Appendix A-8

Stormwater Management Report

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Stormwater Management Report

Conversion of Scarborough Rapid Transit Right-of-Way to Busway – Transit and Rail Project Assessment Process

Toronto Transit Commission

60729927

August 2024

Delivering a better world

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AECOM: 2015-04-13

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Executive Summary

The Toronto Transit Commission is undertaking a Transit and Rail Project Assessment Process for the Line 3 Busway Conversion project, which aims to convert the north-south portion of the decommissioned Line 3 Scarborough Rapid Transit corridor into a dedicated busway. As part of the Scarborough Rapid Transit decommissioning plan, two phases were developed. Phase 1 would see the Toronto Transit Commission operate an interim bus service on-street, which was planned to go into service by November 2023, however, due to the Scarborough Rapid Transit derailment in July 2023, interim bus service started in August 2023. The Toronto Transit Commission is currently advancing the detailed design of Phase 2, which involves converting the at-grade north-south portion of the Scarborough Rapid Transit right-of-way into a busway, allowing buses to operate in the converted busway between Ellesmere and Kennedy stations and continuing on existing transit priority lanes on Ellesmere Road between Ellesmere and Scarborough Centre stations, as implemented in Phase 1.

AECOM has been retained by the Toronto Transit Commission to assist in the completion of the Transit and Rail Project Assessment Process for Phase 2 of the Scarborough Rapid Transit decommission plan.

The Toronto Transit Commission has completed the 60% detailed design of the proposed busway conversion, and AECOM has been tasked with reviewing the design to ensure that the proposed works meet applicable design criteria and undergoes due process. This report will summarize the drainage assessments undertaken for hydraulic conveyance, floodplain and stormwater management and address the proposed drainage design for the busway conversion and confirming all relevant design criteria are met.

Design criteria were reviewed, and previous reports were referenced to determine the design standards that apply to the Project and commitments made to different agencies previously that may still apply to this Project.

The Toronto Transit Commission 60% design drawings were referenced to determine proposed drainage works for the Study Area, of which there are very few. The existing Scarborough Rapid Transit will be converted into a roadway designated for buses, however, the drainage impacts of this work are minimal. The drawing package noted the new busway cross-section will be constructed on top of the existing foundation, with the pavement width and alignment very similar to existing, simply slightly higher. The existing major and minor drainage systems will remain for the proposed busway, as drainage patterns and flowrates are expected to remain the same as existing. It is assumed that the existing drainage system is able to adequately convey the existing

flows, and so with negligible changes the proposed flows should also be adequately conveyed.

According to the Toronto and Region Conservation Authority online floodline mapping, Highland Creek overtops the Study Area during a Regional event. As no additional impervious area is to be added for the proposed works, no additional flows are to be conveyed to the Creek, with no increase in flooding risk. Therefore, no proposed mitigation measures are required at the Creek or anywhere along the Study Area.

There are a few adjustments and additions to be made to the storm sewer system, including catchbasin relocation and adjustment in a few places. These improvements should be communicated with the City of Toronto to ensure they are aware of and in agreement with the changes.

Despite there being negligible impacts to Highland Creek as a result of the 60% design, the Toronto and Region Conservation Authority should be kept informed of the Project in case any construction work or temporary measures have any impact on the Creek. It should be confirmed if any permits are required from the Toronto and Region Conservation Authority before commencement of construction.

The drainage and stormwater design provided by the Toronto Transit Commission within the 60% drawing package indicate that drainage impacts are minimal, and adequate, however, Toronto Transit Commission may review the condition of the existing systems that will remain in place for the proposed design to determine if any maintenance, clean outs or replacements are required.

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1. Introduction

1.1 Project Description and Scope

The Toronto Transit Commission is undertaking a Transit and Rail Project Assessment Process for the Line 3 Busway Conversion project which aims to convert the decommissioned Line 3 Scarborough Rapid Transit corridor into a dedicated busway. As part of the Scarborough Rapid Transit decommissioning plan, two phases were developed. Phase 1 would see the Toronto Transit Commission operate an interim bus service on-street, which was planned to go into service by November 2023, however, due to the Scarborough Rapid Transit derailment in July 2023, interim bus service started in August 2023. The Toronto Transit Commission is currently advancing the detailed design of Phase 2, which involves converting the at-grade north-south portion of the Scarborough Rapid Transit right-of-way into a busway, allowing buses to operate in the converted busway between Ellesmere and Kennedy stations and continuing service on-street along existing transit priority lanes on Ellesmere Road between Ellesmere and Scarborough Centre stations, as implemented in Phase 1.

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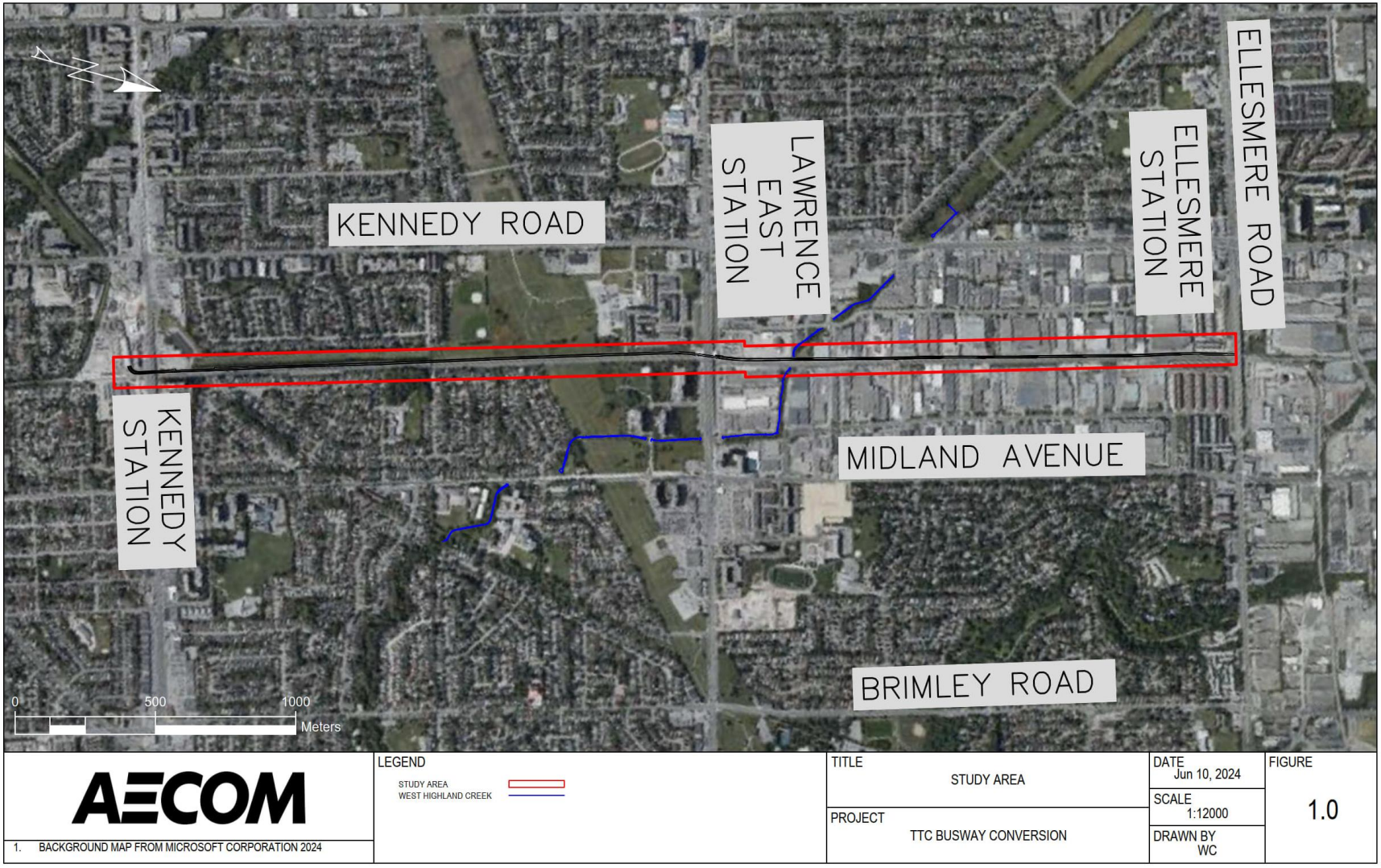
The Study Area is located within the Toronto and Region Conservation Authority jurisdiction, with the Dorset branch of West Highland Creek crossing the Study Area north of Lawrence Avenue East. The limits of the study area is shown in **Figure 1**Error! Reference source not found..

Figure 1: Study Area



1.2 Background Review

The following information has been reviewed to prepare this report:

- Previous Studies
  - Scarborough Subway Extension Environmental Assessment, AECOM, February 2017.
  - Environmental Project Report Addendum, AECOM, August 2020.
- Drawings provided by Toronto Transit Commission as part of the 60% design package
- City of Toronto storm sewer database
- Relevant guidelines and policies:
  - Toronto Transit Commission's Developer's Guide (Dec. 2018)
  - City of Toronto's Transit Design Guide – Urban Design Guidelines (2022)
  - City of Toronto's Design Criteria for Sewers and Watermains (Jan. 2021)
  - City of Toronto's Wet Weather Flow Management Guidelines (2023)
  - Ministry of Transportation Drainage Management Manual (1997)
  - Toronto and Region Conservation Authority and Credit Valley Conservation's Low Impact Development Stormwater Management Planning and Design Guide (2010)
  - Stormwater Management Criteria (Toronto and Region Conservation Authority, 2012)
  - Ministry of Transportation Highway Drainage Design Standards (Ministry of Transportation, 2008)
  - Stormwater Management Planning and Design Manual (Ministry of the Environment, 2003)

As the Study Area is to be converted from a railway system to a busway, the applicable criteria are based on the proposed conditions, and therefore railway guidelines have not been referenced.

2. Design Criteria

2.1 Surface Drainage

- Conveyance of the minor system (10-year storm) in storm sewers with an inlet entry time of 10 minutes using the Rational Method.
- Safe overland conveyance of the major system (100-year storm).
- Depth of ponding over the road does not exceed 0.3 metres under the 100-year storm event.

2.2 Hydraulic Design Criteria for Bridges and Culverts

The proposed busway will be classified as a “Reserved Bus Lane”. It is assumed that the hydraulic criteria will be the same as an urban arterial road. Based on the Ministry of Transportation Highway Drainage Design Standards, the hydraulic design criteria for water course crossing structures for an urban arterial road is summarized below:

Table 1: Hydraulic Design criteria for Bridges and Culverts

Structure/ Design Parameter	Total Span ≤ 6.0 metres	Total Span > 6.0 metres
Design Flow (WC-1)	50-Year	100-Year
Check Flow for Scour[1] (WC-1)	130 % of 100-Year	130% of 100-year
Freeboard (WC-2, WC-7)	≥ 1.0 metre	≥ 1.0 metre
Clearance[2] (WC-2, WC-7)	≥ 1.0 metre (Bridges), ≥ 0.3.0 (Culverts)	≥ 1.0 metre (Bridges), ≥ 0.3.0 (Culverts)
Headwater / Diameter[3]	≤1.5 (Culverts only)	≤1.5 (Culverts only)

Note:
1. The water level generated by the Check Flow shall not exceed the elevation of the edge of the travelled lane and is not subject to the Freeboard, Clearance, and Flow Depth Criteria.
2. For Culverts, clearance requirements apply to open-footing culverts only and should be ≥ 0.3 metres.
3. Applies to Culverts only. The minimum headwater / diameter criterion for culverts with a rise or diameter of <3.0 metres is ≤1.5, culverts with a rise or diameter of 3.0 metres to 4.5 metres is ≤ 4.5 and culverts with a rise or diameter of >4.5 metres is ≤ 4.5.

2.3 Stormwater Management

The stormwater management criteria for the proposed converted busway are summarized below:

- **Quantity Control** – Control post-development peak flows to pre-development levels for all storms up to and including the 100-year storm.
- **Water Quality** – Enhanced level of protection (i.e. 80% Total Suspended Solids on long-term basis).
- **Erosion Control** – At a minimum retain 5 millimetres runoff on site and for sites with Stormwater Management ponds, detain runoff generated from a 25 millimetres storm for 48 hours.
- **Water Balance** – Best efforts to maintain groundwater recharge and hydrologic regimes.

3. Existing Drainage Conditions

The Study Area falls within the Highland Creek watershed, managed by the Toronto and Region Conservation Authority. This watershed covers a highly urbanized area of Scarborough, as only 6% of the area remains as forest. The general topography of the area slopes south, with runoff draining to several tributaries of the creek. The tributaries converge North of Highway 2A (Kingston Road), and flow is conveyed east, then crosses Highway 2A south and discharges into Lake Ontario. The Toronto and Region Conservation Authority floodline map online tool shows that Highland Creek overtops the Study Area during a Regional storm event, as shown in **Figure 2**.

Figure 2: Existing Floodplain Mapping

Under the existing conditions the Scarborough Rapid Transit corridor consists of two tracks set on top of paved concrete. Existing drainage conditions were determined by AECOM by reviewing the 60% design package prepared by the Toronto Transit Commission and a Site Visit on May 31, 2024. The City of Toronto storm sewer network was also referenced to establish existing drainage. The 60% utility drawings show all existing storm sewers and subdrains along the Study Area. A photographic catalog from the Site Visit is in **Appendix A**, and some of the 60% design package drawings are in **Appendix B**.

Along the Study Area the Scarborough Rapid Transit corridor has a fully paved cross-section with elevated rails and a control box that runs between the rails. The design drawings show that most of the existing cross-section is flat with no crown at the centre, but some sections have depressions along the edges, acting as a small impervious ditch. Other sections contain what appears to be half a Corrugated Steel Pipe culvert used as a gutter to contain and convey flow. There are also adjacent ditches along the edge of the property or adjacent to it, in some locations.

Runoff from the entire Study Area drains to different storm sewer systems through catchbasins and ditch inlets, which are mainly located along the lowered periphery of the cross-section. Any groundwater is captured and conveyed by subdrains.

During large storm events where storm sewers may not have capacity, overland flow will be conveyed along the depressed area of the cross-section towards inlets, and what does not get captured would either continue overland along the same path or would flow to an adjacent ditch, ditch inlet or off-site at local low points.

It is assumed that the existing storm sewer networks downstream of the Study Area have the capacity for existing minor runoff. Not all major and minor outlet locations were able to be established based on the information available for this review. A summary of existing drainage conditions can be found in the **Existing Drainage Mosaic**, located at the end of this report.

Figure 3 shows existing drainage features observed along the Study Area. It should be noted that during the Site Visit access to the site itself was not available, so observations were made from adjacent properties and overpasses. Close inspection of any drainage infrastructure was not possible.

The Toronto Transit Commission drawings show that there are five low points along the Study Area at the following locations:

- At the south end of the Study Area.
- Chainage 110+40.

- Chainage 115+60, just south of Lawrence Avenue East.
- Chainage 119+80 at the Highland Creek crossing.
- Chainage 133+30, just south of Ellesmere Road.

Based on the information available, it is assumed that existing major system flows are able to be conveyed safely off-site.

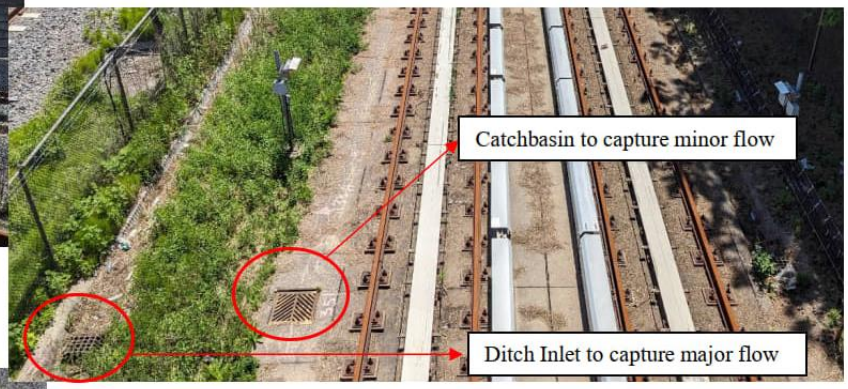
At the low point near Highland Creek, any overland flow that spills beyond the Study Area will be conveyed to the Creek. The south side of the Creek, upstream of the crossing has a concrete block pattern along the steep bank for several dozen metres. This is likely erosion protection for the steep banks for when large storms cause high flows within the Creek. The extra shear stress along the outside of the creek bend has the potential to erode the bank, however, the concrete protection will prevent erosion. This protection will also be beneficial for any overland flow conveyed to the Creek along the bank's side.

Figure 4 shows photos of the Highland Creek Crossing.

Figure 3: Existing Drainage Features

Ellesmere Station facing Northeast

At Tara Road overpass facing South



At Tara Road overpass facing North

At Tara Road overpass facing North

Figure 4: Highland Creek Crossing

4. Proposed Drainage Conditions

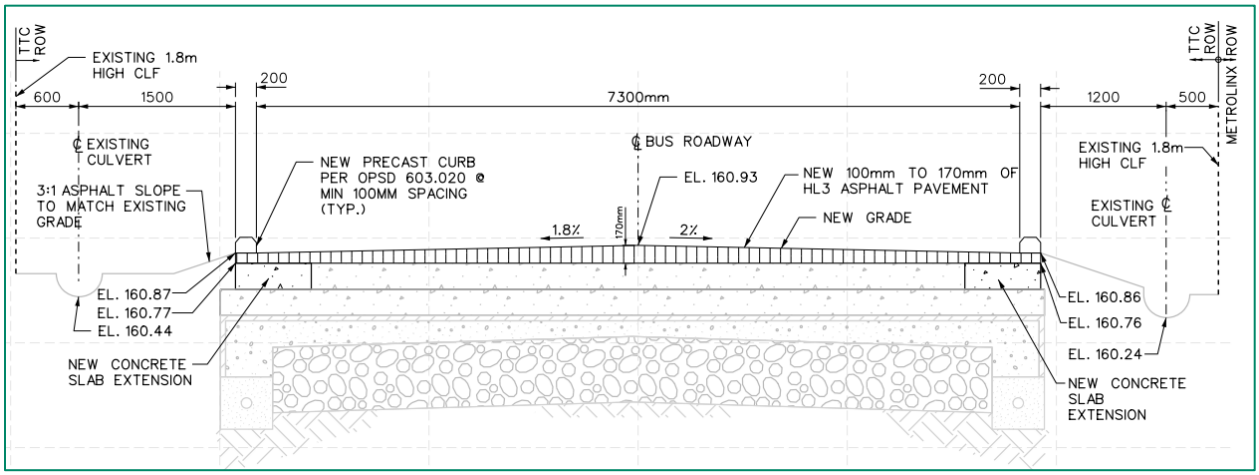
The Toronto Transit Commission is proposing to convert the existing non-elevated portion of the Scarborough Rapid Transit right-of-way into a busway, allowing buses to operate in the converted busway between Ellesmere Station to Kennedy Station. The Toronto Transit Commission is proposing to begin construction of the busway in 2025, with bus service commencing in 2027.

4.1 Proposed Design

The existing Ellesmere Station will be closed and new bus stops will be built, including shelters and other amenities. The existing station building at Lawrence Station will also be closed, and the bus loop will be used for Lawrence East bus routes. New accessible bus stops will be built here as well. New stops will be added at Tara Avenue / Mooregate Avenue to serve the local community and connect to the Meadoway Trail. A new signalized connection from the busway to Eglinton Avenue Service Road will be added to connect the busway to Kennedy Station.

The existing Scarborough Rapid Transit tracks will be removed, and the site will be paved with 100 to 170 millimetres of HL3 asphalt placed directly on the existing foundation. The proposed road will have a crown at the centre sloping at approximately 2% to the sides with a total pavement width of 7.3 metres. A new precast curb will be placed along the edges of the pavement, and beyond the curbs, some regrading will be required to match the proposed curb to the existing ground. See **Figure 5** for a sample of the proposed cross-section referenced from the 60% design drawings.

Figure 5: Proposed Busway Cross-section



The busway's profile will be identical to existing conditions, just slightly higher. The only difference in the cross-section is the crown in the centre, which allows runoff to flow more easily to the catchbasins. With minimal changes in grading, the proposed drainage patterns will remain generally the same as existing conditions, as shown in the Proposed Drainage Mosaic**,** which can be found at the end of this report.

Only a few small changes to the storm infrastructure are proposed, which are shown in **Appendix B**. No design was provided by the Toronto Transit Commission for stormwater management or storm sewer design. It is assumed that the existing storm sewers and major system flow paths were properly designed to accommodate flows from the Study Area.

4.2 Hydraulic Assessment

The site's drainage patterns will remain unchanged, and as the existing railway cross-section is already paved, there will be no increase in impervious area. Therefore, the same amount of runoff will flow in the same direction as it currently does. If the existing drainage systems that intersect the site have capacity for the existing flows, then under proposed conditions the storm systems will continue to have capacity.

The existing catchbasins are to remain on-site; however, with the additional pavement and curb proposed for the busway cross-section, catchbasins, manholes, and ditch inlets may have to be adjusted to match the new top of grade. It should be noted that any changes to the City of Toronto infrastructure should be communicated with the City and any required permits should be obtained.

The existing depressions, trenches, or ditches adjacent to the proposed busway will remain as they are. However, it is recommended to complete a condition assessment on some of this infrastructure, including the half round Corrugated Steel Pipe culverts being used as gutters. If the infrastructure is rusted, damaged or filled with sediment, cleaning out or replacing any sections as needed would be recommended. Any ditches along Toronto Transit Commission property will also be investigated, as needed, to determine whether maintenance or regrading is required.

4.3 Highland Creek Crossing

The watercourse crossing appears to be in good condition, with two very large culverts crossing beneath the Study Area and extensive erosion protection on the south bank. As proposed runoff flows will be virtually the same as existing, no additional runoff will be conveyed to the watercourse. The proposed busway will cover the same footprint as

the existing property, so no culvert extensions will be required. The Toronto and Region Conservation Authority flood line mapping shows that the crossing is overtopped during a Regional storm event, however, as proposed flows will be the same as existing, flooding risk will not increase. There will be no impacts to the watercourse, therefore no mitigation measures will be required.

4.4 Stormwater Management

Due to additional bus stops and access at Ellesmere and Kennedy Stations, only 0.19 hectares of impervious area will be added. The increase in impervious area is considered insignificant compared to the existing impervious area. No new impervious area will be added along the busway itself. As there will be no increase in runoff, no stormwater mitigation measures will be required.

4.5 Review Previous Commitments

The future commitments determined in the 2017 Environmental Assessment Study and 2020 Addendum have been reviewed to determine if any are relevant to the current Busway Conversion Study. An assessment of the commitments is summarized in **Appendix C**.

5. Conclusion and Recommendations

The Toronto Transit Commission is converting the non-elevated portion of the Scarborough Rapid Transit right-of-way into a busway, allowing buses to operate in the converted busway between Ellesmere and Kennedy Stations and continuing on existing priority lanes on Ellesmere Road between Ellesmere and Scarborough Centre Stations implemented in Phase 1 of the Scarborough Rapid Transit decommissioning plan. The proposed busway will be constructed on top of the existing foundation with a crown at the centre. The existing storm systems will remain in place, and some catch basins, manholes and ditch inlets will require adjustment to match the proposed top of the grade.

It is assumed that the existing major and minor drainage systems have capacity for existing flows. As the scope of this project is limited to the study area and the drainage overview was based on Toronto Transit Commission's 60% design package and available drainage information, some drainage outlets were not able to be confirmed at this time.

The proposed profile will be the same as the existing condition, and the cross-section will be very similar. Drainage patterns will remain the same, and negligible impervious areas will be added to the site. Therefore, the existing storm sewers are assumed to have capacity for the proposed design, and no stormwater management measures are proposed.

The Toronto and Region Conservation Authority should be kept informed and contacted if any construction or other temporary activities will impact Highland Creek.

Any changes to existing utilities should be co-ordinated with the City of Toronto and any other relevant parties.

As the area outside the proposed paved busway is to remain the same, existing ditches and "gutters" should be assessed to determine if any ditch or gutter cleanout or replacement is required.

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Drainage Mosaics

- Existing Conditions Drainage Mosaic
- Proposed Conditions Drainage Mosaic

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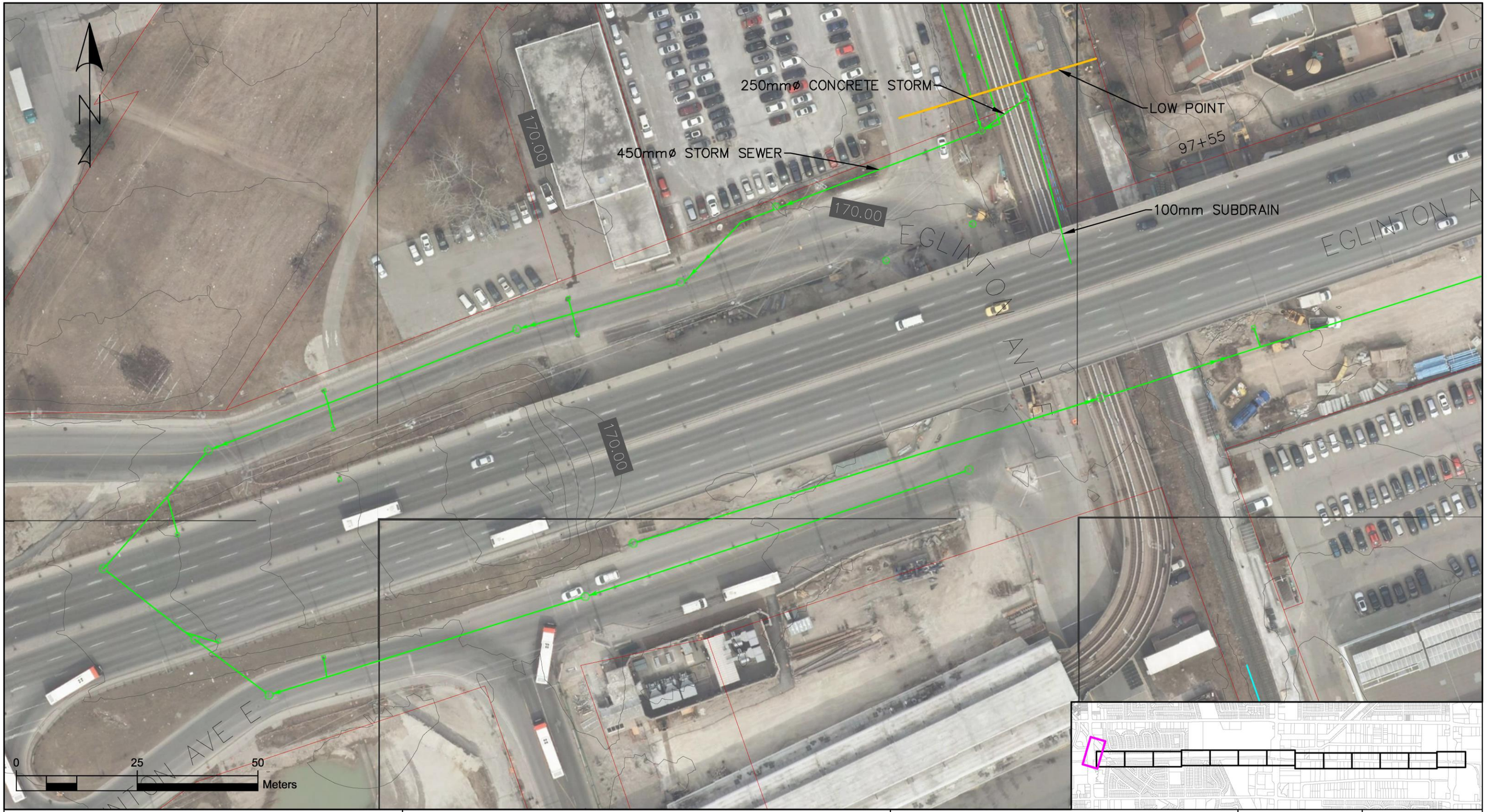
Existing Conditions Drainage Mosaic



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LEGEND

DITCH		EXISTING CATCHBASIN	
WATERCOURSE		EXISTING CATCHBASIN MANHOLE	
PROPERTY LINE		EXISTING MANHOLE	
TRCA REGULATION LIMIT		EXISTING STORM SEWER	
TRCA FLOOD LIMIT		HALVED CULVERT DITCH	
HIGH POINT/LOW POINT		CONCRETE CURB & GUTTER	
OVERLAND FLOW			

