

Appendix N

Functional Servicing Report

March 18, 2021

Prepared for



BRAMPTON
Flower City

Prepared by



IBI GROUP



Environmental Assessment Study for a New Transit Maintenance Facility
RFP2019-025

Functional Servicing Report



Prepared for City of Brampton
by IBI Group

December 7, 2020

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Appendix A: Site Servicing and Grading Plans

1 Project Summary

IBI Group was retained by the City of Brampton to provide architectural and engineering services for an environmental assessment of a new bus operations, maintenance and storage facility located at Highway 50 and Cadetta Road. The environmental assessment will use and comply with the requirements of Transit Project Assessment Process (TPAP).

2 Site Design and Grading

The proposed site is approximately 8.2ha of agricultural land that borders the City of Vaughan and City of Brampton. The existing site drainage can be delineated into two catchment areas. Draining from the north, the West catchment area sheet flows into the West Rainbow Creek, while the east catchment area flows toward Highway 50 and ponds in the highway drainage ditch.

Existing topography indicates slopes are gradual, with a grade differential of approximately 3m from the north east corner to south west corner. Post-development elevations will generally match existing surface drainage to minimize earthwork quantities, while maintaining a gradient range between 2% and 4% for paved areas. The site at its peak is 1m below the elevation of Highway 50. Grade differences between adjacent properties will match with a maximum 3:1 vegetated slopes or less, and where not achievable due to lack of space, retaining soil systems (RSS) such as toe walls, gravity walls or segmental walls will be implemented.

Transit and maintenance vehicles will access the facility from Highway 50. The multi-level employee parking structure located at the north end will be accessed from Cadetta Road. The requirements of the City Planning and Engineering Departments will be implemented during detailed design at driveway locations that tie into existing roads.

Included in Appendix A are the Site Servicing Plan and Site Grading Plan.

3 Pavement Structures

Pavement structures take into account type of traffic loading and recommendations provided in the Geotechnical Investigation prepared by Inspec-Sol Engineering Solutions, dated November 3rd, 2011, see table below. The site will be paved with a combination of heavy-duty asphalt and concrete paving where required. Rigid pavement will be used in areas of long-term parking and sustained loading and will comprise of 250mm thick Portland cement concrete (PCC) on a minimum 200mm of 19mm Crusher run Limestone of granular material, compacted to 100% SPMDD. The PCC should be 32 MPa exposure class C-2 (CSA A23.1) with maximum 40mm nominal size aggregate.

Flexible Pavement

<i>Pavement Layer</i>	<i>Compaction Requirements</i>	<i>(Car & Light Duty Trucks)</i>	<i>(Heavy Duty Trucks)</i>
Asphaltic Concrete	92 to 96.5% MRD*	40 mm (OPSS HL 3) 40 mm (OPSS HL 8)	50 mm (OPSS HL 3) 80 mm (OPSS HL 8) (HL8 to be placed in two layer of 40 mm each)
OPSS Granular A Base (or 20mm Crushed Limestone)	100% SPMDD**	150 mm	150 mm
OPSS Granular B Sub-base **	100% SPMDD**	250 mm	550 mm

* Denotes Maximum Relative Density

** Denotes Standard Proctor Maximum Dry Density, ASTM-D698

4 Site Servicing and Utilities

All site servicing (including municipal and private utilities) must be coordinated with existing Municipal and Regional services. The facility will connect to an existing 300 mm diameter watermain located on the west side of Highway 50 and designed in accordance with the Region of Peel’s design standards for watermains. To ensure adequate coverage and compliance with OBC Division B, a private fire hydrant will need to be installed within 45m of the building fire department connection, unobstructed.

For sanitary services, the facility will outlet on the east façade and convey flows to a control manhole located on the sites property line along Highway 50. The municipal connection will be to an existing 750mm sanitary sewer located on the west side of Highway 50. All sewer and connections will be designed in accordance with the Region of Peel’s design standards for sanitary sewers.

The storm system is designed as part of the overall Stormwater Management (SWM) plan based on site grading and drainage requirements. A series of catch basins, catch basin manholes, roof leads, and storm sewers will collect and convey storm runoff to a wet SWM pond located at the south west corner of the site. Prior to outletting to the SWM pond, an oil-grit separator will be sized and installed upstream to provide quality control measures. All storm sewers will be sized for a two-year design storm and designed in accordance with the City of Brampton’s Subdivision Design Manual.

