No. 427	22' 10.5"	4	GT1	15	-45	Rework
Georgetown	Halton	14.56	CN	Trueman St. Pedestrian Bridge	22' 5"	2	GT1	18	-185	Rework
Georgetown	Halton	18.16	CN	Hwy. No. 7	22' 8"	2	GT2	19	-109	Rework
Georgetown	Halton	24.09	CN	Main Street	22' 6"	1	GT3	20	-160	Rework
Georgetown	GEXR Guelph	62.44	CN	Margaret Ave.	22' 1"	1	GT3	21	-288	Rework
Barrie	Newmarket	3.37	GO	Dundas Street	22.41	2	BA1	22	-188	Rework
Barrie	Newmarket	8.8	GO	Hwy 401	22.8	2	BA1	22	-69	Rework
Barrie	Newmarket	26.5	GO	Bathurst Street, Vaughn	22' 11"	2	BA1	22	-45	Rework
Barrie	Newmarket	33.95	GO	Queen Street, Newmarket	22' 11.5"	2	BA1	22	-29	Rework
Barrie	Newmarket	53.7	GO	6th Line	22' 4"	1	BA2	23	-206	Rework
Barrie	Newmarket	60.3	GO	Big Bay Point Road	22' 9"	1	BA2	24	-90	Rework

Reworks by Option

Option 18 41 Structures to be Reworked

GO Line	Subdivision	Mileage	Owner	Crossing Description	GO Clearance	No. of Electrified Tracks	Corridor Section	Cost Section	Delta (Normal)	Rework or Rebuild
Georgetown	USRC	0.69	GO	Spadina Avenue	21' 11.77"	8	UW1	1	-318	Rework
Lakeshore West	Oakville	1.57	GO	Strachan Ave.	22' 8"	5	LW1	3	-109	Rework
Lakeshore West	Oakville	5.61	GO	Q.E.W (two track)	22' 10"	4	LW1	4	-60	Rework
Lakeshore West	Oakville	9.41	CN	Brown's Line	22' 3"	4	LW1	5	-237	Rework
Lakeshore West	Oakville	18.77	CN	Royal Windsor Dr. (HWY. No.122)	22' 9"	4	LW1	5	-84	Rework
Lakeshore West	Oakville	31.28	CN	Drury Lane Pedestrian Bridge	22' 5"	3	LW2	6	-185	Rework
Lakeshore West	Oakville	32.71	CN	Q.E.W.	22' 5"	3	LW2	6	-185	Rework
Lakeshore West	Oakville	35.35	CN	Lemonville Rd.	22' 11"	3	LW2	6	-32	Rework
Lakeshore West	Oakville	36.37	CN	Snake Rd.	22' 8"	3	LW2	6	-109	Rework
Lakeshore West	Oakville	36.63	CN	Plains Rd. West	22' 7"	3	LW2	6	-136	Rework
Lakeshore West	Oakville	36.67	CN	Spring Garden RD.	22' 9"	3	LW2	6	-84	Rework
Lakeshore West	Oakville	39.3	CN	James St.	23' 3"	2	LW2	8	-237	Rework
Lakeshore West	Hamilton	58.86	CP	King Street	22.94	1	LW3	9	-26	Rework
Lakeshore West	Grimbsy	42.85	CN	Pedestrian overpass (Emerald St.)	22' 7"	1	LW4	10	-136	Rework
Lakeshore East	Kingston	322.51	CN	Markham Hwy No. 48	22' 6"	3	LE1	31	-160	Rework
Lakeshore East	GO Sub	0.35	GO	York Sub	22' 5"	2	LE1	32	-188	Rework
Lakeshore East	GO Sub	1.92	GO	Brock Rd.	22' 9.6"	2	LE2	33	-69	Rework
Lakeshore East	Belleville	175.08	CP	Stevenson Rd. S.	22' 9.5"	2	LE2	35	-69	Rework
Lakeshore East	Belleville	174.04	CP	Simcoe St. S.	22' 5"	2	LE2	35	-191	Rework
Lakeshore East	Belleville	173.94	CP	Albert St.	22' 4'	2	LE2	35	-221	Rework
Lakeshore East	Belleville	172.75	CP	Farewell St.	22'	2	LE2	35	-313	Rework
Georgetown	Weston	13.5	GO	Hwy. No. 427	22' 10.5"	4	GT1	15	-45	Rework
Georgetown	Halton	14.56	CN	Trueman St. Pedestrian Bridge	22' 5"	2	GT1	18	-185	Rework
Georgetown	Halton	18.16	CN	Hwy. No. 7	22' 8"	2	GT2	19	-109	Rework
Georgetown	Halton	24.09	CN	Main Street	22' 6"	1	GT3	20	-160	Rework
Georgetown	GEXR Guelph	62.44	CN	Margaret Ave.	22' 1"	1	GT3	21	-288	Rework
Barrie	Newmarket	3.37	GO	Dundas Street	22.41	2	BA1	22	-188	Rework
Barrie	Newmarket	8.8	GO	Hwy 401	22.8	2	BA1	22	-69	Rework
Barrie	Newmarket	26.5	GO	Bathurst Street, Vaughn	22' 11"	2	BA1	22	-45	Rework
Barrie	Newmarket	33.95	GO	Queen Street, Newmarket	22' 11.5"	2	BA1	22	-29	Rework
Barrie	Newmarket	53.7	GO	6th Line	22' 4"	1	BA2	23	-206	Rework
Barrie	Newmarket	60.3	GO	Big Bay Point Road	22' 9"	1	BA2	24	-90	Rework
Richmond Hill	Bala	2.26	CN	Dundas Street	22' 3"	2	RH1	25	-237	Rework
Richmond Hill	Bala	2.67	CN	Riverdale Park Pedestrian Bridge	22' 4"	2	RH1	25	-212	Rework
Richmond Hill	Bala	3.65	CN	DVP to Bayview Extension	22' 2"	2	RH1	25	-261	Rework
Richmond Hill	Bala	8.94	CN	CP Belleville Subdivision	21' 4"	2	RH1	25	-517	Rework
Richmond Hill	Bala	10.28	CN	Don Mills Road	22' 8"	2	RH1	25	-109	Rework
Richmond Hill	Bala	11.14	CN	York Mills Road	22' 7"	2	RH1	25	-136	Rework
Richmond Hill	Bala	12.16	CN	Hwy 401 South Ramp	22' 3.25"	2	RH1	25	-231	Rework
Stouffville	Uxbridge	56	GO	CP Bellville Sub.	22'	2	ST1	28	-316	Rework
Stouffville	Uxbridge	51.5	GO	14TH Ave.	22' 6"	2	ST1	28	-154	Rework

Rebuilds by Option

Option 1 — 3 Structures to be Rebuilt

GO Line	Subdivision	Mileage	Owner	Crossing Description	GO Clearance	No. of Electrified Tracks	Corridor Section	Cost Section	Delta (Normal)	Rework or Rebuild
Lakeshore West	Oakville	2.69	GO	Dunn Ave.	21' 0"	4	LW1	4	-618	Rebuild
Lakeshore West	Oakville	2.85	GO	Jameson Ave.	21' 11"	4	LW1	4	-337	Rebuild
Lakeshore West	Oakville	3.02	GO	Dowling Ave.	21' 5"	4	LW1	4	-490	Rebuild

Option 2 — 4 Structures to be Rebuilt

GO Line	Subdivision	Mileage	Owner	Crossing Description	GO Clearance	No. of Electrified Tracks	Corridor Section	Cost Section	Delta (Normal)	Rework or Rebuild
Lakeshore East	Kingston	326.5	CN	Birchmount Road	22' 0"	4	UE2	27	-313	Rebuild
Lakeshore West	Oakville	2.69	GO	Dunn Ave.	21' 0"	4	LW1	4	-618	Rebuild
Lakeshore West	Oakville	2.85	GO	Jameson Ave.	21' 11"	4	LW1	4	-337	Rebuild
Lakeshore West	Oakville	3.02	GO	Dowling Ave.	21' 5"	4	LW1	4	-490	Rebuild

Option 3 — 4 Structures to be Rebuilt

GO Line	Subdivision	Mileage	Owner	Crossing Description	GO Clearance	No. of Electrified Tracks	Corridor Section	Cost Section	Delta (Normal)	Rework or Rebuild
Lakeshore East	Kingston	326.5	CN	Birchmount Road	22' 0"	4	UE2	27	-313	Rebuild
Lakeshore West	Oakville	2.69	GO	Dunn Ave.	21' 0"	4	LW1	4	-618	Rebuild
Lakeshore West	Oakville	2.85	GO	Jameson Ave.	21' 11"	4	LW1	4	-337	Rebuild
Lakeshore West	Oakville	3.02	GO	Dowling Ave.	21' 5"	4	LW1	4	-490	Rebuild

Option 11 — 4 Structures to be Rebuilt

GO Line	Subdivision	Mileage	Owner	Crossing Description	GO Clearance	No. of Electrified Tracks	Corridor Section	Cost Section	Delta (Normal)	Rework or Rebuild
Lakeshore East	Kingston	326.5	CN	Birchmount Road	22' 0"	4	UE2	27	-313	Rebuild
Lakeshore West	Oakville	2.69	GO	Dunn Ave.	21' 0"	4	LW1	4	-618	Rebuild
Lakeshore West	Oakville	2.85	GO	Jameson Ave.	21' 11"	4	LW1	4	-337	Rebuild
Lakeshore West	Oakville	3.02	GO	Dowling Ave.	21' 5"	4	LW1	4	-490	Rebuild

Option 13 — 4 Structures to be Rebuilt

GO Line	Subdivision	Mileage	Owner	Crossing Description	GO Clearance	No. of Electrified Tracks	Corridor Section	Cost Section	Delta (Normal)	Rework or Rebuild
Lakeshore East	Kingston	326.5	CN	Birchmount Road	22' 0"	4	UE2	27	-313	Rebuild
Lakeshore West	Oakville	2.69	GO	Dunn Ave.	21' 0"	4	LW1	4	-618	Rebuild
Lakeshore West	Oakville	2.85	GO	Jameson Ave.	21' 11"	4	LW1	4	-337	Rebuild
Lakeshore West	Oakville	3.02	GO	Dowling Ave.	21' 5"	4	LW1	4	-490	Rebuild

Option 18 — 11 Structures to be Rebuilt

GO Line	Subdivision	Mileage	Owner	Crossing Description	GO Clearance	No. of Electrified Tracks	Corridor Section	Cost Section	Delta (Normal)	Rework or Rebuild
Lakeshore East	Kingston	326.5	CN	Birchmount Road	22' 0"	4	UE2	27	-313	Rebuild
Lakeshore West	Oakville	2.69	GO	Dunn Ave.	21' 0"	4	LW1	4	-618	Rebuild
Lakeshore West	Oakville	2.85	GO	Jameson Ave.	21' 11"	4	LW1	4	-337	Rebuild
Lakeshore West	Oakville	3.02	GO	Dowling Ave.	21' 5"	4	LW1	4	-490	Rebuild
Lakeshore West	Hamilton	58.68	CP	Main Street West	20' 5.9"	1	LW3	9	-770	Rebuild
Lakeshore West	Hamilton	58.56	CP	Dunduryn Street South	21' 4.6"	1	LW3	9	-501	Rebuild
Lakeshore West	Hamilton	58.31	CP	Locke Street	20' 9.5"	1	LW3	9	-681	Rebuild
Lakeshore West	Hamilton	58.22	CP	Pearl Street	20' 11.3"	1	LW3	9	-331	Rebuild
Lakeshore West	Hamilton	58.05	CP	Hunter Street Tunnel, North Portal Queen Street, Hamilton	21' 10"	1	LW3	9	-363	Rebuild
Lakeshore West	Hamilton	57.68	CP	Hunter Street Tunnel, South Portal Park Street, Hamilton	21' 0.5"	1	LW3	9	-471	Rebuild
Richmond Hill	Bala	1.98	CN	Queen Street East	22' 1"	2	RH1	25	-285	Rebuild

APPENDIX 8B-3: HORIZONTAL CLEARANCE ANALYSIS

Horizontal Clearance Analysis

In order to assess if there would be sufficient horizontal clearance to allow for electrification in the Reference Case right-of- way , the following steps were undertaken:

- A review of each corridor at identifiable points such as level crossings, bridges and stations was conducted using Google Earth.
- At each location, the existing right-of-way was measured and the number of electrified tracks in the Reference Case noted.
- A determination of whether there is sufficient horizontal clearance was made using the criteria in Table 1.

Table 1 – Minimum Horizontal Clearances by Track Configuration

Track Configuration	Minimum Horizontal Clearance (ft)
1-track	22
2-track	34
3-track	50
4-track	64
5-track	78
6-track	92
8-track	It is assumed that the future sections within UW2 will be constructed to accommodate the required clearances.

