

TECHNICAL MEMO

To: Daniel R. Di Pietro – City of Guelph

Date: January 30, 2023

From: Brent Archibald – Parsons

Parsons Ref. #477916

Copy: Jennifer Juste – City of Guelph
Altaf Hussain – Parsons

Subject: Guelph Transportation Study – Metrolinx's Guelph Existing Level Rail Crossings, Grade Separation Options

Parsons was retained by the City of Guelph (the City) to determine the transportation infrastructure needs to support the planned GO Regional Express Rail (RER) service, which may be needed due to Metrolinx's ongoing review of potential changes to the five (5) existing level rail crossings (LRCs) at Alma Street, Edinburgh Road, Yorkshire Street, Glasgow Street, and Watson Road. A feasibility study of new active transportation (AT) grade separation connection across the rail track at the Cityview Drive, Dublin Street and Margaret Greene Park locations is also conducted.

For this assignment, the City is reviewing the feasibility of constructing road-rail grade separations at the following locations to separate the streets from the Guelph GO Subdivision:

- Alma Street
- Edinburgh Road
- Yorkshire Street
- Glasgow Street
- Cityview Drive - **New**
- Dublin Street - **New**
- Margaret Greene Park - **New**

Inherent with constructing a grade separation in an urban environment, access to some properties and roadways adjacent to the grade separation will be disrupted or cut off as a result of the changes to the roadway profile. The type of grade separation (road over rail, or road under rail) have been selected based on the preferred option identified in the Technical Memorandum titled Guelph Transportation Study – Fatal Flaw Screening of Overpass vs Underpass Grade Separation dated November 10, 2021. In addition, it is recognized that there will be significant private property impacts associated with the construction of grade separations. Furthermore, because of the nature of the construction, the majority of utilities that either cross, or are located within the roadway right-of-way will also be impacted and require relocation.

The concept and sizing outline of the grade separations were developed based on the following assumptions:

1. Grade Separations are completed prior to GO Service Improvements.
2. Proposed structure cross-section is similar to the existing roadway cross-section.
3. Existing tracks can be shifted within the current railway right-of-way to allow for staged construction of the railway bridge(s) and abutments at roadway underpass locations.
4. Underpass locations can be drained using a gravity sewer tied into existing sewer system.
5. Existing utilities can be accommodated below sidewalk allowances and within the proposed permanent easement allowances.

Class D construction cost estimates were prepared excluding the costs of property acquisition, property tax, legal, surveys, RFQ/RFP, investigation/studies, engineering design, contract administration and HST.

Details of the configuration for each grade separation location and their impacts are provided in the following sections.

Alma Street

The proposed grade separation for Alma Street is an overpass (total width of 13m assumed based on existing roadway cross-section) with roadway bridges located over the existing and future tracks at both the Guelph GO Subdivision/Guelph Subdivision as well as the connecting track between the Guelph GO Subdivision and the Guelph Subdivision. This option would raise the roadway with a maximum grade of 6.85% over the railway tracks. As a result of the jog in Alma Street at Inkerman Street, it is proposed to realign Alma Street such that the grade separation ties into the existing roadway at each end. This will require a shift to the roadway right-of-way (ROW) to match the proposed roadway alignment. The primary impact to the road system will be interruption to the existing road patterns and driveways adjacent to the raised roadway. Alma Street north of Inkerman, Inkerman Street, Crimea Street, Lucan Street, Omar Street, and Petrolia Street that presently connect to Alma Street would need to be permanently closed. It may be feasible to maintain a laneway access from Alma Street to Petrolia Street as well as a connection to Lucan Street as a result of the proposed Alma Street alignment shift. An overview of the overpass grade separation sizing/limits shown on a plan is provided in **Appendix A**.

There is currently one connecting track crossing at Alma Street north of Crimea Street and two mainline tracks and one siding track crossing Alma Street south of Crimea Street with switches in close proximity to the crossing. The overpasses for the two crossing can be designed to span over the railway corridor with the abutments located at a minimum distance from the future track configuration of each crossing. Accordingly, no track staging is required for the construction of this grade separation. It has been assumed that Alma Street will be closed for the duration of the construction, with traffic diverted onto adjacent roads, allowing the grade separation to be constructed in a single stage. Retaining walls have been considered for the approach roadway as well as the portion between the two overpass structures in order to minimize property impacts. A permanent easement allowance of up to 5 m from the proposed retaining walls has been assumed to allow for drainage and utilities. The total construction cost of grade separation for the Alma Street is approximately **\$49.8M**. Detailed construction cost estimate is provided in **Appendix B**.

Edinburgh Road

The proposed grade separation for Edinburgh Road is an underpass (total width of 14m assumed based on existing roadway cross-section) with a railway bridge located to support the tracks of the Guelph GO Subdivision. This option would depress the road at a maximum grade of 8.0% under the tracks. The primary impact to the road system will be interruption to the existing road patterns and driveways adjacent to the depressed roadway. Robinson Avenue, Foster Avenue, Preston Street, and Inkerman Street that presently connect to Edinburgh Road will close permanently. An overview of the underpass grade separation sizing/limits shown on a plan is provided in **Appendix A**.

There are currently two tracks crossing at Edinburgh Road, a mainline track and a yard track, which also connect to a Guelph Subdivision yard track to the west. The configuration of the yard track and associated switches will need to be reviewed by the railway to confirm acceptance of the proximity of the switches to the proposed bridge. For the purpose of this study, it has been assumed that the construction of the railway bridges will be completed by shifting the existing tracks within the current railway ROW to allow the structure to be constructed in two stages. Following discussions with the City, it was assumed that Edinburgh Road will be closed within the construction limits (to be determined in preliminary design) during the grade separation construction works and traffic will be detoured to the other north-south major roads including Norfolk Street to the east and Hanlon Pkwy (Hwy 6) to the west. Retaining walls have been considered for the depressed roadway in order to minimize the property impacts. A permanent easement allowance varying up to 7 m from the future retaining walls has also been assumed to allow for retaining wall footings, drainage and utilities. The total construction cost of the grade separation for the Edinburgh Road is estimated at **\$47.5M**. Detailed construction cost estimate is provided in **Appendix B**.

Yorkshire Street

The proposed grade separation for Yorkshire Street is an underpass (total width of 12m assumed based on existing roadway cross-section) with a railway bridge located to support the existing and future tracks of the Guelph GO Subdivision. This option would depress the road at a maximum grade of 6.0% under the railway tracks. The primary impact to the road system will be interruption to the existing road patterns and driveways adjacent to the depressed roadway. Northumberland Street, Foster Avenue, and Preston Street that presently connect to Yorkshire Street will close permanently. An overview of the underpass grade separation sizing layout/limits shown on a plan is provided in **Appendix A**.

There is currently one mainline track crossing at Yorkshire Street. For the purpose of this study, it has been assumed that the construction of the railway bridges will be completed by shifting the existing track within the current railway ROW to allow the structure to be constructed in two stages. It has been assumed that Yorkshire Street will be closed for the duration of the construction, with traffic diverted onto adjacent streets. Retaining walls have been considered for the depressed roadway in order to minimize the property impacts. A permanent easement allowance varying up to 7 m from the future retaining walls has also been assumed to allow for retaining wall footings, drainage and utilities. The total construction cost of the grade separation for the Yorkshire Street is estimated at **\$30.8M**. Detailed construction cost estimate is provided in **Appendix B**.

Glasgow Street

The proposed grade separation for Glasgow Street is an underpass (total width of 12m assumed based on existing roadway cross-section) with a railway bridge located to support the existing and future tracks of the Guelph GO Subdivision. This option would depress the road at a maximum grade of 6.0% under the railway tracks. The primary impact to the road system will be interruption to the existing roads patterns and driveways adjacent to the depressed roadway. Durham Street, Northumberland Street, Kent Street, and Preston Street that presently connect to Glasgow Street will close permanently. An overview of the grade separation sizing layout/limits shown on a plan is provided in **Appendix A**.

There is currently one mainline track crossing at Glasgow Street. For the purpose of this study, it has been assumed that the construction of the railway bridges will be done by shifting the existing track within the current railway ROW to allow the structure to be constructed in two stages. It has been assumed that Glasgow Street will be closed for the duration of the construction, with traffic diverted onto adjacent streets. Retaining walls have been considered for the depressed roadway in order to minimize the property impacts. A permanent easement allowance varying up to 7 m from the future retaining walls has also been assumed to allow for retaining wall footings, drainage, and utilities. The total construction cost for the grade separation at Glasgow Street is estimated at **\$39.1M**. Detailed construction cost estimate is provided in **Appendix B**.

Cityview Drive

Cityview Drive is located in the east end of the City of Guelph and currently does not connect across the Guelph GO Subdivision. To provide pedestrian and AT connectivity across the railway corridor, a pedestrian underpass tunnel has been proposed. An overview of the grade separation sizing layout/limits shown on a plan is provided in **Appendix A**.