TITLE
EXISTING DRAINAGE MOSAIC

PROJECT
TTC BUSWAY CONVERSION

DATE
Jul 11, 2024

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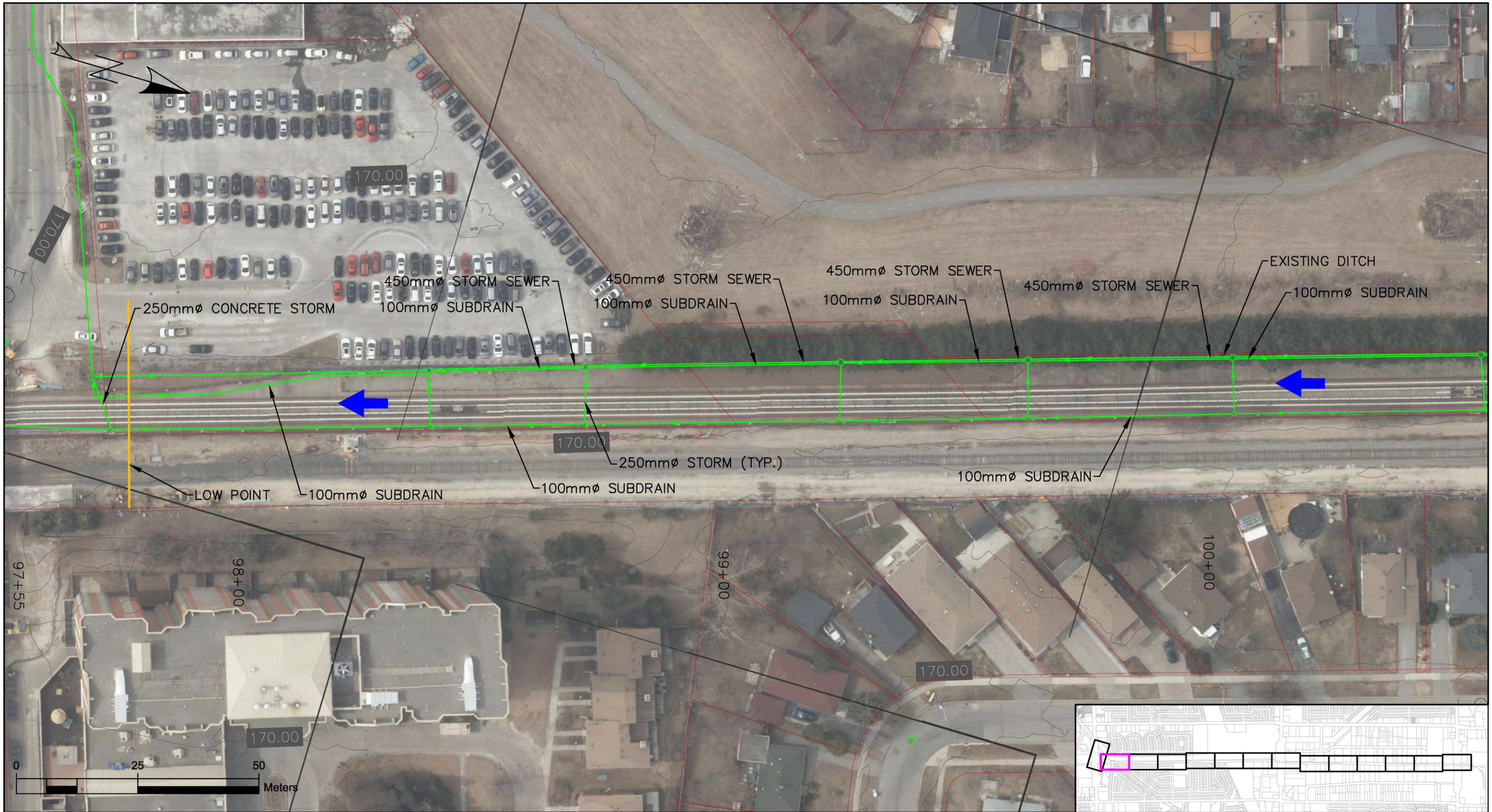

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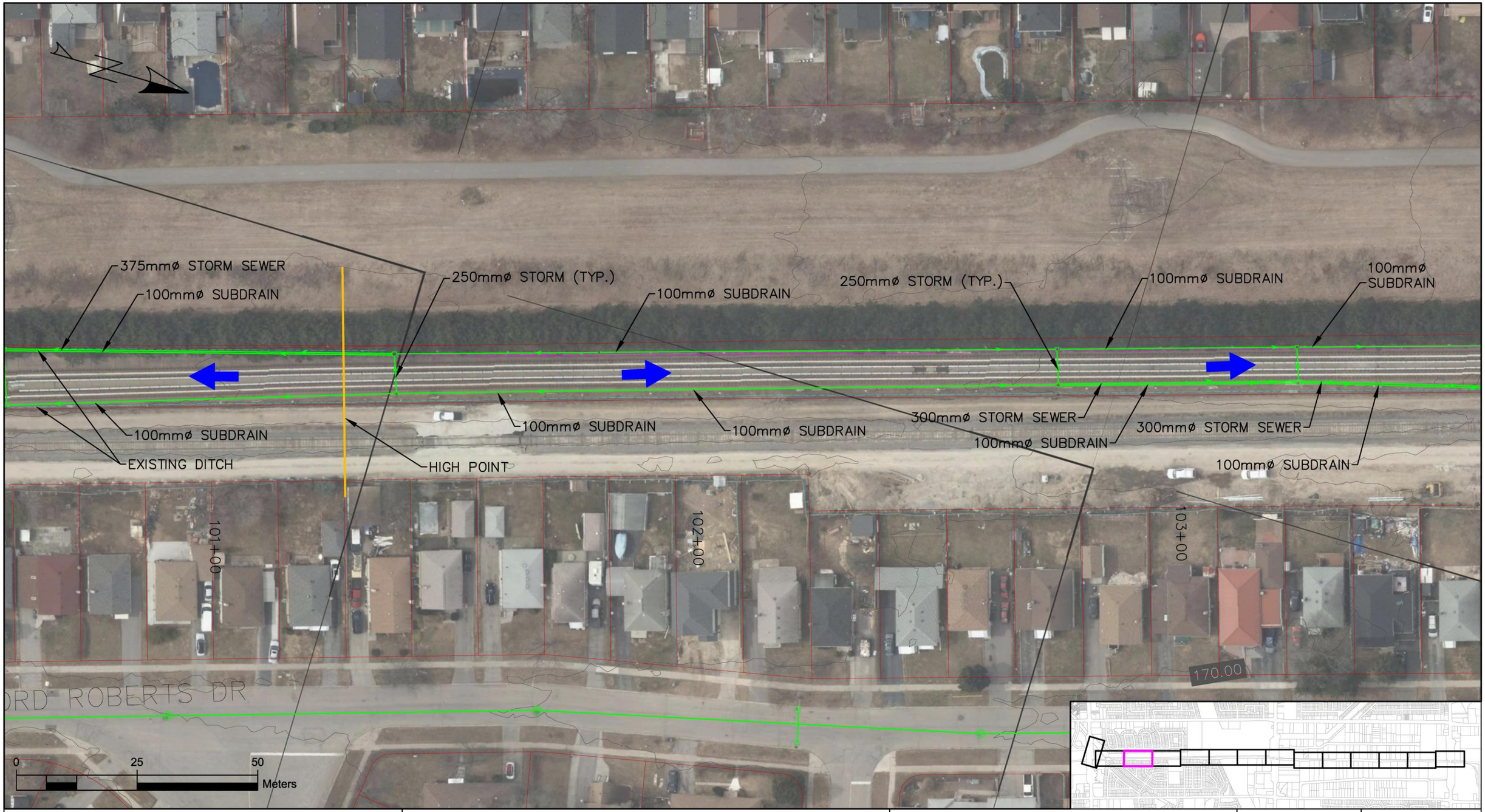

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LEGEND

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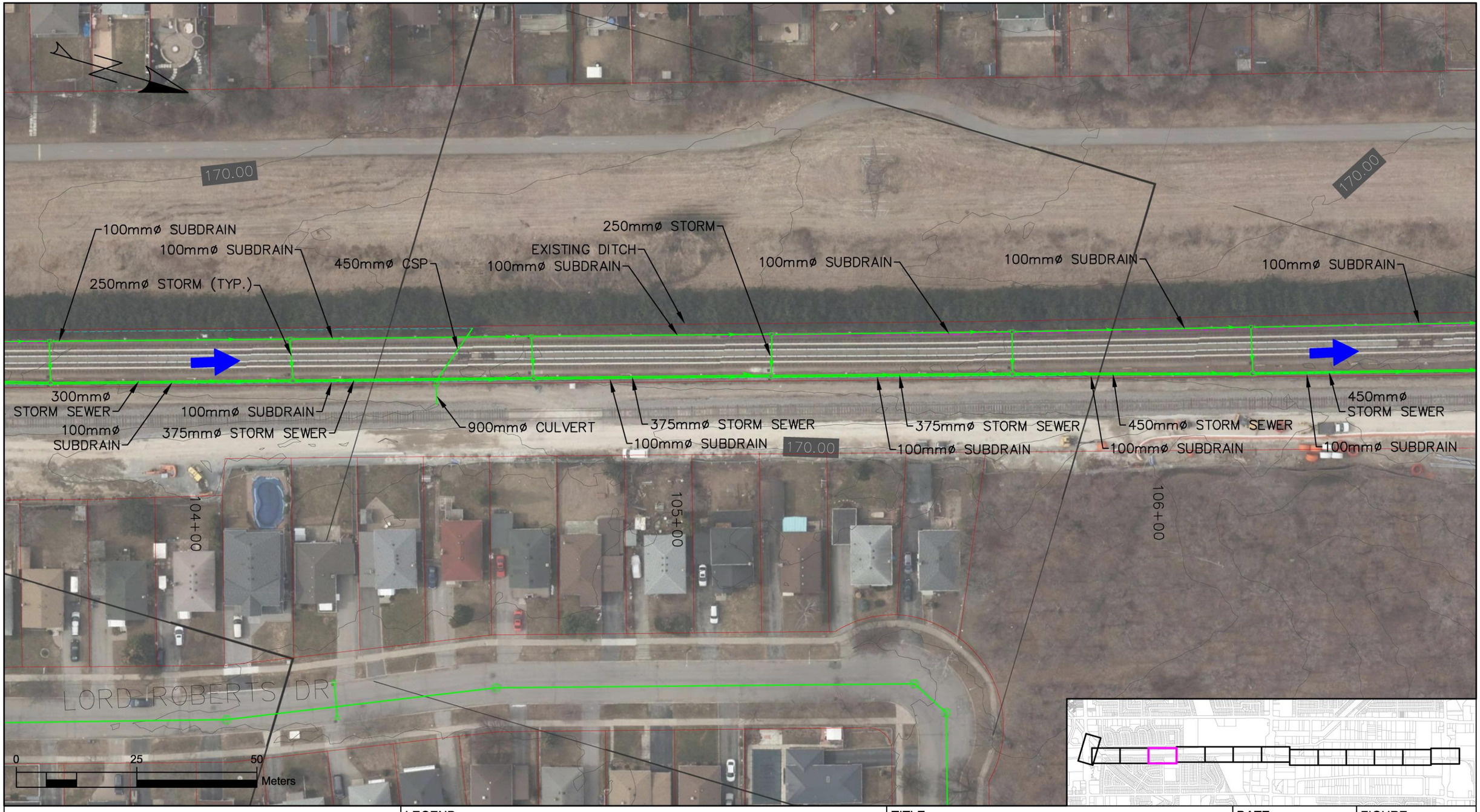

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LEGEND

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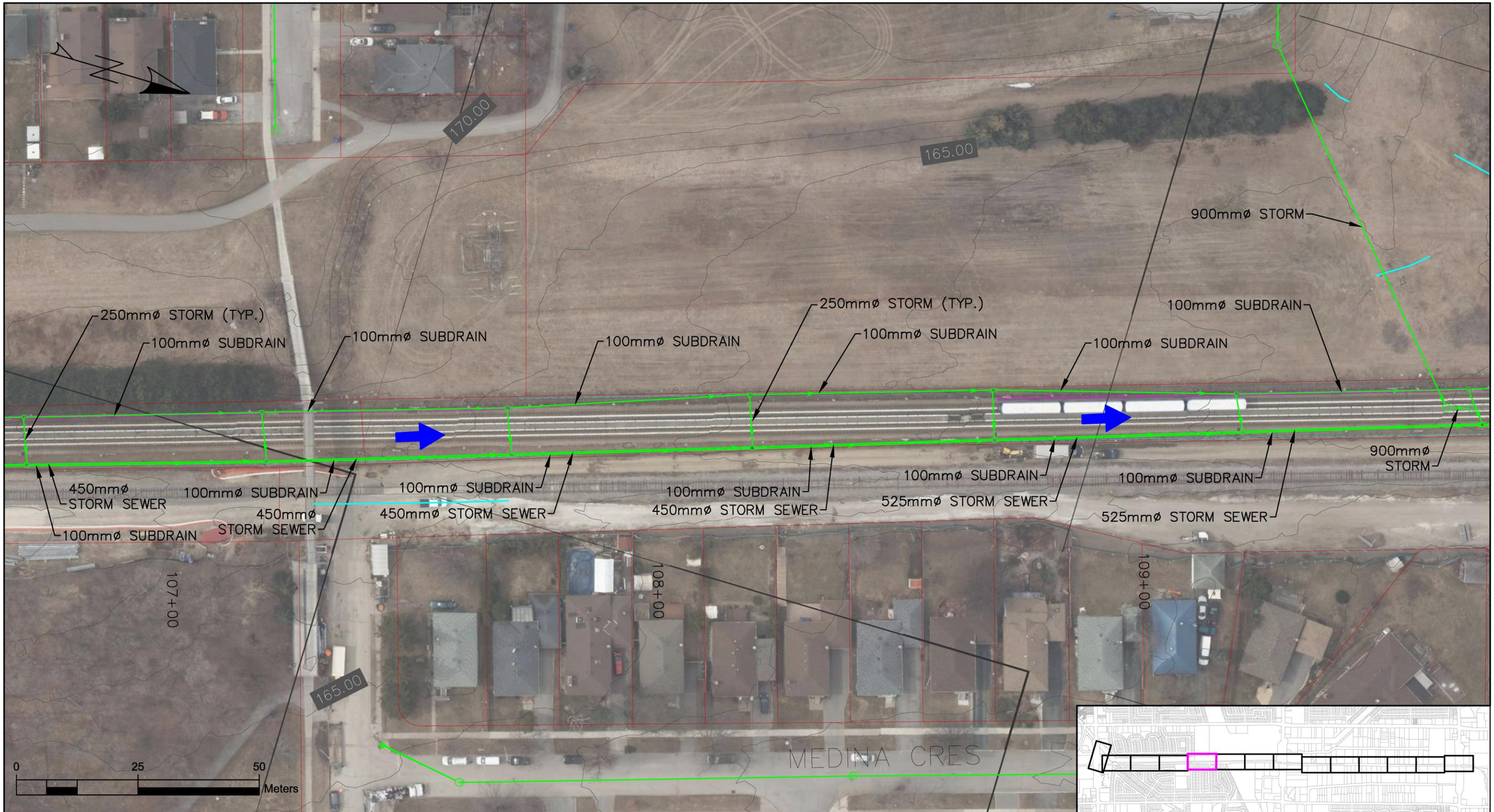
FIGURE
2.3



AECOM

LEGEND

DITCH	EXISTING CATCHBASIN
WATERCOURSE	EXISTING CATCHBASIN MANHOLE
PROPERTY LINE	EXISTING MANHOLE
TRCA REGULATION LIMIT	EXISTING STORM SEWER
TRCA FLOOD LIMIT	HALVED CULVERT DITCH
HIGH POINT/LOW POINT	CONCRETE CURB & GUTTER
OVERLAND FLOW	

TITLE
EXISTING DRAINAGE MOSAIC

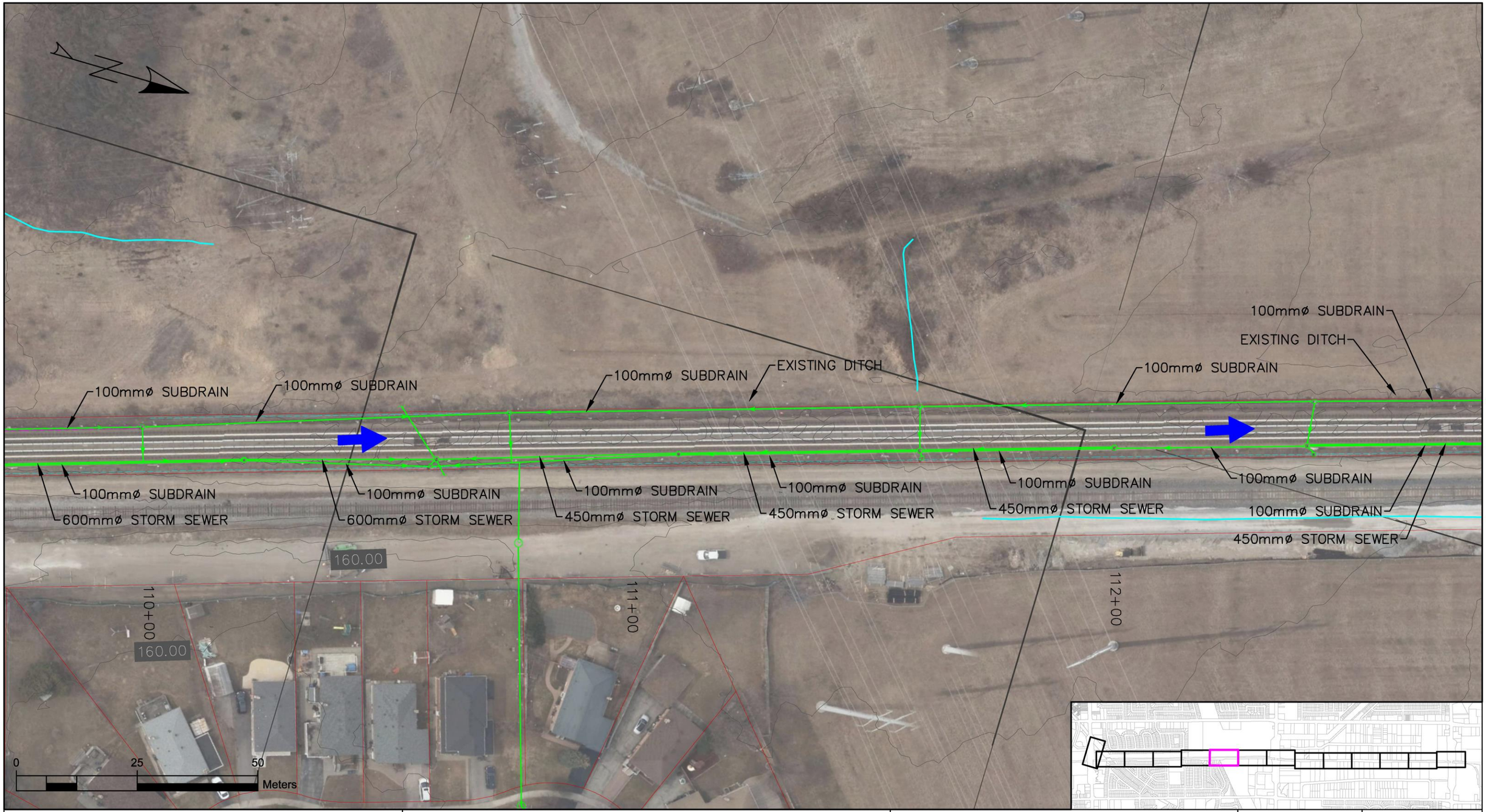
PROJECT
TTC BUSWAY CONVERSION

DATE
Jul 11, 2024

SCALE
1:750

DRAWN BY
WC

FIGURE
2.4



AECOM

LEGEND

DITCH	EXISTING CATCHBASIN
WATERCOURSE	EXISTING CATCHBASIN MANHOLE
PROPERTY LINE	EXISTING MANHOLE
TRCA REGULATION LIMIT	EXISTING STORM SEWER
TRCA FLOOD LIMIT	HALVED CULVERT DITCH
HIGH POINT/LOW POINT	CONCRETE CURB & GUTTER
OVERLAND FLOW	

TITLE
EXISTING DRAINAGE MOSAIC

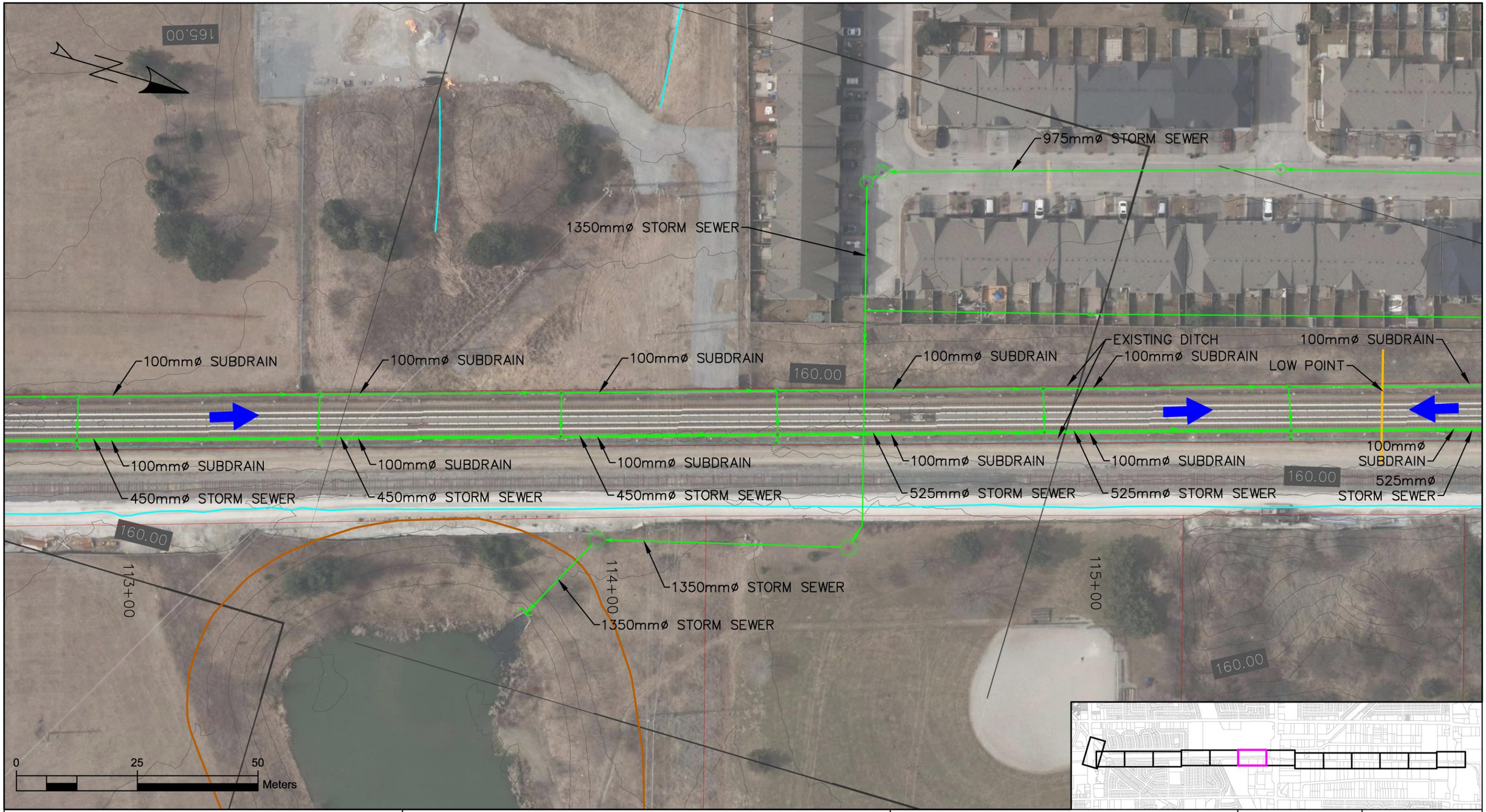
PROJECT
TTC BUSWAY CONVERSION

DATE
Jul 11, 2024

SCALE
1:750

DRAWN BY
WC

FIGURE
2.5



AECOM

LEGEND

DITCH	EXISTING CATCHBASIN
WATERCOURSE	EXISTING CATCHBASIN MANHOLE
PROPERTY LINE	EXISTING MANHOLE
TRCA REGULATION LIMIT	EXISTING STORM SEWER
TRCA FLOOD LIMIT	HALVED CULVERT DITCH
HIGH POINT/LOW POINT	CONCRETE CURB & GUTTER
OVERLAND FLOW	

TITLE
EXISTING DRAINAGE MOSAIC

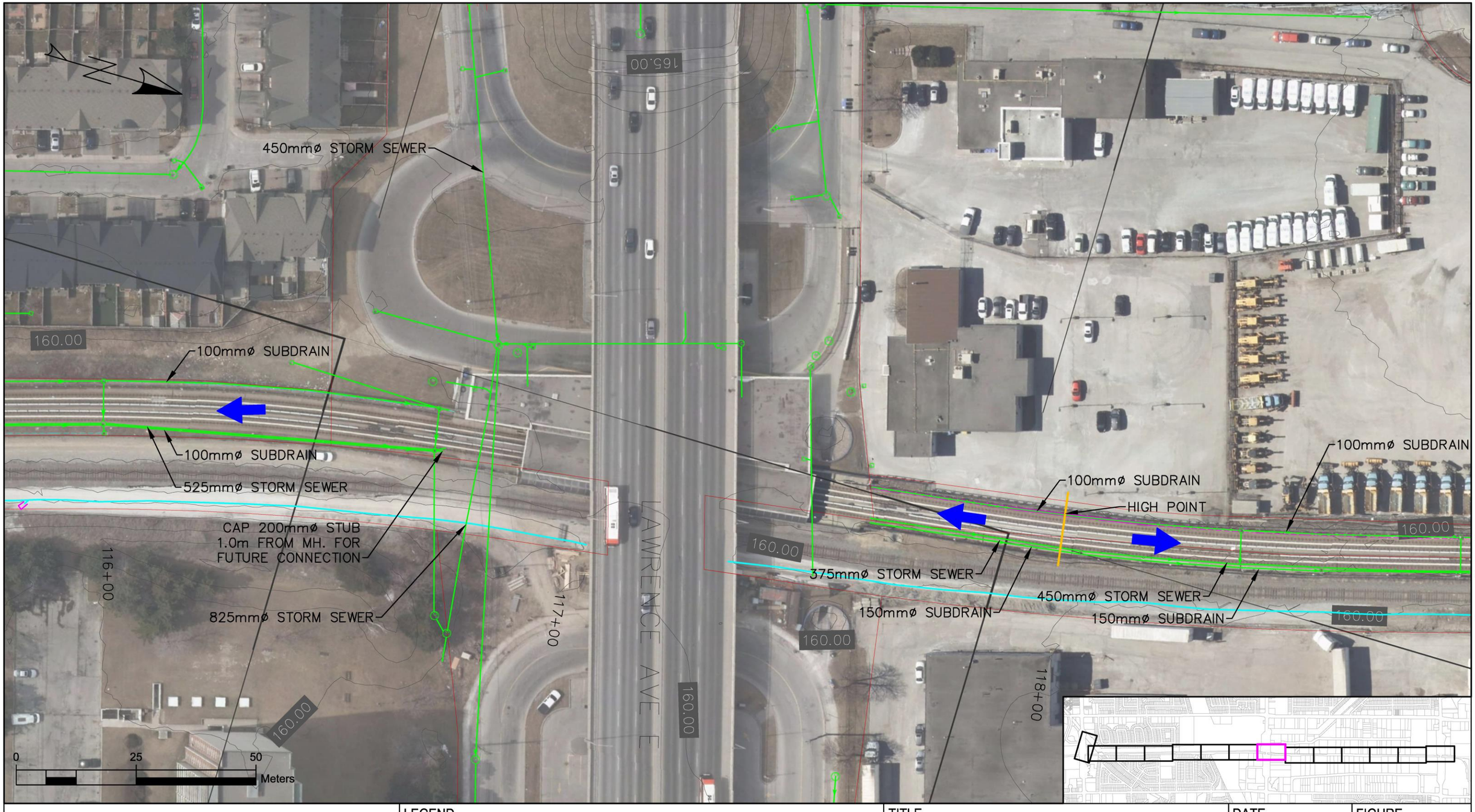
PROJECT
TTC BUSWAY CONVERSION

DATE
Jul 11, 2024

SCALE
1:750

DRAWN BY
WC

FIGURE
2.6



AECOM

LEGEND

DITCH	EXISTING CATCHBASIN
WATERCOURSE	EXISTING CATCHBASIN MANHOLE
PROPERTY LINE	EXISTING MANHOLE
TRCA REGULATION LIMIT	EXISTING STORM SEWER
TRCA FLOOD LIMIT	HALVED CULVERT DITCH
HIGH POINT/LOW POINT	CONCRETE CURB & GUTTER
OVERLAND FLOW	

TITLE
EXISTING DRAINAGE MOSAIC

PROJECT
TTC BUSWAY CONVERSION

DATE
Jul 11, 2024

SCALE
1:750

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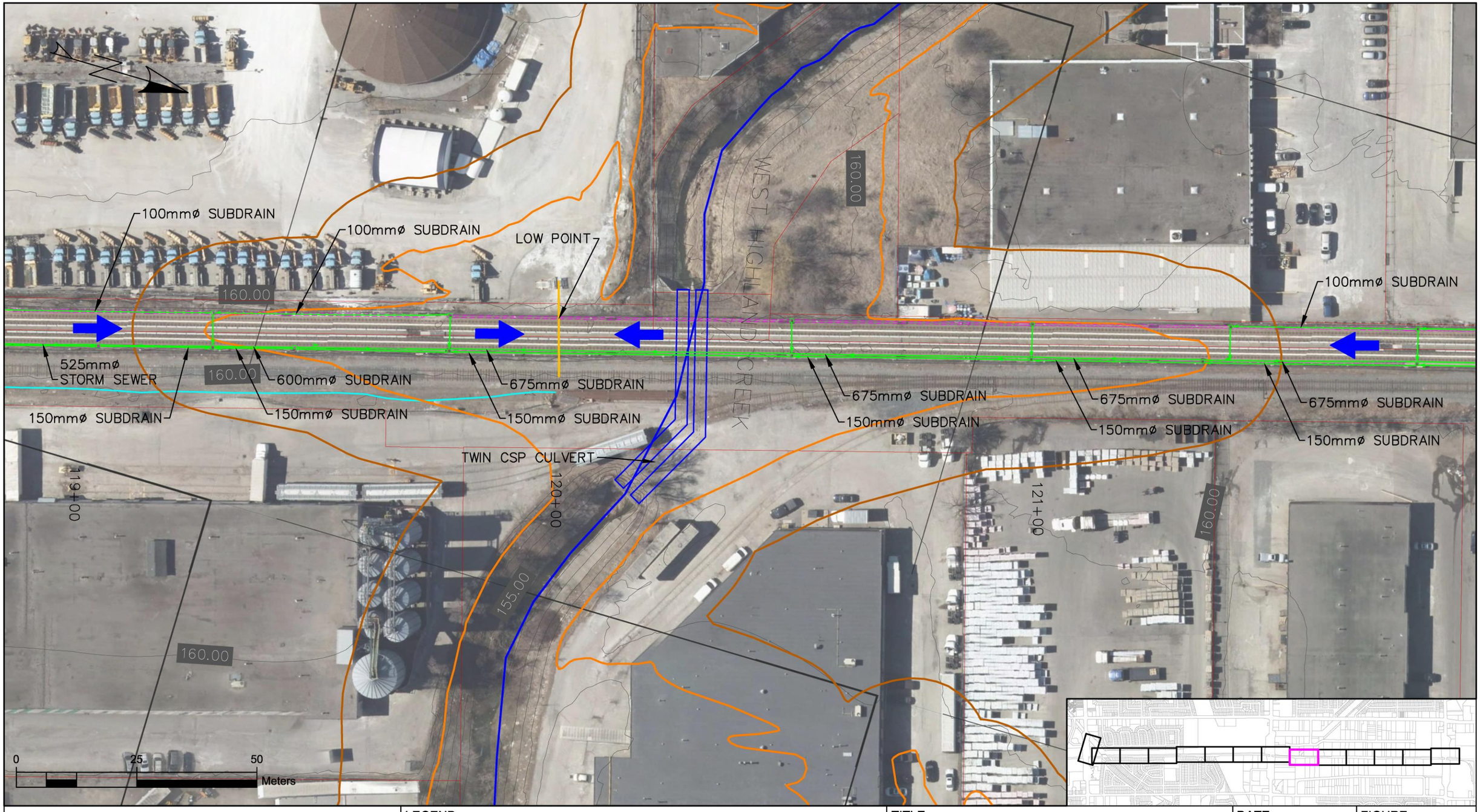
FIGURE
2.7