The review found that at all identified locations there appeared to be sufficient horizontal clearance to accommodate the structure required for electrification. A detailed analysis should therefore be undertaken upon the surveys to be undertaken at the preliminary design stage. The following tables detail the results of this analysis by GO Line and corridor section.

GO Line	Subdivision	Mileage	Owner	Crossing Type	Crossing Description	GO Clearance	No. of Electrified Tracks	Corridor Section	Cost Section	Width of ROW	OK for Electrification
Lakeshore West	Oakville	1.57	GO	Overhead Bridge	Strachan Ave.	22' 8"	5	LW1	3	100	YES
Lakeshore West	Oakville	1.9	GO	Level Crossing	Foreman's Crossing		5	LW1	3	140	YES
Lakeshore West	Oakville	2.04	GO	Subway	Psgr. Tunnel		4	LW1	4	140	YES
Lakeshore West	Oakville	2.38	GO	Overhead Bridge	Dufferin St.	23' 0"	4	LW1	4	75	YES
Lakeshore West	Oakville	2.69	GO	Overhead Bridge	Dunn Ave.	21' 0"	4	LW1	4	60	YES
Lakeshore West	Oakville	2.85	GO	Overhead Bridge	Jameson Ave.	21' 11"	4	LW1	4	80	YES
Lakeshore West	Oakville	3.02	GO	Overhead Bridge	Dowling Ave.	21' 5"	4	LW1	4	70	YES
Lakeshore West	Oakville	3.54	GO	Overhead Bridge	Sunnyside Beach Pedestrian Overpass	23' 3"	4	LW1	4	100	YES
Lakeshore West	Oakville	3.89	GO	Subway	Parkside Drive		4	LW1	4	100	YES
Lakeshore West	Oakville	4.17	GO	Subway	Colborne Lodge Drive		4	LW1	4	100	YES
Lakeshore West	Oakville	4.54	GO	Subway	Ellis Ave.		4	LW1	4	100	YES
Lakeshore West	Oakville	4.7	GO	Subway	Windermere Ave.		4	LW1	4	100	YES
Lakeshore West	Oakville	4.9	GO	Subway	Riverside Drive (Kingsway)		4	LW1	4	100	YES
Lakeshore West	Oakville	5.15	GO	Subway	No name???????		4	LW1	4	100	YES
Lakeshore West	Oakville	5.32	GO	Subway	TTC Loop		4	LW1	4	100	YES
Lakeshore West	Oakville	5.61	GO	Overhead Bridge	Q.E.W (two track)	22' 10"	4	LW1	4	125	YES
Lakeshore West	Oakville	5.68	GO	Level Crossing	Foreman's Crossing		4	LW1	4	100	YES
Lakeshore West	Oakville	5.82	GO	Subway	Park Lawn Rd.		4	LW1	4	65	YES
Lakeshore West	Oakville	6.67	GO	Subway	Psgr. Tunnel		4	LW1	4	135	YES
Lakeshore West	Oakville	6.77	GO	Subway	Royal York Rd		4	LW1	4	100	YES
Lakeshore West	Oakville	7.46	GO	Overhead Bridge	Islington Ave.	NA	4	LW1	4	80	YES
Lakeshore West	Oakville	8.05	CN	Subway	Kipling Ave.		4	LW1	5	80	YES
Lakeshore West	Oakville	8.77	CN	Subway	30th Street		4	LW1	5	60	YES
Lakeshore West	Oakville	9.41	CN	Overhead Bridge	Brown's Line	22' 3"	4	LW1	5	100	YES
Lakeshore West	Oakville	9.7	CN	Subway	Psgr. Tunnel		4	LW1	5	100	YES
Lakeshore West	Oakville	9.81	CN	Subway	Pedestrian Subway		4	LW1	5	100	YES
Lakeshore West	Oakville	10.18	CN	Subway	Dixie Road		4	LW1	5	45	YES
Lakeshore West	Oakville	10.59	CN	Level Crossing	Haig Blvd.		4	LW1	5	100	YES
Lakeshore West	Oakville	10.84	CN	Level Crossing	Ogden Ave.		4	LW1	5	100	YES
Lakeshore West	Oakville	11.02	CN	Level Crossing	Alexandra Ave.		4	LW1	5	100	YES
Lakeshore West	Oakville	11.47	CN	Subway	Cawthra Rd.		4	LW1	5	60	YES
Lakeshore West	Oakville	12.02	CN	Level Crossing	Revus Ave.		4	LW1	5	50	YES
Lakeshore West	Oakville	12.73	CN	Subway	Hwy. 10 Hurontario St.		4	LW1	5	80	YES
Lakeshore West	Oakville	12.81	CN	Subway	Psgr. Tunnel		4	LW1	5	100	YES
Lakeshore West	Oakville	13.11	CN	Level Crossing	Stavebank Rd.		4	LW1	5	100	YES
Lakeshore West	Oakville	13.39	CN	Subway	Mississauga Rd.		4	LW1	5	100	YES
Lakeshore West	Oakville	15.06	CN	Level Crossing	Lorne Park Rd.		4	LW1	5	90	YES
Lakeshore West	Oakville	16.09	CN	Level Crossing	Clarkson Rd.		4	LW1	5	90	YES
Lakeshore West	Oakville	16.62	CN	Subway	Southdown Rd. (dual)	22' 5"	4	LW1	5	120	YES
Lakeshore West	Oakville	16.65	CN	Subway	Psgr. Tunnel		4	LW1	5	120	YES
Lakeshore West	Oakville	16.89	CN	Subway	Psgr. Tunnel		4	LW1	5	100	YES
Lakeshore West	Oakville	17.92	CN	Subway	Winston Churchill Blvd.		4	LW1	5	45	YES
Lakeshore West	Oakville	18.67	CN	Subway	Ford Drive		4	LW1	5	45	YES
Lakeshore West	Oakville	18.77	CN	Overhead Bridge	Royal Windsor Dr.HWY. No.122)	22' 9"	4	LW1	5	100	YES
Lakeshore West	Oakville	20.55	CN	Level Crossing	Chartwell Rd.		4	LW1	5	100	YES
Lakeshore West	Oakville	21.23	CN	Subway	Trafalgar Rd.		4	LW1	5	80	YES
Lakeshore West	Oakville	21.33	CN	Subway	Psgr. Tunnel		4	LW1	5	100	YES
Lakeshore West	Oakville	21.7	CN	Subway	Cross Ave.		3	LW2	6	40	YES
Lakeshore West	Oakville	21.94	CN	Level Crossing	Kerr St.		3	LW2	6	100	YES
Lakeshore West	Oakville	22.59	CN	Subway	Dorval Drive		3	LW2	6	100	YES
Lakeshore West	Oakville	23.13	CN	Level Crossing	Fourth Line		3	LW2	6	90	YES
Lakeshore West	Oakville	24.42	CN	Subway	Third Line		3	LW2	6	80	YES
Lakeshore West	Oakville	25.69	CN	Subway	Bronte Rd.		3	LW2	6	100	YES
Lakeshore West	Oakville	26.2	CN	Level Crossing	Emergency Fire Crossing (McPherson Rd.)		3	LW2	6	100	YES
Lakeshore West	Oakville	26.96	CN	Level Crossing	Burloak Drive		3	LW2	6	90	YES
Lakeshore West	Oakville	28.25	CN	Subway	Appleby Line		3	LW2	6	60	YES
Lakeshore West	Oakville	29.53	CN	Subway	Walker's Line		3	LW2	6	45	YES
Lakeshore West	Oakville	30.81	CN	Subway	Guelph Line		3	LW2	6	60	YES
Lakeshore West	Oakville	31.28	CN	Overhead Bridge	Drury LanePedestrian Bridge	22' 5"	3	LW2	6	100	YES
Lakeshore West	Oakville	31.5	CN	Subway	Passenger Tunnel		3	LW2	6	100	YES
Lakeshore West	Oakville	31.92	CN	Subway	Brant St.		3	LW2	6	50	YES
Lakeshore West	Oakville	32.3	CN	Subway	Plains Rd.		3	LW2	6	56	YES
Lakeshore West	Oakville	32.71	CN	Overhead Bridge	Q.E.W.	22' 5"	3	LW2	6	100	YES
Lakeshore West	Oakville	33.31	CN	Level Crossing	King RD.		3	LW2	6	100	YES
Lakeshore West	Oakville	34.75	CN	Overhead Bridge	Waterdown Rd.	23' 0"	3	LW2	6	100	YES
Lakeshore West	Oakville	35.25	CN	Subway	Hidden Valley Rd.		3	LW2	6	100	YES
Lakeshore West	Oakville	35.35	CN	Overhead Bridge	Lemonville Rd.	22' 11"	3	LW2	6	100	YES
Lakeshore West	Oakville	36.37	CN	Overhead Bridge	Snake Rd.	22' 8"	3	LW2	6	60	YES
Lakeshore West	Oakville	36.63	CN	Overhead Bridge	Plains Rd. West	22' 7"	3	LW2	6	60	YES
Lakeshore West	Oakville	36.67	CN	Overhead Bridge	Spring Garden RD.	22' 9"	3	LW2	6	60	YES
Lakeshore West	Oakville	36.71	CN	Level Crossing	Foreman's Crossing		3	LW2	6	60	YES
Lakeshore West	Oakville	36.95	CN	Level Crossing	Foreman's Crossing		2	LW2	7	60	YES
Lakeshore West	Oakville	36.98	CN	Subway	Valley Inn Rd.		2	LW2	7	30	YES
Lakeshore West	Hamilton	58.93	CP	Overhead Bridge	Hunt Street	26.43	1	LW3	9	50	YES
Lakeshore West	Hamilton	58.88	CP	Overhead Bridge	Church Access Bridge	25.83	1	LW3	9	50	YES
Lakeshore West	Hamilton	58.86	CP	Overhead Bridge	King Street	22.94	1	LW3	9	50	YES
Lakeshore West	Hamilton	58.68	CP	Overhead Bridge	Main Street West	20' 5.9"	1	LW3	9	50	YES
Lakeshore West	Oakville	39.11	CN	Overhead Bridge	Bay St.	25' 0"	2	LW2	8	80	YES
Lakeshore West	Hamilton	58.56	CP	Overhead Bridge	Dunduryn Street South	21' 4.6"	1	LW3	9	50	YES
Lakeshore West	Oakville	39.22	CN	Overhead Bridge	MacNab St.	27' 1"	2	LW2	8	80	YES