There is currently one mainline track in service at Cityview Drive. It has been assumed that construction of the new pedestrian tunnel can be completed during a weekend track closure, which is typical industry practice. Alternately, tunnel construction could be staged with the existing railway ROW if a closure cannot be obtained from the railway. The underpass grade separation has been assumed to consist of a concrete box structure with a 3 m vertical clearance and a width of 5 m for pedestrians and AT users. The existing Cityview Road is on a 5% grade (approximately) and hence a switchback ramp with a similar slope has been assumed for the purpose of this study. Retaining walls have been considered for the entrances to the tunnel to accommodate the grade difference required for the pathway and switchback.

The total construction cost of an underpass tunnel at Cityview Drive is estimated at **\$9.9M**. Detailed construction cost estimate is provided in **Appendix B**.

Dublin Street

The proposed grade separation for Dublin Street as an underpass across the Guelph GO Subdivision and Kent Street roadway has been proposed to maintain the pedestrian and AT connectivity across the railway corridor. An overview of the grade separation sizing layout/ limits shown on a plan is provided in **Appendix A**.

There is currently one mainline track in service at the location of Dublin Street crossing. It has been assumed that the construction of the new pedestrian tunnel can be completed during a weekend track closure which is typical industry practice. Alternatively, the tunnel construction could be staged within the current railway ROW if a closure permission cannot be obtained from the railway. The grade separation has been assumed to consist of a concrete box structure with a 3m vertical clearance for pedestrians. The existing Dublin Street is on a grade close to 5%, and hence a switchback ramp with a similar slope has been assumed for the purpose of this feasibility study. The tunnel has been positioned on the northeast of the Dublin Street to maintain the transportation access from Dublin Street to Kent Street. Retaining walls have been considered for the entrances to the tunnel to accommodate the grade difference required for the pathway and switchback.

The total construction cost of underpass tunnel at the Dublin Street crossing is estimated at **\$ 10.9M**. Detailed construction cost estimate is provided in **Appendix B**.

Margaret Greene Park

The Margaret Greene Park is located in the west end of the City of Guelph and currently does not connect across the Guelph GO Subdivision. To provide pedestrian and AT connectivity across the railway corridor, a pedestrian underpass tunnel has been proposed. An overview of the grade separation sizing/layout limits shown on a plan is provided in **Appendix A**.

There is currently one mainline track in service at the location of Margaret Greene Park. It has been assumed that the construction of the new pedestrian tunnel can be done during a weekend track closure which is typical industry practice. Alternatively, the tunnel construction could be staged within the current railway ROW if a closure permission cannot be obtained from the railway. The grade separation has been assumed to consist of a concrete box structure with a 3m vertical clearance for pedestrians. The concrete box tunnel is provided at 0.5% grade for drainage. The north retaining walls have been aligned to the west for the entrance to accommodate the grade difference required for pathway and avoid interference with the existing soccer field.

The total construction cost of underpass tunnel at Margaret Greene Park is estimated at **\$6.2M**. Detailed construction cost estimate is provided in **Appendix B**.

Appendix A – Grade Separation Concepts

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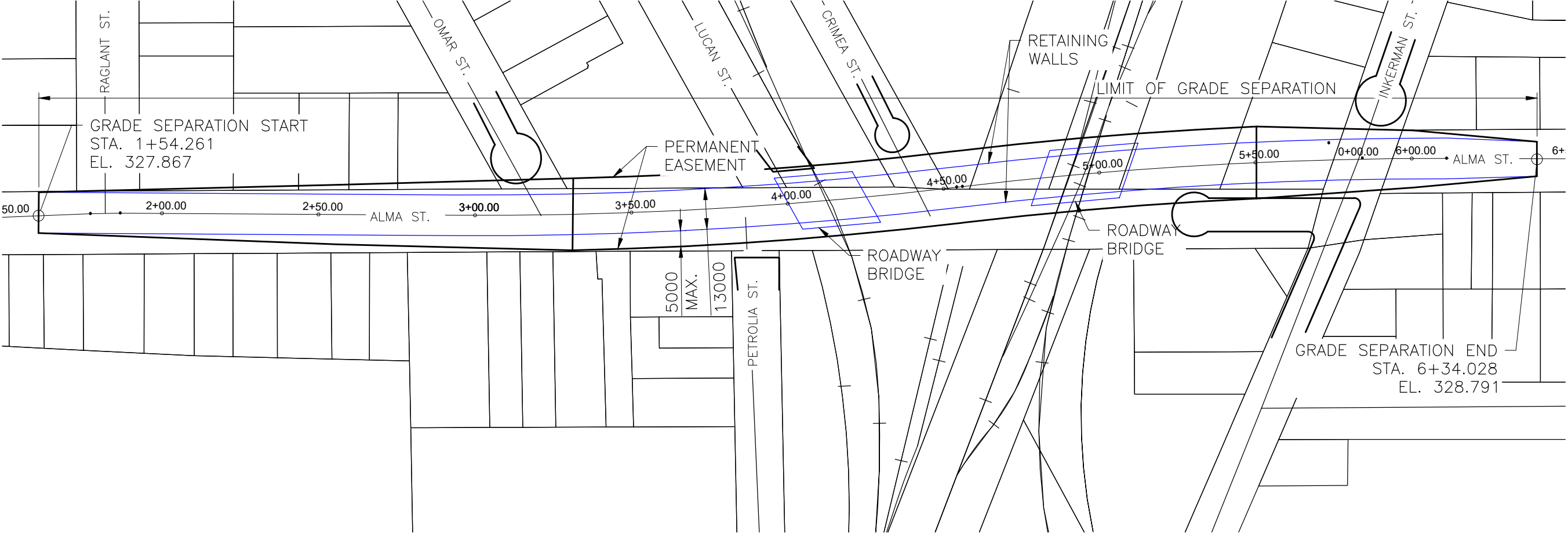
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2017-08

PARSONS



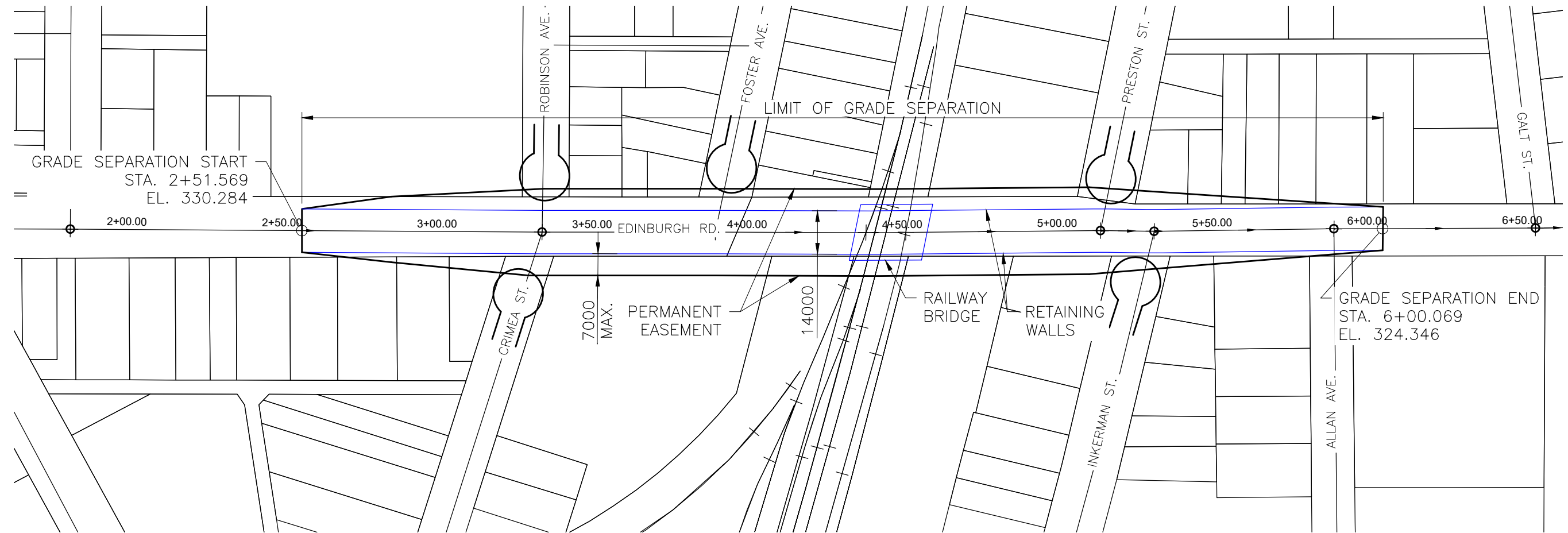
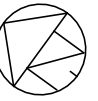
FIGURE 1-1