With regards to private utilities, there are existing utility plants from the following third parties on both the east and west side of Highway 50:

- Existing Bell plant (Aerial and underground buried cables) on the west side of Highway 50.
- Existing Bell plant (Aerial and underground buried cables) on the east side of Highway 50 (north of Old Castlemore up to St 7+500 on Peel Record Drawings).

- Existing Gasmain (Enbridge) on the east side of Highway 50
- Existing Alectra plant (overhead) on both sides of Highway 50
- Existing Bell on the north side of Cadetta Road
- Existing Gas on the north side of Cadetta Road.
- Existing Alectra (overhead) on south side of Cadetta Road.

During this study phase, other utility companies were contacted via Ontario One Call and it was confirmed that Telus, Zayo and Hydro One did not have any existing or proposed future plants in this area.

A proper conflict analysis must be done once site servicing coordination occurs, and any plant relocation must comply with the Municipality and Region's PUC requirements.

5 Stormwater Management

The satellite yard will be constructed in two phases resulting in intermediate and ultimate drainage conditions. In Phase 1 (intermediate condition), West Rainbow Creek follows the same channel alignment as in the existing condition and the proposed site layout is bounded by the creek to the west. In Phase 2 (ultimate condition), West Rainbow Creek will be realigned to the west, providing more space on-site and allowing for the expansion of the MSF building.

A storm sewer system is proposed to convey post-development runoff to a proposed SWM Pond in the southwest quadrant of the site.

The proposed SWM pond will be equipped with an orifice plate in order to control the rate of discharge into the receiving watercourse (West Rainbow Creek). Since the satellite yard is located within the Humber River watershed, unit flow control is required for all design storms (2-100 year) using the unit flow equations outlined in Table E.1, Appendix A of the TRCA Stormwater Management Criteria guidelines based on Sub-Basin 36 (Equation F). The proposed SWM Pond will achieve water quantity, water quality, and erosion control requirements for the satellite yard through Permanent Pool and Active Storage Volume. The SWM Pond has been designed to contain the ultimate condition 100-year storm event and discharge stormwater at the 100-year controlled release rate.