GO Line	Subdivision	Mileage	Owner	Crossing Type	Crossing Description	GO Clearance	No. of Electrified Tracks	Corridor Section	Cost Section	Width of ROW	OK for Electrification
Lakeshore West	Oakville	39.3	CN	Overhead Bridge	James St.	23' 3"	2	LW2	8	80	YES
Lakeshore West	Hamilton	58.31	CP	Overhead Bridge	Locke Street	20' 9.5"	1	LW3	9	50	YES
Lakeshore West	Hamilton	58.22	CP	Overhead Bridge	Pearl Street	20' 11.3"	1	LW3	9	50	YES
Lakeshore West	Grimbsy	43.51	CN	Overhead Bridge	John Street, Hamilton	23' 2"	1	LW4	10	100	YES
Lakeshore West	Grimbsy	43.46	CN	Subway	Catherine St.		1	LW4	10	100	YES
Lakeshore West	Grimbsy	43.38	CN	Overhead Bridge	Mary St.	24' 2.6"	1	LW4	10	100	YES
Lakeshore West	Hamilton	58.05	CP	Overhead Bridge	Hunter Street Tunnel, North PortalQuee	21' 10"	1	LW4	9	40	YES
Lakeshore West	Grimbsy	43.25	CN	Overhead Bridge	Ferguson St.	23'	1	LW4	10	100	YES
Lakeshore West	Grimbsy	43.14	CN	Level Crossing	Wellington St.		1	LW4	10	100	YES
Lakeshore West	Grimbsy	42.99	CN	Level Crossing	Victoria Ave.		1	LW4	10	100	YES
Lakeshore West	Hamilton	57.68	CP	Overhead Bridge	Hunter Street Tunnel, South PortalPark	21' 0.5"	1	LW4	9	40	YES
Lakeshore West	Grimbsy	42.85	CN	Overhead Bridge	Pedestrian overpass (Emerald St.)	22' 7"	1	LW4	10	100	YES
Lakeshore West	Grimbsy	42.61	CN	Level Crossing	Wenworth St.		1	LW4	10	90	YES
Lakeshore West	Grimbsy	42.27	CN	Subway	Birch St.		1	LW4	10	90	YES
Lakeshore West	Grimbsy	42.07	CN	Level Crossing	Sherman Ave.		1	LW4	10	90	YES
Lakeshore West	Grimbsy	41.82	CN	Level Crossing	Lottridge Ave.		1	LW4	10	90	YES
Lakeshore West	Grimbsy	41.54	CN	Level Crossing	Gage Ave.		1	LW4	10	90	YES
Lakeshore West	Grimbsy	41.18	CN	Subway	T.H. & B. (Foreign Owned Trackage)		1	LW4	10	90	YES
Lakeshore West	Grimbsy	41.02	CN	Level Crossing	Ottawa St.		1	LW4	10	80	YES
Lakeshore West	Grimbsy	40.48	CN	Subway	Kenilworth Ave.		1	LW4	10	80	YES
Lakeshore West	Grimbsy	39.5	CN	Level Crossing	Parkdale Ave.		1	LW4	10	80	YES
Lakeshore West	Grimbsy	39.04	CN	Level Crossing	Woodward Ave.		1	LW4	10	80	YES
Lakeshore West	Grimbsy	38.65	CN	Subway	Red Hill Creek Expressway		1	LW4	10	30	YES
Lakeshore West	Grimbsy	38.56	CN	Level Crossing	Nash Rd.		1	LW4	10	90	YES
Lakeshore West	Grimbsy	38.31	CN	Level Crossing	Kenora Rd.		1	LW4	10	90	YES
Lakeshore West	Grimbsy	38.04	CN	Subway	Hwy 20 Centennial Pkwy.		1	LW4	10	90	YES
Lakeshore West	Grimbsy	37.56	CN	Subway	Lake Ave. N.		1	LW4	10	45	YES
Lakeshore West	Grimbsy	36.97	CN	Level Crossing	Gray's Rd.		1	LW4	10	100	YES
Lakeshore West	Grimbsy	36.39	CN	Level Crossing	Green's Rd.		1	LW4	10	100	YES
Lakeshore West	Grimbsy	35.87	CN	Level Crossing	Millan Rd.		1	LW4	10	100	YES
Lakeshore West	Grimbsy	35.32	CN	Level Crossing	Dewitt Rd.		1	LW4	10	90	YES
Lakeshore West	Grimbsy	34.84	CN	Subway	Fruitland Rd. (H-W Reg. Rd. 455)		1	LW4	10	90	YES
Lakeshore West	Grimbsy	34.29	CN	Level Crossing	Jones Rd.		1	LW4	10	100	YES
Lakeshore West	Grimbsy	33.74	CN	Level Crossing	Glover Rd (H-W Reg. Rd. 452)		1	LW4	10	100	YES
Lakeshore West	Grimbsy	33.22	CN	Level Crossing	McNeilly Rd.		1	LW4	10	100	YES
Lakeshore West	Grimbsy	32.69	CN	Level Crossing	Lewis Rd.		1	LW4	10	100	YES
Lakeshore West	Grimbsy	32.17	CN	Level Crossing	Winona Rd.		1	LW4	10	100	YES
Lakeshore West	Grimbsy	31.67	CN	Level Crossing	50 Road (H-W Reg. Rd. 450)		1	LW4	10	100	YES
Lakeshore West	Grimbsy	31.41	CN	Subway	Private (Bridgman Lane)		1	LW4	10	80	YES
Lakeshore West	Grimbsy	31.39	CN	Subway	Conc. No. 1		1	LW4	10	80	YES
Lakeshore West	Grimbsy	30.9	CN	Level Crossing	Kelson Ave.		1	LW4	10	80	YES
Lakeshore West	Grimbsy	30.39	CN	Level Crossing	Oakes Rd. N		1	LW4	10	80	YES
Lakeshore West	Grimbsy	29.87	CN	Level Crossing	Hunter Rd.		1	LW4	10	80	YES
Lakeshore West	Grimbsy	29.37	CN	Level Crossing	Casablanca Boulevard (H-W Reg. Rd. 10)		1	LW4	10	80	YES
Lakeshore West	Grimbsy	28.84	CN	Level Crossing	Roberts Rd.		1	LW4	10	100	YES
Lakeshore West	Grimbsy	28.32	CN	Level Crossing	Kerman Ave.		1	LW4	10	80	YES
Lakeshore West	Grimbsy	27.64	CN	Overhead Bridge	Christie St.	23' 0"	1	LW4	10	60	YES
Lakeshore West	Grimbsy	27.57	CN	Subway	Elizabeth St.		1	LW4	10	60	YES
Lakeshore West	Grimbsy	27.42	CN	Level Crossing	Ontario St.		1	LW4	10	60	YES
Lakeshore West	Grimbsy	27.25	CN	Overhead Bridge	Maple Ave.	23' 0"	1	LW4	10	60	YES
Lakeshore West	Grimbsy	26.79	CN	Level Crossing	Nelles Rd.		1	LW4	10	80	YES
Lakeshore West	Grimbsy	25.67	CN	Subway	Bartlett Ave. (Reg. Rd. No. 14)		1	LW4	10	80	YES
Lakeshore West	Grimbsy	24.79	CN	Level Crossing	Durham Rd.		1	LW4	10	80	YES
Lakeshore West	Grimbsy	24.27	CN	Level Crossing	Mountainview Rd.		1	LW4	10	80	YES
Lakeshore West	Grimbsy	23.74	CN	Level Crossing	Lincoln Ave		1	LW4	10	80	YES
Lakeshore West	Grimbsy	23.21	CN	Level Crossing	Ontario St. (Niagara Reg. Rd. 18)		1	LW4	10	80	YES
Lakeshore West	Grimbsy	22.67	CN	Level Crossing	Bartlett Rd.		1	LW4	10	80	YES
Lakeshore West	Grimbsy	22.13	CN	Level Crossing	Sann Rd.		1	LW4	10	80	YES
Lakeshore West	Grimbsy	21.76	CN	Level Crossing	Farm Xing.		1	LW4	10	80	YES
Lakeshore West	Grimbsy	21.61	CN	Level Crossing	Tufford Rd.		1	LW4	10	80	YES
Lakeshore West	Grimbsy	21.09	CN	Level Crossing	Merritt Rd.		1	LW4	10	80	YES
Lakeshore West	Grimbsy	20.59	CN	Level Crossing	Farm Xing.		1	LW4	10	80	YES
Lakeshore West	Grimbsy	20.51	CN	Level Crossing	Maple Grove Rd.		1	LW4	10	80	YES
Lakeshore West	Grimbsy	20.01	CN	Level Crossing	Cherry Ave.		1	LW4	10	80	YES
Lakeshore West	Grimbsy	19.67	CN	Level Crossing	Farm Xing		1	LW4	10	80	YES
Lakeshore West	Grimbsy	19.47	CN	Level Crossing	Martin Rd.		1	LW4	10	80	YES
Lakeshore West	Grimbsy	18.93	CN	Subway	Victoria Ave. Reg. Rd. 24		1	LW4	10	80	YES
Lakeshore West	Grimbsy	18.65	CN	Level Crossing	23rd St.		1	LW4	10	80	YES
Lakeshore West	Grimbsy	18.13	CN	Level Crossing	21st St.		1	LW4	10	80	YES
Lakeshore West	Grimbsy	17.19	CN	Level Crossing	Jordan Rd. Reg. Rd. 26		1	LW4	10	80	YES
Lakeshore West	Grimbsy	16.65	CN	Level Crossing	15th St. Louth Twp.		1	LW4	10	80	YES
Lakeshore West	Grimbsy	16.5	CN	Level Crossing	Farm Xing.		1	LW4	10	80	YES
Lakeshore West	Grimbsy	15	CN	Overhead Bridge	Conc. O. 3 Lot 8-9 (9th St)	23' 4"	1	LW4	10	80	YES
Lakeshore West	Grimbsy	14.45	CN	Overhead Bridge	Reg. Rd. No. 34 Reg. Mun. Niagara (7th	23' 2"	1	LW4	10	80	YES
Lakeshore West	Grimbsy	13.91	CN	Subway	Middle Rd. Reg. Rd. 77 (4th Ave.)		1	LW4	10	80	YES
Lakeshore West	Grimbsy	13.39	CN	Level Crossing	Third St. Louth Conc. 4		1	LW4	10	80	YES
Lakeshore West	Grimbsy	12.85	CN	Level Crossing	First St. Louth Townline		1	LW4	10	80	YES
Lakeshore West	Grimbsy	12.55	CN	Level Crossing	Vansikle Rd.		1	LW4	10	80	YES
Lakeshore West	Grimbsy	12.02	CN	Level Crossing	Louth St. Reg. Rd. 72		1	LW4	10	80	YES