GUELPH
TRANSPORTATION STUDY
GRADE SEPARATIONS
AT ALMA STREET

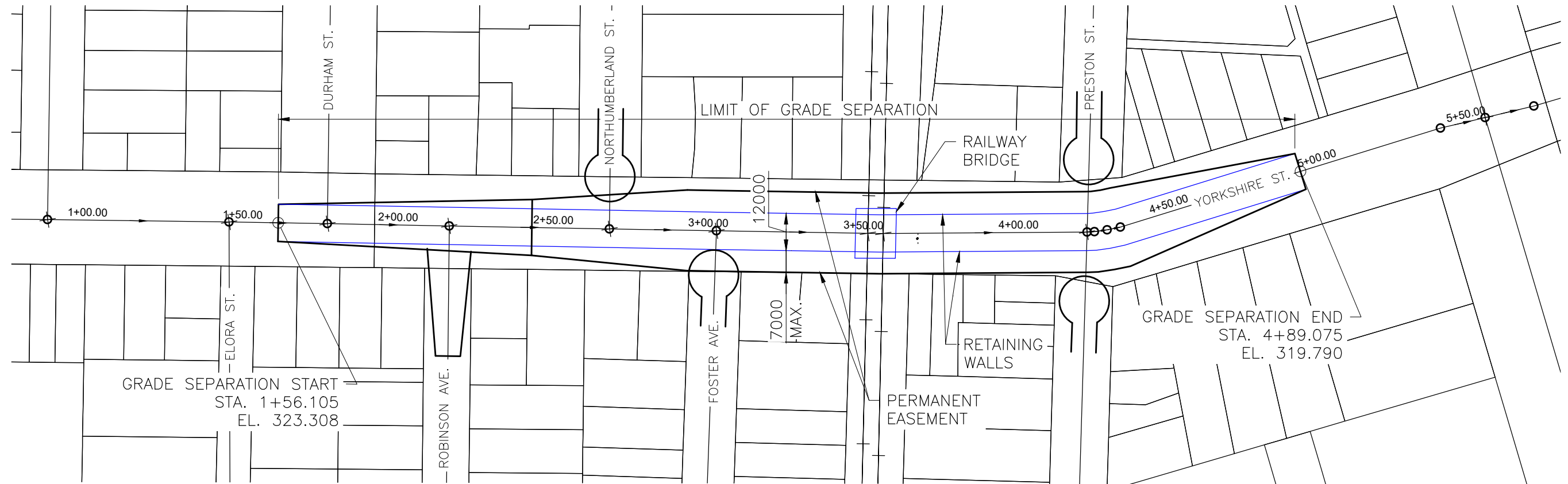


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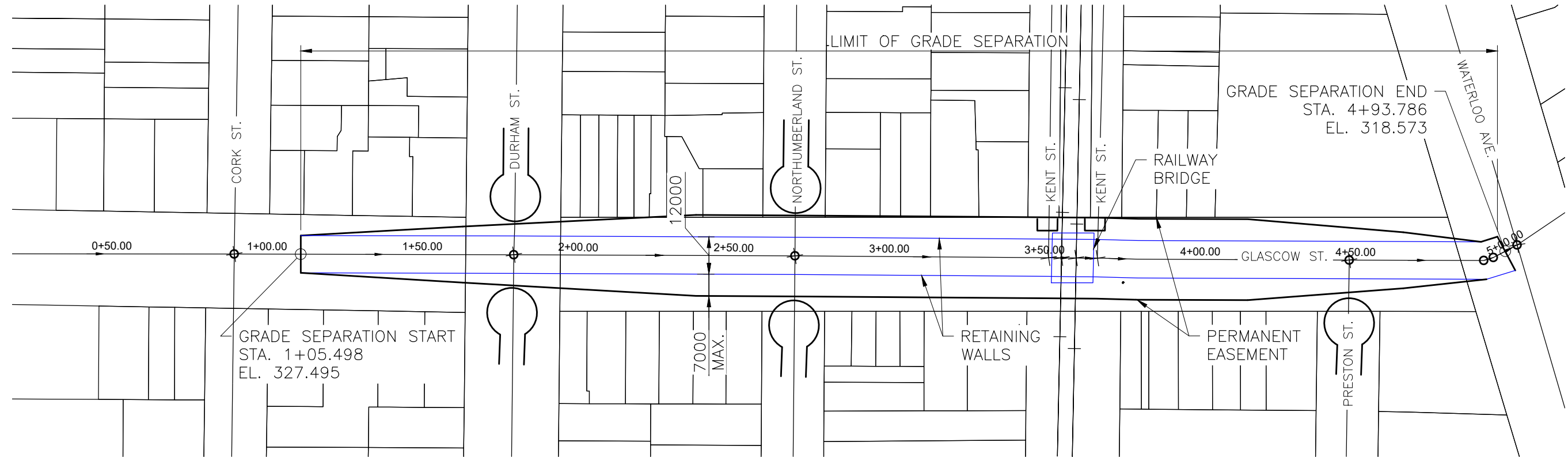
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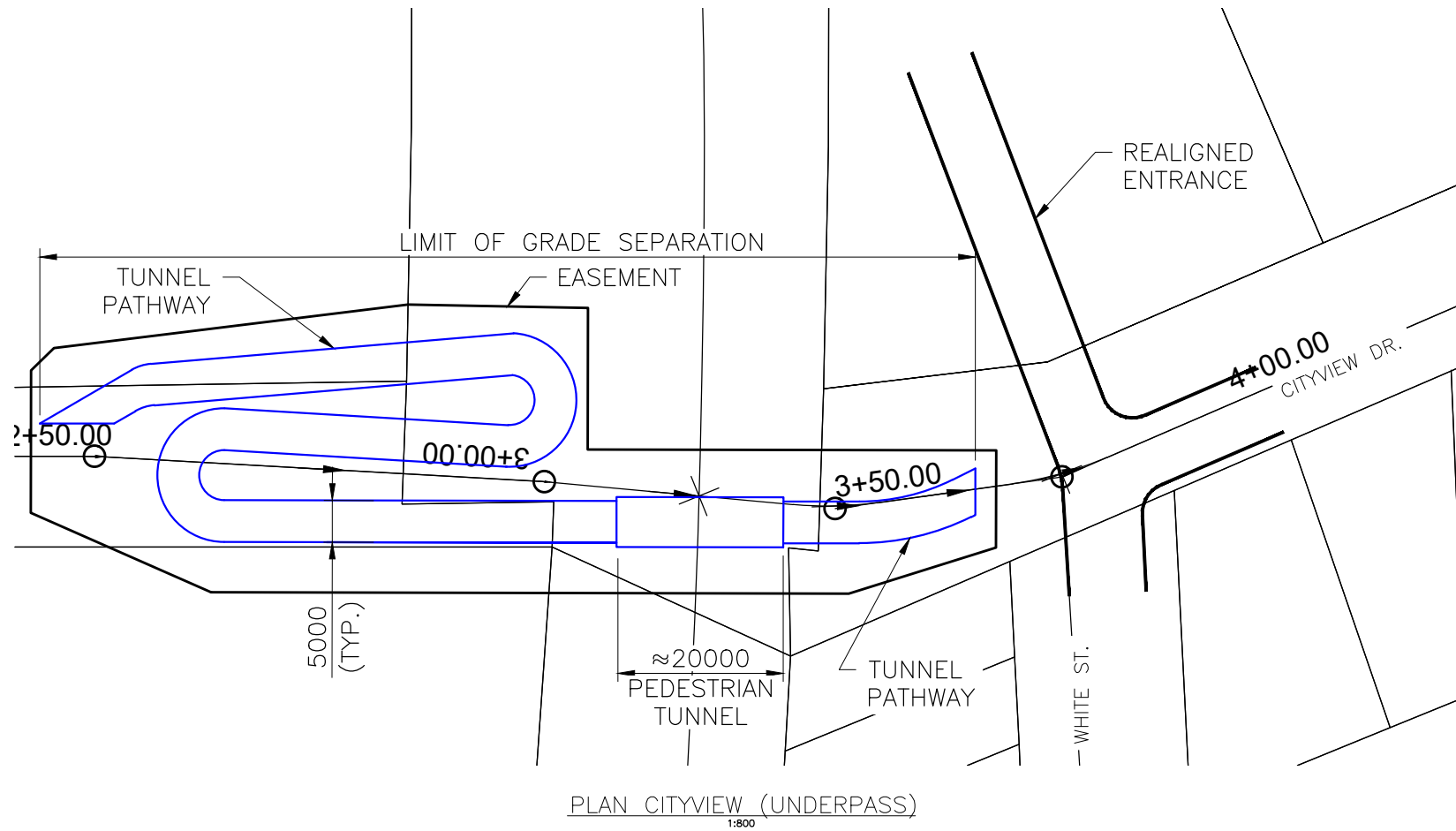