AECOM

LEGEND

DITCH	EXISTING CATCHBASIN
WATERCOURSE	EXISTING CATCHBASIN MANHOLE
PROPERTY LINE	EXISTING MANHOLE
TRCA REGULATION LIMIT	EXISTING STORM SEWER
TRCA FLOOD LIMIT	HALVED CULVERT DITCH
HIGH POINT/LOW POINT	CONCRETE CURB & GUTTER
OVERLAND FLOW	

TITLE
EXISTING DRAINAGE MOSAIC

PROJECT
TTC BUSWAY CONVERSION

DATE
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SCALE
1:750

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WC

FIGURE
2.8

100mmø SUBDRAIN
675mmø STORM SEWER
150mmø SUBDRAIN
675mmø STORM SEWER
150mmø SUBDRAIN
600mmø STORM SEWER
150mmø SUBDRAIN
600mmø STORM SEWER
150mmø SUBDRAIN
100mmø SUBDRAIN
100mmø SUBDRAIN
100mmø SUBDRAIN
600mmø STORM SEWER
150mmø SUBDRAIN
600mmø STORM SEWER
150mmø SUBDRAIN
160.00
160.00
122+00
123+00
124+00
0
25
50
Meters

AECOM

LEGEND

DITCH	EXISTING CATCHBASIN
WATERCOURSE	EXISTING CATCHBASIN MANHOLE
PROPERTY LINE	EXISTING MANHOLE
TRCA REGULATION LIMIT	EXISTING STORM SEWER
TRCA FLOOD LIMIT	HALVED CULVERT DITCH
HIGH POINT/LOW POINT	CONCRETE CURB & GUTTER
OVERLAND FLOW	

TITLE
EXISTING DRAINAGE MOSAIC

PROJECT
TTC BUSWAY CONVERSION

DATE
Jul 11, 2024

SCALE
1:750

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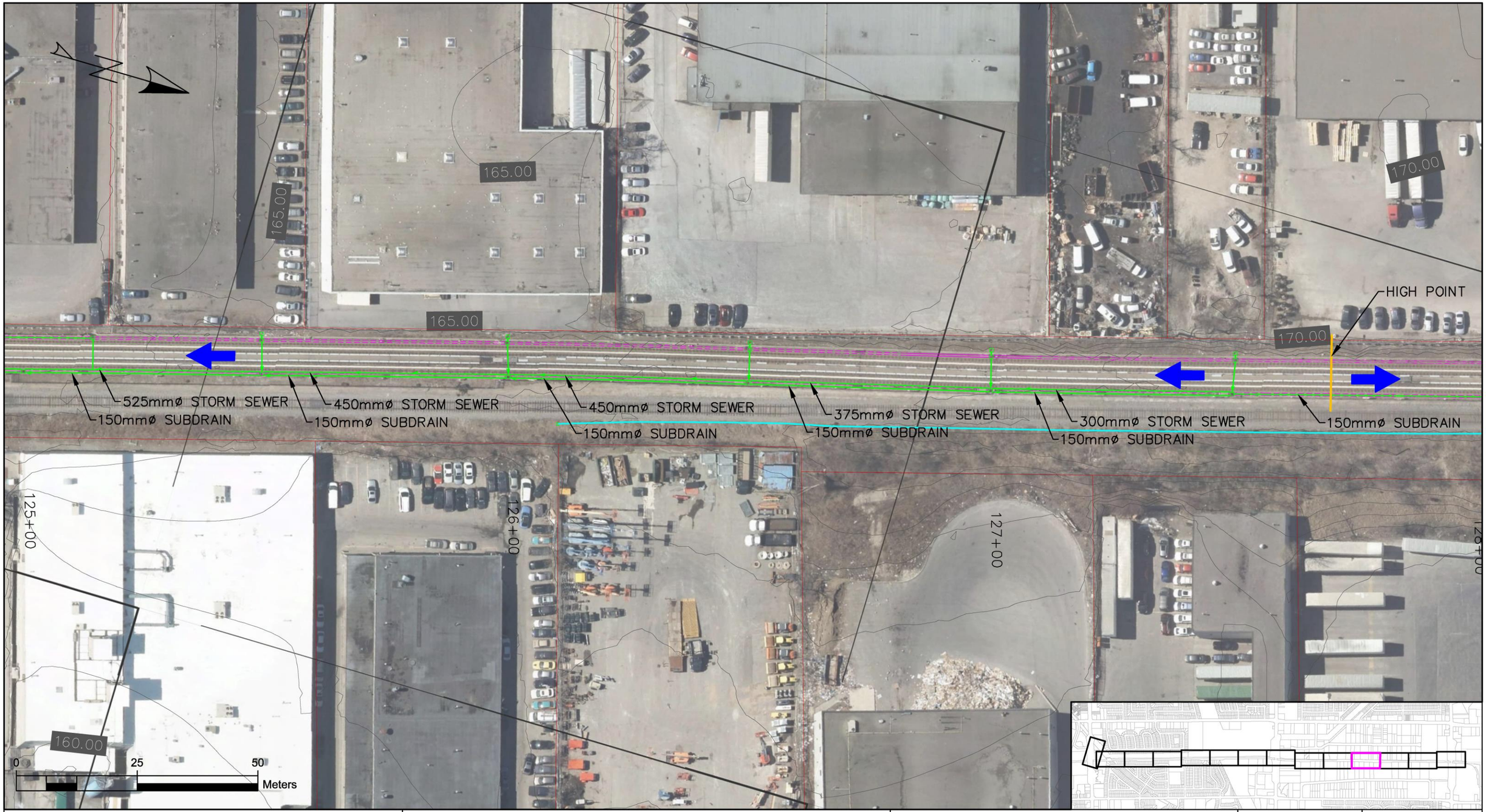
FIGURE
2.9



AECOM

LEGEND

DITCH	EXISTING CATCHBASIN
WATERCOURSE	EXISTING CATCHBASIN MANHOLE
PROPERTY LINE	EXISTING MANHOLE
TRCA REGULATION LIMIT	EXISTING STORM SEWER
TRCA FLOOD LIMIT	HALVED CULVERT DITCH
HIGH POINT/LOW POINT	CONCRETE CURB & GUTTER
OVERLAND FLOW	

TITLE
EXISTING DRAINAGE MOSAIC

PROJECT
TTC BUSWAY CONVERSION

DATE
Jul 11, 2024

SCALE
1:750

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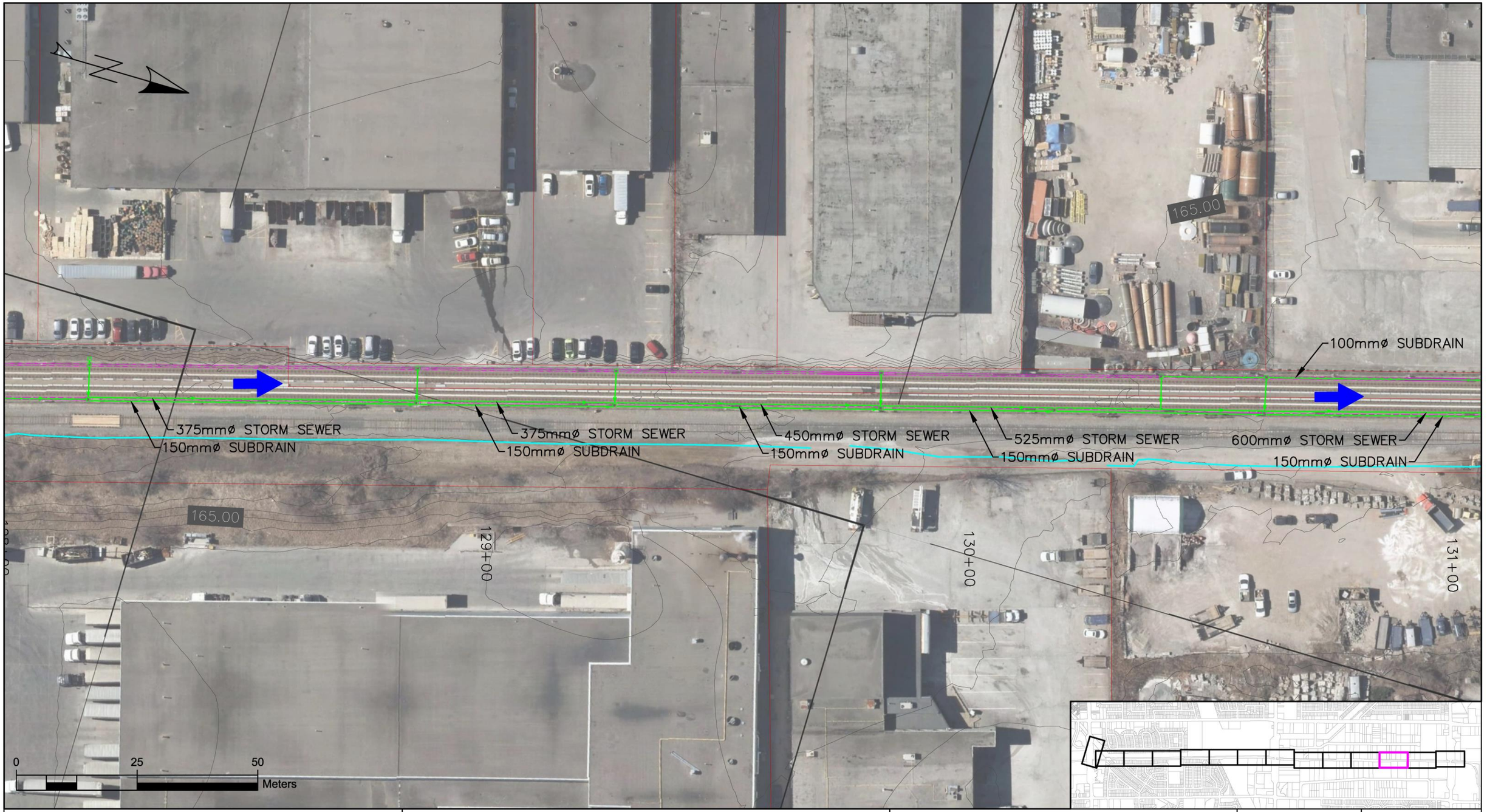
WC

FIGURE
2.10



AECOM

LEGEND

DITCH	EXISTING CATCHBASIN
WATERCOURSE	EXISTING CATCHBASIN MANHOLE
PROPERTY LINE	EXISTING MANHOLE
TRCA REGULATION LIMIT	EXISTING STORM SEWER
TRCA FLOOD LIMIT	HALVED CULVERT DITCH
HIGH POINT/LOW POINT	CONCRETE CURB & GUTTER
OVERLAND FLOW	

TITLE
EXISTING DRAINAGE MOSAIC

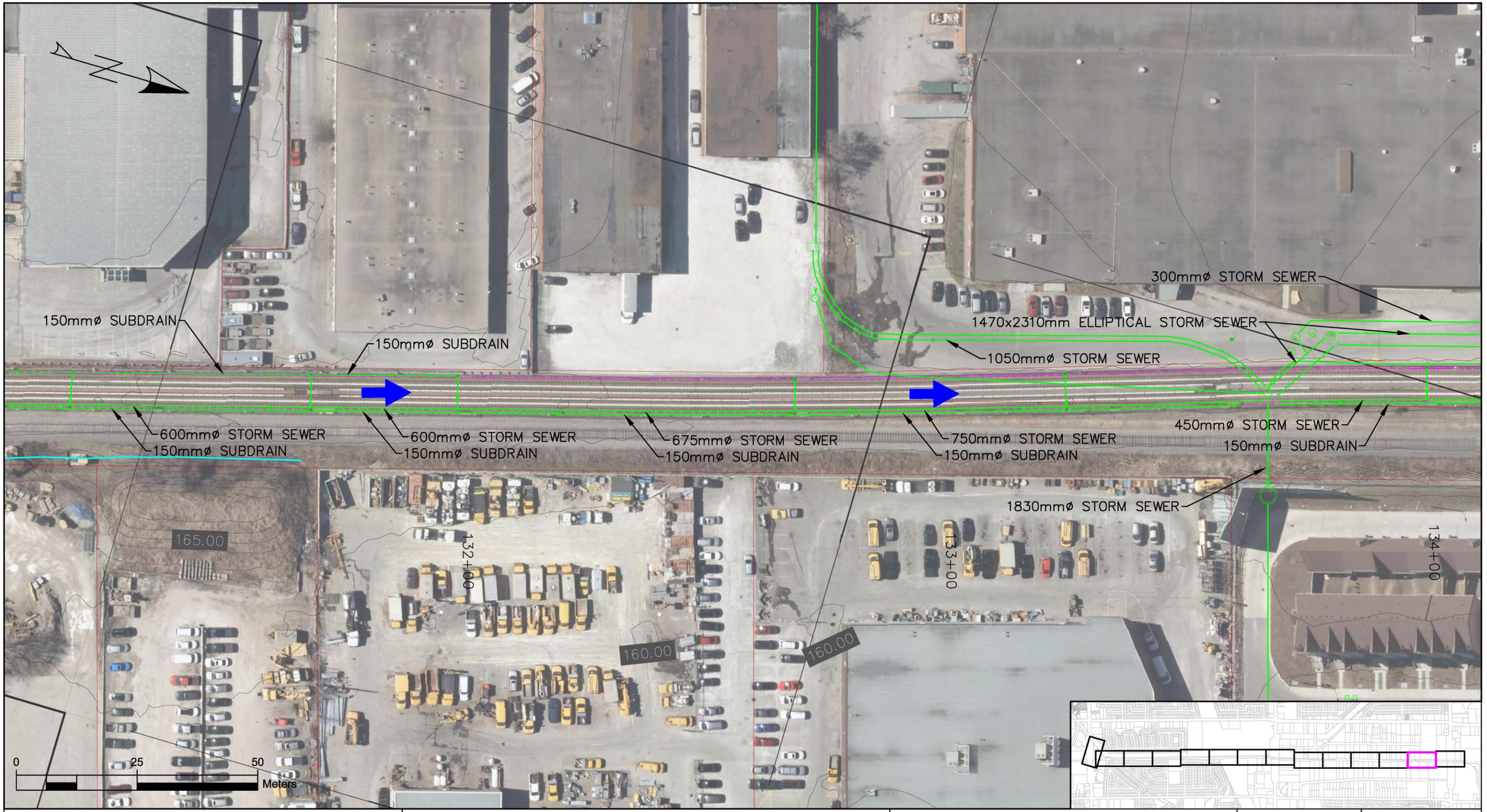
PROJECT
TTC BUSWAY CONVERSION

DATE
Jul 11, 2024

SCALE
1:750

DRAWN BY
WC

FIGURE
2.11



AECOM

1. SEWER INFO FROM CITY OF TORONTO DRAWING J2-21-U-401

LEGEND

- DITCH
- WATERCOURSE
- PROPERTY LINE
- TRCA REGULATION LIMIT
- TRCA FLOOD LIMIT
- HIGH POINT/LOW POINT
- OVERLAND FLOW
- EXISTING CATCHBASIN
- EXISTING CATCHBASIN MANHOLE
- EXISTING MANHOLE
- EXISTING STORM SEWER
- HALVED CULVERT DITCH
- CONCRETE CURB & GUTTER

TITLE
EXISTING DRAINAGE MOSAIC

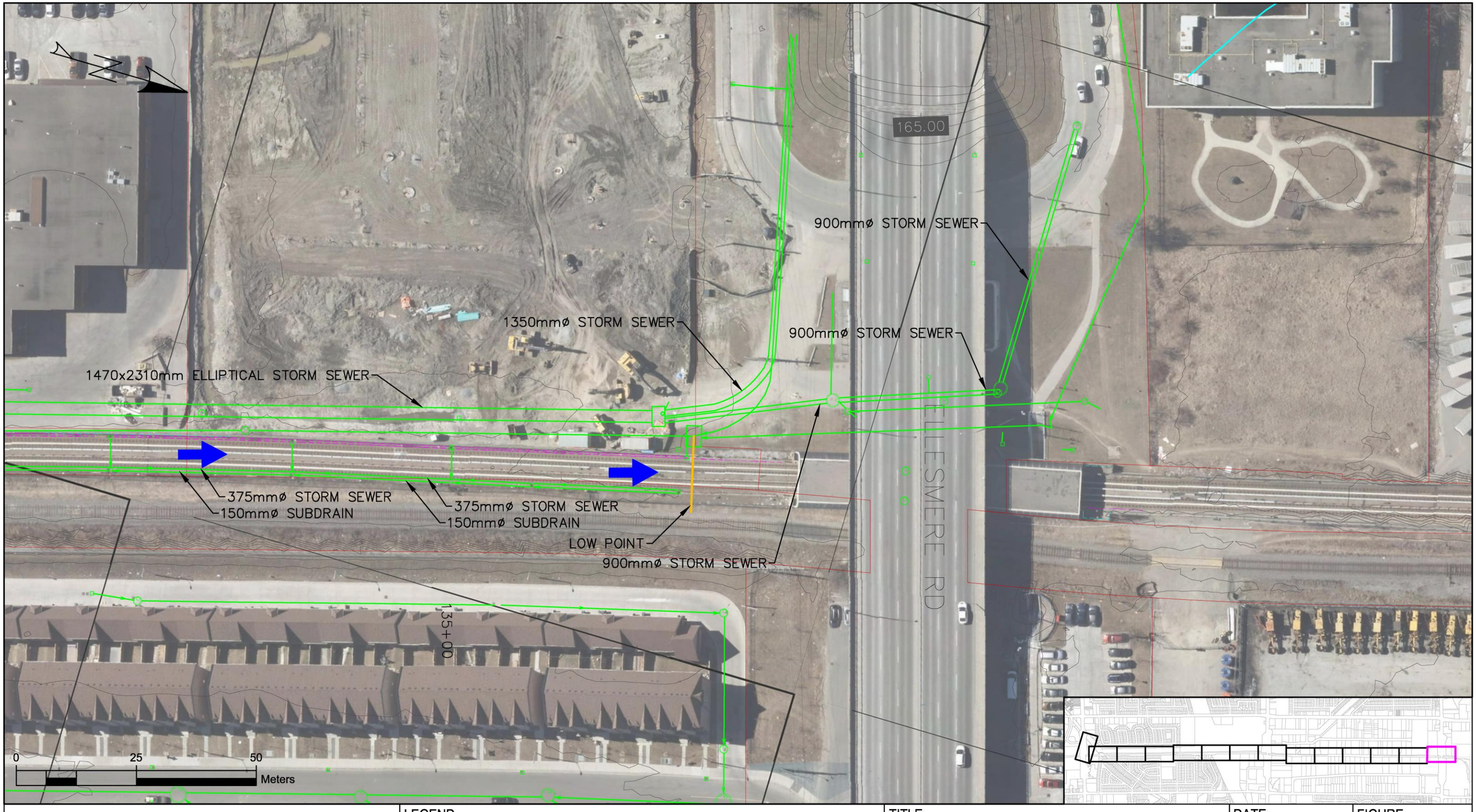
PROJECT
TTC BUSWAY CONVERSION

DATE
Jul 11, 2024

SCALE
1:750

DRAWN BY
WC

FIGURE
2.12



AECOM

1. SEWER INFO FROM CITY OF TORONTO DRAWING J2-21-U-401

LEGEND

- DITCH
- WATERCOURSE
- PROPERTY LINE
- TRCA REGULATION LIMIT
- TRCA FLOOD LIMIT
- HIGH POINT/LOW POINT
- OVERLAND FLOW
- EXISTING CATCHBASIN
- EXISTING CATCHBASIN MANHOLE
- EXISTING MANHOLE
- EXISTING STORM SEWER
- HALVED CULVERT DITCH
- CONCRETE CURB & GUTTER

TITLE: EXISTING DRAINAGE MOSAIC

PROJECT: TTC BUSWAY CONVERSION

DATE: Jul 11, 2024

SCALE: 1:750

DRAWN BY: WC

FIGURE: 2.13

Proposed Conditions Drainage Mosaic

AECOM

LEGEND

DITCH	OVERLAND FLOW
WATERCOURSE	EXISTING CATCHBASIN
PROPERTY LINE	EXISTING CATCHBASIN MANHOLE
TRCA REGULATION LIMIT	EXISTING MANHOLE
TRCA FLOOD LIMIT	PROPOSED STORM SEWER
HALVED CULVERT DITCH	PROPOSED CATCHBASIN
CONCRETE CURB & GUTTER	PROPOSED CATCHBASIN MANHOLE
EXISTING STORM SEWER	PROPOSED MANHOLE
HIGH POINT/LOW POINT	

TITLE
PROPOSED DRAINAGE MOSAIC

PROJECT
TTC BUSWAY CONVERSION

DATE
Jul 11, 2024

SCALE
1:750

DRAWN BY
WC

FIGURE
3.0

AECOM

LEGEND

DITCH		OVERLAND FLOW	
WATERCOURSE		EXISTING CATCHBASIN	
PROPERTY LINE		EXISTING CATCHBASIN MANHOLE	
TRCA REGULATION LIMIT		EXISTING MANHOLE	
TRCA FLOOD LIMIT		PROPOSED STORM SEWER	
HALVED CULVERT DITCH		PROPOSED CATCHBASIN	
CONCRETE CURB & GUTTER		PROPOSED CATCHBASIN MANHOLE	
EXISTING STORM SEWER		PROPOSED MANHOLE	
HIGH POINT/LOW POINT			

TITLE
PROPOSED DRAINAGE MOSAIC

PROJECT
TTC BUSWAY CONVERSION

DATE
Jul 11, 2024

SCALE
1:750

DRAWN BY
WC

FIGURE
3.1

AECOM

LEGEND

DITCH		OVERLAND FLOW	
WATERCOURSE		EXISTING CATCHBASIN	
PROPERTY LINE		EXISTING CATCHBASIN MANHOLE	
TRCA REGULATION LIMIT		EXISTING MANHOLE	
TRCA FLOOD LIMIT		PROPOSED STORM SEWER	
HALVED CULVERT DITCH		PROPOSED CATCHBASIN	
CONCRETE CURB & GUTTER		PROPOSED CATCHBASIN MANHOLE	
EXISTING STORM SEWER		PROPOSED MANHOLE	
HIGH POINT/LOW POINT			

TITLE	PROPOSED DRAINAGE MOSAIC
PROJECT	TTC BUSWAY CONVERSION
DATE	Jul 11, 2024
SCALE	1:750
DRAWN BY	WC
FIGURE	3.2

AECOM

LEGEND

DITCH	OVERLAND FLOW
WATERCOURSE	EXISTING CATCHBASIN
PROPERTY LINE	EXISTING CATCHBASIN MANHOLE
TRCA REGULATION LIMIT	EXISTING MANHOLE
TRCA FLOOD LIMIT	PROPOSED STORM SEWER
HALVED CULVERT DITCH	PROPOSED CATCHBASIN
CONCRETE CURB & GUTTER	PROPOSED CATCHBASIN MANHOLE
EXISTING STORM SEWER	PROPOSED MANHOLE
HIGH POINT/LOW POINT	

TITLE
PROPOSED DRAINAGE MOSAIC

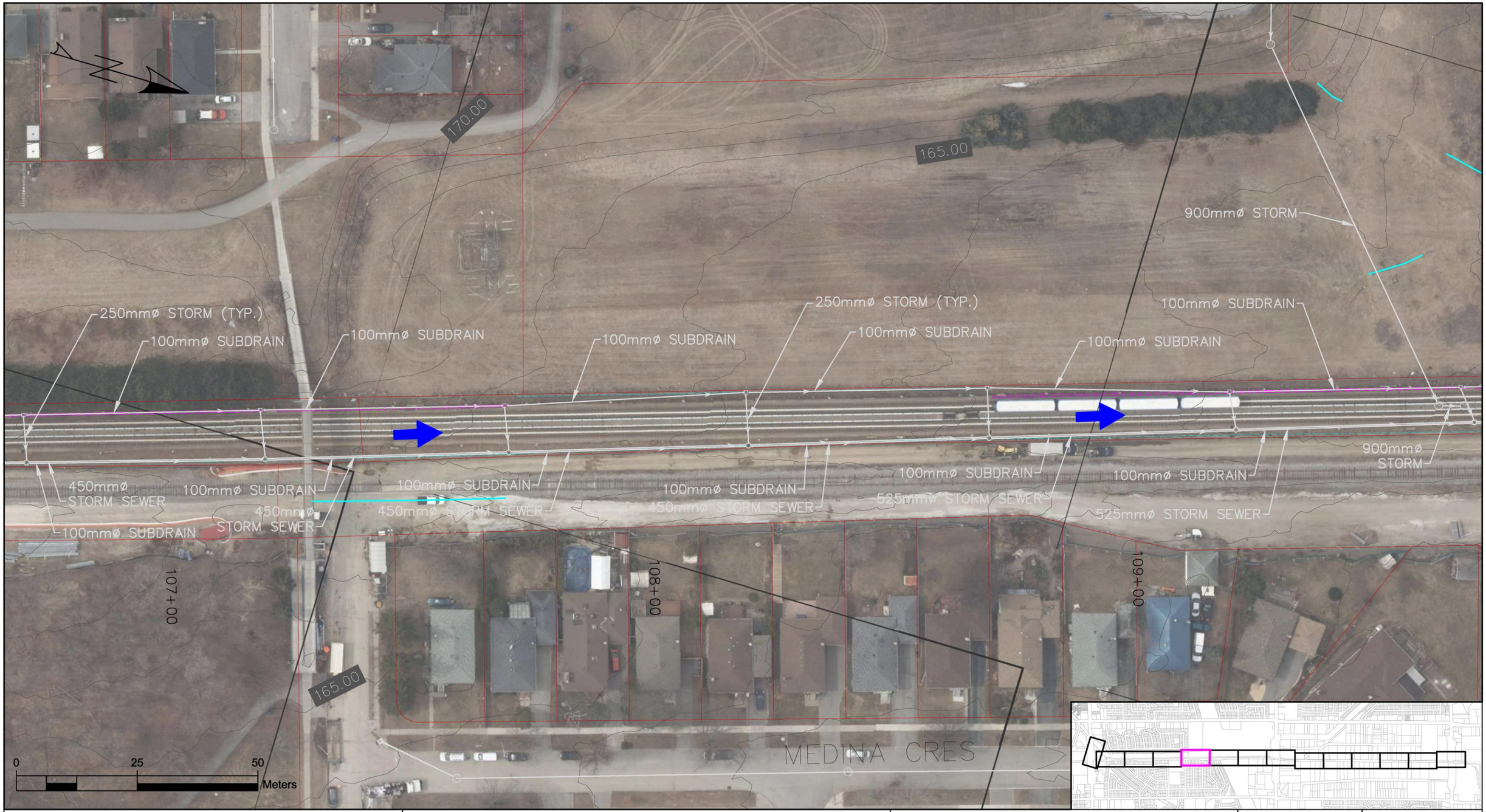
PROJECT
TTC BUSWAY CONVERSION

DATE
Jul 11, 2024

SCALE
1:750

DRAWN BY
WC

FIGURE
3.3



AECOM

LEGEND

DITCH		OVERLAND FLOW	
WATERCOURSE		EXISTING CATCHBASIN	
PROPERTY LINE		EXISTING CATCHBASIN MANHOLE	
TRCA REGULATION LIMIT		EXISTING MANHOLE	
TRCA FLOOD LIMIT		PROPOSED STORM SEWER	
HALVED CULVERT DITCH		PROPOSED CATCHBASIN	
CONCRETE CURB & GUTTER		PROPOSED CATCHBASIN MANHOLE	
EXISTING STORM SEWER		PROPOSED MANHOLE	
HIGH POINT/LOW POINT			