GO Line	Subdivision	Mileage	Owner	Crossing Type	Crossing Description	GO Clearance	No. of Electrified Tracks	Corridor Section	Cost Section	Width of ROW	OK for Electrification
Lakeshore East	USRC	333.32	GO	Subway	Jarvis St		6	UE1	2	100	YES
Lakeshore East	USRC	333.12	GO	Subway	Sherbourne St.		6	UE1	2	86	YES
Lakeshore East	USRC	332.85	GO	Subway	Parliament St.		6	UE1	2	100	YES
Lakeshore East	USRC	332.6	GO	Subway	Cherry St.		6	UE1	2	100	YES
Lakeshore East	Kingston	332.13	CN	Subway	Don River Parkway		4	UE2	27	75	YES
Lakeshore East	Kingston	331.89	CN	Subway	Eastern Ave.		4	UE2	27	75	YES
Lakeshore East	Kingston	331.68	CN	Subway	Queen St. E.		4	UE2	27	70	YES
Lakeshore East	Kingston	331.58	CN	Level Crossing	Foreman's Turnaround		4	UE2	27	90	YES
Lakeshore East	Kingston	331.39	CN	Subway	Dundas St. E.		4	UE2	27	70	YES
Lakeshore East	Kingston	331.3	CN	Subway	Logan Ave.		4	UE2	27	70	YES
Lakeshore East	Kingston	331.12	CN	Subway	Carlaw Ave.		4	UE2	27	60	YES
Lakeshore East	Kingston	331.09	CN	Subway	Gerrard St. E.		4	UE2	27	60	YES
Lakeshore East	Kingston	330.96	CN	Overhead Bridge	Pape Ave. Pedestrian Overpass	23'8"	4	UE2	27	80	YES
Lakeshore East	Kingston	330.68	CN	Subway	Jones Ave.		4	UE2	27	54	YES
Lakeshore East	Kingston	330.28	CN	Subway	Greenwood Ave.		4	UE2	27	60	YES
Lakeshore East	Kingston	330.08	CN	Subway	Woodfield Rd. Pedestrian Underpass		4	UE2	27	100	YES
Lakeshore East	Kingston	329.8	CN	Subway	Coxwell Ave.		4	UE2	27	55	YES
Lakeshore East	Kingston	329.23	CN	Subway	Woodbine Ave.		4	UE2	27	60	YES
Lakeshore East	Kingston	328.64	CN	Overhead Bridge	Main St.	23' 1"	4	UE2	27	100	YES
Lakeshore East	Kingston	328.6	CN	Overhead Bridge	Danforth Platform Pedestrian Overhead	23' 6"	4	UE2	27	100	YES
Lakeshore East	Kingston	327.93	CN	Subway	Victoria Park Ave.		4	UE2	27	150	YES
Lakeshore East	Kingston	327.16	CN	Subway	Warden Avenue		4	UE2	27	55	YES
Lakeshore East	Kingston	327.01	CN	Subway	Danforth Avenue		4	UE2	27	60	YES
Lakeshore East	Kingston	326.5	CN	Overhead Bridge	Birchmount Road	22' 0"	4	UE2	27	100	YES
Lakeshore East	Kingston	326.15	CN	Overhead Bridge	Woodrow Ave.	23' 6"	4	UE2	27	80	YES
Lakeshore East	Kingston	325.76	CN	Overhead Bridge	Kennedy Rd	23" 6"	4	UE2	27	80	YES
Lakeshore East	Kingston	325.35	CN	Level Crossing	Mtce. Xing		3	LE1	31	80	YES
Lakeshore East	Kingston	325.3	CN	Subway	Passenger Tunnel		3	LE1	31	80	YES
Lakeshore East	Kingston	325.22	CN	Level Crossing	Mtce. Xing		3	LE1	31	120	YES
Lakeshore East	Kingston	325.2	CN	Subway	St. Clair Ave. East		3	LE1	31	90	YES
Lakeshore East	Kingston	324.97	CN	Subway	Midland Ave.		3	LE1	31	70	YES
Lakeshore East	Kingston	324.22	CN	Subway	Brimley Rd.		3	LE1	31	90	YES
Lakeshore East	Kingston	323.65	CN	Subway	McCowan Rd.		3	LE1	31	60	YES
Lakeshore East	Kingston	323.24	CN	Subway	Psgr. Tunnel		3	LE1	31	100	YES
Lakeshore East	Kingston	323.21	CN	Subway	Psgr. Tunnel		3	LE1	31	100	YES
Lakeshore East	Kingston	323.2	CN	Level Crossing	Mtce. Xing.		3	LE1	31	100	YES
Lakeshore East	Kingston	323.19	CN	Subway	Eglinton Ave.		3	LE1	31	45	YES
Lakeshore East	Kingston	322.51	CN	Overhead Bridge	Markham Hwy No. 48	22' 6"	3	LE1	31	80	YES
Lakeshore East	Kingston	321.97	CN	Level Crossing	Scarborough Golf Club Rd.		3	LE1	31	80	YES
Lakeshore East	Kingston	321.45	CN	Overhead Bridge	Kingston Rd. Hwy. No. 2	NA	3	LE1	31	80	YES
Lakeshore East	Kingston	321.4	CN	Level Crossing	Mtce. Xing		3	LE1	31	80	YES
Lakeshore East	Kingston	321.39	CN	Subway	Psgr. Tunnel		3	LE1	31	80	YES
Lakeshore East	Kingston	321.38	CN	Subway	Psgr. Tunnel		3	LE1	31	80	YES
Lakeshore East	Kingston	321.2	CN	Level Crossing	Mtce. Xing		3	LE1	31	100	YES
Lakeshore East	Kingston	320.95	CN	Level Crossing	Galloway Rd.		3	LE1	31	80	YES
Lakeshore East	Kingston	320.65	CN	Level Crossing	Popular Rd.		3	LE1	31	80	YES
Lakeshore East	Kingston	320.41	CN	Level Crossing	Morningside Ave.		3	LE1	31	80	YES
Lakeshore East	Kingston	319.9	CN	Level Crossing	Manse Rd.		3	LE1	31	80	YES
Lakeshore East	Kingston	318.88	CN	Level Crossing	Beechgrove Dr.		3	LE1	31	80	YES
Lakeshore East	Kingston	317.7	CN	Subway	Port Union Pedestrian Pathway		3	LE1	31	75	YES
Lakeshore East	Kingston	317.4	CN	Subway	Psgr. Tunnel		3	LE1	31	80	YES
Lakeshore East	Kingston	317.3	CN	Subway	Psgr. Tunnel		3	LE1	31	80	YES
Lakeshore East	Kingston	317.22	CN	Level Crossing	Chesterton Shores		3	LE1	31	80	YES
Lakeshore East	Kingston	316.55	CN	Level Crossing	Farm Xing.		3	LE1	31	80	YES
Lakeshore East	Kingston	316.16	CN	Subway	Rouge River Crossing		3	LE1	31	45	YES
Lakeshore East	Kingston	315.95	CN	Level Crossing	Rodd Ave.		3	LE1	31	80	YES
Lakeshore East	Kingston	314.95	CN	Overhead Bridge	Granite Court	23' 4"	3	LE1	31	80	YES
Lakeshore East	Kingston	314.76	CN	Overhead Bridge	Whites Rd. (Durham Reg. Rd. 38)	NA	3	LE1	31	100	YES
Lakeshore East	GO Sub	0.35	GO	Overhead Bridge	York Sub	22' 5"	2	LE1	32	60	YES
Lakeshore East	GO Sub	0.84	GO	Overhead Bridge	Liverpool Rd.	23'	2	LE1	32	60	YES
Lakeshore East	GO Sub	1.92	GO	Overhead Bridge	Brock Rd.	22' 9.6"	2	LE2	33	60	YES
Lakeshore East	GO Sub	3.67	GO	Subway	Westney Rd. South		2	LE2	33	50	YES
Lakeshore East	GO Sub	4.52	GO	Overhead Bridge	Harwood Ave. South	23' 5.5"	2	LE2	33	60	YES
Lakeshore East	GO Sub	5.09	GO	Subway	Salem Rd. S.		2	LE2	33	30	YES
Lakeshore East	GO Sub	6.6	GO	Overhead Bridge	Lakeridge Rd.	23'	2	LE2	33	60	YES
Lakeshore East	GO Sub	8.72	GO	Overhead Bridge	Henry St.	23' 10"	2	LE2	33	60	YES
Lakeshore East	GO Sub	9	GO	Overhead Bridge	Brock St. South	23' 11.5"	2	LE2	33	60	YES
Lakeshore East	GO Sub	9.31	GO	Subway	Victoria St. and Pringle Creek		2	LE2	33	60	YES
Lakeshore East	GO Sub	9.61	GO	Level Crossing	South Blair St.		2	LE2	33	60	YES
Lakeshore East	GO Sub	10.13	GO	Overhead Bridge	Hopkins St.	24' 6"	2	LE2	33	60	YES
Lakeshore East	Belleville	175.6	CP	Level Crossing	Thorton Rd. S.		2	LE2	35	100	YES
Lakeshore East	Belleville	175.08	CP	Overhead Bridge	Stevenson Rd. S.	22' 9.5"	2	LE2	35	100	YES
Lakeshore East	Belleville	174.55	CP	Overhead Bridge	Park Rd. S.	23' 6"	2	LE2	35	100	YES
Lakeshore East	Belleville	174.28	CP	Subway	Pedestrian Subway		2	LE2	35	100	YES
Lakeshore East	Belleville	174.04	CP	Overhead Bridge	Simcoe St. S.	22' 5"	2	LE2	35	100	YES
Lakeshore East	Belleville	173.94	CP	Overhead Bridge	Albert St.	22' 4'	2	LE2	35	80	YES
Lakeshore East	Belleville	173.87	CP	Level Crossing	Front St.		2	LE2	35	80	YES
Lakeshore East	Belleville	173.52	CP	Overhead Bridge	Ritson Rd. S.	23' 8"	2	LE2	35	80	YES
Lakeshore East	Belleville	173.01	CP	Subway	Wilson Rd. S.		2	LE2	35	80	YES

GO Line	Subdivision	Mileage	Owner	Crossing Type	Crossing Description	GO Clearance	No. of Electrified Tracks	Corridor Section	Cost Section	Width of ROW	OK for Electrification
Lakeshore East	Belleville	172.75	CP	Overhead Bridge	Farewell St.	22'	2	LE2	35	80	YES
Lakeshore East	Belleville	172.49	CP	Overhead Bridge	Harmony Rd. S.	23'	2	LE2	35	80	YES
Lakeshore East	Belleville	171.74	CP	Level Crossing	Bloor St. E		2	LE2	35	80	YES
Lakeshore East	Belleville	170.07	CP	Level Crossing	Prestonvalve Rd.		1	LE3	36	80	YES
Lakeshore East	Belleville	169.31	CP	Level Crossing	Trulls. Rd.		1	LE3	36	80	YES
Lakeshore East	Belleville	168.79	CP	Overhead Bridge	Courtice Rd.	24'	1	LE3	36	80	YES
Lakeshore East	Belleville	168.22	CP	Level Crossing	Baseline Rd. W.		1	LE3	36	80	YES
Lakeshore East	Belleville	167.62	CP	Level Crossing	Solina rd.		1	LE3	36	80	YES
Lakeshore East	Belleville	167.08	CP	Level Crossing	Rundle Rd.		1	LE3	36	80	YES
Lakeshore East	Belleville	166.92	CP	Level Crossing	Baseline Rd. W.		1	LE3	36	80	YES
Lakeshore East	Belleville	166.55	CP	Level Crossing	Holt Rd.		1	LE3	36	80	YES
Lakeshore East	Belleville	165.98	CP	Level Crossing	Maple Grove Rd.		1	LE3	36	80	YES
Lakeshore East	Belleville	165.41	CP	Subway	Green Rd.		1	LE3	36	80	YES
Lakeshore East	Belleville	165.23	CP	Subway	Farm Xing		1	LE3	36	80	YES
Milton	Galt	4.94	CP	Subway	Keele Street		2	MI1	13	92	YES
Milton	Galt	5.87	CP	Subway	Runnymede Road		2	MI1	13	80	YES
Milton	Galt	6.25	CP	Subway	Jane Street		2	MI1	13	95	YES
Milton	Galt	6.63	CP	Subway	Scarlett Road		2	MI1	13	60	YES
Milton	Galt	7.7	CP	Subway	Royal York Road		2	MI1	13	60	YES
Milton	Galt	7.76	CP	Overhead Bridge	Dundas Street West	24.20 ft	2	MI1	13	75	YES
Milton	Galt	8.35	CP	Subway	Montgomery Road		2	MI1	13	60	YES
Milton	Galt	8.64	CP	Subway	Islington Avenue		2	MI1	13	55	YES
Milton	Galt	8.92	CP	Subway	Bloor Street West		2	MI1	13	55	YES
Milton	Galt	9.39	CP	Overhead Bridge	Kipling Avenue	0 ft (SW Quad	2	MI1	13	75	YES
Milton	Galt	9.58	CP	Subway	Pedestrian Tunnel		2	MI1	13	110	YES
Milton	Galt	10.13	CP	Subway	Shorncliffe Road		2	MI1	13	75	YES
Milton	Galt	10.58	CP	Subway	East Mall		2	MI1	13	90	YES
Milton	Galt	10.87	CP	Overhead Bridge	Highway 427	0 ft (NE Quad	2	MI1	13	90	YES
Milton	Galt	11.7	CP	Subway	West Mall		2	MI1	13	100	YES
Milton	Galt	12.06	CP	Level Crossing	Rische's LaneLoreland Avenue		2	MI1	13	80	YES
Milton	Galt	12.58	CP	Subway	Dixie Road		2	MI1	13	50	YES
Milton	Galt	13.1	CP	Level Crossing	Stanfield Road		2	MI1	13	100	YES
Milton	Galt	13.62	CP	Level Crossing	Haines Road		2	MI1	13	100	YES
Milton	Galt	13.87	CP	Subway	Cawthra Road		2	MI1	13	65	YES
Milton	Galt	14.17	CP	Overhead Bridge	Dundas Street East	0 ft (NW Quad	2	MI1	13	85	YES
Milton	Galt	15.25	CP	Subway	Hurontario Street		2	MI1	13	30	YES
Milton	Galt	15.61	CP	Subway	Confederation Parkway		2	MI1	13	70	YES
Milton	Galt	16.56	CP	Subway	Mavis Road		2	MI1	13	50	YES
Milton	Galt	16.82	CP	Level Crossing	Wolfedale Road		2	MI1	13	100	YES
Milton	Galt	17.35	CP	Level Crossing	Erindale Station Road		2	MI1	13	100	YES
Milton	Galt	17.98	CP	Subway	Burnhamthorpe Road		2	MI1	13	80	YES
Milton	Galt	18	CP	Subway	Pedestrian Tunnel		2	MI1	13	100	YES
Milton	Galt	18.11	CP	Subway	Pedestrian Tunnel		2	MI1	13	100	YES
Milton	Galt	18.53	CP	Subway	Highway 403		2	MI1	13	75	YES
Milton	Galt	19.25	CP	Subway	Eglinton Avenue		2	MI1	13	50	YES
Milton	Galt	20.12	CP	Level Crossing	Queen Street		2	MI1	13	100	YES
Milton	Galt	20.41	CP	Subway	Pedestrian Tunnel		2	MI1	13	150	YES
Milton	Galt	20.67	CP	Level Crossing	Thomas Street		2	MI1	13	100	YES
Milton	Galt	20.85	CP	Level Crossing	Tannery Street		2	MI1	13	80	YES
Milton	Galt	21.2	CP	Level Crossing	Ontario Street		2	MI1	13	85	YES
Milton	Galt	21.44	CP	Subway	Britannia Road		2	MI1	13	65	YES
Milton	Galt	22.39	CP	Overhead Bridge	Erin Mills Parkway	3 ft (NW Quad	2	MI1	13	85	YES
Milton	Galt	23.43	CP	Subway	Derry Road		2	MI2	14	70	YES
Milton	Galt	24.65	CP	Subway	Winston Churchill Blvd		2	MI2	14	45	YES
Milton	Galt	25.09	CP	Level Crossing	10th Line West		2	MI2	14	100	YES
Milton	Galt	25.87	CP	Level Crossing	9th Line		2	MI2	14	100	YES
Milton	Galt	26.3	CP	Overhead Bridge	Highway 407	23.95 ft	2	MI2	14	90	YES
Milton	Galt	26.72	CP	Level Crossing	8th Line		2	MI2	14	100	YES
Milton	Galt	27.57	CP	Overhead Bridge	Trafalgar Road	23.74 ft	2	MI2	14	75	YES
Milton	Galt	28.43	CP	Level Crossing	6th Line		2	MI2	14	100	YES
Milton	Galt	29.3	CP	Level Crossing	5th Line		2	MI2	14	75	YES
Milton	Galt	30.11	CP	Subway	James Snow Parkway		2	MI2	14	50	YES
Milton	Galt	30.16	CP	Level Crossing	4th Line		2	MI2	14	100	YES
Milton	Galt	31.02	CP	Subway	Thomson Road South		2	MI2	14	45	YES
Georgetown	USRC	0.21	GO	Overhead Bridge	Skywalk	24.73	8	UW1	1	250	YES
Georgetown	USRC	0.4	GO	Overhead Bridge	CN Tower Pedestrian Bridge	23.13	8	UW1	1	125	YES
Georgetown	USRC	0.42	GO	Overhead Bridge	John Street	24.89	8	UW1	1	125	YES
Georgetown	USRC	0.56	GO	Overhead Bridge	Peter Street	23.55	8	UW1	1	160	YES
Georgetown	USRC	0.69	GO	Overhead Bridge	Spadina Avenue		8	UW1	1	260	YES
Georgetown	USRC	0.8	GO	Overhead Bridge	Weston Sub Flyover	22.26	8	UW1	1	320	YES
Georgetown	USRC	1.09	GO	Overhead Bridge	Bathurst Street	23' 3"	8	UW1	1	150	YES
Georgetown	Weston	1.59	GO	Overhead Bridge	Strachan Avenue	24' 3.5"	8	UW2	11	TBD	YES
Georgetown	Weston	1.63	GO	Level Crossing	Foreman's Crossing		8	UW2	11	TBD	YES
Georgetown	Weston	1.99	GO	Subway	King St.		8	UW2	11	TBD	YES
Georgetown	Weston	2.46	GO	Subway	Queen St.		8	UW2	11	TBD	YES
Georgetown	Weston	2.79	GO	Subway	Brock Ave.		8	UW2	11	TBD	YES
Georgetown	Weston	3.12	GO	Subway	Landsdowne Ave.		6	UW3	12	TBD	YES
Georgetown	Weston	3.45	GO	Overhead Bridge	Dundas Street	24.09	6	UW3	12	TBD	YES
Georgetown	Weston	3.96	GO	Subway	Bloor St.		6	UW3	12	TBD	YES