PLAN YORKSHIRE (UNDERPASS)
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PLAN GLASGOW (UNDERPASS)

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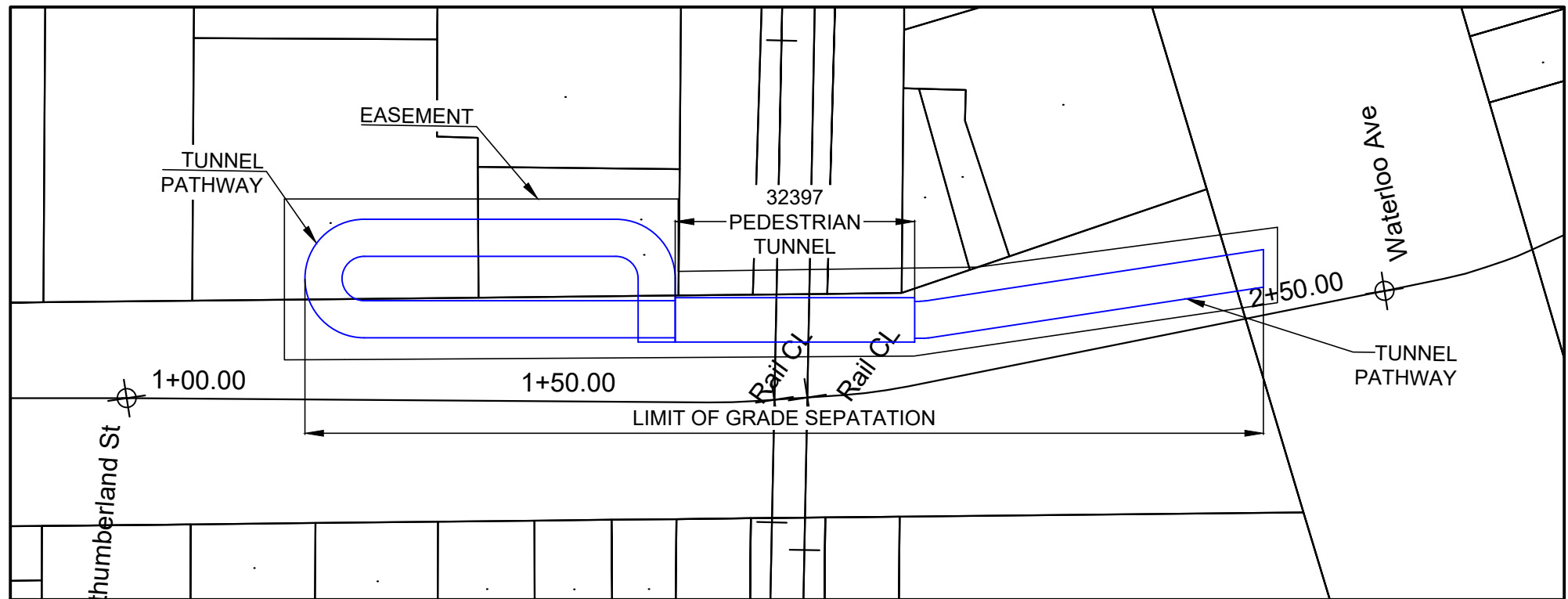


PARSONS



GUELPH
TRANSPORTATION STUDY
GRADE SEPARATION
AT DUBLIN STREET

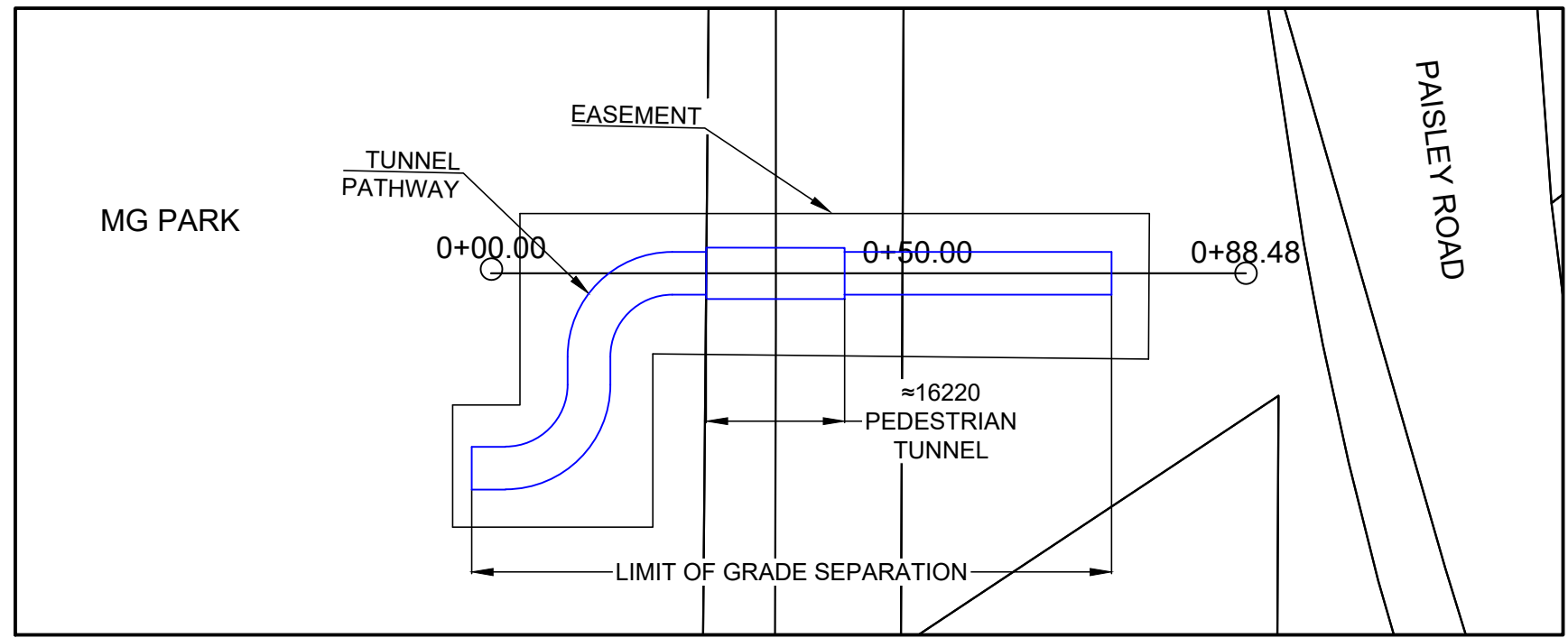
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PLAN DUBLIN (UNDERPASS)
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DESIGN	CHK	CODE	LOAD	DATE
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DOCUMENT CODE:



PLAN MG PARK (UNDERPASS)
1:800

DESIGN	CHK	CODE	LOAD	DATE
DRAWN	CHK	SITE		DWG

DOCUMENT CODE:

PARSONS



GUELPH
TRANSPORTATION STUDY
GRADE SEPARATION
AT MG PARK

SHEET

Appendix B – Cost Estimates

SUMMARY COST BREAKDOWN

<u>Construction Cost Breakdown:</u>	Unit	Area/L	Unit Cost	Amount	Amount (Rounded)*
<u>1 Grade Separation (Alma St) - Overpass</u>					
1.1 Site Works	LS			\$5,000,000	\$5,000,000
1.2 Bridge Structure	/m ²	476	\$ 8,000.00	\$3,807,558	\$3,800,000
1.3 Retaining Walls	/m ²	7968	\$ 1,500.00	\$11,951,996	\$12,000,000
1.4 Trackwork	LS			\$4,000,000	\$4,000,000
1.5 Roadworks (2-Lane Urbanized)	LM	1399	\$3,000	\$4,195,714	\$4,200,000
1.6 Site Services (Including Utilities)	15%			\$4,343,290	\$4,300,000
Sub-total				\$33,298,559	\$33,300,000
1.7 Mob/Demob/Bonding/etc..	15%			\$4,994,784	\$5,000,000
1.8 Contingency	30%			\$11,488,003	\$11,500,000
Total			Total	\$49,781,345	\$49,800,000
<u>2 Grade Separation (Edinburgh St) - Underpass</u>					
2.1 Site Works (Removals, Excavation)	LS			\$5,000,000	\$5,000,000
2.2 Bridge Structure	/m ²	325	\$ 10,000.00	\$3,250,427	\$3,300,000
2.3 Retaining Walls	/m ²	4165	\$ 2,500.00	\$10,412,377	\$10,400,000
2.4 Trackwork	LS			\$4,000,000	\$4,000,000
2.5 Roadworks (2-Lane Urbanized)	LM	1656	\$3,000	\$4,968,771	\$5,000,000
2.6 Site Services (Including Utilities)	15%			\$4,144,736	\$4,100,000
Sub-total				\$31,776,312	\$31,800,000
2.7 Mob/Demob/Bonding/etc..	15%			\$4,766,447	\$4,800,000
2.8 Contingency	30%			\$10,962,828	\$11,000,000
Total			Total	\$47,505,586	\$47,500,000
<u>3 Grade Separation (Yorkshire St) - Underpass</u>					
3.1 Site Works	LS			\$4,000,000	\$4,000,000
3.2 Bridge Structure	/m ²	211	\$ 10,000.00	\$2,108,324	\$2,100,000
3.3 Retaining Walls	/m ²	2617	\$ 2,500.00	\$6,542,628	\$6,500,000
3.4 Trackwork	LS			\$2,000,000	\$2,000,000
3.5 Roadworks (2-Lane Urbanized)	LM	1083	\$3,000	\$3,249,429	\$3,200,000
3.6 Site Services (Including Utilities)	15%			\$2,685,057	\$2,700,000
Sub-total				\$20,585,438	\$20,600,000
3.7 Mob/Demob/Bonding/etc..	15%			\$3,087,816	\$3,100,000
3.8 Contingency	30%			\$7,101,976	\$7,100,000
Total			Total	\$30,775,230	\$30,800,000
<u>4 Grade Separation (Glasgow St) - Underpass</u>					
4.1 Site Works	LS			\$4,000,000	\$4,000,000
4.2 Bridge Structure	/m ²	211	\$ 10,000.00	\$2,108,324	\$2,100,000
4.3 Retaining Walls	/m ²	4257	\$ 2,500.00	\$10,643,172	\$10,600,000
4.4 Trackwork	LS			\$2,000,000	\$2,000,000
4.5 Roadworks (2-Lane Urbanized)	LM	1339	\$3,000	\$4,016,143	\$4,000,000
4.6 Site Services (Including Utilities)	15%			\$3,415,146	\$3,400,000
Sub-total				\$26,182,785	\$26,200,000
4.7 Mob/Demob/Bonding/etc..	15%			\$3,927,418	\$3,900,000
4.8 Contingency	30%			\$9,033,061	\$9,000,000
Total			Total	\$39,143,263	\$39,100,000

SUMMARY COST BREAKDOWN

	Unit	Area	Unit Cost	Amount	Amount (Rounded)*
5 Grade Separation (City View) - Underpass					
5.1 Mob/Demob/Bonding/etc..	15%			\$989,332	\$1,000,000
5.2 Site Works	LS			\$75,000	\$100,000
5.3 Tunnel Structure	/m ²	249	\$ 10,000.00	\$2,491,200	\$2,500,000
5.4 Retaining Walls	/m ²	1092	\$ 2,500.00	\$2,729,348	\$2,700,000
5.5 Trackwork	LS			\$1,000,000	\$1,000,000
5.6 Roadworks	LS			\$200,000	\$200,000
5.6 Site Services (Including Utilities)	LS			\$100,000	\$100,000
	Contingency (30%)			\$2,275,464	\$2,300,000
	Total			\$9,860,344	\$9,900,000
6 Grade Separation (Dublin Street) - Underpass					
6.1 Mob/Demob/Bonding/etc..	15%			\$1,091,145	\$1,100,000
6.2 Site Works	LS			\$75,000	\$100,000
6.3 Tunnel Structure	/m ²	194	\$ 10,000.00	\$1,944,000	\$1,900,000
6.4 Retaining Walls	/m ²	1582	\$ 2,500.00	\$3,955,300	\$4,000,000
6.5 Trackwork	LS			\$1,000,000	\$1,000,000
6.6 Site Services	LS			\$100,000	\$100,000
6.7 Roadworks	LS			\$200,000	\$200,000
	Contingency (30%)			\$2,509,634	\$2,500,000
	Total			\$10,875,079	\$10,900,000
7 Grade Separation (Magaret GreenPark) - Underpass					
7.1 Mob/Demob/Bonding/etc..	15%			\$626,798	\$600,000
7.2 Site Works	LS			\$75,000	\$100,000
7.3 Tunnel Structure	/m ²	97	\$ 10,000.00	\$973,200	\$1,000,000
7.4 Retaining Walls	/m ²	732	\$ 2,500.00	\$1,830,450	\$1,800,000
7.5 Trackwork	LS			\$1,000,000	\$1,000,000
7.6 Site Services	LS			\$100,000	\$100,000
7.7 Roadworks	LS			\$200,000	\$200,000
	Contingency (30%)			\$1,441,634	\$1,400,000
	Total			\$6,247,082	\$6,200,000

*Amount rounded to 00,000

Cost Exclusions

Property Acquisition

Property Tax

Legal Fees

Survey Costs

RFQ/RFP Costs

Investigations and Studies Costs

Consultant Design Fees

Contract Administration

HST

Assumptions

- Grade Separations are completed prior to GO Service Improvements
- Proposed structure cross-section similar to existing roadway cross-section.
- Existing
- Underpass locations can be drained using a gravity sewer tied into existing sewer system
- Existing utilities can be accommodated below sidewalk allowances and within permanent easement allowances

TECHNICAL MEMO

To: Daniel R. Di Pietro – City of Guelph

Date: January 30, 2023

From: Brent Archibald – Parsons

Parsons Ref. #477916

Copy: Jennifer Juste – City of Guelph
Altat Hussain – Parsons

Subject: **Guelph Transportation Study – Metrolinx’s Guelph Existing Level Rail Crossings, Pedestrian Bridge Options**

Parsons has been retained by the City of Guelph (the City) to determine the transportation infrastructure needs to support the planned GO Regional Express Rail (RER) service, which may be needed due to Metrolinx’s ongoing review of potential changes to five (5) existing level rail crossings (LRCs) at Alma Street, Edinburgh Road, Yorkshire Street, Glasgow Street, and Watson Road. A feasibility study of an active transportation (AT) connection across the rail track at Cityview Drive, Dublin Street and Margaret Greene Park is also conducted.

For this assignment, the City is reviewing the feasibility of converting the current at-grade railway crossings into pedestrian bridges and also providing new connection at the following locations to provide pedestrian access across the Guelph GO Subdivision:

- Alma Street
- Yorkshire Street
- Glasgow Street
- Cityview Drive - **New**
- Dublin Street - **New**
- Margaret Greene Park - **New**

In order to provide pedestrian access across the railway corridor, pedestrian bridges should ideally be located outside the railway right-of-way (ROW). Locating the bridges off the railway corridor and providing a minimum offset from the proposed railway tracks of 7.6 m (25 ft.), will also avoid the need for crash wall protection. For the purpose of this study, all bridges have been positioned off the railway ROW and it has been assumed they are able to achieve the minimum offset to the future track layout to avoid crash wall protection.

All pedestrian bridges layouts have been based on providing accessible ramps as well as stair access. Ramps have been based on the Guelph Accessibility Standards with a maximum slope of 1V:20H. In order to minimize the footprint of the ramp structure, it has been assumed that multiple levels of ramps will be stacked above each other. Based on a minimum vertical pedestrian clearance of 2.5 m, and an assumed superstructure depth of 0.5 m, the minimum ramp length to permit stacking is 60 m. In order to provide a clearance of 7.58 m to the railway tracks, approximately 2.5 levels of ramps will be required.

Class D construction cost estimates were prepared excluding the costs of property acquisition, property tax, legal, surveys, RFQ/RFP, investigation/studies, engineering design, contract administration and HST.

Alma Street

The proposed pedestrian bridge will comprise of a 32.32 m long single span steel truss structure to clear the existing and future Guelph GO Subdivision and the Guelph Subdivision tracks south of Crimea Street, and it includes a stacked ramp

structure and 16.5 m long staircases with intermediate landings on each side of the pedestrian bridge. The bridge has been positioned on the east side of Alma Street to minimize impacts to current businesses on the west side. Alma Street will be permanently closed at the track crossing, however, a roadway connection between Alma Street and Crimea Street can be maintained north of the bridge. An overview of the pedestrian bridge sizing and impacts to properties is provided in **Appendix A**. The total construction cost of pedestrian bridge at Alma Street crossing is approximately **\$5.8M**. Detailed construction cost estimate is provided in **Appendix B**.

Yorkshire Street

The proposed pedestrian bridge will comprise of a 29 m long single span steel truss structure to clear the existing and future Guelph GO Subdivision tracks, and it includes a stacked ramp structure and 17.4 m long staircases with intermediate landings on each side of the pedestrian bridge. The bridge ramps have been positioned diagonally across from each other, however, the ramps could be located in any of the four quadrants. Yorkshire Street will be permanently closed at the track crossing. An overview of the pedestrian bridge sizing and impacts to properties is provided in **Appendix A**. The total construction cost of the pedestrian bridge at Yorkshire Street crossing is estimated to **\$5.6M**. Detailed construction cost estimate is provided in **Appendix B**.