TITLE
PROPOSED DRAINAGE MOSAIC

PROJECT
TTC BUSWAY CONVERSION

DATE
Jul 11, 2024

SCALE
1:750

DRAWN BY
WC

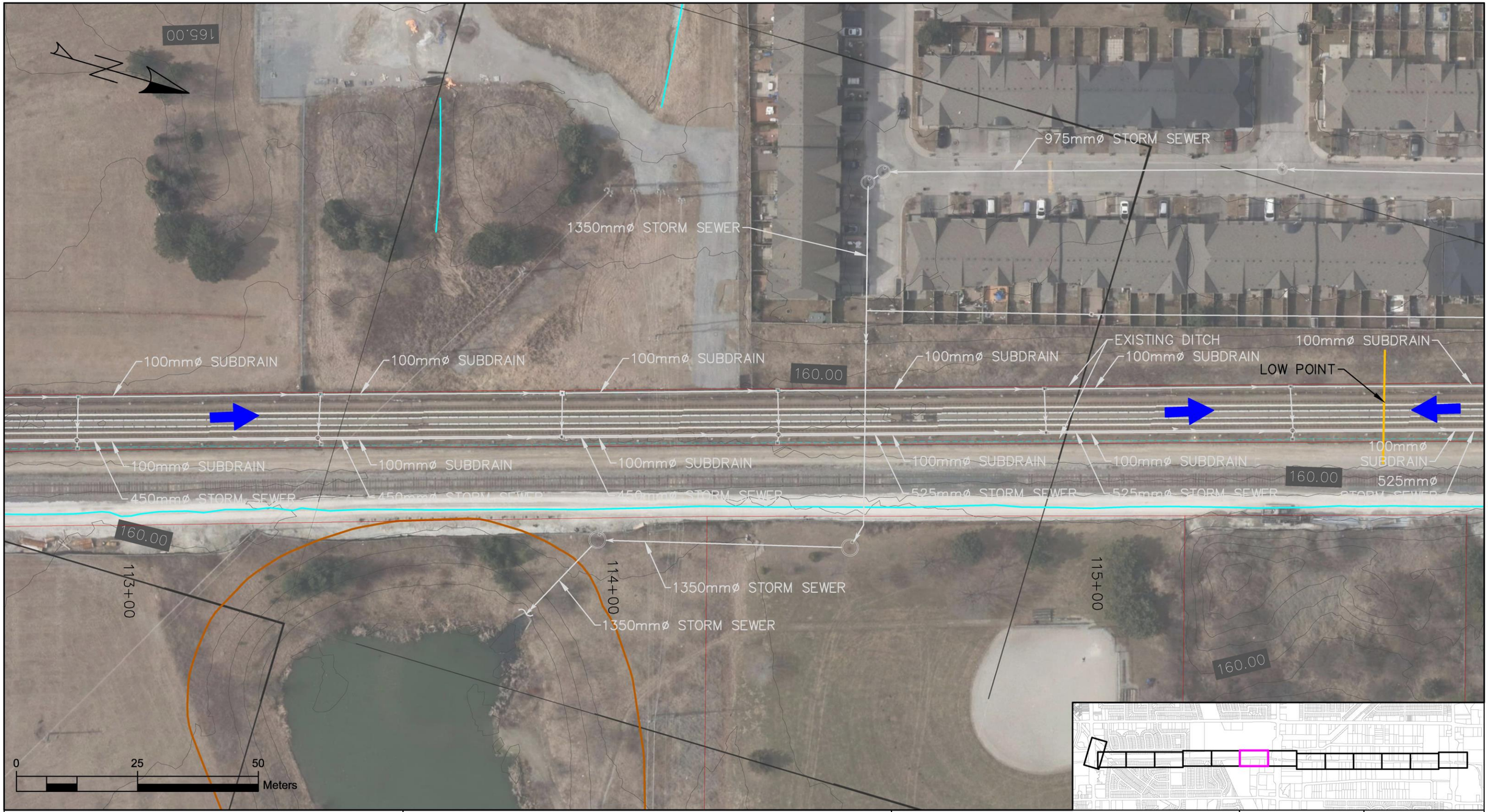
FIGURE
3.4

AECOM

LEGEND

DITCH		OVERLAND FLOW	
WATERCOURSE		EXISTING CATCHBASIN	
PROPERTY LINE		EXISTING CATCHBASIN MANHOLE	
TRCA REGULATION LIMIT		EXISTING MANHOLE	
TRCA FLOOD LIMIT		PROPOSED STORM SEWER	
HALVED CULVERT DITCH		PROPOSED CATCHBASIN	
CONCRETE CURB & GUTTER		PROPOSED CATCHBASIN MANHOLE	
EXISTING STORM SEWER		PROPOSED MANHOLE	
HIGH POINT/LOW POINT			

TITLE	PROPOSED DRAINAGE MOSAIC
PROJECT	TTC BUSWAY CONVERSION
DATE	Jul 11, 2024
SCALE	1:750
DRAWN BY	WC
FIGURE	3.5



AECOM

LEGEND

DITCH	OVERLAND FLOW
WATERCOURSE	EXISTING CATCHBASIN
PROPERTY LINE	EXISTING CATCHBASIN MANHOLE
TRCA REGULATION LIMIT	EXISTING MANHOLE
TRCA FLOOD LIMIT	PROPOSED STORM SEWER
HALVED CULVERT DITCH	PROPOSED CATCHBASIN
CONCRETE CURB & GUTTER	PROPOSED CATCHBASIN MANHOLE
EXISTING STORM SEWER	PROPOSED MANHOLE
HIGH POINT/LOW POINT	

TITLE
PROPOSED DRAINAGE MOSAIC

PROJECT
TTC BUSWAY CONVERSION

DATE
Jul 11, 2024

SCALE
1:750

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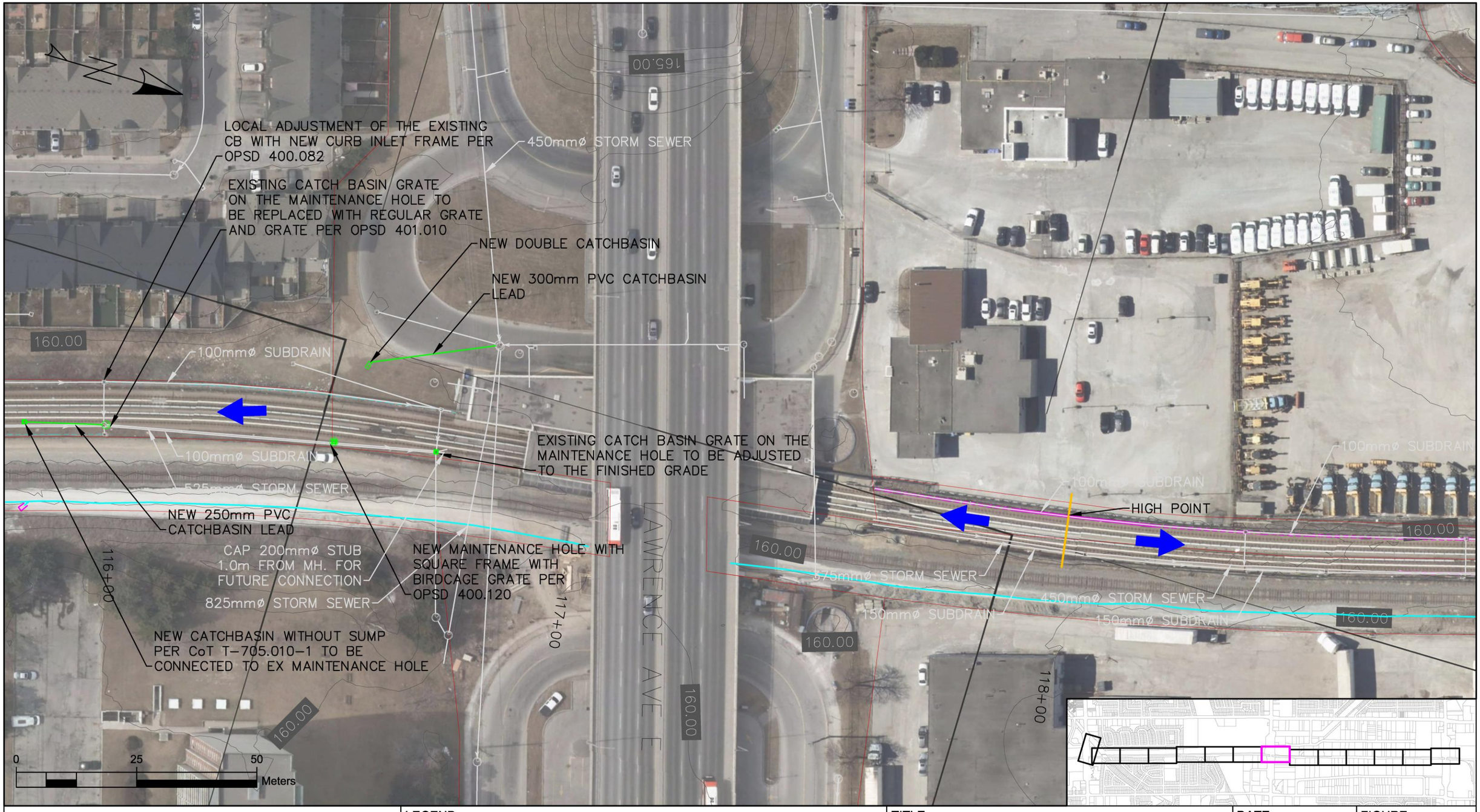
WC

FIGURE
3.6

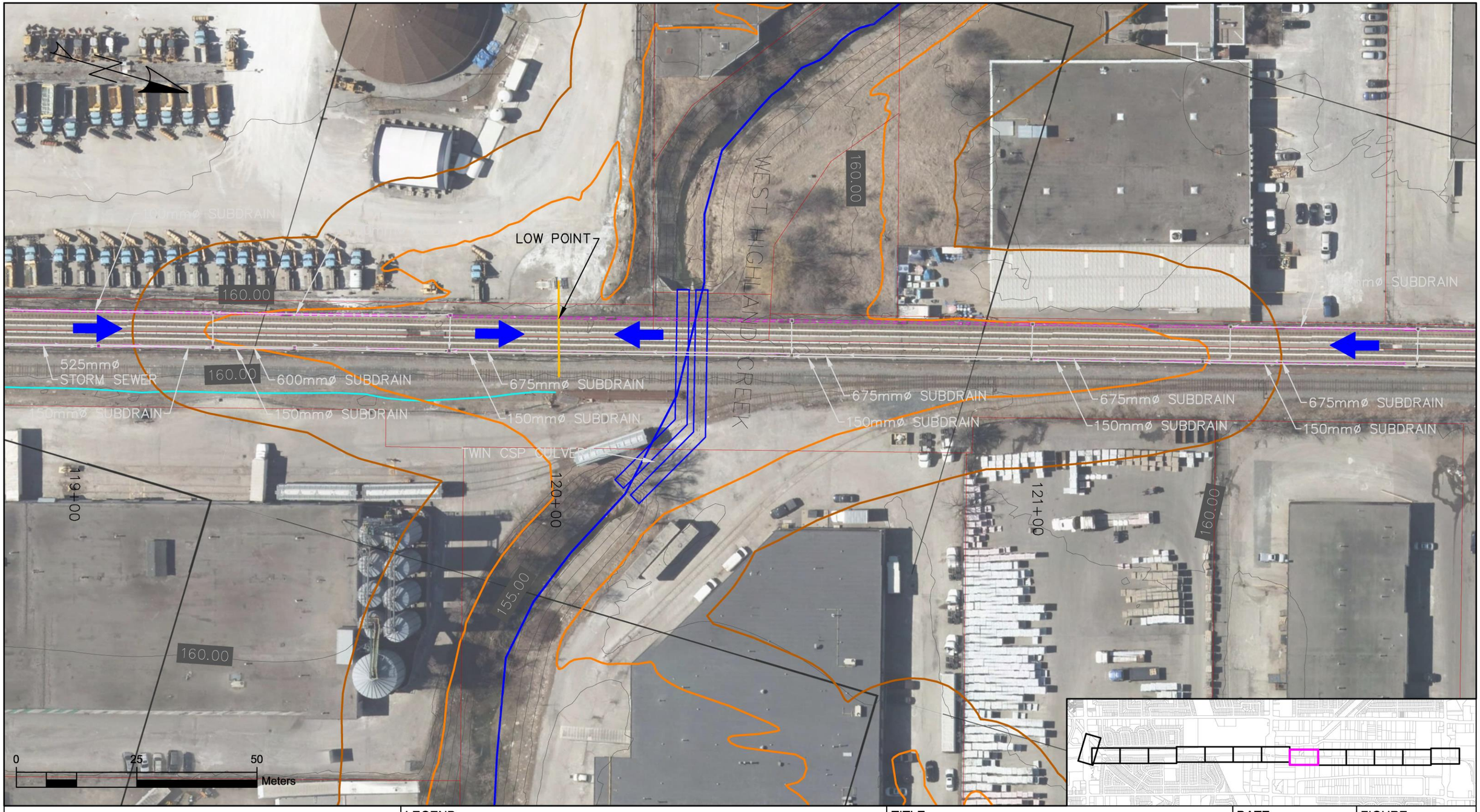


AECOM

LEGEND

DITCH		OVERLAND FLOW	
WATERCOURSE		EXISTING CATCHBASIN	
PROPERTY LINE		EXISTING CATCHBASIN MANHOLE	
TRCA REGULATION LIMIT		EXISTING MANHOLE	
TRCA FLOOD LIMIT		PROPOSED STORM SEWER	
HALVED CULVERT DITCH		PROPOSED CATCHBASIN	
CONCRETE CURB & GUTTER		PROPOSED CATCHBASIN MANHOLE	
EXISTING STORM SEWER		PROPOSED MANHOLE	
HIGH POINT/LOW POINT			

TITLE	PROPOSED DRAINAGE MOSAIC
PROJECT	TTC BUSWAY CONVERSION
DATE	Jul 11, 2024
SCALE	1:750
DRAWN BY	WC
FIGURE	3.7

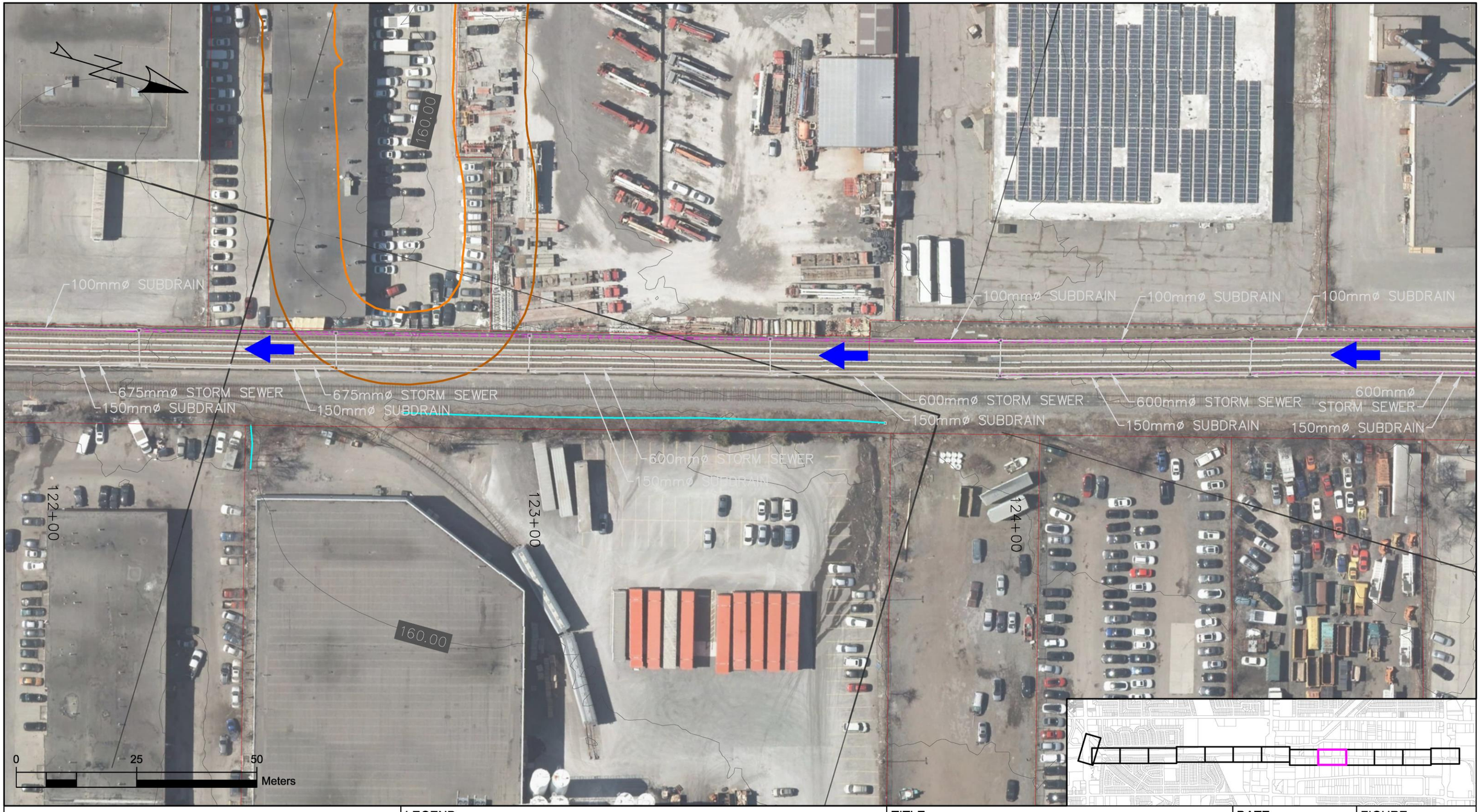


AECOM

LEGEND

DITCH	OVERLAND FLOW
WATERCOURSE	EXISTING CATCHBASIN
PROPERTY LINE	EXISTING CATCHBASIN MANHOLE
TRCA REGULATION LIMIT	EXISTING MANHOLE
TRCA FLOOD LIMIT	PROPOSED STORM SEWER
HALVED CULVERT DITCH	PROPOSED CATCHBASIN
CONCRETE CURB & GUTTER	PROPOSED CATCHBASIN MANHOLE
EXISTING STORM SEWER	PROPOSED MANHOLE
HIGH POINT/LOW POINT	

TITLE	PROPOSED DRAINAGE MOSAIC
PROJECT	TTC BUSWAY CONVERSION
DATE	Jul 11, 2024
SCALE	1:750
DRAWN BY	WC
FIGURE	3.8



AECOM

LEGEND

DITCH		OVERLAND FLOW	
WATERCOURSE		EXISTING CATCHBASIN	
PROPERTY LINE		EXISTING CATCHBASIN MANHOLE	
TRCA REGULATION LIMIT		EXISTING MANHOLE	
TRCA FLOOD LIMIT		PROPOSED STORM SEWER	
HALVED CULVERT DITCH		PROPOSED CATCHBASIN	
CONCRETE CURB & GUTTER		PROPOSED CATCHBASIN MANHOLE	
EXISTING STORM SEWER		PROPOSED MANHOLE	
HIGH POINT/LOW POINT			

TITLE
PROPOSED DRAINAGE MOSAIC

PROJECT
TTC BUSWAY CONVERSION

DATE
Jul 11, 2024

SCALE
1:750

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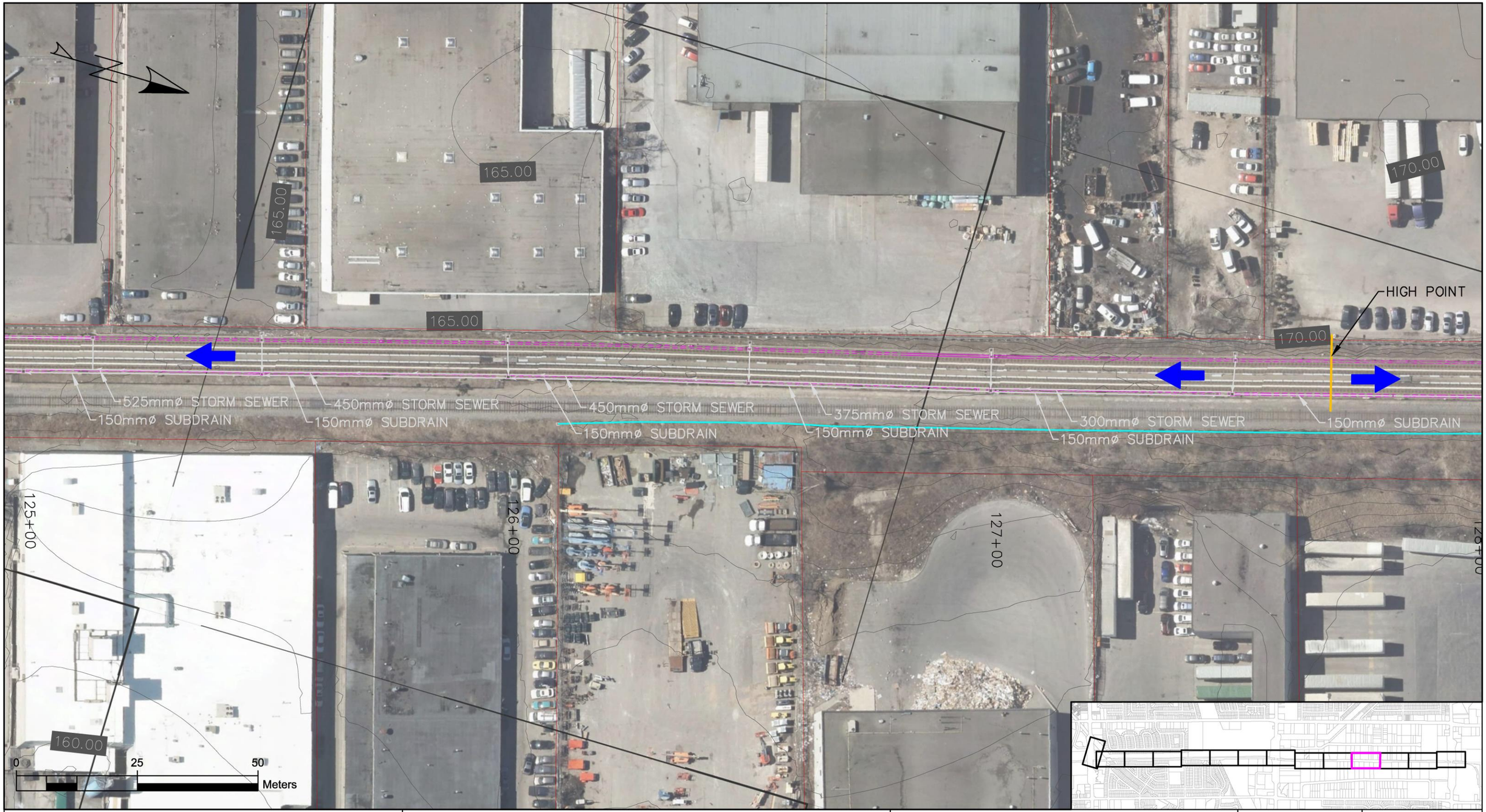
WC

FIGURE
3.9



AECOM

LEGEND

DITCH		OVERLAND FLOW	
WATERCOURSE		EXISTING CATCHBASIN	
PROPERTY LINE		EXISTING CATCHBASIN MANHOLE	
TRCA REGULATION LIMIT		EXISTING MANHOLE	
TRCA FLOOD LIMIT		PROPOSED STORM SEWER	
HALVED CULVERT DITCH		PROPOSED CATCHBASIN	
CONCRETE CURB & GUTTER		PROPOSED CATCHBASIN MANHOLE	
EXISTING STORM SEWER		PROPOSED MANHOLE	
HIGH POINT/LOW POINT			

TITLE
PROPOSED DRAINAGE MOSAIC

PROJECT
TTC BUSWAY CONVERSION

DATE
Jul 11, 2024

SCALE
1:750

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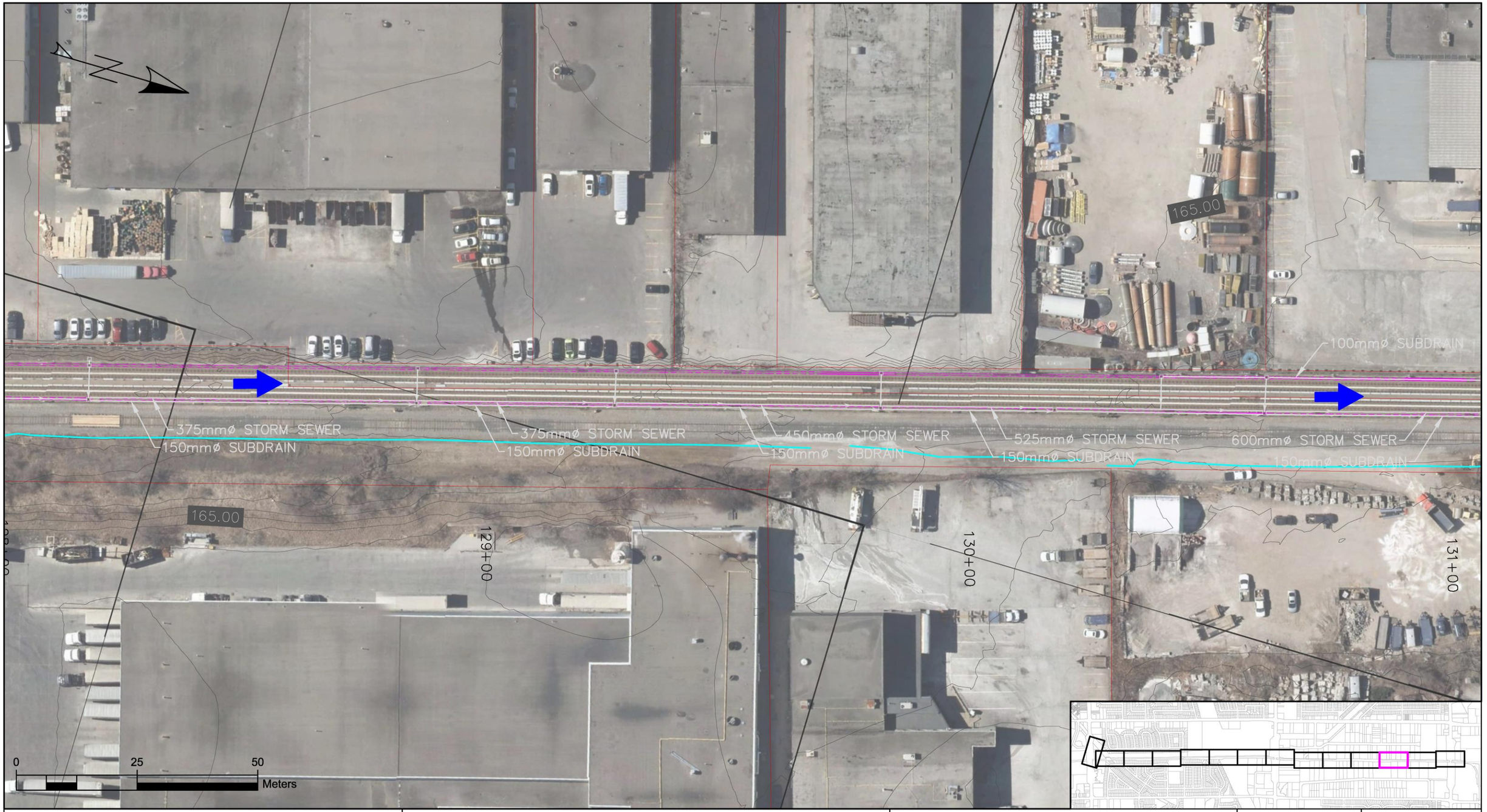
WC

FIGURE
3.10



AECOM

LEGEND

DITCH	OVERLAND FLOW
WATERCOURSE	EXISTING CATCHBASIN
PROPERTY LINE	EXISTING CATCHBASIN MANHOLE
TRCA REGULATION LIMIT	EXISTING MANHOLE
TRCA FLOOD LIMIT	PROPOSED STORM SEWER
HALVED CULVERT DITCH	PROPOSED CATCHBASIN
CONCRETE CURB & GUTTER	PROPOSED CATCHBASIN MANHOLE
EXISTING STORM SEWER	PROPOSED MANHOLE
HIGH POINT/LOW POINT	

TITLE
PROPOSED DRAINAGE MOSAIC

PROJECT
TTC BUSWAY CONVERSION

DATE
Jul 11, 2024

SCALE
1:750

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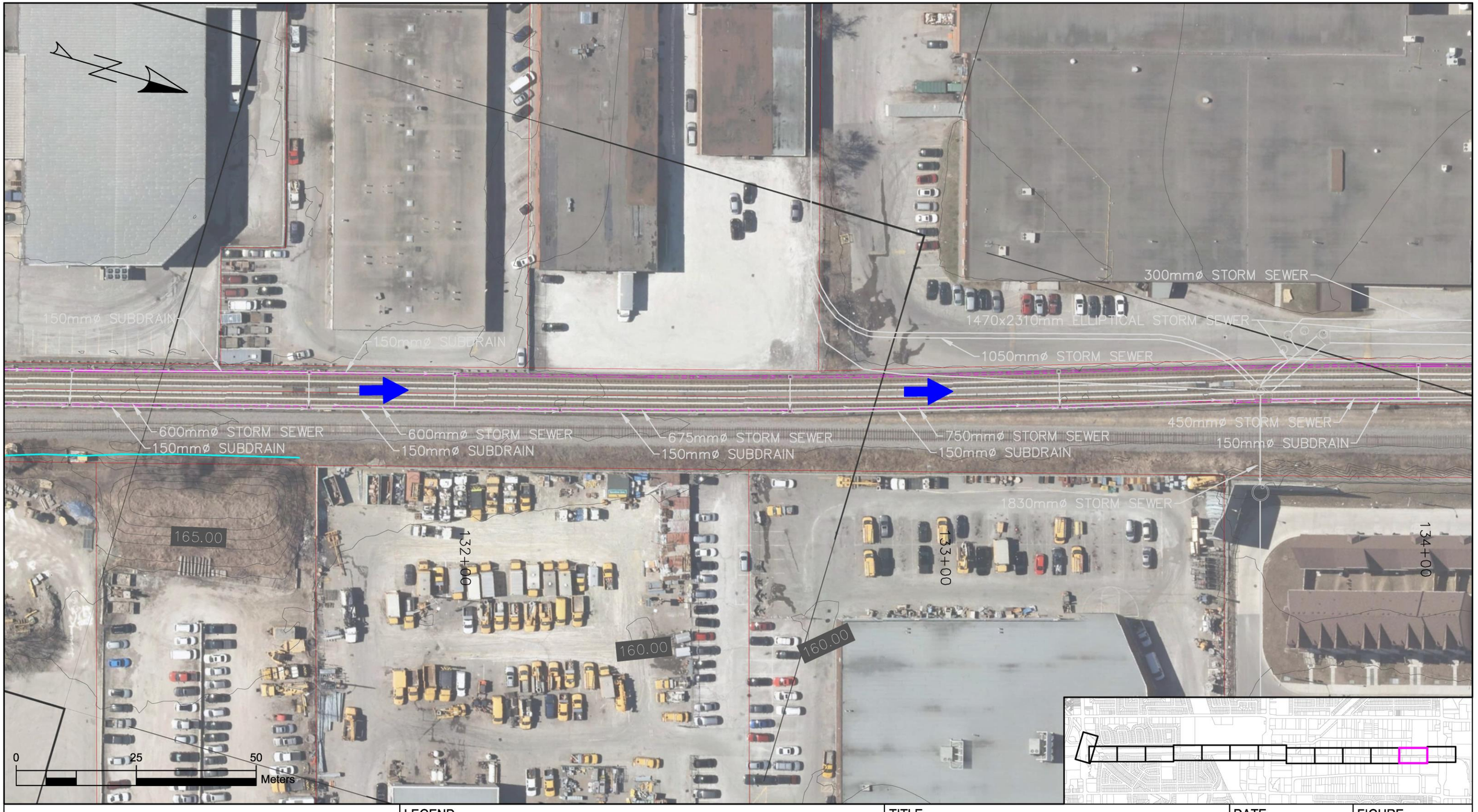
WC