GO Line	Subdivision	Mileage	Owner	Crossing Type	Crossing Description	GO Clearance	No. of Electrified Tracks	Corridor Section	Cost Section	Width of ROW	OK for Electrification
Georgetown	Weston	4.27	GO	Overhead Bridge	Wallace Ave. Pedestrian Bridge	24.82	6	UW3	12	TBD	YES
Georgetown	Weston	4.6	GO	Subway	Dupont St.		6	UW3	12	TBD	YES
Georgetown	Weston	4.87	GO	Overhead Bridge	West Toronto Diamond Subdivision Gra	23' 0"	4	GT1	15	TBD	YES
Georgetown	Weston	4.87	GO	Overhead Bridge	West Toronto Diamond Grade Separatio	22' 0"	4	GT1	15	TBD	YES
Georgetown	Weston	4.95	GO	Level Crossing	Foreign Owned Trackage - CP Mactier Sub.		4	GT1	15	TBD	YES
Georgetown	Weston	4.99	GO	Overhead Bridge	Old Weston Rd.	23' 0"	4	GT1	15	TBD	YES
Georgetown	Weston	4.99	GO	Overhead Bridge	Old Weston Rd.	22' 0"	4	GT1	15	TBD	YES
Georgetown	Weston	5.3	GO	Subway	St. Clair Ave. West		4	GT1	15	TBD	YES
Georgetown	Weston	6.12	GO	Overhead Bridge	Rogers Rd.	22.49	4	GT1	15	TBD	YES
Georgetown	Weston	6.45	GO	Subway	Black Creek Dr.		4	GT1	15	TBD	YES
Georgetown	Weston	6.82	GO	Subway	Eglinton Ave.		4	GT1	15	TBD	YES
Georgetown	Weston	7.17	GO	Subway	Ray Ave.		4	GT1	15	TBD	YES
Georgetown	Weston	7.7	GO	Overhead Bridge	Jane St.	24.02	4	GT1	15	TBD	YES
Georgetown	Weston	7.96	GO	Subway	Dennison Road East		4	GT1	15	TBD	YES
Georgetown	Weston	8.44	GO	Subway	Lawrence Ave.		4	GT1	15	TBD	YES
Georgetown	Weston	8.63	GO	Overhead Bridge	John Street Pedestrian Overpass	25' 0"	4	GT1	15	TBD	YES
Georgetown	Weston	8.74	GO	Overhead Bridge	King Street	23' 0"	4	GT1	15	TBD	YES
Georgetown	Weston	8.94	GO	Overhead Bridge	Church Street	25' 6"	4	GT1	15	TBD	YES
Georgetown	Weston	9.51	GO	Subway	Weston Rd.		4	GT1	15	20	YES
Georgetown	Weston	9.61	GO	Subway	Private Golf club		4	GT1	15	90	YES
Georgetown	Weston	9.93	GO	Level Crossing	Private Golf Club		4	GT1	15	90	YES
Georgetown	Weston	10.41	GO	Overhead Bridge	Islington Ave.	23.37	4	GT1	15	90	YES
Georgetown	Weston	10.68	GO	Overhead Bridge	HWY No. 401	23.93	4	GT1	15	90	YES
Georgetown	Weston	11.07	GO	Subway	Kipling Ave.		4	GT1	15	90	YES
Georgetown	Weston	11.73	GO	Subway	Martin Grove Rd.		4	GT1	15	90	YES
Georgetown	Weston	12.37	GO	Subway	Hwy No. 27		4	GT1	15	90	YES
Georgetown	Weston	13.06	GO	Level Crossing	Carlingview Dr.		4	GT1	15	90	YES
Georgetown	Weston	13.5	GO	Overhead Bridge	Hwy. No. 427	22.88	4	GT1	15	90	YES
Georgetown	Weston	13.52	GO	Overhead Bridge	Hwy No. 427/409 Ramp	23.89	4	GT1	15	90	YES
Georgetown	Weston	13.6	GO	Subway	Goreway Dr.		3	GT1	16	80	YES
Georgetown	Weston	14.8	GO	Subway	Derry Rd.		3	GT1	16	80	YES
Georgetown	Weston	14.87	GO	Subway	Airport Rd.		3	GT1	16	80	YES
Georgetown	Weston	15.27	GO	Level Crossing	North Alarton St. (Scarboro St.)		3	GT1	16	80	YES
Georgetown	Weston	16.17	GO	Level Crossing	Torbram Rd.		3	GT1	16	80	YES
Georgetown	Weston	16.9	GO	Overhead Bridge	Hwy. No. 407	23.56	3	GT1	16	100	YES
Georgetown	Weston	16.94	GO	Overhead Bridge	Hwy. No. 407	25.13	3	GT1	16	100	YES
Georgetown	Halton	11.39	CN	Overhead Bridge	Bramlea Rd.	24.46	3	GT1	17	100	YES
Georgetown	Halton	11.67	CN	Subway	Psgr. Tunnel		2	GT1	18	100	YES
Georgetown	Halton	11.71	CN	Subway	Psgr. Tunnel		2	GT1	18	100	YES
Georgetown	Halton	11.73	CN	Subway	Psgr. Tunnel		2	GT1	18	100	YES
Georgetown	Halton	11.79	CN	Level Crossing	Maint. Xing		2	GT1	18	100	YES
Georgetown	Halton	11.8	CN	Overhead Bridge	Steeles Ave.	23' 8"	2	GT1	18	100	YES
Georgetown	Halton	12.39	CN	Subway	Dixie Rd. (Peel Reg. Rd. 4)		2	GT1	18	60	YES
Georgetown	Halton	12.83	CN	Overhead Bridge	West Drive	27.5	2	GT1	18	100	YES
Georgetown	Halton	13.33	CN	Overhead Bridge	Hwy. No. 410	24.48	2	GT1	18	100	YES
Georgetown	Halton	13.36	CN	Overhead Bridge	Heartlake Rd.	25.7	2	GT1	18	100	YES
Georgetown	Halton	13.76	CN	Subway	Rutherford Rd.		2	GT1	18	75	YES
Georgetown	Halton	14.32	CN	Subway	Kennedy Rd. (Peel Reg. Rd. 16)		2	GT1	18	75	YES
Georgetown	Halton	14.56	CN	Overhead Bridge	Trueman St. Pedestrian Bridge	22' 5"	2	GT1	18	75	YES
Georgetown	Halton	14.78	CN	Subway	Center St.		2	GT1	18	75	YES
Georgetown	Halton	14.95	CN	Level Crossing	James St. and John St.		2	GT1	18	50	YES
Georgetown	Halton	15.05	CN	Subway	Queen St. Hwy. No. 7		2	GT1	18	50	YES
Georgetown	Halton	15.17	CN	Subway	Union Station		2	GT1	18	50	YES
Georgetown	Halton	15.28	CN	Subway	Main St.		2	GT1	18	50	YES
Georgetown	Halton	15.3	CN	Subway	Psgr. Tunne		2	GT1	18	50	YES
Georgetown	Halton	15.53	CN	Level Crossing	Mill St.		2	GT2	19	60	YES
Georgetown	Halton	15.6	CN	Level Crossing	Orangeville-Brampton Railway Owensound Sub		2	GT2	19	60	YES
Georgetown	Halton	16.26	CN	Subway	Mclauglhlin Rd.		2	GT2	19	45	YES
Georgetown	Halton	16.82	CN	Level Crossing	Farm Xing		2	GT2	19	100	YES
Georgetown	Halton	17.24	CN	Overhead Bridge	Chinguacousy Rd.	23' 2"	2	GT2	19	100	YES
Georgetown	Halton	17.6	CN	Overhead Bridge	Williams Parkway	23' 2"	2	GT2	19	100	YES
Georgetown	Halton	18.16	CN	Overhead Bridge	Hwy. No. 7	22' 8"	2	GT2	19	100	YES
Georgetown	Halton	18.28	CN	Subway	Psgr. Tunnel		2	GT2	19	100	YES
Georgetown	Halton	18.32	CN	Level Crossing	Farm Xing		2	GT2	19	100	YES
Georgetown	Halton	18.56	CN	Level Crossing	Farm Xing		2	GT2	19	100	YES
Georgetown	Halton	19.17	CN	Level Crossing	Mississauga Rd. (Peel Reg. Rd. 1)		2	GT2	19	100	YES
Georgetown	Halton	19.84	CN	Level Crossing	Farm Xing		2	GT2	19	100	YES
Georgetown	Halton	20.14	CN	Level Crossing	5th Line West (Heritage Rd.)		2	GT2	19	100	YES
Georgetown	Halton	21.15	CN	Level Crossing	Winston Churchill Boulevard		2	GT2	19	90	YES
Georgetown	Halton	21.5	CN	Level Crossing	Farm Xing		2	GT2	19	90	YES
Georgetown	Halton	21.9	CN	Level Crossing	Farm Xing		2	GT2	19	90	YES
Georgetown	Halton	22.13	CN	Level Crossing	Private		2	GT2	19	90	YES
Georgetown	Halton	22.89	CN	Overhead Bridge	Maple Ave.	24.1	2	GT2	19	90	YES
Georgetown	Halton	23.1	CN	Overhead Bridge	Mountainview Rd.	23' 1"	2	GT2	19	75	YES
Georgetown	Halton	23.5	CN	Subway	Psgr. Tunnel		2	GT2	19	75	YES
Georgetown	Halton	23.64	CN	Subway	John St.		1	GT3	20	75	YES
Georgetown	Halton	24.09	CN	Overhead Bridge	Main Street	22' 6"	1	GT3	20	75	YES
Georgetown	GEXR Guelph	30.57	CN	Subway	Pedestrian Underpass		1	GT3	21	75	YES
Georgetown	GEXR Guelph	30.83	CN	Level Crossing	Trafalgar Road		1	GT3	21	75	YES