Glasgow Street

The proposed pedestrian bridge will comprise of a 35 m long single span steel truss structure to clear the existing and future Guelph GO Subdivision tracks, and it includes a stacked ramp structure and 17.9 m long staircases with intermediate landings on each side of the pedestrian bridge. The bridge ramps have been positioned on the west side to maintain access to the current Kent Street laneways, however, the ramps could be located in any of the four quadrants if access to Kent Street is not required. Glasgow Street will be permanently closed at the track crossing. An overview of the pedestrian bridge sizing and impacts to properties is provided in **Appendix A**. The total construction cost for the pedestrian bridge at Glasgow Street is estimated to **\$5.9M**. Detailed construction cost estimate is provided in **Appendix B**.

Cityview Drive

Currently, there is no crossing at Cityview Drive and the proposed pedestrian bridge comprises of a 35 m long single span steel truss structure to clear the existing and future Guelph GO Subdivision tracks, and it includes a stacked ramp structure and staircases with intermediate landings on each side of the pedestrian bridge. Due to the existing grades at Cityview Drive, the ramp and staircase south of the railway will be longer than the one to the north. The south ramp has been positioned on the east side to avoid conflicts with existing residential buildings, however, the north ramp could be positioned either to the east or west of Cityview Drive. Cityview Drive will remain permanently closed at the track crossing. An overview of the pedestrian bridge sizing and impacts to the adjacent properties is provided in **Appendix A**. The total construction cost of pedestrian bridge at Cityview Drive is estimated to **\$5.9M**. Detailed construction cost estimate is provided in **Appendix B**.

Dublin Street

Currently, there is no crossing at Dublin Street and the proposed pedestrian bridge at this location comprises of 35 m long single span steel truss structure to clear the existing and future Guelph Go Subdivision tracks and Kent Street, and it includes a stacked ramp structure and 17.9 m long staircases with intermediate landings on each side of the pedestrian bridge. The bridge ramps and stairs have been positioned on the northeast side to maintain the access from the Dublin Street to Kent Street. An overview of the pedestrian bridge and impacts to the properties are provided in **Appendix A**.

The total construction cost of pedestrian bridge at the Dublin Street crossing is **\$ 5.9M**. Detailed construction cost estimate is provided in **Appendix B**.

Margaret Greene Park

Currently, there is no crossing at rail corridor south of Margaret Greene Park (north of Paisley Road) and location of the new pedestrian crossing was selected in consultation with the City as it was identified in the City of Guelph Trail Master Plan, May 2021.

The proposed pedestrian bridge comprises of 30m long span steel truss structure to clear the existing Guelph GO Subdivision track and it includes a stacked ramp structure and 28.7m long staircases with intermediate landing on each side of the pedestrian bridge. Due to the existing railway embankment being higher than the surrounding park lands, the ramp and staircases will be longer than other sites in order to obtain the vertical clearance to the railway. An overview of the pedestrian bridge layout and impacts to the properties is provided in **Appendix A**.

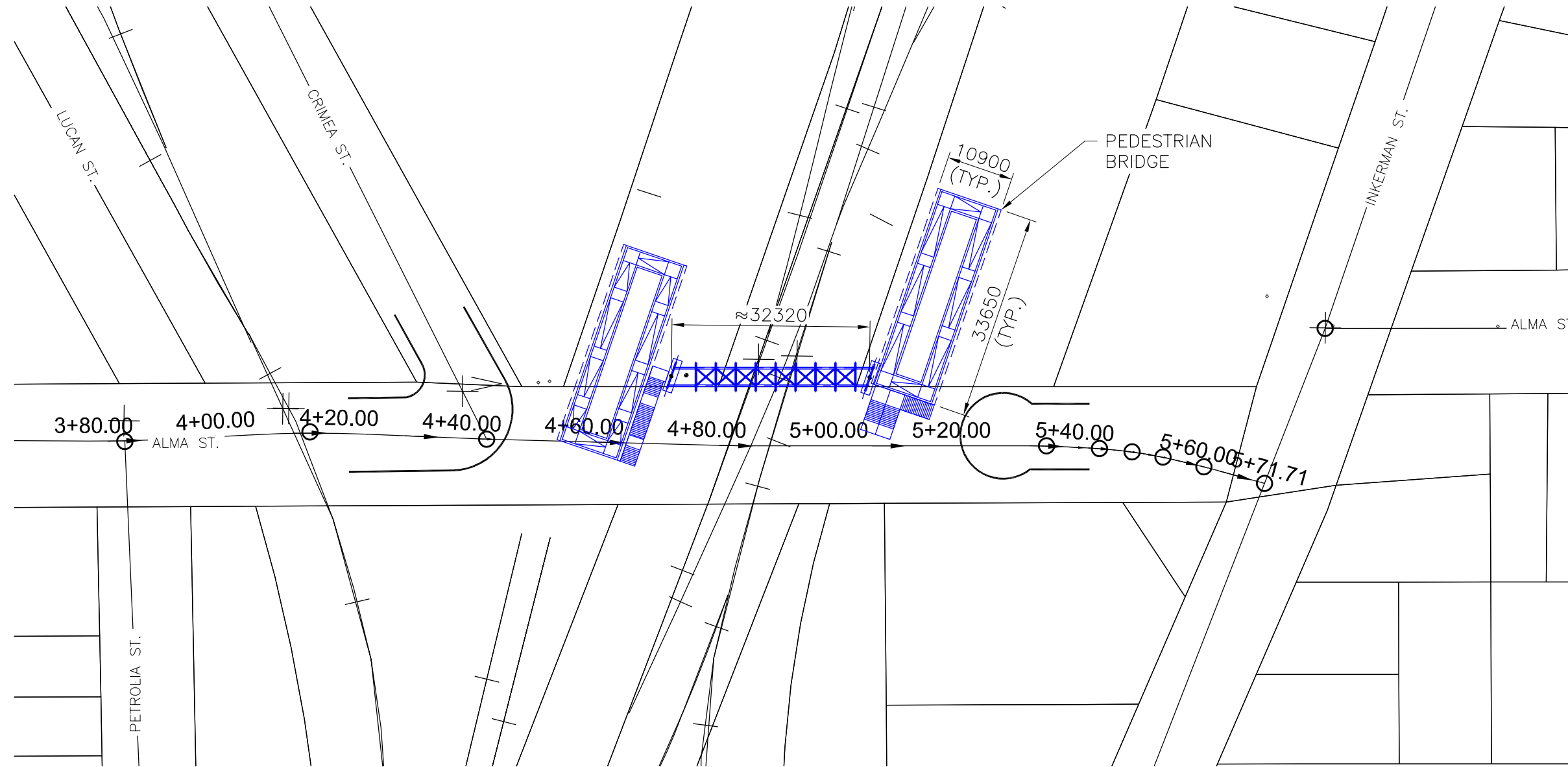
The total construction cost of pedestrian bridge at the Margaret Greene Park rail crossing is **\$ 7.8M**. Detailed construction cost estimate is provided in **Appendix B**.