FIGURE
3.11



AECOM

1. SEWER INFO FROM CITY OF TORONTO DRAWING J2-21-U-401

LEGEND

DITCH	OVERLAND FLOW
WATERCOURSE	EXISTING CATCHBASIN
PROPERTY LINE	EXISTING CATCHBASIN MANHOLE
TRCA REGULATION LIMIT	EXISTING MANHOLE
TRCA FLOOD LIMIT	PROPOSED STORM SEWER
HALVED CULVERT DITCH	PROPOSED CATCHBASIN
CONCRETE CURB & GUTTER	PROPOSED CATCHBASIN MANHOLE
EXISTING STORM SEWER	PROPOSED MANHOLE
HIGH POINT/LOW POINT	

TITLE
PROPOSED DRAINAGE MOSAIC

PROJECT
TTC BUSWAY CONVERSION

DATE
Jul 11, 2024

SCALE
1:750

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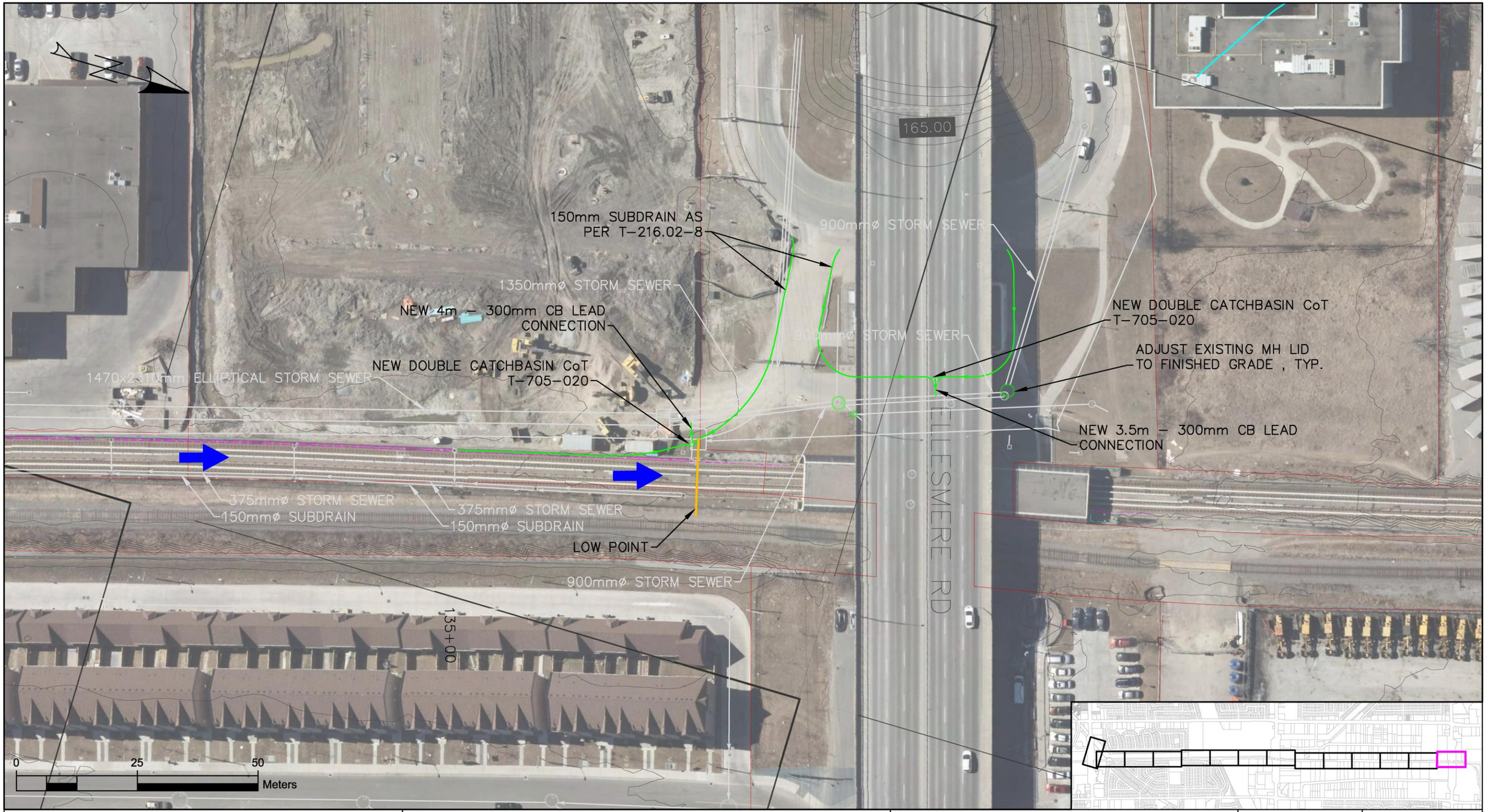
WC

FIGURE
3.12



AECOM

1. SEWER INFO FROM CITY OF TORONTO DRAWING J2-21-U-401

LEGEND

DITCH	OVERLAND FLOW
WATERCOURSE	EXISTING CATCHBASIN
PROPERTY LINE	EXISTING CATCHBASIN MANHOLE
TRCA REGULATION LIMIT	EXISTING MANHOLE
TRCA FLOOD LIMIT	PROPOSED STORM SEWER
HALVED CULVERT DITCH	PROPOSED CATCHBASIN
CONCRETE CURB & GUTTER	PROPOSED CATCHBASIN MANHOLE
EXISTING STORM SEWER	PROPOSED MANHOLE
HIGH POINT/LOW POINT	

TITLE
PROPOSED DRAINAGE MOSAIC

PROJECT
TTC BUSWAY CONVERSION

DATE
Jul 11, 2024

SCALE
1:750

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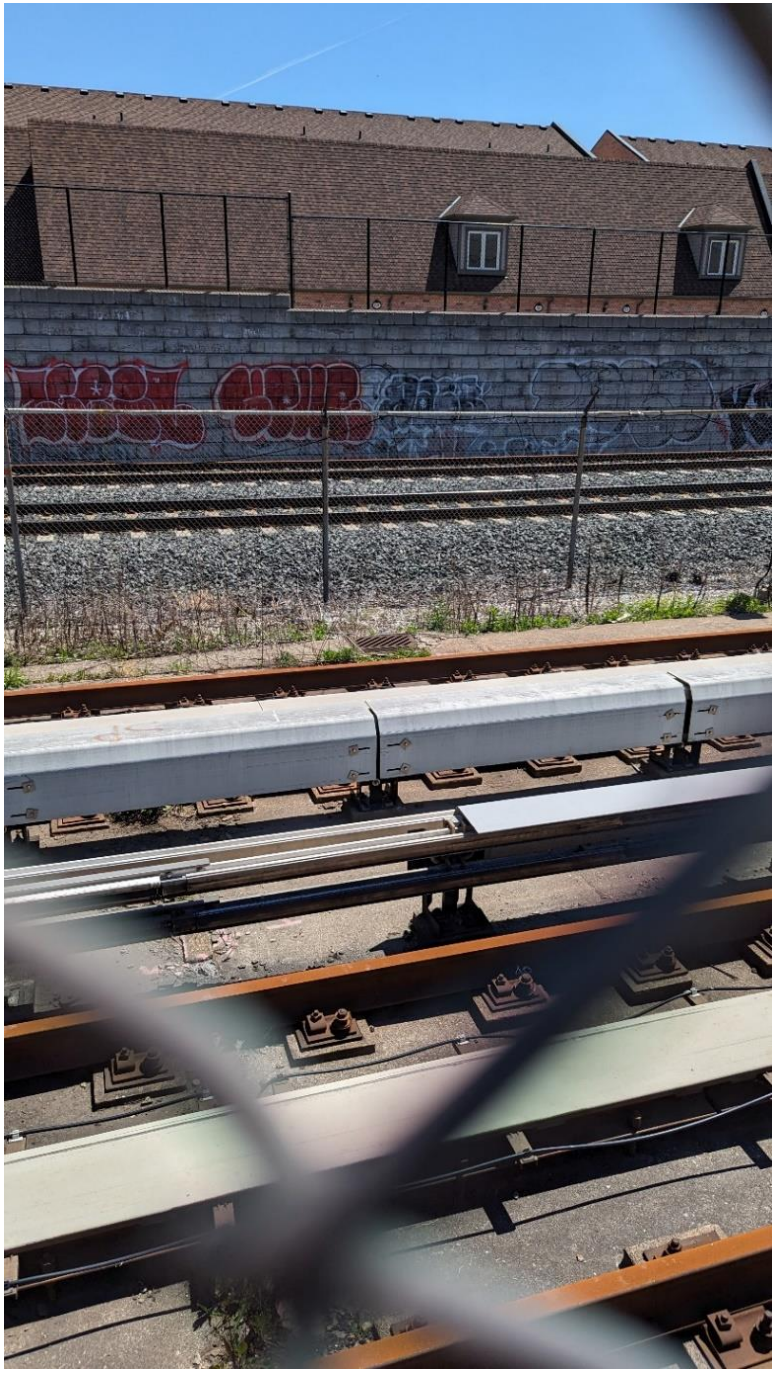
WC

FIGURE
3.13

Appendix A

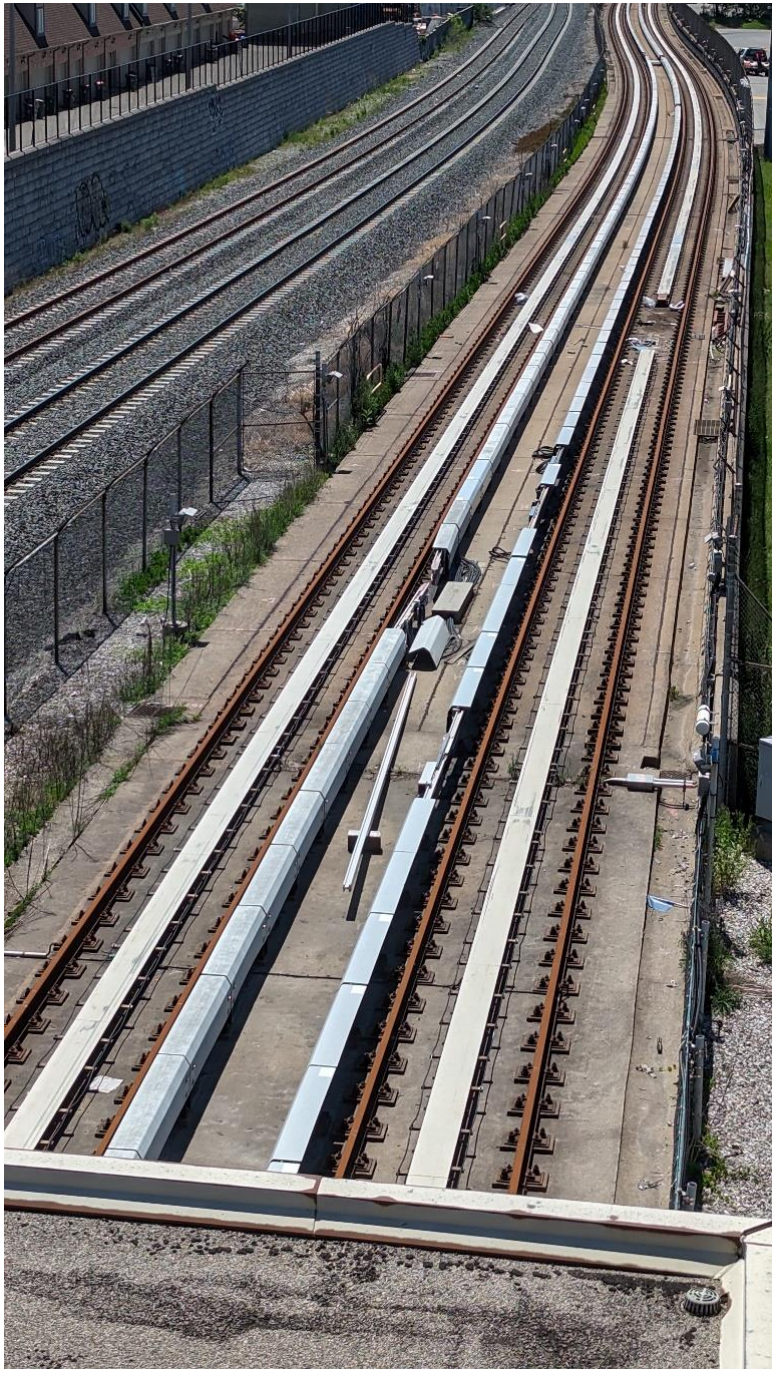
Photographic Record of Toronto Transit Commission Site

Photograph 1: Ellesmere Station – Facing West

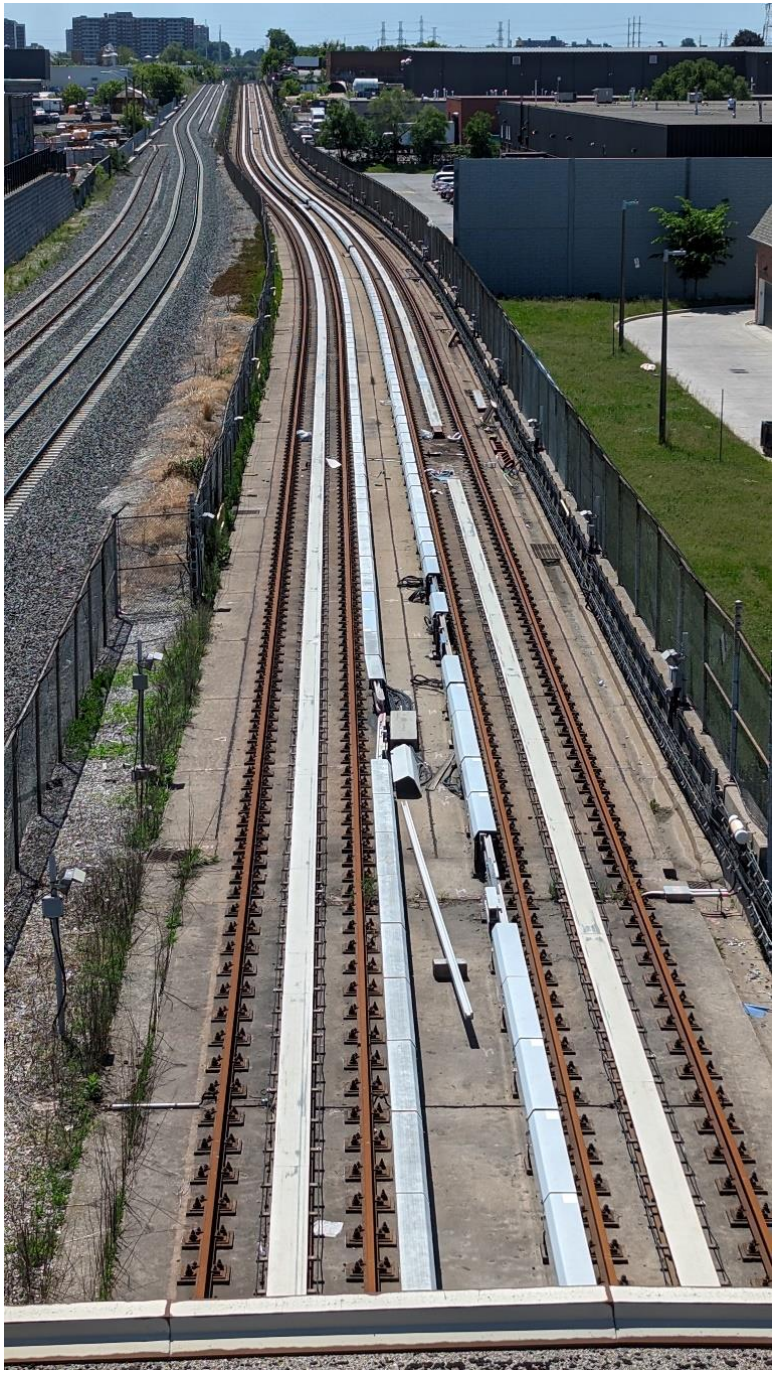


Photograph 2: Ellesmere Station – CB and concrete trough

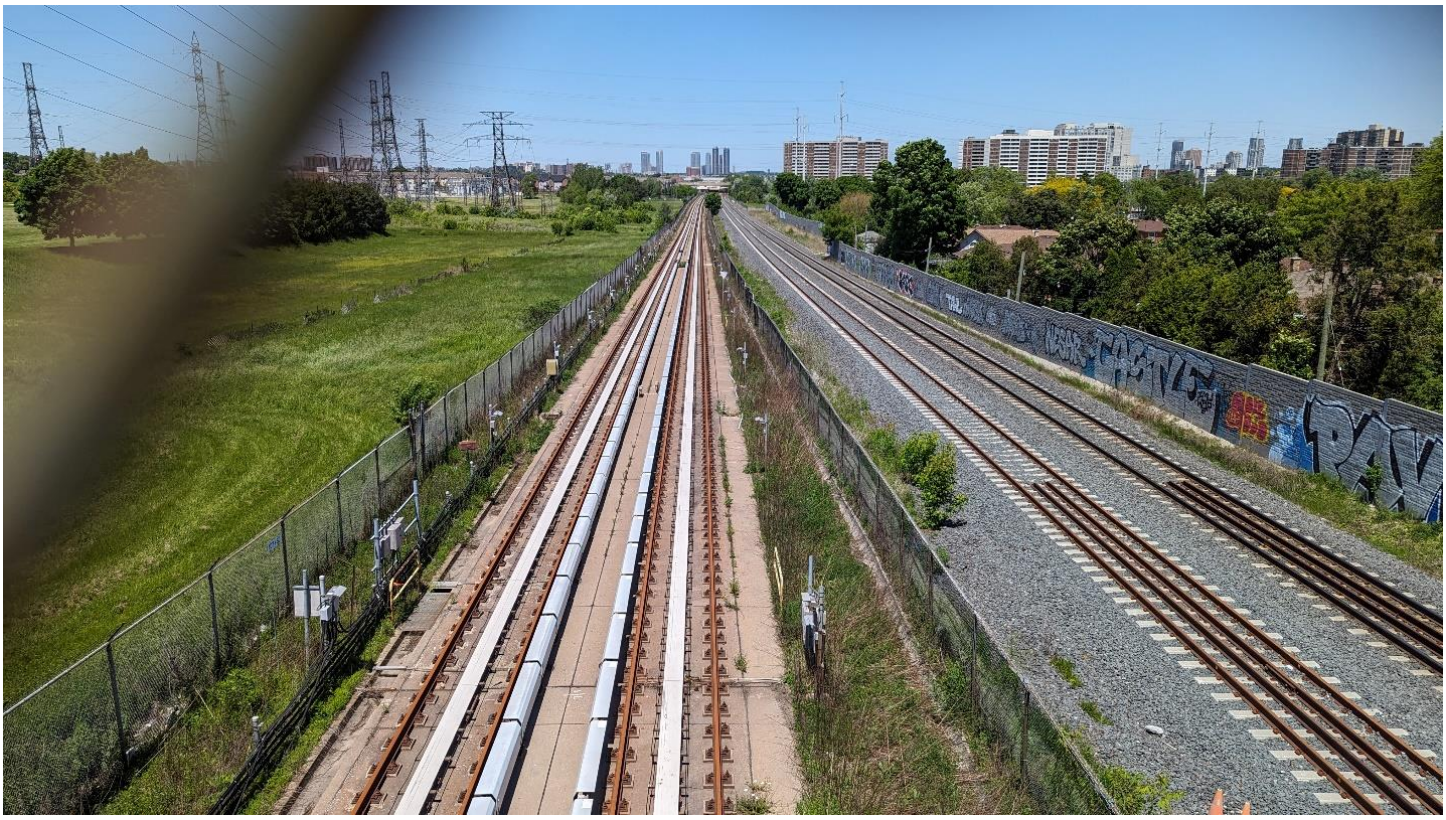
Photograph 3: Ellesmere Station – facing South