GO Line	Subdivision	Mileage	Owner	Crossing Type	Crossing Description	GO Clearance	No. of Electrified Tracks	Corridor Section	Cost Section	Width of ROW	OK for Electrification
Georgetown	GEXR Guelph	31.75	CN	Subway	6th Lind Rd		1	GT3	21	75	YES
Georgetown	GEXR Guelph	32.58	CN	Overhead Bridge	5th Avenue	NA	1	GT3	21	75	YES
Georgetown	GEXR Guelph	33.54	CN	Level Crossing	4th Line Rd. (L)		1	GT3	21	75	YES
Georgetown	GEXR Guelph	34.25	CN	Level Crossing	3rd Line road		1	GT3	21	75	YES
Georgetown	GEXR Guelph	34.57	CN	Level Crossing	Private Road		1	GT3	21	75	YES
Georgetown	GEXR Guelph	34.85	CN	Level Crossing	Private Road		1	GT3	21	75	YES
Georgetown	GEXR Guelph	35.48	CN	Level Crossing	Queen Street		1	GT3	21	75	YES
Georgetown	GEXR Guelph	35.69	CN	Level Crossing	Mill St. Hwy. 7		1	GT3	21	75	YES
Georgetown	GEXR Guelph	36.2	CN	Level Crossing	Main St. Hwy. 25		1	GT3	21	75	YES
Georgetown	GEXR Guelph	36.75	CN	Level Crossing	Farm Crossing		1	GT3	21	90	YES
Georgetown	GEXR Guelph	37.2	CN	Level Crossing	Dublin Line		1	GT3	21	90	YES
Georgetown	GEXR Guelph	38.16	CN	Subway	Town Line Rd.		1	GT3	21	90	YES
Georgetown	GEXR Guelph	38.21	CN	Level Crossing	Region and County Line		1	GT3	21	90	YES
Georgetown	GEXR Guelph	39.22	CN	Level Crossing	7th Line Rd.		1	GT3	21	90	YES
Georgetown	GEXR Guelph	39.59	CN	Level Crossing	Farm Crossing		1	GT3	21	90	YES
Georgetown	GEXR Guelph	40.25	CN	Overhead Bridge	6th Line Rd.	NA	1	GT3	21	90	YES
Georgetown	GEXR Guelph	40.56	CN	Level Crossing	Wellington Road 50		1	GT3	21	90	YES
Georgetown	GEXR Guelph	41.05	CN	Subway	Eramosa River		1	GT3	21	90	YES
Georgetown	GEXR Guelph	41.3	CN	Level Crossing	Main St. (Rockwood)		1	GT3	21	90	YES
Georgetown	GEXR Guelph	42.19	CN	Level Crossing	4th Line Rd.		1	GT3	21	90	YES
Georgetown	GEXR Guelph	42.27	CN	Level Crossing	Farm Crossing		1	GT3	21	90	YES
Georgetown	GEXR Guelph	42.8	CN	Level Crossing	Farm Crossing		1	GT3	21	90	YES
Georgetown	GEXR Guelph	43.02	CN	Level Crossing	3rd Line Rd.		1	GT3	21	90	YES
Georgetown	GEXR Guelph	43.87	CN	Level Crossing	Wellington Road 29		1	GT3	21	90	YES
Georgetown	GEXR Guelph	44.79	CN	Overhead Bridge	Jones Baseline Con. 1-3	NA	1	GT3	21	90	YES
Georgetown	GEXR Guelph	44.83	CN	Level Crossing	Farm Crossing		1	GT3	21	90	YES
Georgetown	GEXR Guelph	45.8	CN	Level Crossing	Private road		1	GT3	21	90	YES
Georgetown	GEXR Guelph	46.22	CN	Level Crossing	Watson Road		1	GT3	21	90	YES
Georgetown	GEXR Guelph	46.45	CN	Subway	Watson Pkwy		1	GT3	21	90	YES
Georgetown	GEXR Guelph	46.91	CN	Level Crossing	Cityview Dr.		1	GT3	21	90	YES
Georgetown	GEXR Guelph	47.57	CN	Subway	Victoria St.		1	GT3	21	90	YES
Georgetown	GEXR Guelph	47.93	CN	Subway	Stevenson St. N.		1	GT3	21	90	YES
Georgetown	GEXR Guelph	48.26	CN	Overhead Bridge	Metcalfe & Huron St. Pedestrian Crossi	NA	1	GT3	21	90	YES
Georgetown	GEXR Guelph	48.48	CN	Subway	Arthur St.		1	GT3	21	50	YES
Georgetown	GEXR Guelph	48.5	CN	Subway	Speed River		1	GT3	21	50	YES
Georgetown	GEXR Guelph	48.52	CN	Subway	CP Goodrich Sub		1	GT3	21	50	YES
Georgetown	GEXR Guelph	48.54	CN	Subway	Wellington St. E		1	GT3	21	50	YES
Georgetown	GEXR Guelph	48.66	CN	Subway	Neeve St. Pedestrian Crossing		1	GT3	21	50	YES
Georgetown	GEXR Guelph	48.79	CN	Subway	Wyndham St.		1	GT3	21	50	YES
Georgetown	GEXR Guelph	48.94	CN	Subway	Wilson St.		1	GT3	21	50	YES
Georgetown	GEXR Guelph	48.96	CN	Subway	Norforlk St.		1	GT3	21	50	YES
Georgetown	GEXR Guelph	49.08	CN	Level Crossing	Dublin St.		1	GT3	21	50	YES
Georgetown	GEXR Guelph	49.2	CN	Level Crossing	Glasgow St.		1	GT3	21	50	YES
Georgetown	GEXR Guelph	49.33	CN	Level Crossing	Yorkshire St.		1	GT3	21	50	YES
Georgetown	GEXR Guelph	49.54	CN	Level Crossing	Edinburgh Rd.		1	GT3	21	50	YES
Georgetown	GEXR Guelph	49.79	CN	Level Crossing	Alam St.		1	GT3	21	50	YES
Georgetown	GEXR Guelph	50.37	CN	Subway	Hanion Expressway Hwy. 6 & 7		1	GT3	21	50	YES
Georgetown	GEXR Guelph	50.45	CN	Subway	Palsley Road West		1	GT3	21	90	YES
Georgetown	GEXR Guelph	51.3	CN	Subway	Imperial Road		1	GT3	21	90	YES
Georgetown	GEXR Guelph	51.8	CN	Subway	Elmira Road		1	GT3	21	90	YES
Georgetown	GEXR Guelph	52.09	CN	Level Crossing	Farm Crossing		1	GT3	21	90	YES
Georgetown	GEXR Guelph	52.41	CN	Level Crossing	Farm Crossing		1	GT3	21	90	YES
Georgetown	GEXR Guelph	52.96	CN	Level Crossing	Wellington Road 32		1	GT3	21	90	YES
Georgetown	GEXR Guelph	53.47	CN	Level Crossing	Private Road		1	GT3	21	90	YES
Georgetown	GEXR Guelph	53.74	CN	Level Crossing	Farm Crossing		1	GT3	21	90	YES
Georgetown	GEXR Guelph	54.06	CN	Level Crossing	Speedvale Avenue		1	GT3	21	90	YES
Georgetown	GEXR Guelph	54.37	CN	Level Crossing	Woolwich-Guelph Trail		1	GT3	21	90	YES
Georgetown	GEXR Guelph	55.01	CN	Level Crossing	Farm Crossing		1	GT3	21	90	YES
Georgetown	GEXR Guelph	55.41	CN	Level Crossing	Farm Crossing		1	GT3	21	90	YES
Georgetown	GEXR Guelph	56.14	CN	Subway	Shantz Station Rd.		1	GT3	21	90	YES
Georgetown	GEXR Guelph	57	CN	Level Crossing	Wurster Pt.		1	GT3	21	90	YES
Georgetown	GEXR Guelph	57.19	CN	Level Crossing	Private Road		1	GT3	21	90	YES
Georgetown	GEXR Guelph	58.05	CN	Level Crossing	Fountain St.		1	GT3	21	90	YES
Georgetown	GEXR Guelph	58.39	CN	Level Crossing	Woolwich Street Reg. Road 17.		1	GT3	21	90	YES
Georgetown	GEXR Guelph	58.72	CN	Subway	Pathway		1	GT3	21	60	YES
Georgetown	GEXR Guelph	59.03	CN	Subway	Victoria St. Hwy 7		1	GT3	21	60	YES
Georgetown	GEXR Guelph	59.67	CN	Level Crossing	Bingemans Centre Dr.		1	GT3	21	60	YES
Georgetown	GEXR Guelph	59.8	CN	Level Crossing	Bingemans Centre Dr.		1	GT3	21	60	YES
Georgetown	GEXR Guelph	61.11	CN	Overhead Bridge	River Bridge Pedestrian Bridge	NA	1	GT3	21	60	YES
Georgetown	GEXR Guelph	61.44	CN	Subway	Conestoga Parkway Hwy 85		1	GT3	21	60	YES
Georgetown	GEXR Guelph	62.08	CN	Level Crossing	Lancaster St. Reg Rd. 29		1	GT3	21	60	YES
Georgetown	GEXR Guelph	62.26	CN	Level Crossing	Saint Ledger St.		1	GT3	21	60	YES
Georgetown	GEXR Guelph	62.44	CN	Overhead Bridge	Margaret Ave.	22' 1"	1	GT3	21	60	YES
Georgetown	GEXR Guelph	62.6	CN	Level Crossing	Ahrens St.		1	GT3	21	60	YES
Barrie	Newmarket	3.12	GO	Subway	Lannsdowne Avenue		2	BA1	22	50	YES
Barrie	Newmarket	3.37	GO	Overhead Bridge	Dundas Street	22.41	2	BA1	22	50	YES
Barrie	Newmarket	3.91	GO	Subway	Bloor Street		2	BA1	22	50	YES
Barrie	Newmarket	4.08	GO	Subway	Paton Road Pedestrian Tunnel		2	BA1	22	50	YES
Barrie	Newmarket	4.19	GO	Level Crossing	Wallace Avenue		2	BA1	22	50	YES