Appendix A – Pedestrian Bridge Concepts

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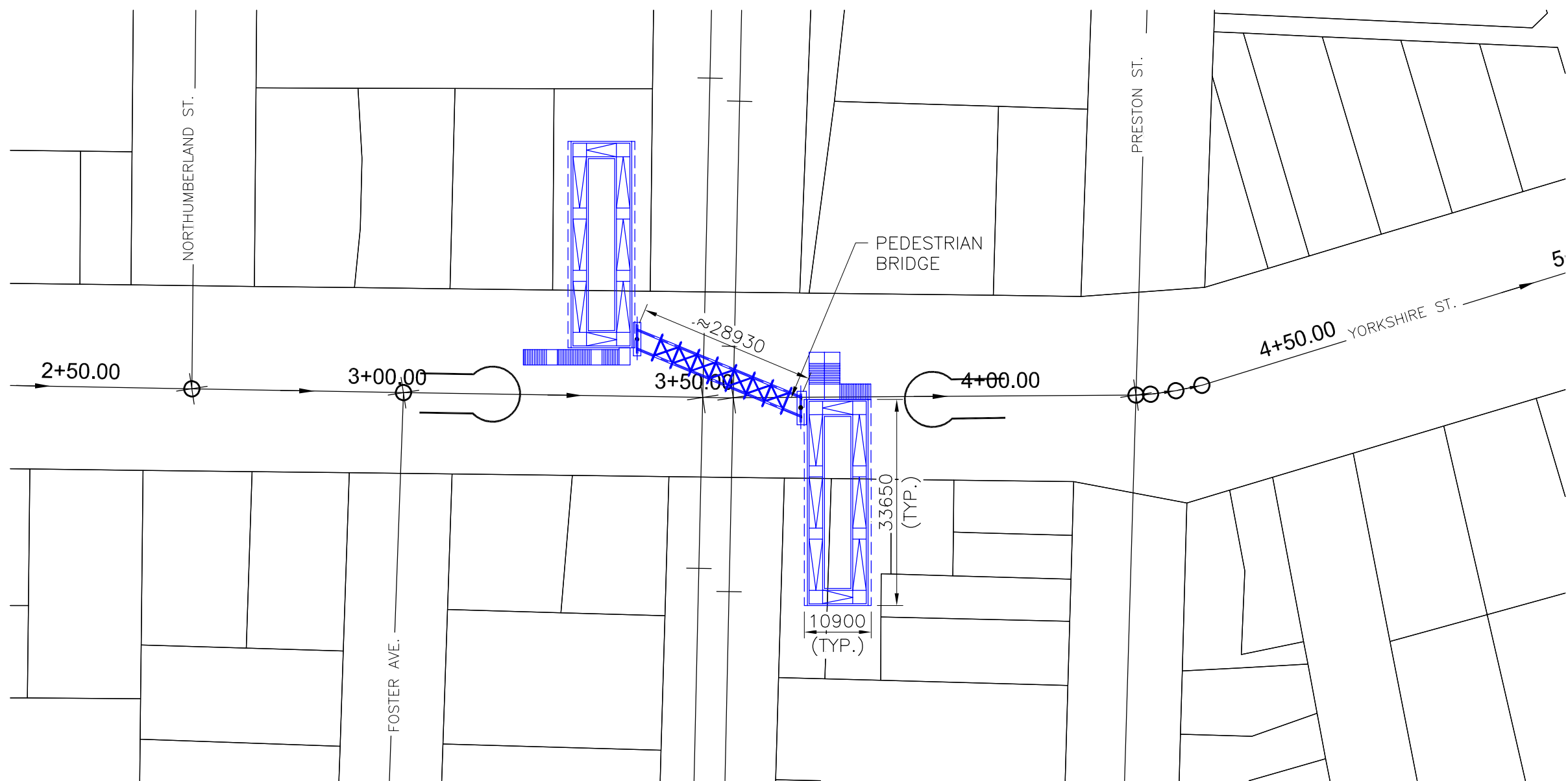
MINISTRY OF TRANSPORTATION, ONTARIO
ANSI-D
2017-08

PARSONS	
FIGURE 1-1	
GUELPH TRANSPORTATION STUDY PEDESTRIAN BRIDGE AT ALMA STREET	



PLAN ALMA
1:800

PARSONS	
FIGURE 1-2	
GUELPH TRANSPORTATION STUDY PEDESTRIAN BRIDGE AT YORKSHIRE STREET	




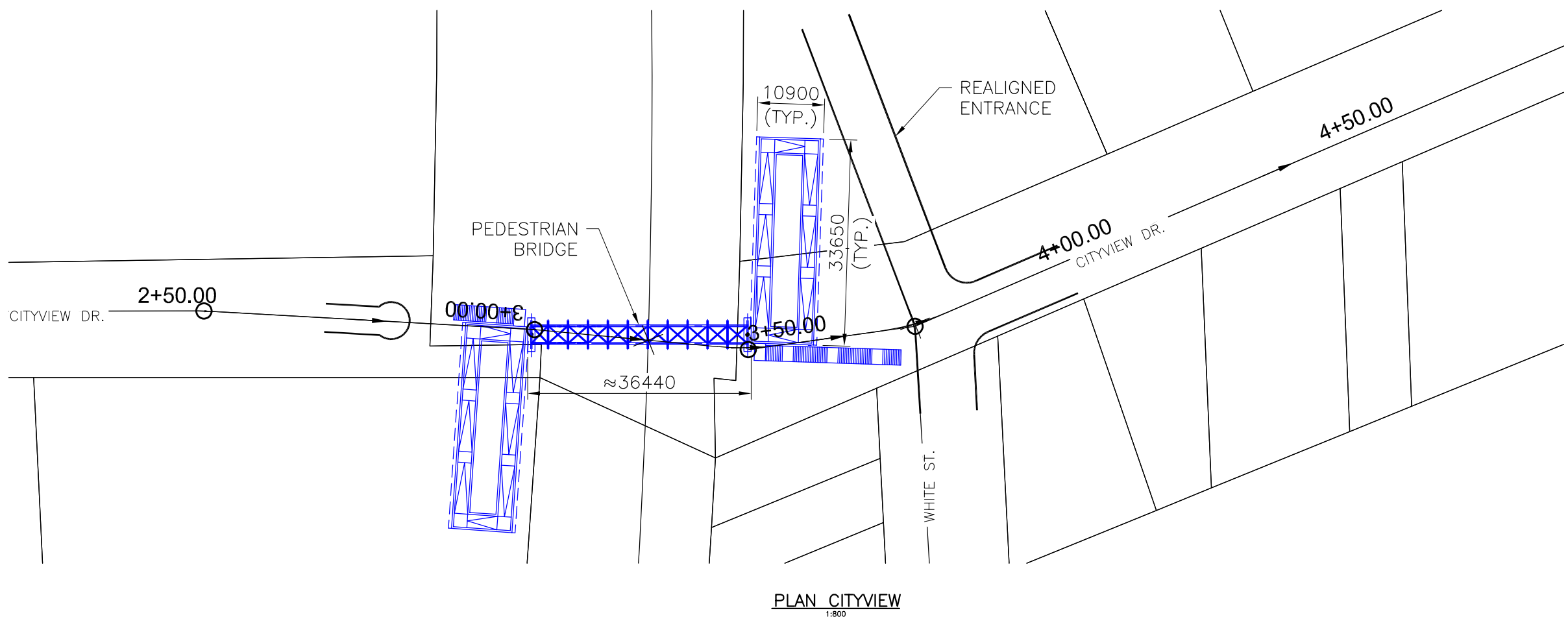
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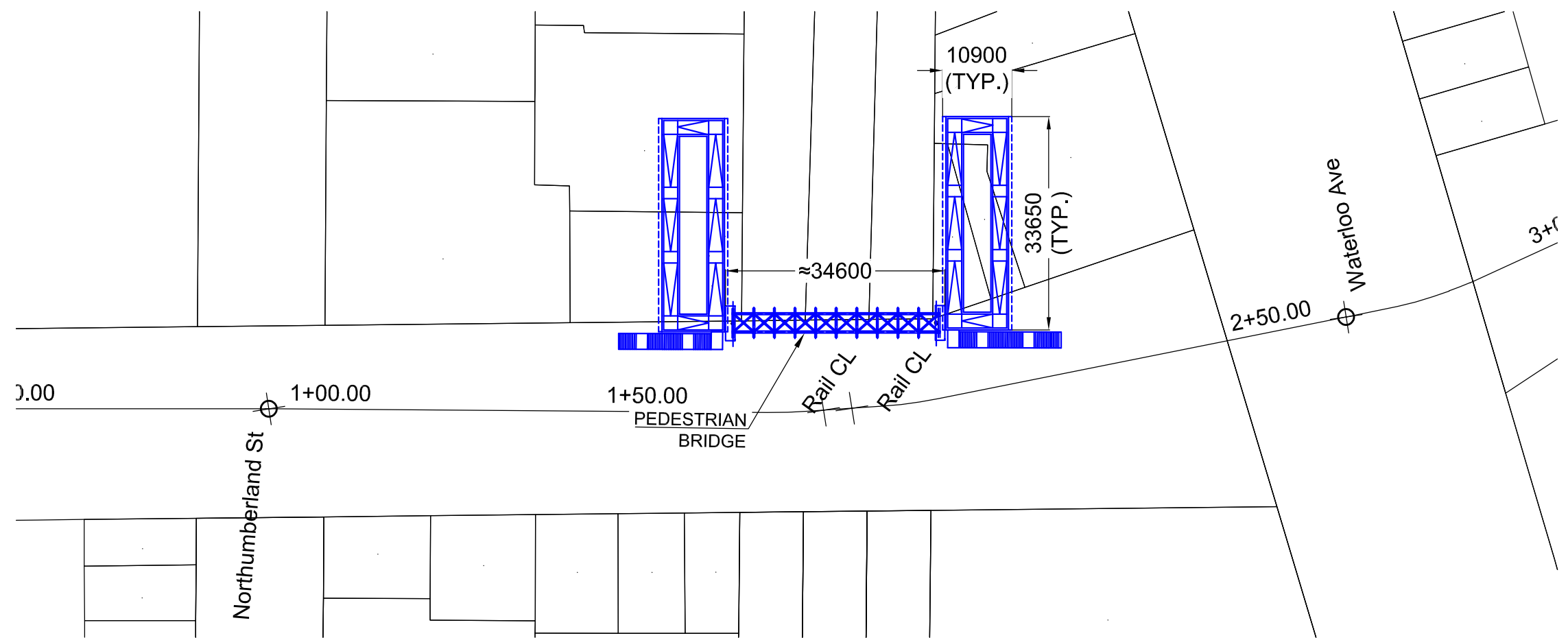