Photograph 4: Ellesmere Station – facing South



Photograph 5: Tara Road – facing North

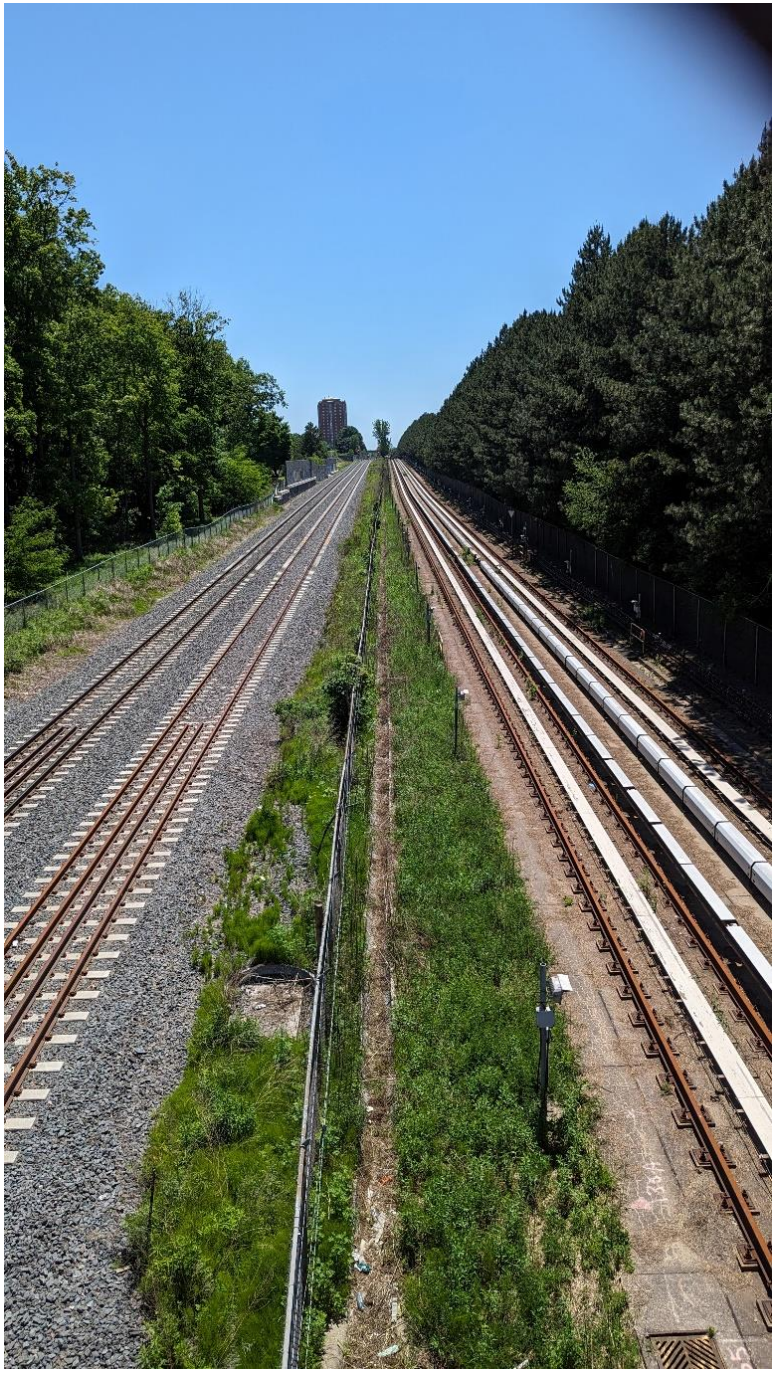


Photograph 6: Tara Road – facing North

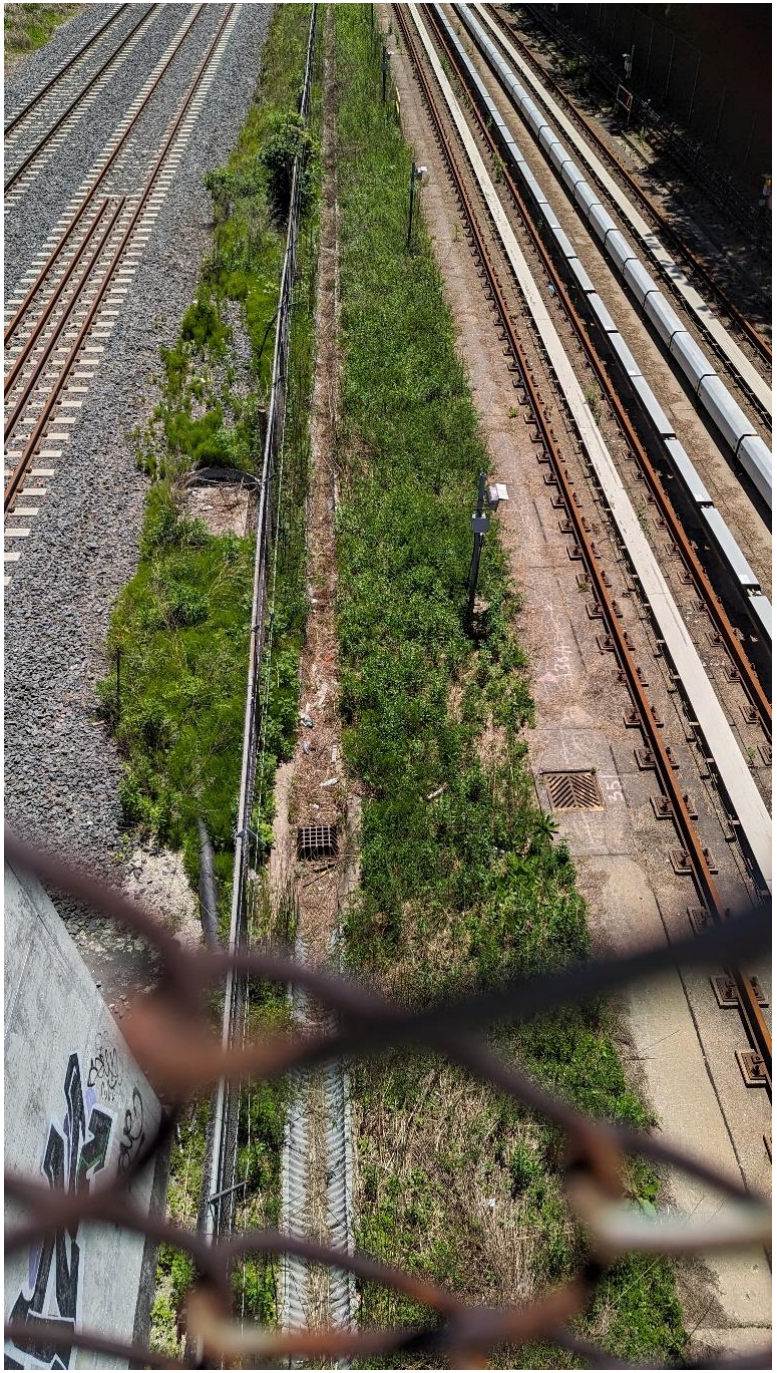
Photograph 7: Tara Road – facing North

Photograph 8: Tara Road – facing North

Photograph 9: Tara Road – facing South

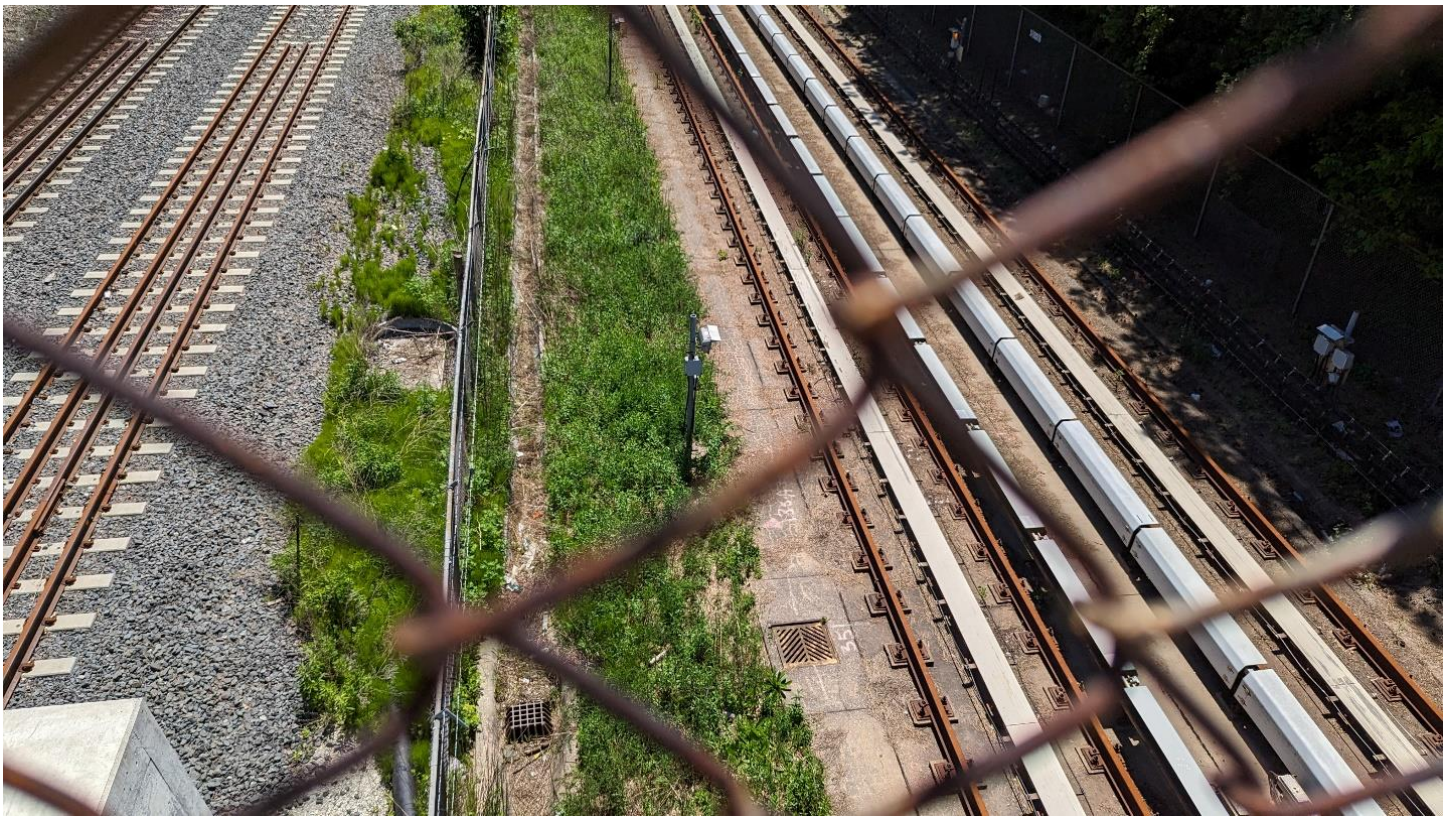


Photograph 10: Tara Road – facing South



Photograph 11: Tara Road – facing South

Photograph 12: Tara Road – facing South



Photograph 13: Tara Road – facing South

Photograph 14: Tara Road – facing South

Photograph 15: Highland Creek – Crossing upstream of Study Area

Photograph 16: Highland Creek – Upstream of Crossing

Photograph 17: Highland Creek – Upstream of Crossing

Photograph 18: Highland Creek – Upstream of Crossing

Photograph 19: Highland Creek – Upstream of Crossing

Photograph 20: Highland Creek – Upstream of Crossing

Photograph 21: Highland Creek – Upstream of Crossing

Photograph 22: Highland Creek – Study Area Crossing

Photograph 23: Highland Creek – Study Area Crossing

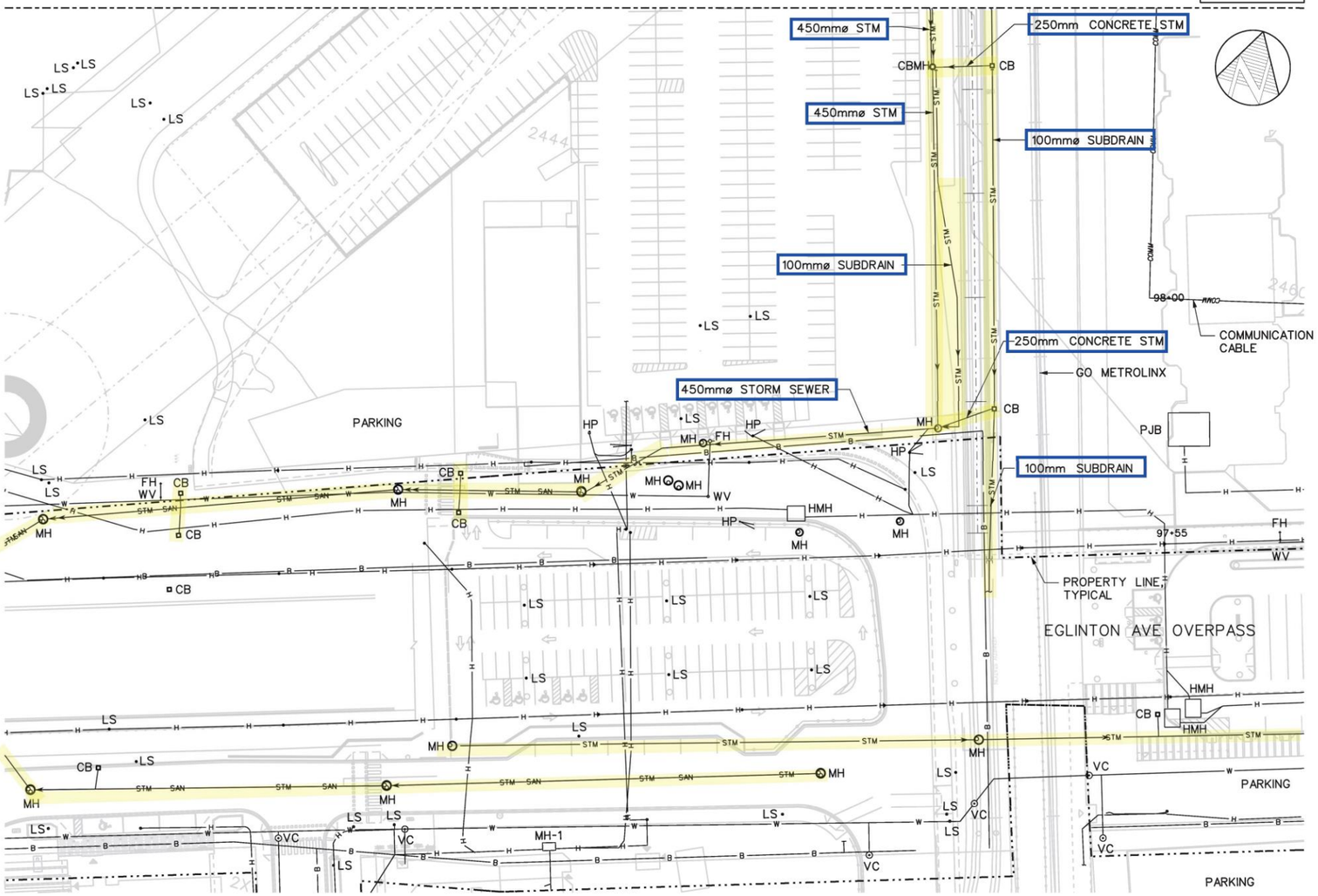
Photograph 24: Existing Railway Tracks at Highland Creek

AECOM

Appendix B

Toronto Transit Commission
60% Design Drawings

FOR CONTINUATION SEE DWG.
MATCHLINE
C302

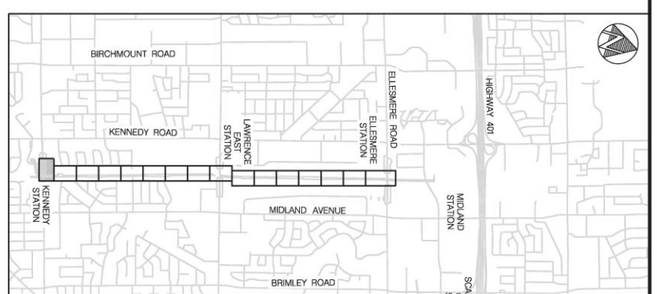


LEGEND:

———	DENOTES EXISTING UTILITIES
CB	DENOTES EXISTING CATCH BASIN
WV	DENOTES EXISTING WATER VALVE
VC	DENOTES EXISTING WATER VALVE CHAMBER
MH	DENOTES EXISTING MAINTENANCE HOLE
LS	DENOTES EXISTING LIGHT STANDARD
FH	DENOTES EXISTING FIRE HYDRANT
PED	DENOTES EXISTING BELL CANADA PEDESTAL

NOTES:

1. REFER TO GENERAL NOTES ON C001 AND UTILITIES NOTES ON C002.



N.T.S

▭ - DENOTES CONSTRUCTION AREA

REVISIONS					
△					
△					
△					

60% REVIEW DRAWING
NOT FOR CONSTRUCTION

		YYYY/MM/DD
DRAWN	D.AMADOR	2022/02/08
CHECKED	S.KIM	2023/02/10
CORRECT	A.SO	2023/02/10

SCALE 0 5 10 15 20m

SRT BUS REPLACEMENT CONVERSION OF SRT ROW TO BUSWAY

EXISTING UTILITIES
KENNEDY STATION
SHEET 1 OF 16

Contract: J35-13

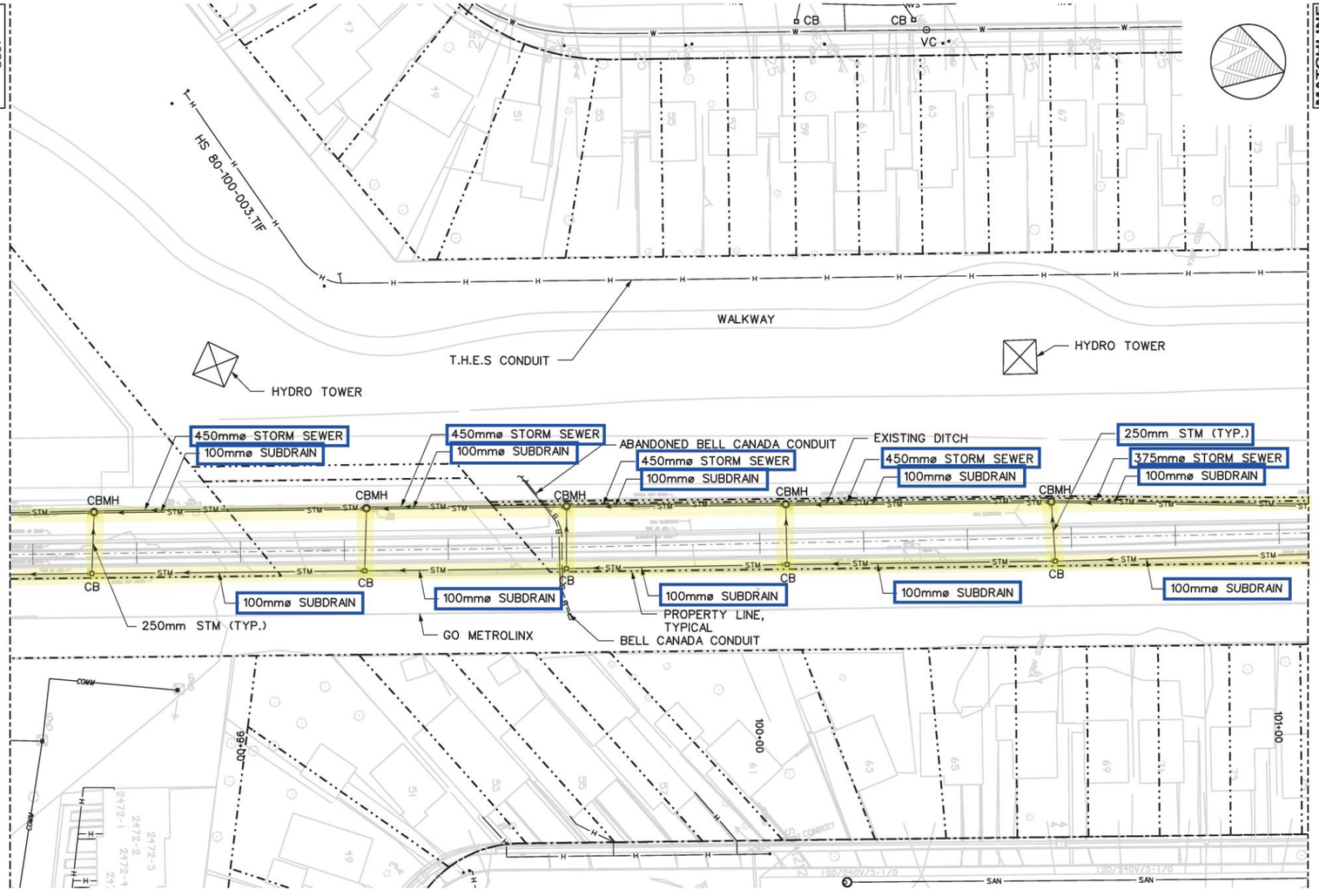
TORONTO TRANSIT COMMISSION
ENGINEERING DEPARTMENT

Dwg. No.	Rev. No.	Sheet No.
J35-13-C301		–

Plot Date: 16-MAR-2023

FOR CONTINUATION SEE DWG. MATCHLINE C301

MATCHLINE C303 FOR CONTINUATION SEE DWG.

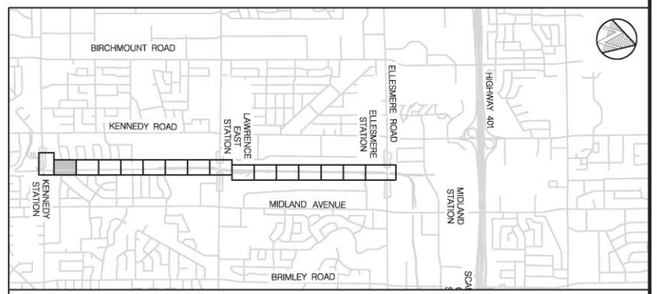


LEGEND:

———	DENOTES EXISTING UTILITIES
CB	DENOTES EXISTING CATCH BASIN
WV	DENOTES EXISTING WATER VALVE
VC	DENOTES EXISTING WATER VALVE CHAMBER
MH	DENOTES EXISTING MAINTENANCE HOLE
LS	DENOTES EXISTING LIGHT STANDARD
FH	DENOTES EXISTING FIRE HYDRANT
PED	DENOTES EXISTING BELL CANADA PEDESTAL

NOTES:

1. REFER TO GENERAL NOTES ON C001 AND UTILITIES NOTES ON C002.



N.T.S

▭ - DENOTES CONSTRUCTION AREA

REVISIONS

60% REVIEW DRAWING
NOT FOR CONSTRUCTION

		YYYY/MM/DD
DRAWN	D.AMADOR	2022/02/02
CHECKED	S.KIM	2023/02/10
CORRECT	A.SO	2023/02/10

SCALE 0 5 10 15 20m

SRT BUS REPLACEMENT
CONVERSION OF SRT ROW TO BUSWAY

EXISTING UTILITIES
98+50 TO 101+000
SHEET 2 OF 16

Contract: J35-13 Package:

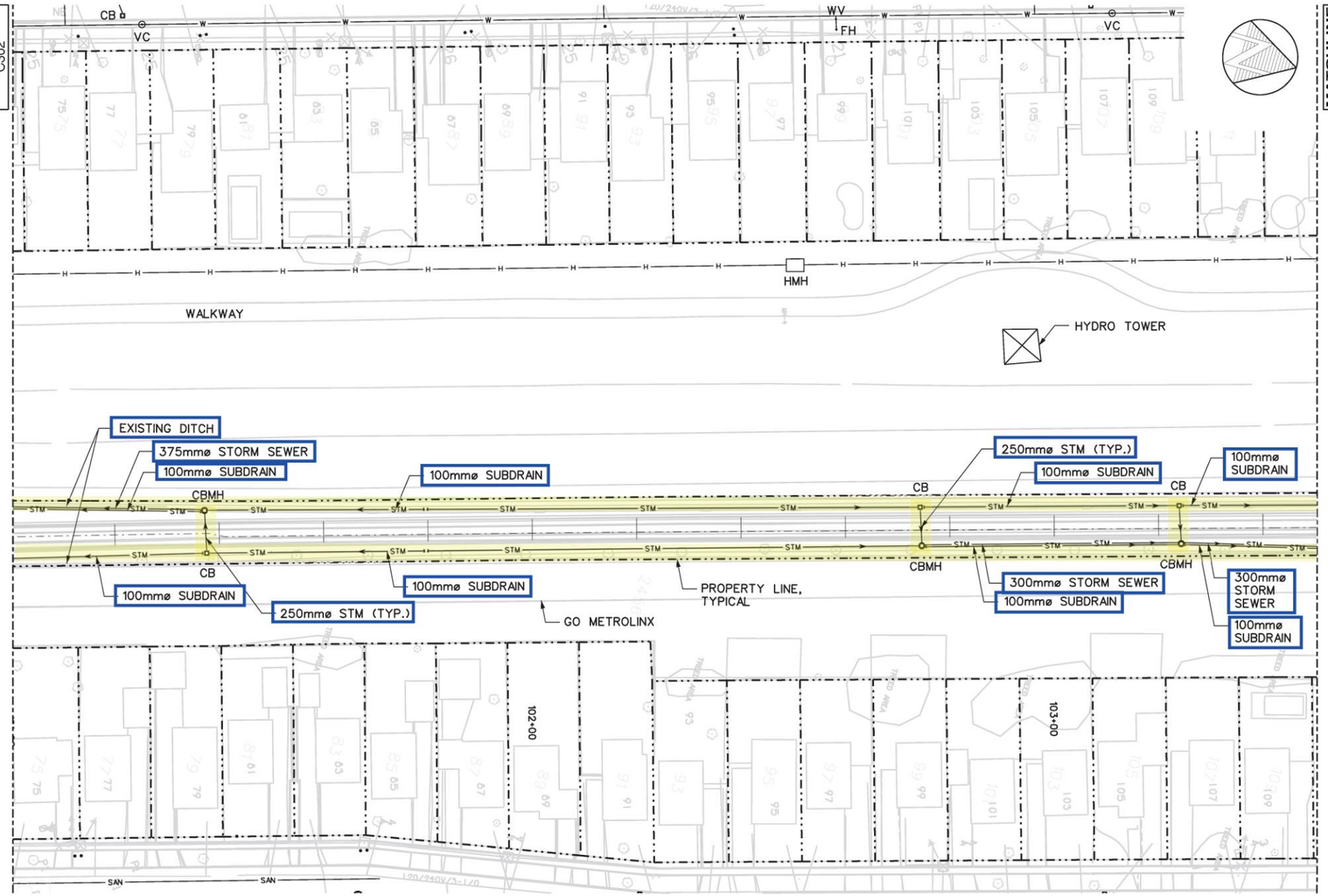
TORONTO TRANSIT COMMISSION
ENGINEERING DEPARTMENT

Dwg. No.	Rev. No.	Sheet No.
J35-13-C302		–

Plot Date: 16-MAR-2023

MATCHLINE C302
FOR CONTINUATION SEE DWG.

MATCHLINE C304
FOR CONTINUATION SEE DWG.

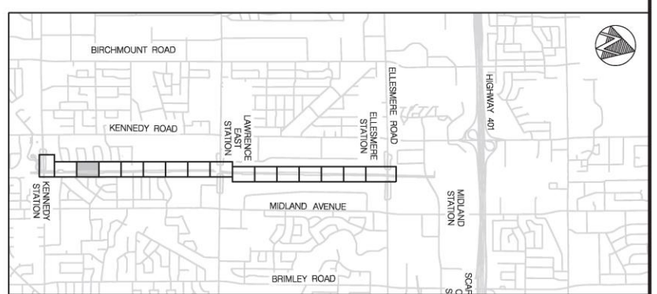


LEGEND:

———	DENOTES EXISTING UTILITIES
□ CB	DENOTES EXISTING CATCH BASIN
• WV	DENOTES EXISTING WATER VALVE
⊙ VC	DENOTES EXISTING WATER VALVE CHAMBER
Ⓜ MH	DENOTES EXISTING MAINTENANCE HOLE
• LS	DENOTES EXISTING LIGHT STANDARD
FH	DENOTES EXISTING FIRE HYDRANT
⊠ PED	DENOTES EXISTING BELL CANADA PEDESTAL

NOTES:

1. REFER TO GENERAL NOTES ON C001 AND UTILITIES NOTES ON C002.



N.T.S

▭ - DENOTES CONSTRUCTION AREA

REVISIONS

60% REVIEW DRAWING
NOT FOR CONSTRUCTION

		YYYY/MM/DD
DRAWN	D.AMADOR	2022/02/02
CHECKED	S.KIM	2023/02/10
CORRECT	A.SO	2023/02/10

SCALE 0 5 10 15 20m

SRT BUS REPLACEMENT
CONVERSION OF SRT ROW TO BUSWAY

EXISTING UTILITIES
101+00 TO 103+50
SHEET 3 OF 16

Contract: J35-13 Package:

TORONTO TRANSIT COMMISSION
ENGINEERING DEPARTMENT

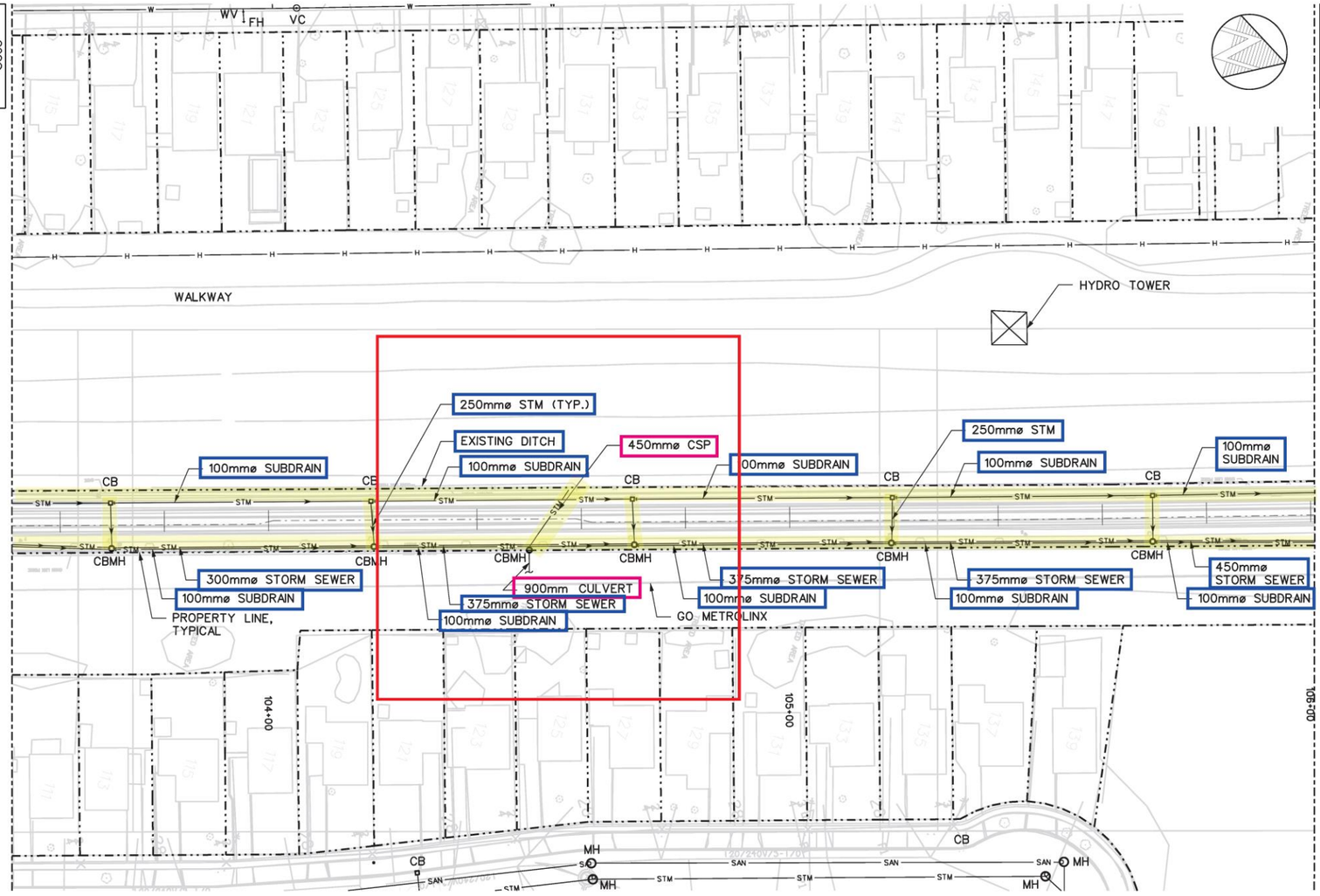
Dwg. No.	Rev. No.	Sheet No.
J35-13-C303		–

Plot Date: 16-MAR-2023

engbord3.dgn (BORDER) FEBRUARY 2, 2020
BLDG. REF. No.
FILENAME: 7s_plan_ue103.dgn
SHEET No. –
DRAWING No. J35-13-C303

FOR CONTINUATION SEE DWG. MATCHLINE C303

FOR CONTINUATION SEE DWG. MATCHLINE C305

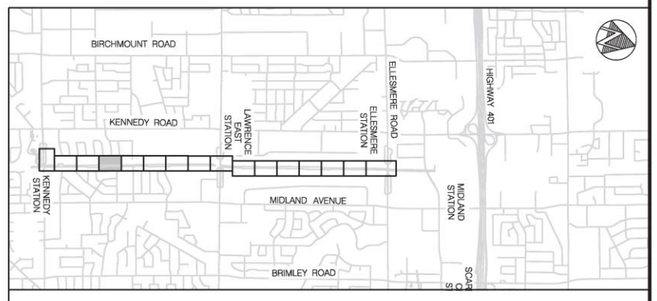


LEGEND:

———	DENOTES EXISTING UTILITIES
CB	DENOTES EXISTING CATCH BASIN
WV	DENOTES EXISTING WATER VALVE
VC	DENOTES EXISTING WATER VALVE CHAMBER
MH	DENOTES EXISTING MAINTENANCE HOLE
LS	DENOTES EXISTING LIGHT STANDARD
FH	DENOTES EXISTING FIRE HYDRANT
PED	DENOTES EXISTING BELL CANADA PEDESTAL

NOTES:

1. REFER TO GENERAL NOTES ON C001 AND UTILITIES NOTES ON C002.



N.T.S

▭ - DENOTES CONSTRUCTION AREA

REVISIONS

60% REVIEW DRAWING
NOT FOR CONSTRUCTION

		YYYY/MM/DD
DRAWN	D.AMADOR	2022/02/02
CHECKED	S.KIM	2023/02/10
CORRECT	A.SO	2023/02/10

SCALE 0 5 10 15 20m

SRT BUS REPLACEMENT
CONVERSION OF SRT ROW TO BUSWAY

EXISTING UTILITIES
103+50 TO 106+00
SHEET 4 OF 16

Contract: J35-13 Package:

TORONTO TRANSIT COMMISSION
ENGINEERING DEPARTMENT

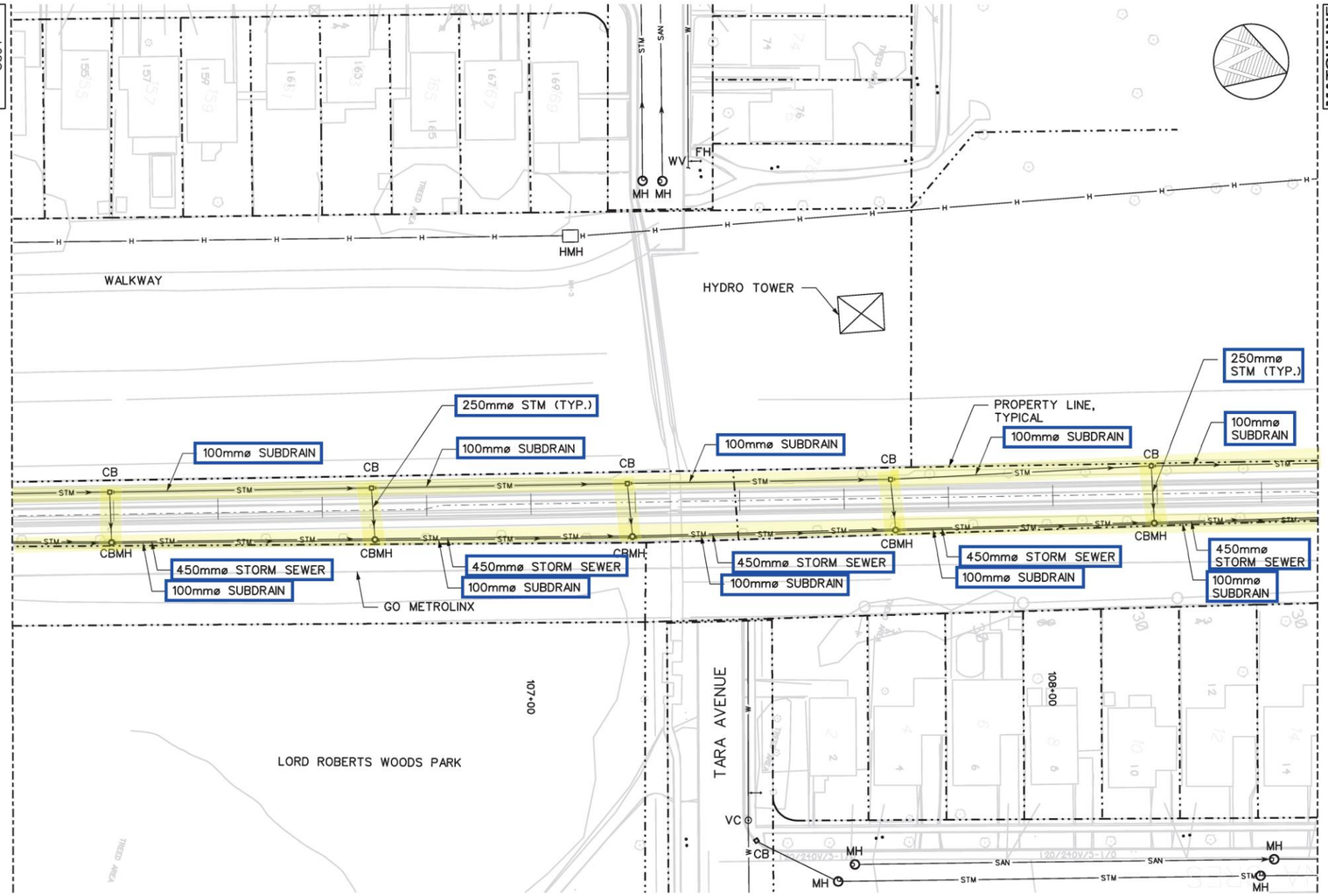
Dwg. No. J35-13-C304 | Rev. No. | Sheet No. –

Plot Date: 16-MAR-2023

BLDG. REF. No. — FILENAME: 7s_plan_ue104.dgn — SHEET No. – — DRAWING No. J35-13-C304

MATCHLINE C304
FOR CONTINUATION SEE DWG.