GO Line	Subdivision	Mileage	Owner	Crossing Type	Crossing Description	GO Clearance	No. of Electrified Tracks	Corridor Section	Cost Section	Width of ROW	OK for Electrification
Barrie	Newmarket	4.51	GO	Subway	Dupont Street		2	BA1	22	60	YES
Barrie	Newmarket	4.6	GO	Subway	CP North Toronto Grade Separation		2	BA1	22	60	YES
Barrie	Newmarket	4.87	GO	Subway	Davenport Road		2	BA1	22	60	YES
Barrie	Newmarket	5.24	GO	Subway	St. Clair Avenue		2	BA1	22	40	YES
Barrie	Newmarket	5.65	GO	Overhead Bridge	Innes Avenue Pedestrian Bridge	23' 6"	2	BA1	22	40	YES
Barrie	Newmarket	5.86	GO	Subway	Rogers Road		2	BA1	22	30	YES
Barrie	Newmarket	6.12	GO	Subway	Dunraven Drive Pedestrian Underpass		2	BA1	22	40	YES
Barrie	Newmarket	6.5	GO	Overhead Bridge	Eglinton Avenue	23'	2	BA1	22	40	YES
Barrie	Newmarket	6.89	GO	Level Crossing	Castlefield Avenue		2	BA1	22	80	YES
Barrie	Newmarket	7.81	GO	Subway	Lawrence Avenue West		2	BA1	22	45	YES
Barrie	Newmarket	8.8	GO	Overhead Bridge	Hwy 401	22.8	2	BA1	22	50	YES
Barrie	Newmarket	9.12	GO	Subway	Wilson Avenue		2	BA1	22	45	YES
Barrie	Newmarket	10.5	GO	Level Crossing	Carhall Road		2	BA1	22	80	YES
Barrie	Newmarket	10.87	GO	Subway	Sheppard Avenue West		2	BA1	22	45	YES
Barrie	Newmarket	11.65	GO	Subway	Finch Avenue		2	BA1	22	45	YES
Barrie	Newmarket	11.9	GO	Level Crossing	TTC Bus Route (York University		2	BA1	22	60	YES
Barrie	Newmarket	12.92	GO	Subway	Steeles Avenue		2	BA1	22	30	YES
Barrie	Newmarket	13.19	GO	Subway	CN York Subdivision		2	BA1	22	30	YES
Barrie	Newmarket	13.81	GO	Subway	Hwy 407		2	BA1	22	30	YES
Barrie	Newmarket	14.23	GO	Subway	Hwy No. 7		2	BA1	22	30	YES
Barrie	Newmarket	14.65	GO	Level Crossing	Private Crossing		2	BA1	22	60	YES
Barrie	Newmarket	14.82	GO	Level Crossing	Rivermede Road		2	BA1	22	60	YES
Barrie	Newmarket	15.5	GO	Level Crossing	Langstaff Road		2	BA1	22	60	YES
Barrie	Newmarket	16.83	GO	Level Crossing	Rutherford Road		2	BA1	22	100	YES
Barrie	Newmarket	17.54	GO	Level Crossing	Private Road		2	BA1	22	100	YES
Barrie	Newmarket	18.1	GO	Subway	Major Mackenzie Drive		2	BA1	22	35	YES
Barrie	Newmarket	18.49	GO	Level Crossing	McNaughton Road		2	BA1	22	100	YES
Barrie	Newmarket	19.4	GO	Level Crossing	Teston Side Road		2	BA1	22	75	YES
Barrie	Newmarket	19.6	GO	Overhead Bridge	Keele Street	23'	2	BA1	22	40	YES
Barrie	Newmarket	19.72	GO	Level Crossing	Farm Crossing		2	BA1	22	70	YES
Barrie	Newmarket	20.03	GO	Level Crossing	Farm Crossing		2	BA1	22	70	YES
Barrie	Newmarket	20.43	GO	Level Crossing	Farm Crossing		2	BA1	22	70	YES
Barrie	Newmarket	20.66	GO	Level Crossing	Kirby Road		2	BA1	22	70	YES
Barrie	Newmarket	21.1	GO	Level Crossing	Farm Crossing		2	BA1	22	70	YES
Barrie	Newmarket	21.49	GO	Level Crossing	Farm Crossing		2	BA1	22	70	YES
Barrie	Newmarket	21.7	GO	Level Crossing	Farm Crossing		2	BA1	22	70	YES
Barrie	Newmarket	21.99	GO	Level Crossing	King-Vaughn Townline Road		2	BA1	22	70	YES
Barrie	Newmarket	22.73	GO	Level Crossing	Station Road		2	BA1	22	70	YES
Barrie	Newmarket	23.26	GO	Overhead Bridge	Kings Road	26' 8.5"	2	BA1	22	40	YES
Barrie	Newmarket	23.3	GO	Overhead Bridge	Keele Street	24' 6"	2	BA1	22	40	YES
Barrie	Newmarket	24.6	GO	Level Crossing	Duffering Street		2	BA1	22	70	YES
Barrie	Newmarket	25.25	GO	Level Crossing	Farm Crossing		2	BA1	22	70	YES
Barrie	Newmarket	26.1	GO	Level Crossing	Bloomington Road Side Road 15		2	BA1	22	70	YES
Barrie	Newmarket	26.5	GO	Overhead Bridge	Bathurst Street, Vaughn	22' 11"	2	BA1	22	70	YES
Barrie	Newmarket	28.5	GO	Subway	Yonge Street/Hwy 11		2	BA1	22	20	YES
Barrie	Newmarket	29.17	GO	Level Crossing	Engelhard Drive		2	BA1	22	70	YES
Barrie	Newmarket	29.79	GO	Level Crossing	Pedestrian Crossing		2	BA1	22	60	YES
Barrie	Newmarket	29.99	GO	Level Crossing	Wellington Street		2	BA1	22	60	YES
Barrie	Newmarket	30.04	GO	Level Crossing	Centre Street		2	BA1	22	60	YES
Barrie	Newmarket	31.28	GO	Level Crossing	St. John's Side Road		2	BA1	22	60	YES
Barrie	Newmarket	32.75	GO	Level Crossing	Mulock Drive		2	BA1	22	50	YES
Barrie	Newmarket	33.55	GO	Level Crossing	Water Street		2	BA1	22	50	YES
Barrie	Newmarket	33.64	GO	Level Crossing	Timothy Street		2	BA1	22	60	YES
Barrie	Newmarket	33.95	GO	Overhead Bridge	Queen Street, Newmarket	22' 11.5"	2	BA1	22	40	YES
Barrie	Newmarket	34.16	GO	Level Crossing	Davis Drive		2	BA1	22	60	YES
Barrie	Newmarket	34.86	GO	Level Crossing	Newmarket Pedestrian Crossing		2	BA1	22	50	YES
Barrie	Newmarket	35.61	GO	Level Crossing	Green Lane Road		2	BA1	22	80	YES
Barrie	Newmarket	36.38	GO	Level Crossing	2nd Avenue		2	BA1	22	50	YES
Barrie	Newmarket	37.65	GO	Level Crossing	Chapman Street		2	BA1	22	50	YES
Barrie	Newmarket	37.71	GO	Level Crossing	Old Yonge Street (Holland Landing)		2	BA1	22	50	YES
Barrie	Newmarket	38.43	GO	Level Crossing	Bradford Street		2	BA1	22	50	YES
Barrie	Newmarket	39.33	GO	Level Crossing	Oriole Road		2	BA1	22	50	YES
Barrie	Newmarket	39.66	GO	Level Crossing	Bathurst Sreet / Townline Road		2	BA1	22	50	YES
Barrie	Newmarket	40.53	GO	Level Crossing	Kalvers Street		2	BA1	22	50	YES
Barrie	Newmarket	40.93	GO	Level Crossing	Toll Road		2	BA1	22	50	YES
Barrie	Newmarket	41.02	GO	Level Crossing	Private Road		2	BA1	22	50	YES
Barrie	Newmarket	41.25	GO	Level Crossing	Private Road		2	BA1	22	50	YES
Barrie	Newmarket	41.39	GO	Level Crossing	Given Road		2	BA1	22	50	YES
Barrie	Newmarket	41.49	GO	Level Crossing	Pedestrian Crossing		2	BA1	22	50	YES
Barrie	Newmarket	41.56	GO	Level Crossing	Pedestrian Crossing		2	BA2	23	50	YES
Barrie	Newmarket	41.96	GO	Level Crossing	Private Road (Ministry of Environment)		1	BA2	23	40	YES
Barrie	Newmarket	42.26	GO	Level Crossing	Industrial Road		1	BA2	23	40	YES
Barrie	Newmarket	43.37	GO	Level Crossing	9th Line		1	BA2	23	40	YES
Barrie	Newmarket	44.34	GO	Level Crossing	10th Line		1	BA2	23	40	YES
Barrie	Newmarket	44.86	GO	Level Crossing	Farm Crossing		1	BA2	23	40	YES
Barrie	Newmarket	45.37	GO	Level Crossing	11th Line		1	BA2	23	40	YES
Barrie	Newmarket	46.29	GO	Level Crossing	12th Line		1	BA2	23	40	YES
Barrie	Newmarket	47.21	GO	Level Crossing	13th Line		1	BA2	23	40	YES
Barrie	Newmarket	48.2	GO	Level Crossing	Farm Crossing		1	BA2	23	40	YES

GO Line	Subdivision	Mileage	Owner	Crossing Type	Crossing Description	GO Clearance	No. of Electrified Tracks	Corridor Section	Cost Section	Width of ROW	OK for Electrification
Barrie	Newmarket	48.65	GO	Level Crossing	Farm Crossing		1	BA2	23	40	YES
Barrie	Newmarket	49.05	GO	Level Crossing	Gilford Street		1	BA2	23	40	YES
Barrie	Newmarket	49.24	GO	Level Crossing	1st Line (Shore Acres Drive)		1	BA2	23	40	YES
Barrie	Newmarket	49.88	GO	Level Crossing	Farm Crossing		1	BA2	23	40	YES
Barrie	Newmarket	50.12	GO	Level Crossing	2nd Line		1	BA2	23	40	YES
Barrie	Newmarket	50.99	GO	Level Crossing	3rd Line		1	BA2	23	40	YES
Barrie	Newmarket	51.89	GO	Level Crossing	4th Line, Killarney Beach Road		1	BA2	23	40	YES
Barrie	Newmarket	52.82	GO	Level Crossing	5th Line Belle Aire Beach Road		1	BA2	23	40	YES
Barrie	Newmarket	53.7	GO	Overhead Bridge	6th Line	22' 4"	1	BA2	23	40	YES
Barrie	Newmarket	54.56	GO	Level Crossing	7th Line		1	BA2	23	40	YES
Barrie	Newmarket	55.55	GO	Level Crossing	8th Line Innisfil Beach Road		1	BA2	23	40	YES
Barrie	Newmarket	56.59	GO	Level Crossing	9th Line		1	BA2	23	40	YES
Barrie	Newmarket	57.49	GO	Level Crossing	10th Line, Victoria St. E.		1	BA2	23	40	YES
Barrie	Newmarket	58.15	GO	Level Crossing	Farm Crossing		1	BA2	23	40	YES
Barrie	Newmarket	58.47	GO	Level Crossing	11th Line, Lockhart Road		1	BA2	23	40	YES
Barrie	Newmarket	58.94	GO	Level Crossing	Farm Crossing		1	BA2	23	40	YES
Barrie	Newmarket	59.29	GO	Level Crossing	Mapleview Drive East		1	BA2	23	40	YES
Barrie	Newmarket	60.3	GO	Overhead Bridge	Big Bay Point Road	22' 9"	1	BA2	24	40	YES
Barrie	Newmarket	61.14	GO	Subway	Cox Mill Road		1	BA2	24	40	YES
Barrie	Newmarket	61.34	GO	Level Crossing	Little Avenue, City of Barrie		1	BA2	24	40	YES
Barrie	Newmarket	62.03	GO	Level Crossing	Minet's Point Road		1	BA2	24	40	YES
Richmond Hill	Bala	1.93	CN	Overhead Bridge	Eastern Avenue Ramp From DVP	23' 3.5"	2	RH1	25	50	YES
Richmond Hill	Bala	1.98	CN	Overhead Bridge	Queen Street East	22' 1"	2	RH1	25	50	YES
Richmond Hill	Bala	2.26	CN	Overhead Bridge	Dundas Street	22' 3"	2	RH1	25	50	YES
Richmond Hill	Bala	2.3	CN	Level Crossing	Foreman's plank crossing		2	RH1	25	50	YES
Richmond Hill	Bala	2.45	CN	Overhead Bridge	Gerrard Street	24' 4.5"	2	RH1	25	50	YES
Richmond Hill	Bala	2.67	CN	Overhead Bridge	Riverdale Park Pedestrian Bridge	22' 4"	2	RH1	25	65	YES
Richmond Hill	Bala	3.31	CN	Overhead Bridge	Bloor Street East	54'	2	RH1	25	50	YES
Richmond Hill	Bala	3.65	CN	Overhead Bridge	DVP to Bayview Extension	22' 2"	2	RH1	25	50	YES
Richmond Hill	Bala	4.03	CN	Overhead Bridge	CP Belleville Subdivision	49' 7"	2	RH1	25	45	YES
Richmond Hill	Bala	4.43	CN	Level Crossing	Pottery Road		2	RH1	25	45	YES
Richmond Hill	Bala	4.91	CN	Level Crossing	Beechwood Road		2	RH1	25	50	YES
Richmond Hill	Bala	5.39	CN	Overhead Bridge	Millwood Road	100' 8"	2	RH1	25	40	YES
Richmond Hill	Bala	6.5	CN	Overhead Bridge	Don Mills Road	24' 5"	2	RH1	25	40	YES
Richmond Hill	Bala	6.53	CN	Overhead Bridge	Pedestrian Bridge	23' 5"	2	RH1	25	50	YES
Richmond Hill	Bala	6.6	CN	Overhead Bridge	Don Valley Parkway	23' 10"	2	RH1	25	45	YES
Richmond Hill	Bala	8.26	CN	Overhead Bridge	Eglinton	27' 4"	2	RH1	25	45	YES
Richmond Hill	Bala	8.94	CN	Overhead Bridge	CP Belleville Subdivision	21' 4"	2	RH1	25	50	YES
Richmond Hill	Bala	9.2	CN	Subway	Don Valley Parkway		2	RH1	25	20	YES
Richmond Hill	Bala	9.6	CN	Overhead Bridge	Lawrence Avenue East	23' 1"	2	RH1	25	40	YES
Richmond Hill	Bala	10.28	CN	Overhead Bridge	Don Mills Road	22' 8"	2	RH1	25	40	YES
Richmond Hill	Bala	11.14	CN	Overhead Bridge	York Mills Road	22' 7"	2	RH1	25	40	YES
Richmond Hill	Bala	11.86	CN	Subway	Leslie Street		2	RH1	25	50	YES
Richmond Hill	Bala	12.1	CN	Overhead Bridge	Oriole GO Station Pedestrian Bridge	23' 11"	2	RH1	25	85	YES
Richmond Hill	Bala	12.16	CN	Overhead Bridge	Hwy 401 South Ramp	22' 3.25"	2	RH1	25	85	YES
Richmond Hill	Bala	12.2	CN	Overhead Bridge	Hwy 401	23'	2	RH1	25	85	YES
Richmond Hill	Bala	12.23	CN	Overhead Bridge	Hwy 401 North Ramp	23' 10.5"	2	RH1	25	85	YES
Richmond Hill	Bala	12.37	CN	Subway	Esther Shiner Blvd		2	RH1	25	30	YES
Richmond Hill	Bala	12.5	CN	Subway	TTC Sheppard Subway		2	RH1	25	85	YES
Richmond Hill	Bala	12.54	CN	Subway	Sheppard Avenue East		2	RH1	25	30	YES
Richmond Hill	Bala	13.88	CN	Subway	Finch Avenue East		2	RH1	25	30	YES
Richmond Hill	Bala	14.55	CN	Subway	Cummer Avenue		2	RH1	25	30	YES
Richmond Hill	Bala	15.17	CN	Subway	Steeles Avenue East		2	RH1	25	30	YES
Richmond Hill	Bala	16.08	CN	Overhead Bridge	York CN Subdivision Grade Separation	24' 0"	2	RH1	25	100	YES
Richmond Hill	Bala	16.32	CN	Level Crossing	Foreman's Crossing		2	RH1	25	100	YES
Richmond Hill	Bala	16.33	CN	Overhead Bridge	John Street, Thornhill	23' 4"	2	RH1	25	100	YES
Richmond Hill	Bala	16.52	CN	Level Crossing	Green Lane		2	RH1	25	100	YES
Richmond Hill	Bala	16.91	CN	Subway	Pedestrian Underpass		2	RH1	25	100	YES
Richmond Hill	Bala	16.92	CN	Overhead Bridge	Bayview Avenue	24' 10.3"	2	RH1	25	85	YES
Richmond Hill	Bala	17.33	CN	Subway	Pedestrian Underpass		2	RH1	25	70	YES
Richmond Hill	Bala	17.8	CN	Subway	Holy Cross Cemetary Private Underpass		2	RH1	25	75	YES
Richmond Hill	Bala	18.15	CN	Level Crossing	Langstaff Road		2	RH1	25	100	YES
Richmond Hill	Bala	18.19	CN	Overhead Bridge	Hwy 407 West	NA	2	RH1	25	100	YES
Richmond Hill	Bala	18.21	CN	Overhead Bridge	Hwy 407 East	NA	2	RH1	25	100	YES
Richmond Hill	Bala	18.23	CN	Overhead Bridge	Hwy 7	NA	2	RH1	25	100	YES
Richmond Hill	Bala	18.33	CN	Overhead Bridge	Pedestrian Overpass	24' 0"	2	RH1	25	100	YES
Richmond Hill	Bala	18.45	CN	Overhead Bridge	High Tech Drive	NA	2	RH1	25	100	YES
Richmond Hill	Bala	18.95	CN	Overhead Bridge	Bantry Avenue	NA	2	RH1	25	100	YES
Richmond Hill	Bala	19.47	CN	Overhead Bridge	Carville Road (16th Avenue)	NA	2	RH1	25	100	YES
Richmond Hill	Bala	20.18	CN	Level Crossing	Hillsview Avenue Pedestrian Crossing		2	RH1	25	100	YES
Richmond Hill	Bala	20.31	CN	Level Crossing	Weldrick Road East		2	RH1	25	100	YES
Richmond Hill	Bala	20.85	CN	Subway	Major Mackenzie Drive East		2	RH1	25	45	YES
Richmond Hill	Bala	21.11	CN	Level Crossing	Centre Street East		1	RH2	26	100	YES
Richmond Hill	Bala	21.48	CN	Level Crossing	Crosby Avenue		1	RH2	26	100	YES
Richmond Hill	Bala	22.16	CN	Level Crossing	Elgin Mills Road East, Town of Richmond Hill		1	RH2	26	100	YES
Richmond Hill	Bala	22.81	CN	Subway	Pedestrian Underpass		1	RH2	26	100	YES
Richmond Hill	Bala	23.61	CN	Level Crossing	19th Avenue, Township of Markham		1	RH2	26	100	YES
Richmond Hill	Bala	23.77	CN	Subway	Bayview Avenue, Township of Markham		1	RH2	26	30	YES
Richmond Hill	Bala	25.04	CN	Level Crossing	Farm Xing		1	RH2	26	60	YES