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PARSONS	
FIGURE 1-4	
GUELPH TRANSPORTATION STUDY PEDESTRIAN BRIDGE CITYVIEW DRIVE	





PLAN DUBLIN
1:800

PARSONS

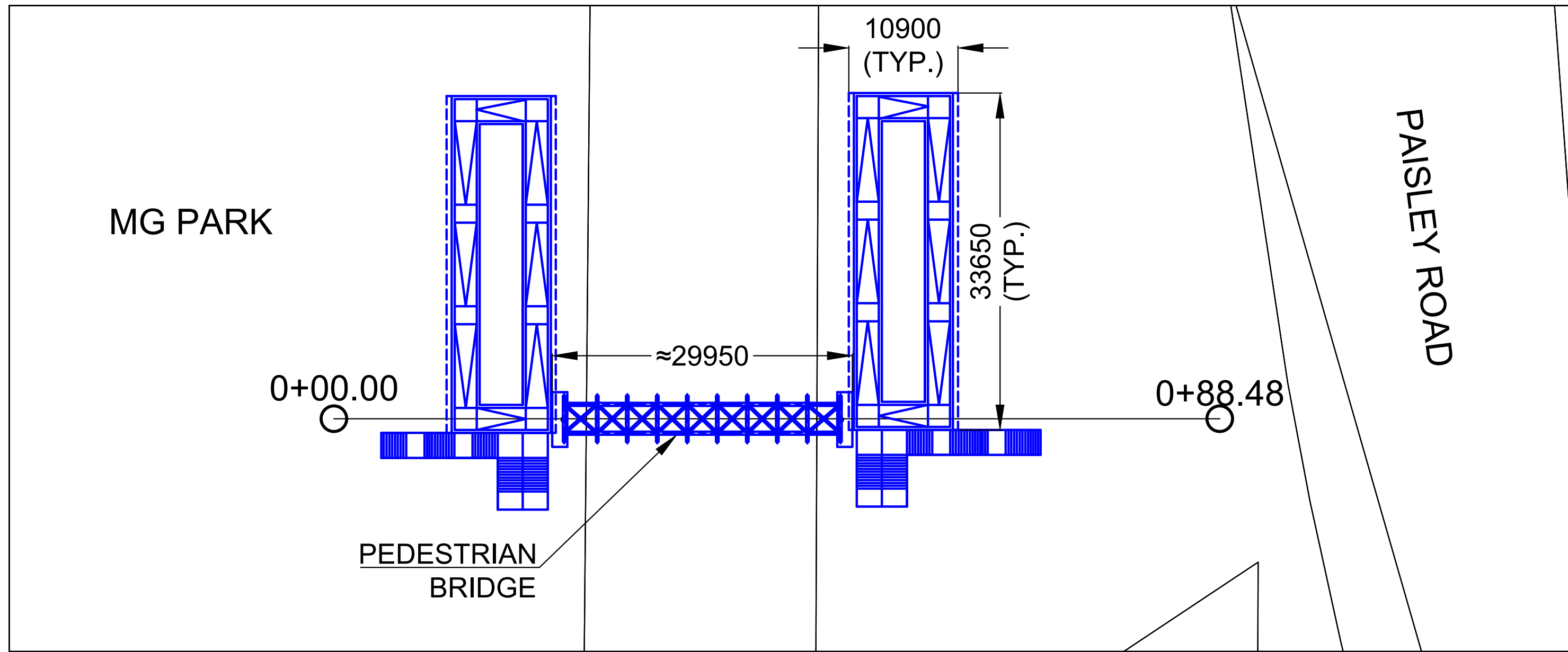


GUELPH
TRANSPORTATION STUDY
PEDESTRIAN BRIDGE
AT DUBLIN STREET

SHEET

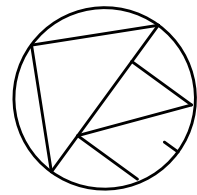
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PLAN MG PARK
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PARSONS



GUELPH
TRANSPORTATION STUDY
PEDESTRIAN BRIDGE
AT MG PARK

SHEET

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Appendix B – Cost Estimates

SUMMARY COST BREAKDOWN

<u>Construction Cost Breakdown:</u>	Unit	Area	Unit Cost	Amount	Amount (Rounded)*
1 Pedestrian Bridge (Alma St)					
1.1 Mob/Demob/Bonding/etc..	15%			\$582,798	\$580,000
1.2 Site Works	LS			\$50,000	\$50,000
1.3 Ramp Structures	/m ²	810	\$ 3,000.00	\$2,430,360	\$2,430,000
1.4 Bridge Structure	/m ²	129	\$ 7,000.00	\$904,960	\$900,000
1.5 Site Services	LS			\$300,000	\$300,000
1.6 Roadworks	LS			\$200,000	\$200,000
			Contingency (30%)	\$1,340,435	\$1,340,000
			Total	\$5,808,553	\$5,810,000
2 Pedestrian Bridge (Yorkshire St)					
1.1 Mob/Demob/Bonding/etc..	15%			\$563,004	\$560,000
1.2 Site Works	LS			\$50,000	\$50,000
1.3 Ramp Structures	/m ²	797	\$ 3,000.00	\$2,391,360	\$2,390,000
1.4 Bridge Structure	/m ²	116	\$ 7,000.00	\$812,000	\$810,000
1.5 Site Services	LS			\$300,000	\$300,000
1.6 Roadworks	LS			\$200,000	\$200,000
			Contingency (30%)	\$1,294,909	\$1,290,000
			Total	\$5,611,273	\$5,610,000
3 Pedestrian Bridge (Glasgow St)					
1.1 Mob/Demob/Bonding/etc..	15%			\$594,062	\$590,000
1.2 Site Works	LS			\$50,000	\$50,000
1.3 Ramp Structures	/m ²	814	\$ 3,000.00	\$2,441,610	\$2,440,000
1.4 Bridge Structure	/m ²	138	\$ 7,000.00	\$968,800	\$970,000
1.5 Site Services	LS			\$300,000	\$300,000
1.6 Roadworks	LS			\$200,000	\$200,000
			Contingency (30%)	\$1,366,341	\$1,370,000
			Total	\$5,920,813	\$5,920,000
4 Pedestrian Bridge (City View)					
1.1 Mob/Demob/Bonding/etc..	15%			\$588,804	\$590,000
1.2 Site Works	LS			\$50,000	\$50,000
1.3 Ramp Structures	/m ²	817	\$ 3,000.00	\$2,451,360	\$2,450,000
1.4 Bridge Structure	/m ²	132	\$ 7,000.00	\$924,000	\$920,000
1.5 Site Services	LS			\$300,000	\$300,000
1.6 Roadworks	LS			\$200,000	\$200,000
			Contingency (30%)	\$1,354,249	\$1,350,000
			Total	\$5,868,413	\$5,870,000

SUMMARY COST BREAKDOWN

	Unit	Area	Unit Cost	Amount	Amount (Rounded)*
5 Pedestrian Bridge (Dublin Street)					
5.1 Mob/Demob/Bonding/etc..	15%			\$587,342	\$600,000
5.2 Site Works	LS			\$50,000	\$100,000
5.3 Ramp Structures	/m ²	814	\$ 3,000.00	\$2,441,610	\$2,400,000
5.4 Bridge Structure	/m ²	132	\$ 7,000.00	\$924,000	\$900,000
5.5 Site Services	LS			\$300,000	\$300,000
5.6 Roadworks	LS			\$200,000	\$200,000
			Contingency (30%)	\$1,350,885	\$1,400,000
			Total	\$5,853,837	\$5,900,000
6 Pedestrian Bridge (MG Park)					
6.1 Mob/Demob/Bonding/etc..	15%			\$781,298	\$780,000
6.2 Site Works	LS			\$50,000	\$50,000
6.3 Ramp Structures	/m ²	1291	\$ 3,000.00	\$3,872,271	\$3,870,000
6.4 Bridge Structure	/m ²	112	\$ 7,000.00	\$786,380	\$790,000
6.5 Site Services	LS			\$300,000	\$300,000
6.6 Roadworks	LS			\$200,000	\$200,000
			Contingency (30%)	\$1,796,985	\$1,800,000
			Total	\$7,786,933	\$7,790,000

*Amount rounded to 0,000

Cost Exclusions

Property Acquisition
Property Tax
Legal Fees
Survey Costs
RFQ/RFP Costs
Investigations and Studies Costs
Consultant Design Fees
Contract Administration
HST

Assumptions:

Ramp width = 2.2m
Ramp vertical clearance = 2.5m
Bridge width = 2.4m + 2-0.78m catwalks
City of Guelph Accessibility Compliant (width, slopes)