MATCHLINE C306
FOR CONTINUATION SEE DWG.

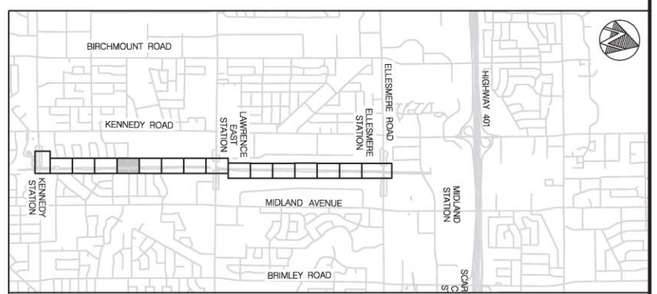


LEGEND:

———	DENOTES EXISTING UTILITIES
CB	DENOTES EXISTING CATCH BASIN
WV	DENOTES EXISTING WATER VALVE
VC	DENOTES EXISTING WATER VALVE CHAMBER
MH	DENOTES EXISTING MAINTENANCE HOLE
LS	DENOTES EXISTING LIGHT STANDARD
FH	DENOTES EXISTING FIRE HYDRANT
PED	DENOTES EXISTING BELL CANADA PEDESTAL

NOTES:

1. REFER TO GENERAL NOTES ON C001 AND UTILITIES NOTES ON C002.



N.T.S

▭ - DENOTES CONSTRUCTION AREA

REVISIONS					
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60% REVIEW DRAWING
NOT FOR CONSTRUCTION

		YYYY/MM/DD
DRAWN	D.AMADOR	2022/02/02
CHECKED	S.KIM	2023/02/10
CORRECT	A.SO	2023/02/10

SCALE 0 5 10 15 20m

SRT BUS REPLACEMENT
CONVERSION OF SRT ROW TO BUSWAY

EXISTING UTILITIES
106+00 TO 108+50
SHEET 5 OF 16

Contract: J35-13 Package:

TORONTO TRANSIT COMMISSION
ENGINEERING DEPARTMENT

Dwg. No.	Rev. No.	Sheet No.
J35-13-C305		–

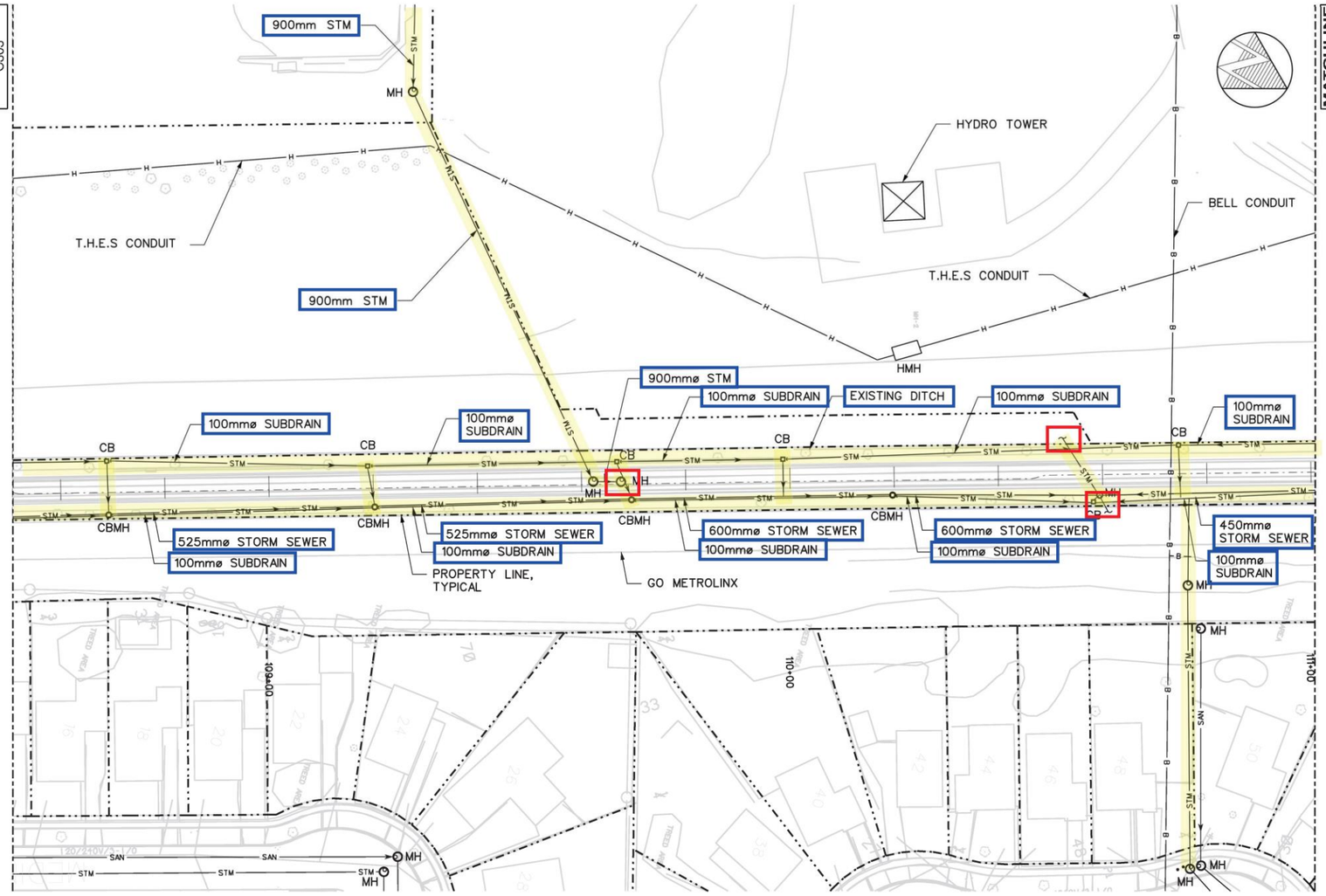
Plot Date: 16-MAR-2023

DRAWING No. J35-13-C305 SHEET No. – FILENAME: 7s_plan_ue105.dgn BLDG. REF: No.

engbord3.dgn (BORDER) FEBRUARY 2, 2020

MATCHLINE C305
FOR CONTINUATION SEE DWG.

MATCHLINE C307
FOR CONTINUATION SEE DWG.

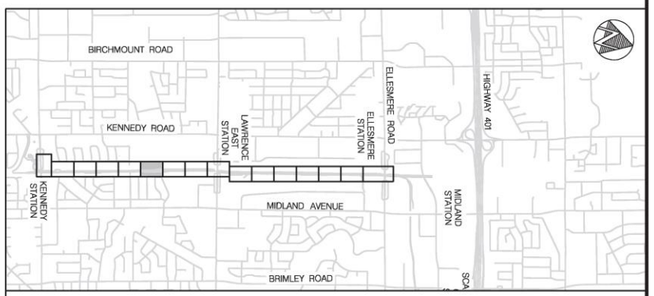


LEGEND:

———	DENOTES EXISTING UTILITIES
CB	DENOTES EXISTING CATCH BASIN
WV	DENOTES EXISTING WATER VALVE
VC	DENOTES EXISTING WATER VALVE CHAMBER
MH	DENOTES EXISTING MAINTENANCE HOLE
LS	DENOTES EXISTING LIGHT STANDARD
FH	DENOTES EXISTING FIRE HYDRANT
PED	DENOTES EXISTING BELL CANADA PEDESTAL

NOTES:

1. REFER TO GENERAL NOTES ON C001 AND UTILITIES NOTES ON C002.



N.T.S

▭ - DENOTES CONSTRUCTION AREA

BLDG. REF. No.
FILENAME: 7s_plan_ue106.dgn
SHEET No. –
DRAWING No. J35-13-C306

REVISIONS					
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60% REVIEW DRAWING
NOT FOR CONSTRUCTION

		YYYY/MM/DD
DRAWN	D.AMADOR	2022/02/02
CHECKED	S.KIM	2023/02/10
CORRECT	A.SO	2023/02/10

SCALE 0 5 10 15 20m

SRT BUS REPLACEMENT
CONVERSION OF SRT ROW TO BUSWAY

EXISTING UTILITIES
108+50 TO 111+00
SHEET 6 OF 16

Contract: J35-13 Package:

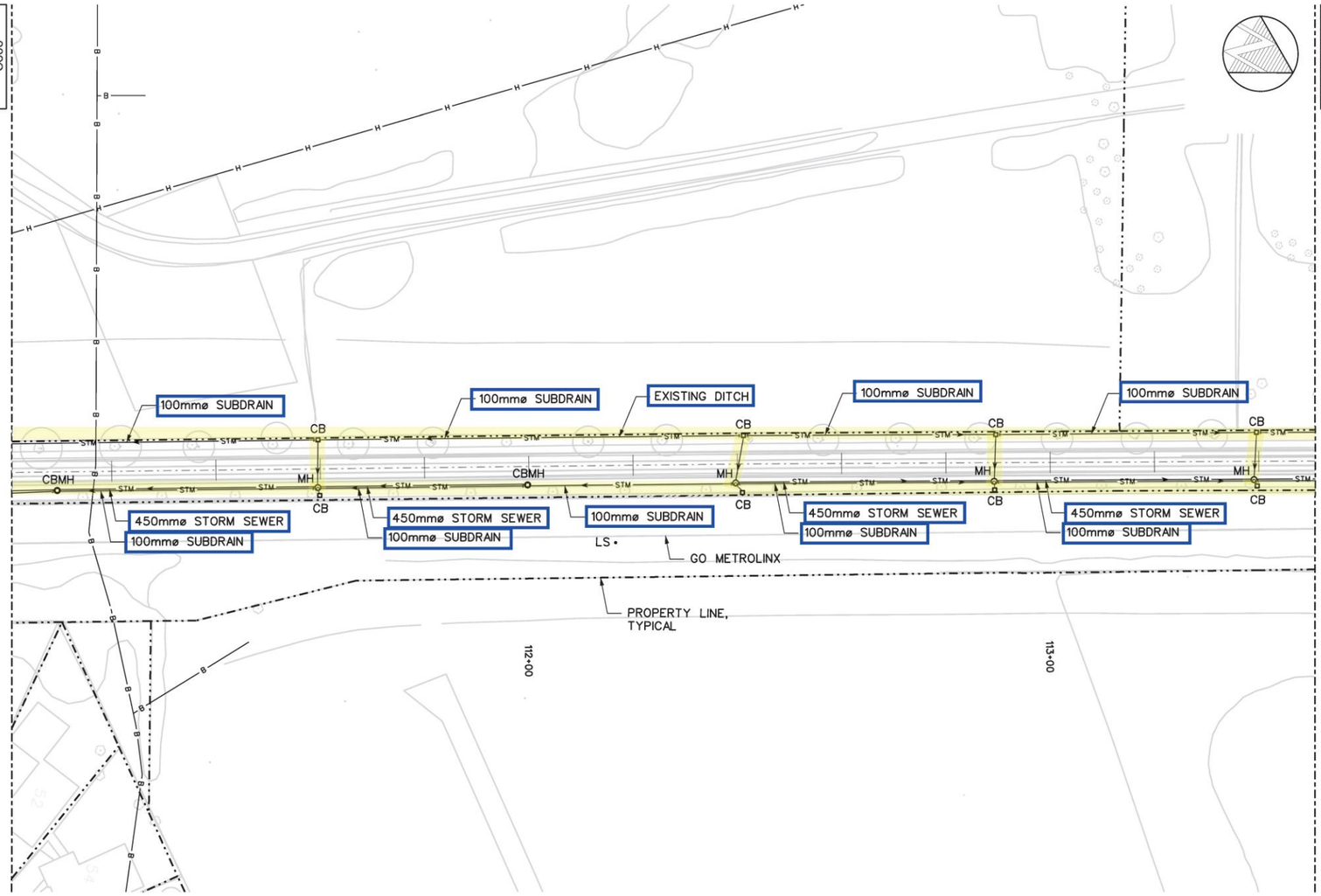
TORONTO TRANSIT COMMISSION
ENGINEERING DEPARTMENT

Dwg. No.	Rev. No.	Sheet No.
J35-13-C306		–

Plot Date: 16-MAR-2023

FOR CONTINUATION SEE DWG. MATCHLINE C306

MATCHLINE C308 FOR CONTINUATION SEE DWG.

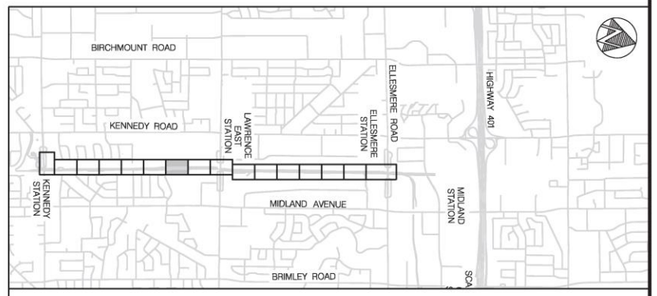


LEGEND:

———	DENOTES EXISTING UTILITIES
CB	DENOTES EXISTING CATCH BASIN
WV	DENOTES EXISTING WATER VALVE
VC	DENOTES EXISTING WATER VALVE CHAMBER
MH	DENOTES EXISTING MAINTENANCE HOLE
LS	DENOTES EXISTING LIGHT STANDARD
FH	DENOTES EXISTING FIRE HYDRANT
PED	DENOTES EXISTING BELL CANADA PEDESTAL

NOTES:

1. REFER TO GENERAL NOTES ON C001 AND UTILITIES NOTES ON C002.



N.T.S

▭ - DENOTES CONSTRUCTION AREA

REVISIONS						
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△						

60% REVIEW DRAWING
NOT FOR CONSTRUCTION

		YYYY/MM/DD
DRAWN	D.AMADOR	2022/02/02
CHECKED	S.KIM	2023/02/10
CORRECT	A.SO	2023/02/10

SCALE 0 5 10 15 20m

SRT BUS REPLACEMENT
CONVERSION OF SRT ROW TO BUSWAY

EXISTING UTILITIES
111+00 TO 113+50
SHEET 7 OF 16

Contract: J35-13 Package:

TORONTO TRANSIT COMMISSION
ENGINEERING DEPARTMENT

Dwg. No.	Rev. No.	Sheet No.
J35-13-C307		–

Plot Date: 16-MAR-2023

DRAWING No. J35-13-C307 SHEET No. – FILENAME: 7s_plan_ue107.dgn BLDG. REF. No.

FOR CONTINUATION SEE DWG. MATCHLINE C307

MATCHLINE C309 FOR CONTINUATION SEE DWG.

KENNEDY LAWRENCE PARKETTE

THES CONDUIT

JENKINSON WAY

JENKINSON WAY

975mm STM

150mm WM

MH

VC

WV

FH

250mm SAN

1350mm STM

STM

CB

HMH

LS

100mmø SUBDRAIN

EXISTING DITCH

450mmø STORM SEWER

525mmø STORM SEWER

GO METROLINX

PROPERTY LINE, TYPICAL

MH WITH CB GRATE

ARSANDCO PARK

HEADWALL

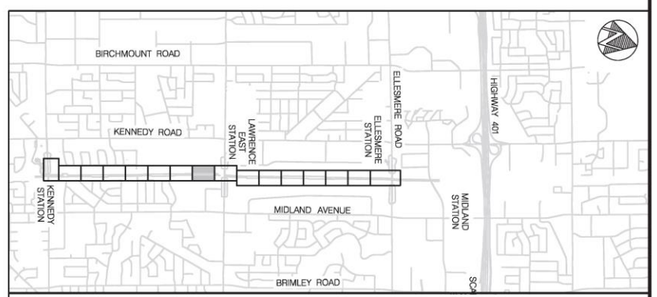
PARKING

LEGEND:

———	DENOTES EXISTING UTILITIES
CB	DENOTES EXISTING CATCH BASIN
WV	DENOTES EXISTING WATER VALVE
VC	DENOTES EXISTING WATER VALVE CHAMBER
MH	DENOTES EXISTING MAINTENANCE HOLE
LS	DENOTES EXISTING LIGHT STANDARD
FH	DENOTES EXISTING FIRE HYDRANT
PED	DENOTES EXISTING BELL CANADA PEDESTAL

NOTES:

1. REFER TO GENERAL NOTES ON C001 AND UTILITIES NOTES ON C002.



N.T.S

▭ - DENOTES CONSTRUCTION AREA

REVISIONS

60% REVIEW DRAWING
NOT FOR CONSTRUCTION

		YYYY/MM/DD
DRAWN	D.AMADOR	2022/02/02
CHECKED	S.KIM	2023/02/10
CORRECT	A.SO	2023/02/10

SCALE 0 5 10 15 20m

SRT BUS REPLACEMENT
CONVERSION OF SRT ROW TO BUSWAY

EXISTING UTILITIES
113+50 TO 116+00
SHEET 8 OF 16

Contract: J35-13 Package:

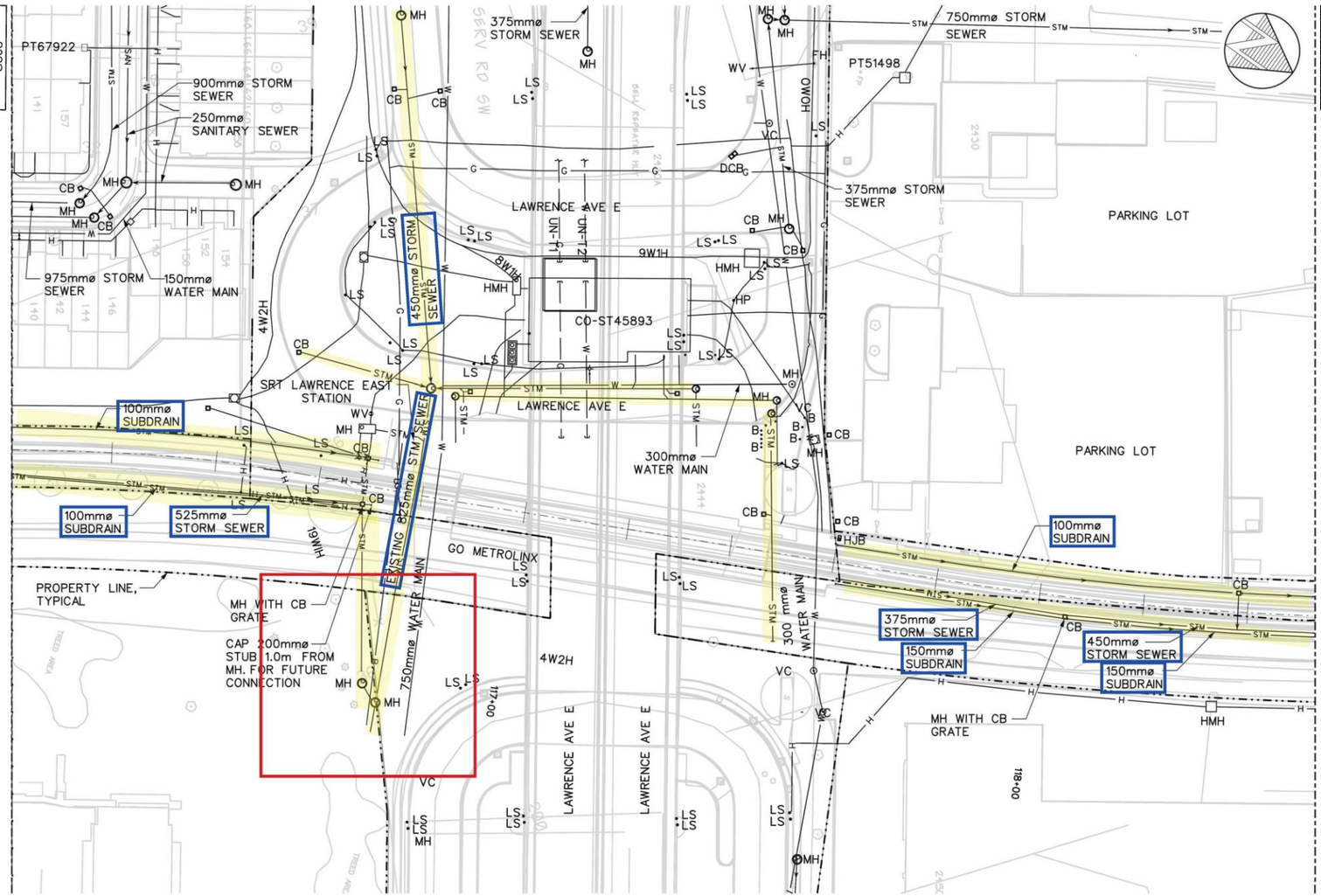
TORONTO TRANSIT COMMISSION
ENGINEERING DEPARTMENT

Dwg. No.	Rev. No.	Sheet No.
J35-13-C308		–

Plot Date: 16-MAR-2023

FOR CONTINUATION SEE DWG MATCHLINE C308

FOR CONTINUATION SEE DWG MATCHLINE C310

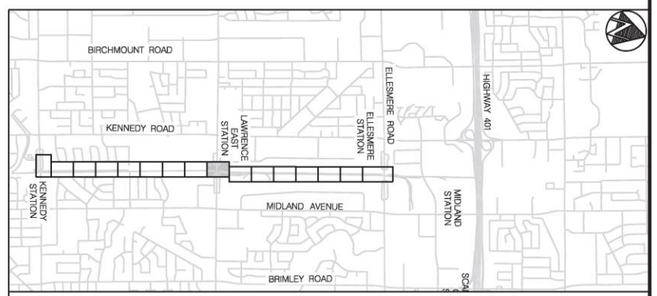


LEGEND:

———	DENOTES EXISTING UTILITIES
CB	DENOTES EXISTING CATCH BASIN
WV	DENOTES EXISTING WATER VALVE
VC	DENOTES EXISTING WATER VALVE CHAMBER
MH	DENOTES EXISTING MAINTENANCE HOLE
LS	DENOTES EXISTING LIGHT STANDARD
FH	DENOTES EXISTING FIRE HYDRANT
PED	DENOTES EXISTING BELL CANADA PEDESTAL
	DENOTES EXISTING UTILITY CAP

NOTES:

1. REFER TO GENERAL NOTES ON C001 AND UTILITIES NOTES ON C002.



N.T.S

▭ - DENOTES CONSTRUCTION AREA

REVISIONS	60% REVIEW DRAWING NOT FOR CONSTRUCTION		DRAWN D.AMADOR 2022/02/02 CHECKED M.KIM 2023/02/10 CORRECT A.SO 2023/02/10 SCALE 0 5 10 15 20m

SRT BUS REPLACEMENT
CONVERSION OF SRT ROW TO BUSWAY

EXISTING UTILITIES
116+00 TO 118+50
SHEET 9 OF 16

Contract: J35-13 Package:

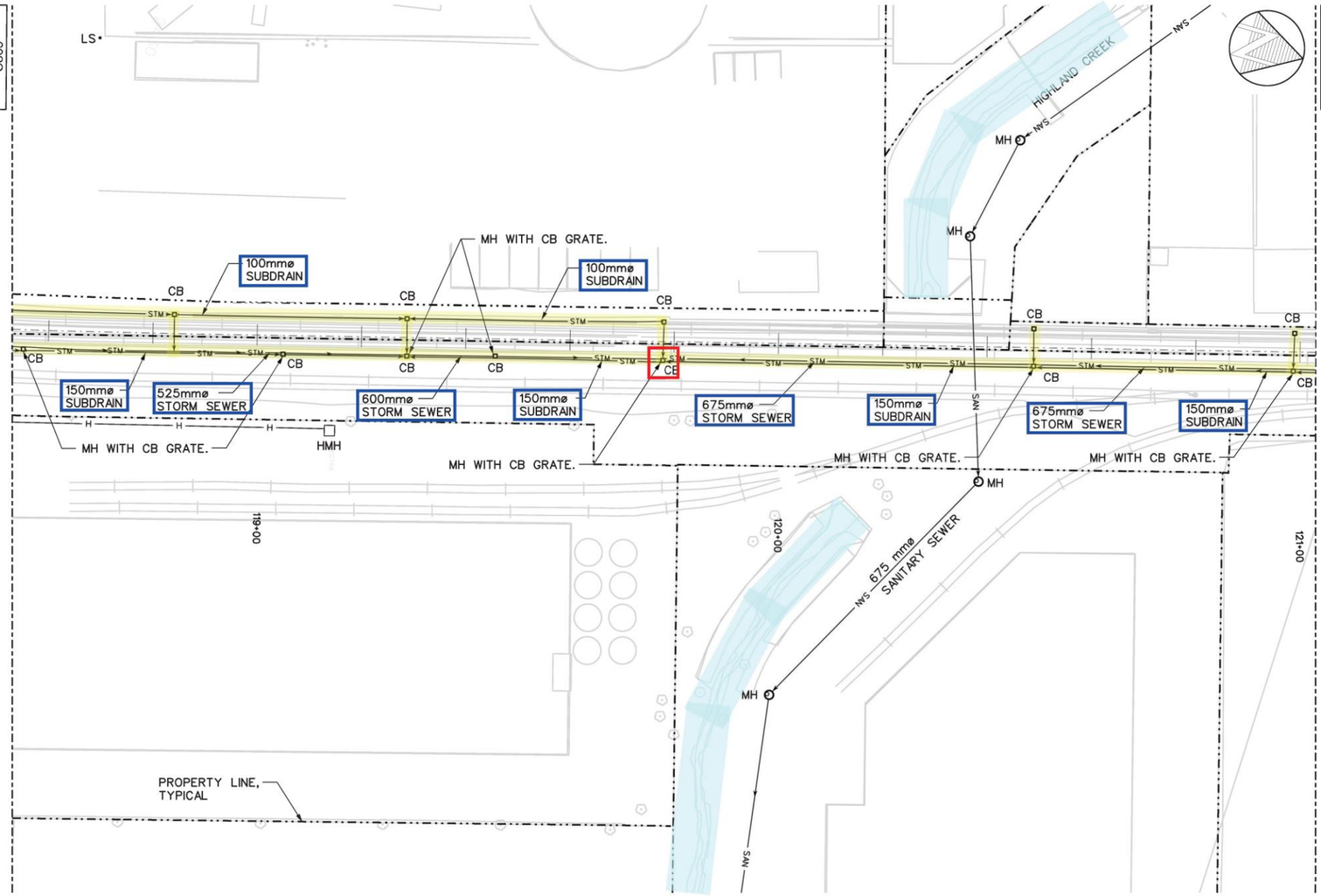
TORONTO TRANSIT COMMISSION
ENGINEERING DEPARTMENT

Dwg. No. J35-13-C309 | Rev. No. | Sheet No. –

Plot Date: 16-MAR-2023

DRAWING No. J35-13-C309 SHEET No. – FILENAME: 7s_plan_ue309.dgn BLDG. REF. No.

engbord3.dgn (BORDER) FEBRUARY 2, 2020

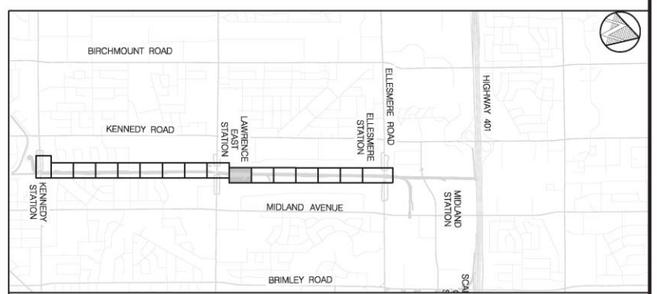


LEGEND:

———	DENOTES EXISTING UTILITIES
CB	DENOTES EXISTING CATCH BASIN
WV	DENOTES EXISTING WATER VALVE
VC	DENOTES EXISTING WATER VALVE CHAMBER
MH	DENOTES EXISTING MAINTENANCE HOLE
LS	DENOTES EXISTING LIGHT STANDARD
FH	DENOTES EXISTING FIRE HYDRANT
PED	DENOTES EXISTING BELL CANADA PEDESTAL

NOTES:

1. REFER TO GENERAL NOTES ON C001 AND UTILITIES NOTES ON C002.



N.T.S

▭ - DENOTES CONSTRUCTION AREA

REVISIONS					
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△					
△					

60% REVIEW DRAWING
NOT FOR CONSTRUCTION

		YYYY/MM/DD
DRAWN	D.AMADOR	2022/02/08
CHECKED	M.KIM	2023/02/10
CORRECT	A.SO	2023/02/10

SCALE 0 5 10 15 20m

SRT BUS REPLACEMENT
CONVERSION OF SRT ROW TO BUSWAY

EXISTING UTILITIES
118+50 TO 121+00
SHEET 10 OF 16

Contract: J35-13 Package:

TORONTO TRANSIT COMMISSION
ENGINEERING DEPARTMENT

Dwg. No.	Rev. No.	Sheet No.
J35-13-C310		–

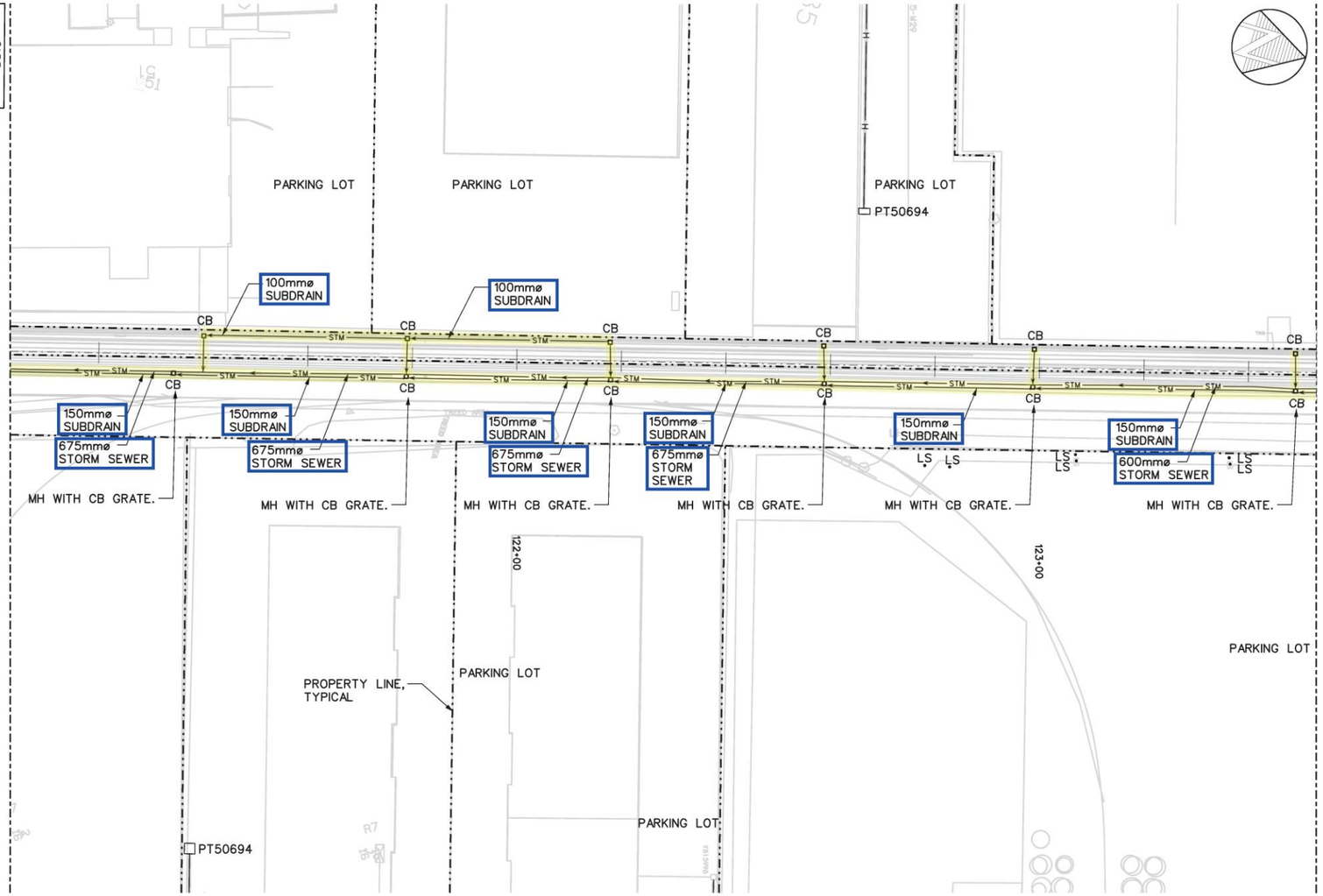
Plot Date: 16-MAR-2023

DRAWING No. J35-13-C310 | SHEET No. – | FILENAME: 7s_plan_ue110.dgn | BLDG. REF. No.

engbord3.dgn (BORDER) FEBRUARY 2, 2020

MATCHLINE C310
FOR CONTINUATION SEE DWG.