GO Line	Subdivision	Mileage	Owner	Crossing Type	Crossing Description	GO Clearance	No. of Electrified Tracks	Corridor Section	Cost Section	Width of ROW	OK for Electrification
Richmond Hill	Bala	25.49	CN	Level Crossing	Leslie Street		1	RH2	26	60	YES
Richmond Hill	Bala	25.6	CN	Level Crossing	Private Road		1	RH2	26	60	YES
Richmond Hill	Bala	26	CN	Level Crossing	Gormely Road Pedestrian Crossing		1	RH2	26	60	YES
Richmond Hill	Bala	26.12	CN	Subway	Stouffville Road		1	RH2	26	30	YES
Richmond Hill	Bala	26.45	CN	Level Crossing	Private Crossing		1	RH2	26	100	YES
Richmond Hill	Bala	26.92	CN	Level Crossing	Farm Crossing		1	RH2	26	100	YES
Richmond Hill	Bala	27.3	CN	Level Crossing	Bethesda Side Road		1	RH2	26	100	YES
Stouffville	Uxbridge	61.02	GO	Subway	St. Clair Ave. East		2	ST1	28	60	YES
Stouffville	Uxbridge	60.92	GO	Subway	Passenger Tunnel		2	ST1	28	60	YES
Stouffville	Uxbridge	60.87	GO	Level Crossing	Mtce. Xing		2	ST1	28	60	YES
Stouffville	Uxbridge	60.7	GO	Subway	Psgr. Tunnel		2	ST1	28	60	YES
Stouffville	Uxbridge	60.66	GO	Subway	St. Clair Ave. East		2	ST1	28	60	YES
Stouffville	Uxbridge	60.18	GO	Level Crossing	Danforth Rd.		2	ST1	28	60	YES
Stouffville	Uxbridge	59.96	GO	Level Crossing	Pedestrian Xing. (Corvette Ave.)		2	ST1	28	50	YES
Stouffville	Uxbridge	59.74	GO	Subway	Pedestrian Underpass		2	ST1	28	60	YES
Stouffville	Uxbridge	59.51	GO	Subway	Pedestrian Underpass to L.R.T. Station		2	ST1	28	70	YES
Stouffville	Uxbridge	59.49	GO	Overhead Bridge	Eglinton Ave.	23' 6"	2	ST1	28	70	YES
Stouffville	Uxbridge	58.79	GO	Overhead Bridge	Mooregate/Tara Ave Pedestrian Overpa	24' 4.5"	2	ST1	28	45	YES
Stouffville	Uxbridge	58.3	GO	Overhead Bridge	Lawrence Ave. E.	23' 0.5"	2	ST1	28	38	YES
Stouffville	Uxbridge	58.29	GO	Subway	Pedestrian Underpass To L.R.T. Station		2	ST1	28	40	YES
Stouffville	Uxbridge	57.05	GO	Overhead Bridge	Ellesmere Rd.	23' 5"	2	ST1	28	40	YES
Stouffville	Uxbridge	57.01	GO	Subway	Pedestrian Underpass to L.R.T. Station		2	ST1	28	40	YES
Stouffville	Uxbridge	56.87	GO	Subway	TTC-L.R.T. To Scarborough Town Center		2	ST1	28	60	YES
Stouffville	Uxbridge	56.74	GO	Level Crossing	Progress Ave.		2	ST1	28	50	YES
Stouffville	Uxbridge	56.3	GO	Overhead Bridge	Hwy. No. 401	23' 5"	2	ST1	28	50	YES
Stouffville	Uxbridge	56	GO	Overhead Bridge	CP Bellville Sub.	22'	2	ST1	28	50	YES
Stouffville	Uxbridge	55.99	GO	Subway	West Highland Creek		2	ST1	28	50	YES
Stouffville	Uxbridge	55.73	GO	Level Crossing	Sheppard Ave. E.		2	ST1	28	55	YES
Stouffville	Uxbridge	55.44	GO	Level Crossing	Marilyn Ave. Pedestrian Crossing		2	ST1	28	55	YES
Stouffville	Uxbridge	55.16	GO	Level Crossing	Havendale Rd.		2	ST1	28	40	YES
Stouffville	Uxbridge	54.88	GO	Level Crossing	Huntingwood Dr.		2	ST1	28	45	YES
Stouffville	Uxbridge	54.43	GO	Level Crossing	Finch Ave.		2	ST1	28	60	YES
Stouffville	Uxbridge	53.61	GO	Level Crossing	McNicoll Ave.		2	ST1	28	65	YES
Stouffville	Uxbridge	53.16	GO	Level Crossing	Passmore Ave.		2	ST1	28	50	YES
Stouffville	Uxbridge	52.78	GO	Level Crossing	Steeles Ave.		2	ST1	28	50	YES
Stouffville	Uxbridge	52.4	GO	Level Crossing	Reg Rd. 2 Kennedy Rd. S.		2	ST1	28	65	YES
Stouffville	Uxbridge	51.98	GO	Level Crossing	Denison St.		2	ST1	28	65	YES
Stouffville	Uxbridge	51.5	GO	Overhead Bridge	14TH Ave.	22' 6"	2	ST1	28	33	YES
Stouffville	Uxbridge	51.1	GO	Overhead Bridge	CN York Sub - Over Uxbridge Sub	No Info	2	ST1	28	30	YES
Stouffville	Uxbridge	51.05	GO	Level Crossing	Private Xing. Markham Hydro		2	ST1	28	75	YES
Stouffville	Uxbridge	50.97	GO	Overhead Bridge	HWY 407	23' 7"	2	ST1	28	40	YES
Stouffville	Uxbridge	50.95	GO	Overhead Bridge	Hwy. No. 407	24' 5.75"	2	ST1	28	40	YES
Stouffville	Uxbridge	50.45	GO	Subway	Enterprise Drive		1	ST1	29	25	YES
Stouffville	Uxbridge	50.3	GO	Subway	CREEK		1	ST1	29	50	YES
Stouffville	Uxbridge	50.15	GO	Level Crossing	Hwy. No. 7		1	ST1	29	50	YES
Stouffville	Uxbridge	49.94	GO	Level Crossing	Eureka St.		1	ST1	29	45	YES
Stouffville	Uxbridge	49.79	GO	Level Crossing	Main St. Unionville (Old kennedy Rd.)		1	ST1	29	50	YES
Stouffville	Uxbridge	49.42	GO	Level Crossing	Reg. Rd. 3 Kennnedy Rd. N.		1	ST1	29	50	YES
Stouffville	Uxbridge	48.38	GO	Level Crossing	7th Line Rd. McCowan Rd.		1	ST1	29	50	YES
Stouffville	Uxbridge	47.3	GO	Subway	Snider Creek		1	ST1	29	25	YES
Stouffville	Uxbridge	47.17	GO	Level Crossing	Snider Dr.		1	ST1	29	40	YES
Stouffville	Uxbridge	46.95	GO	Level Crossing	Main St. Hwy. No. 48		1	ST1	29	40	YES
Stouffville	Uxbridge	46.31	GO	Level Crossing	16th Ave. Town of MarkhamYork Reg. Rd. 73		1	ST1	29	40	YES
Stouffville	Uxbridge	45.74	GO	Level Crossing	Bur-Oak Rd.		1	ST1	29	40	YES
Stouffville	Uxbridge	45.47	GO	Level Crossing	Castlemore Ave		1	ST2	30	45	YES
Stouffville	Uxbridge	44.96	GO	Level Crossing	17th Ave. Major Mackenzie Dr. E.York Reg. Rd. 25		1	ST2	30	40	YES
Stouffville	Uxbridge	44.4	GO	Level Crossing	Farm Xing		1	ST2	30	40	YES
Stouffville	Uxbridge	43.65	GO	Level Crossing	Farm Xing.		1	ST2	30	40	YES
Stouffville	Uxbridge	43.46	GO	Level Crossing	18th Ave. Elgin Mills Rd. E.		1	ST2	30	40	YES
Stouffville	Uxbridge	42.95	GO	Level Crossing	Farm Xing.		1	ST2	30	40	YES
Stouffville	Uxbridge	42.46	GO	Level Crossing	Farm Xing.		1	ST2	30	40	YES
Stouffville	Uxbridge	42.35	GO	Level Crossing	9th Concession Rd. Town of Markham(York Reg. Rd. 6		1	ST2	30	40	YES
Stouffville	Uxbridge	42.25	GO	Level Crossing	Farm Xing.		1	ST2	30	40	YES
Stouffville	Uxbridge	42.04	GO	Level Crossing	19th Ave. Town of Markham		1	ST2	30	45	YES
Stouffville	Uxbridge	41.73	GO	Level Crossing	Reeves Way Blvd.		1	ST2	30	75	YES
Stouffville	Uxbridge	41.17	GO	Level Crossing	Hoover Park Dr.		1	ST2	30	65	YES
Stouffville	Uxbridge	40.72	GO	Level Crossing	Main St. (Hwy. 47) Stouffville Rd.(York Reg. Rd. 14)		1	ST2	30	40	YES
Stouffville	Uxbridge	40.3	GO	Level Crossing	Millard St.		1	ST2	30	45	YES
Stouffville	Uxbridge	39.4	GO	Level Crossing	Farm Xing.		1	ST2	30	40	YES
Stouffville	Uxbridge	38.95	GO	Level Crossing	Bethesda Rd		1	ST2	30	50	YES
Stouffville	Uxbridge	38.93	GO	Level Crossing	10th Line		1	ST2	30	50	YES