MATCHLINE C312
FOR CONTINUATION SEE DWG.

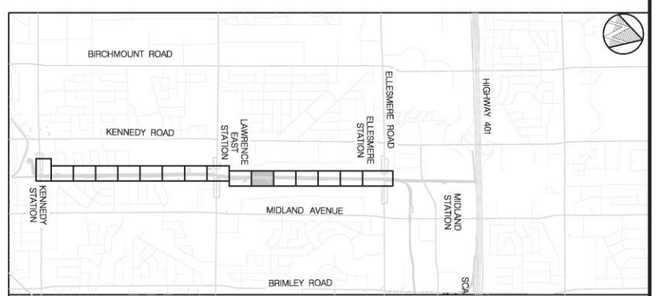


LEGEND:

———	DENOTES EXISTING UTILITIES
CB	DENOTES EXISTING CATCH BASIN
WV	DENOTES EXISTING WATER VALVE
VC	DENOTES EXISTING WATER VALVE CHAMBER
MH	DENOTES EXISTING MAINTENANCE HOLE
LS	DENOTES EXISTING LIGHT STANDARD
FH	DENOTES EXISTING FIRE HYDRANT
PED	DENOTES EXISTING BELL CANADA PEDESTAL

NOTES:

1. REFER TO GENERAL NOTES ON C001 AND UTILITIES NOTES ON C002.



N.T.S

▭ - DENOTES CONSTRUCTION AREA

REVISIONS

60% REVIEW DRAWING
NOT FOR CONSTRUCTION

		YYYY/MM/DD
DRAWN	D.AMADOR	2022/02/02
CHECKED	M.KIM	2023/02/10
CORRECT	A.SO	2023/02/10

SCALE 0 5 10 15 20m

SRT BUS REPLACEMENT
CONVERSION OF SRT ROW TO BUSWAY

EXISTING UTILITIES
121+00 TO 123+50
SHEET 11 OF 16

Contract: J35-13 Package:

TORONTO TRANSIT COMMISSION
ENGINEERING DEPARTMENT

Dwg. No.	Rev. No.	Sheet No.
J35-13-C311		–

Plot Date: 16-MAR-2023

DRAWING No. J35-13-C311 SHEET No. – FILENAME: 7s_plan_ue111.dgn BLDG. REF: No.
engbord3.dgn (BORDER) FEBRUARY 2, 2020

FOR CONTINUATION SEE DWG. MATCHLINE C311

MATCHLINE C313 FOR CONTINUATION SEE DWG.

PARKING LOT

PARKING LOT

100mmø SUBDRAIN

100mmø SUBDRAIN

100mmø SUBDRAIN

CB

STM

LS

150mmø SUBDRAIN

600mmø STORM SEWER

150mmø SUBDRAIN

600mmø STORM SEWER

150mmø SUBDRAIN

525mmø STORM SEWER

150mmø SUBDRAIN

525mmø STORM SEWER

150mmø SUBDRAIN

450mmø STORM SEWER

MH WITH CB GRATE.

MH WITH CB GRATE.

MH WITH CB GRATE.

MH WITH CB GRATE.

MH WITH CB GRATE.

124+00

125+00

126+00

PARKING LOT

PROPERTY LINE, TYPICAL

LS

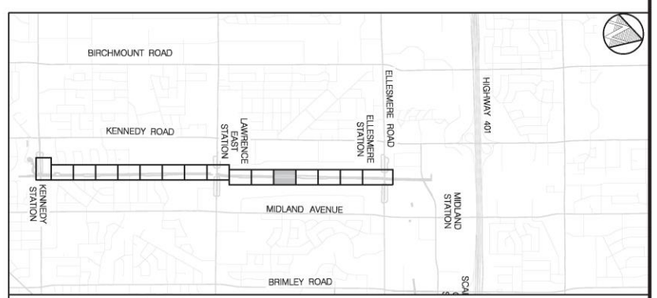
LS

LEGEND:

———	DENOTES EXISTING UTILITIES
CB	DENOTES EXISTING CATCH BASIN
WV	DENOTES EXISTING WATER VALVE
VC	DENOTES EXISTING WATER VALVE CHAMBER
MH	DENOTES EXISTING MAINTENANCE HOLE
LS	DENOTES EXISTING LIGHT STANDARD
FH	DENOTES EXISTING FIRE HYDRANT
PED	DENOTES EXISTING BELL CANADA PEDESTAL

NOTES:

1. REFER TO GENERAL NOTES ON C001 AND UTILITIES NOTES ON C002.



N.T.S

▭ - DENOTES CONSTRUCTION AREA

REVISIONS

60% REVIEW DRAWING
NOT FOR CONSTRUCTION

		YYYY/MM/DD
DRAWN	D.AMADOR	2022/02/04
CHECKED	M.KIM	2023/02/10
CORRECT	A.SO	2023/02/10

SCALE 0 5 10 15 20m

SRT BUS REPLACEMENT
CONVERSION OF SRT ROW TO BUSWAY

EXISTING UTILITIES
123+50 TO 126+00
SHEET 12 OF 16

Contract: J35-13 Package:

TORONTO TRANSIT COMMISSION
ENGINEERING DEPARTMENT

Dwg. No.	Rev. No.	Sheet No.
J35-13-C312		–

Plot Date: 16-MAR-2023

DRAWING No. J35-13-C312 | SHEET No. – | FILENAME: 7s_plan_ue112.dgn | BLDG. REF: No. | engbord3.dgn (BORDER) FEBRUARY 2, 2020

FOR CONTINUATION SEE DWG. MATCHLINE C312

MATCHLINE C314 FOR CONTINUATION SEE DWG.

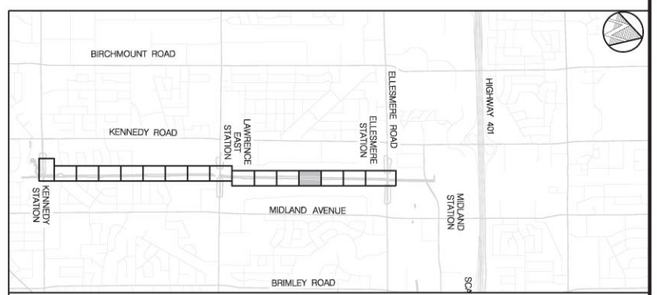
CB
STM
150mmø SUBDRAIN
450mmø STORM SEWER
375mmø STORM SEWER
300mmø STORM SEWER
MH WITH CB GRATE.
LS
PROPERTY LINE, TYPICAL
PT49468
127+00
128+00

LEGEND:

———	DENOTES EXISTING UTILITIES
CB	DENOTES EXISTING CATCH BASIN
WV	DENOTES EXISTING WATER VALVE
VC	DENOTES EXISTING WATER VALVE CHAMBER
MH	DENOTES EXISTING MAINTENANCE HOLE
LS	DENOTES EXISTING LIGHT STANDARD
FH	DENOTES EXISTING FIRE HYDRANT
PED	DENOTES EXISTING BELL CANADA PEDESTAL

NOTES:

1. REFER TO GENERAL NOTES ON C001 AND UTILITIES NOTES ON C002.



N.T.S

▭ - DENOTES CONSTRUCTION AREA

REVISIONS

60% REVIEW DRAWING
NOT FOR CONSTRUCTION

		YYYY/MM/DD
DRAWN	D.AMADOR	2022/02/04
CHECKED	M.KIM	2023/02/10
CORRECT	A.SO	2023/02/10

SCALE 0 5 10 15 20m

SRT BUS REPLACEMENT
CONVERSION OF SRT ROW TO BUSWAY

EXISTING UTILITIES
126+00 TO 128+50
SHEET 13 OF 16

Contract: J35-13 Package:

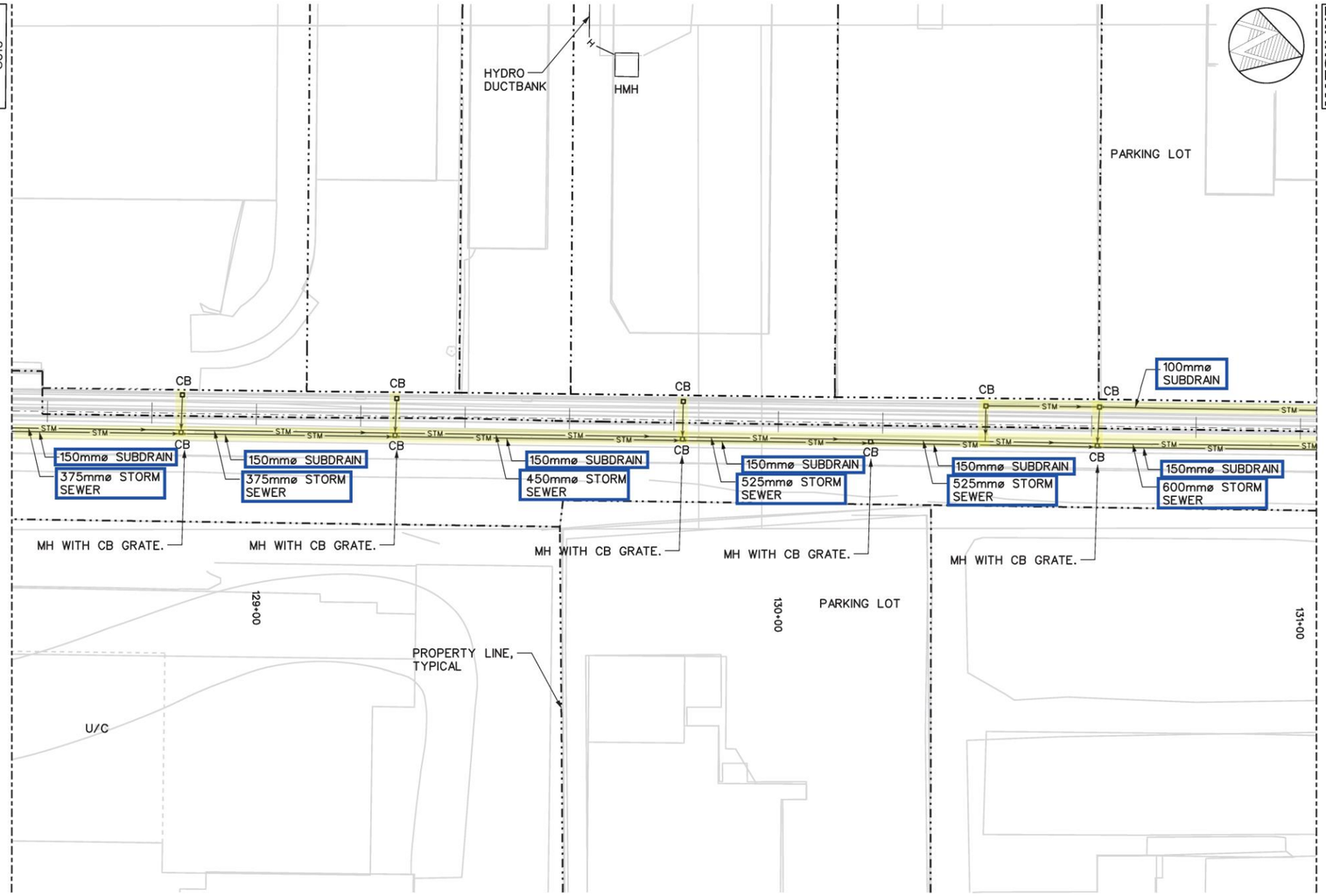
TORONTO TRANSIT COMMISSION
ENGINEERING DEPARTMENT

Dwg. No.	Rev. No.	Sheet No.
J35-13-C313		–

Plot Date: 16-MAR-2023

FOR CONTINUATION, SEE DWG MATCHLINE C313

MATCHLINE C315 FOR CONTINUATION, SEE DWG

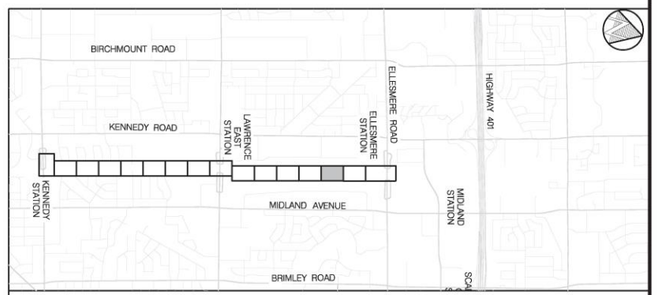


LEGEND:

———	DENOTES EXISTING UTILITIES
CB	DENOTES EXISTING CATCH BASIN
WV	DENOTES EXISTING WATER VALVE
VC	DENOTES EXISTING WATER VALVE CHAMBER
MH	DENOTES EXISTING MAINTENANCE HOLE
LS	DENOTES EXISTING LIGHT STANDARD
FH	DENOTES EXISTING FIRE HYDRANT
PED	DENOTES EXISTING BELL CANADA PEDESTAL

NOTES:

1. REFER TO GENERAL NOTES ON C001 AND UTILITIES NOTES ON C002.



N.T.S

▭ - DENOTES CONSTRUCTION AREA

REVISIONS					
△					
△					
△					

60% REVIEW DRAWING
NOT FOR CONSTRUCTION

		YYYY/MM/DD
DRAWN	D.AMADOR	2022/02/07
CHECKED	M.KIM	2023/02/10
CORRECT	A.SO	2023/02/10

SCALE 0 5 10 15 20m

SRT BUS REPLACEMENT
CONVERSION OF SRT ROW TO BUSWAY

EXISTING UTILITIES
128+50 TO 131+00
SHEET 14 OF 16

Contract: J35-13 Package:

TORONTO TRANSIT COMMISSION
ENGINEERING DEPARTMENT

Dwg. No. J35-13-C314 | Rev. No. | Sheet No. –

Plot Date: 16-MAR-2023

DRAWING No. J35-13-C315 | SHEET No. – | FILENAME: 7s_plan_ue115.dgn | BLDG. REF. No.

MATCHLINE C314
FOR CONTINUATION, SEE DWG.

MATCHLINE C316
FOR CONTINUATION, SEE DWG.

U/C

PARKING LOT

PARKING LOT

PARKING LOT

PARKING LOT

PARKING LOT

250mm DIA. VIT SAN SEWER

100mmø SUBDRAIN

100mmø SUBDRAIN

1050mmø STORM SEWER

250mmø SANITARY SEWER

150mmø SUBDRAIN
600mmø STORM SEWER

150mmø SUBDRAIN
600mmø STORM SEWER

150mmø SUBDRAIN
675mmø STORM SEWER

150mmø SUBDRAIN
750mmø STORM SEWER

CB
MH
STM
SAN

MH WITH CB GRATE.

132+00

133+00

LS

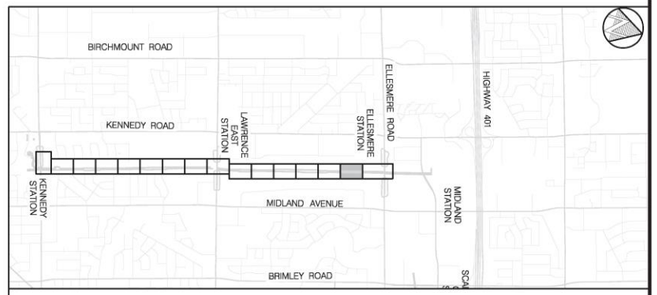
PROPERTY LINE, TYPICAL

LEGEND:

———	DENOTES EXISTING UTILITIES
CB	DENOTES EXISTING CATCH BASIN
WV	DENOTES EXISTING WATER VALVE
VC	DENOTES EXISTING WATER VALVE CHAMBER
MH	DENOTES EXISTING MAINTENANCE HOLE
LS	DENOTES EXISTING LIGHT STANDARD
FH	DENOTES EXISTING FIRE HYDRANT
PED	DENOTES EXISTING BELL CANADA PEDESTAL

NOTES:

1. REFER TO GENERAL NOTES ON C001 AND UTILITIES NOTES ON C002.



N.T.S

▭ - DENOTES CONSTRUCTION AREA

REVISIONS

60% REVIEW DRAWING
NOT FOR CONSTRUCTION

		YYYY/MM/DD
DRAWN	D.AMADOR	2022/02/07
CHECKED	M.KIM	2023/02/10
CORRECT	A.SO	2023/02/10

SCALE 0 5 10 15 20m

SRT BUS REPLACEMENT
CONVERSION OF SRT ROW TO BUSWAY

EXISTING UTILITIES
131+00 TO 133+50
SHEET 15 OF 16

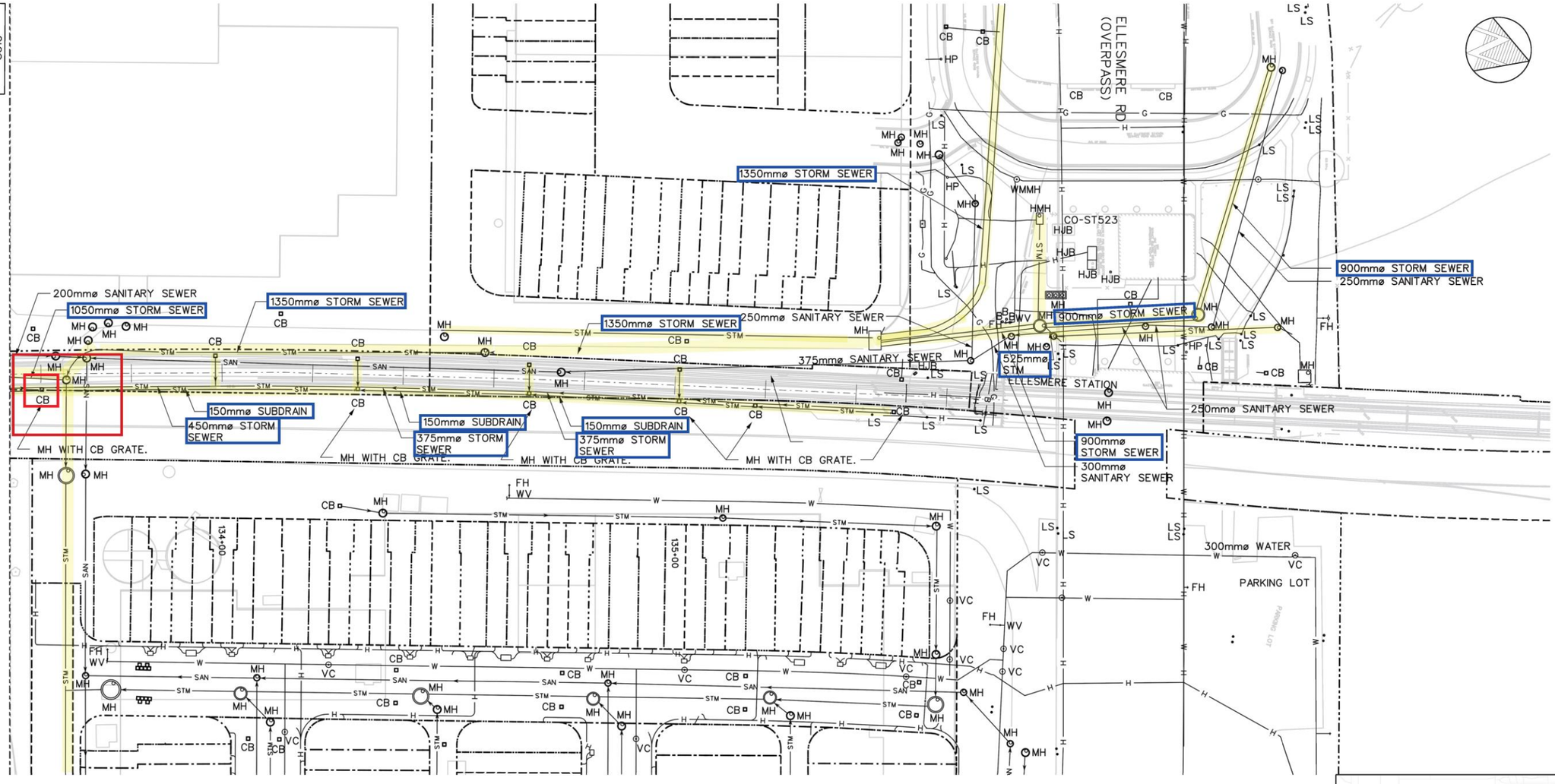
Contract: J35-13 Package:

TORONTO TRANSIT COMMISSION
ENGINEERING DEPARTMENT

Dwg. No.	Rev. No.	Sheet No.
J35-13-C315		–

Plot Date: 16-MAR-2023

engbord3.dgn (BORDER) FEBRUARY 2, 2020
BLDG. REF. No.
FILENAME: 7s_plan_ue115.dgn
SHEET No. –
DRAWING No. J35-13-C315



LEGEND:

———	DENOTES EXISTING UTILITIES
CB	DENOTES EXISTING CATCH BASIN
WV	DENOTES EXISTING WATER VALVE
VC	DENOTES EXISTING WATER VALVE CHAMBER
MH	DENOTES EXISTING MAINTENANCE HOLE
LS	DENOTES EXISTING LIGHT STANDARD
FH	DENOTES EXISTING FIRE HYDRANT
PED	DENOTES EXISTING BELL CANADA PEDESTAL

NOTES:

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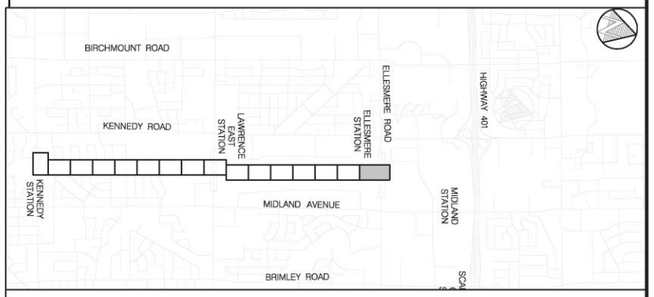

N.T.S

▭ - DENOTES CONSTRUCTION AREA

REVISIONS

60% REVIEW DRAWING
NOT FOR CONSTRUCTION

		YYYY/MM/DD
DRAWN	D.AMADOR	2022/02/07
CHECKED	M.KIM	2023/02/10
CORRECT	A.SO	2023/02/10

SCALE 0 5 10 15 20m

SRT BUS REPLACEMENT
CONVERSION OF SRT ROW TO BUSWAY

EXISTING UTILITIES
133+50 TO 136+00 AND ELLESMERE STATION
SHEET 16 OF 16

Contract: J35-13 Package:

TORONTO TRANSIT COMMISSION
ENGINEERING DEPARTMENT

Dwg. No.	Rev. No.	Sheet No.
J35-13-C316		–

Plot Date: 16-MAR-2023

Appendix C

Assessment of Previous Commitments

Assessment of Previous Commitments

Discipline	Commitment	Current Assessment
Drainage and Hydrology	■ Conduct Hydraulic Analysis and Modelling to define the level of impact on flow rates, runoff volumes, and water levels and velocities as a result of Project ancillary facilities during detailed design.	■ There will be no impact on stormwater runoff volumes or drainage paths along the Study Area and, therefore, no impact on the creek. Hydraulic modeling and analysis are not required.
Drainage and Hydrology	■ Complete a SWM report in compliance with TRCA's Living City Policies and the City of Toronto's Wet Weather Flow Management Guidelines and Design Criteria for Sewers and Watermains, during detailed design. TRCA and the City will be consulted during detailed design to ensure concerns and recommendations are considered. TRCA will also be provided the opportunity to review the SWM report.	■ The TRCA and City of Toronto Criteria have been addressed in this report, and ongoing communication with both parties is advised.
Drainage and Hydrology	■ During detailed design, the following TRCA policy programs and guidelines will be used to design components of the EEBs, stations and TPSSs: • TRCA Stormwater Management Criteria (2012); • Low Impact Development Guidelines for Storm Water Management Design; • Greater Golden Horseshoe Area Conservation Authorities Erosion and Sediment Control Guidelines for Urban Construction (2006); • TRCA Geotechnical Engineering Design and Submission Plan Guidelines; and • TRCA Environmental Impacts Statement Guidelines.	■ This commitment is no longer relevant as the proposed design does not contain any new emergency exit buildings (EEBs) or traction power substations (TPSSs).
Drainage and Hydrology	■ To mitigate potential interference with existing drainage as a result of cut-and-cover construction, the following mitigation measures shall be followed: • Co-ordinate with the City of Toronto for ongoing City projects within the Bendale Branch of West Highland Creek. • Prepare an Erosion and Sediment Control Plan, which complies with prevailing TRCA and Toronto Water guidelines and requirements prior to the start of Project construction activities.	■ As cut-and-cover construction is no longer proposed, this commitment is no longer relevant.
Drainage and Hydrology	■ Coordinate with Toronto Water during detailed design to manage potential impacts to: • Basement Flooding Study works. • Existing servicing and servicing recommendations as per the City's Servicing Study.	■ The City of Toronto should be kept in communication regarding impacts to utilities
Drainage and Hydrology	■ It is acknowledged that it is the TRCA' s preference for Project features to avoid flood vulnerable areas to prevent flood risk to staff, nearby properties or the general public. The TRCA will be consulted at later stages regarding flood proofing and siting options to avoid flood risks. A future hydraulic assessment will be completed during detailed design to support the site assessment.	■ As there will be no impacts to the watercourse, hydraulic modelling will not be required.
Drainage and Hydrology	■ An assessment by a geotechnical engineer to identify adequate setbacks will be completed with continued consultation with TRCA. If setbacks cannot be achieved, mitigation measures will be implemented to prevent risks to the creek bank and slope.	■ There will be no impacts to the watercourse and so TRCA will not have to be consulted on this matter.
Municipal Permits & Approvals	■ Metrolinx, as a Provincial Agency, is not subject to municipal permits and approvals (Metrolinx Act, 2006); however, Metrolinx will endeavour to adhere to the intent of the relevant municipal permits/approvals to the greatest extent possible and shall submit applications for review and information. ■ Water, sanitary, and storm servicing will be reviewed during detailed design. Metrolinx will consult with the City of Toronto during detailed design to address impacts to municipal water, sanitary, and storm sewer systems. ■ Metrolinx shall continue to communicate and engage with the City of Toronto during detailed design and construction planning to address municipal concerns.	■ Communication with the City of Toronto regarding utilities should be maintained.
Conservation Authority Permits & Approvals	■ Metrolinx will engage with the TRCA as detailed design advances, including regarding compensation and post-planting monitoring in or near water works and dewatering, as necessary. As a provincial Crown corporation, Metrolinx may work in co-operation with the TRCA to consult on detailed design activities associated with project construction, maintenance or emergency activities through the environmental assessment/infrastructure projects application for VPR.	■ The proposed design will not impact the watercourse, however, if any construction activities will impact the creek, the TRCA should be consulted.
Utilities Permits & Approvals	■ Co-ordination with both the City of Toronto and the relevant private utilities will be undertaken during detailed design. Potential utility conflicts shall be reviewed in consultation with each utility company as part of detailed design. Implementation and construction obligations shall be undertaken pursuant to the crossing agreements with each of the utility companies as required. The City of Toronto will be engaged regarding impacts to municipal servicing and required permits will be obtained prior to construction.	■ Communication with the City of Toronto and other utilities should be maintained