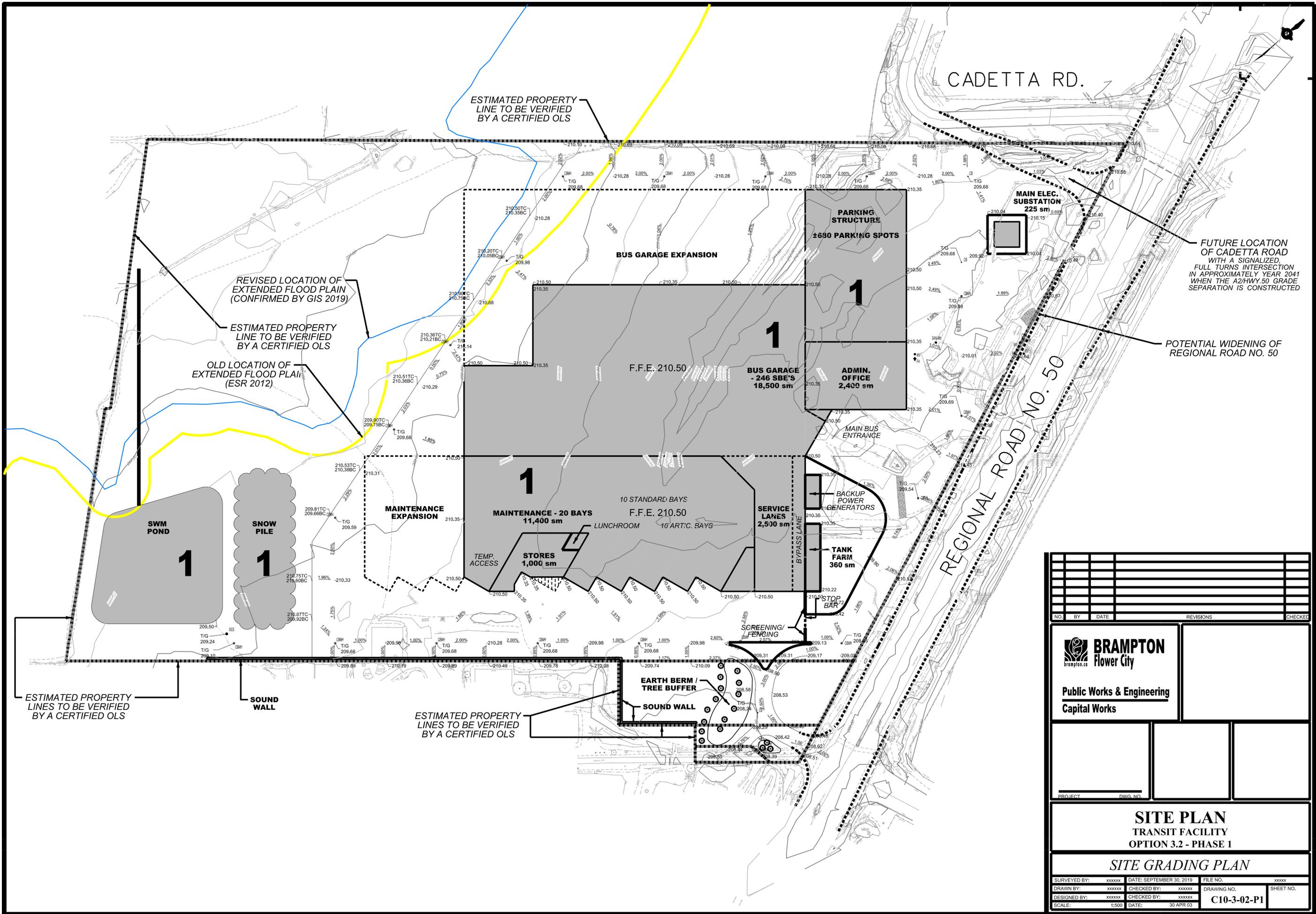
The SWM Pond will to achieve Enhanced Level Protection (80% TSS removal) water quality control in accordance the MECP's requirements for habitat protection. The SWM Pond is designed to provide extended detention of the 25 mm storm event for a period of 48 hours in compliance with TRCA erosion control requirements.

6 Site Erosion and Sedimentation Control

An erosion and sediment control plan will be constructed and maintained during construction. The temporary erosion control plan will comply with the "Greater Golden Horseshoe Area Conservation Authorities" Erosion and Sediment Control Guidelines. Mitigation measures will include mud mats, filter cloths on existing drainage structures, rock check dams, silt fences, tree protection, barriers and stockpile protection to the approval of the City of Brampton.

Appendix A

Site Servicing and Grading Plans



CADETTA RD.

ESTIMATED PROPERTY LINE TO BE VERIFIED BY A CERTIFIED OLS

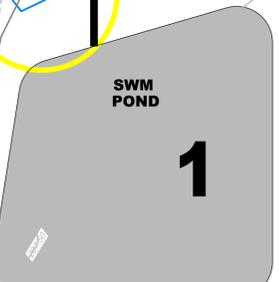
REVISED LOCATION OF EXTENDED FLOOD PLAIN (CONFIRMED BY GIS 2019)

ESTIMATED PROPERTY LINE TO BE VERIFIED BY A CERTIFIED OLS

OLD LOCATION OF EXTENDED FLOOD PLAIN (ESR 2012)

FUTURE LOCATION OF CADETTA ROAD WITH A SIGNALIZED FULL TURNS INTERSECTION IN APPROXIMATELY YEAR 2041 WHEN THE A2/HWY.50 GRADE SEPARATION IS CONSTRUCTED

POTENTIAL WIDENING OF REGIONAL ROAD NO. 50



ESTIMATED PROPERTY LINES TO BE VERIFIED BY A CERTIFIED OLS

SOUND WALL

ESTIMATED PROPERTY LINES TO BE VERIFIED BY A CERTIFIED OLS

NO.	BY	DATE	REVISIONS	CHECKED

BRAMPTON
Flower City
Public Works & Engineering
Capital Works

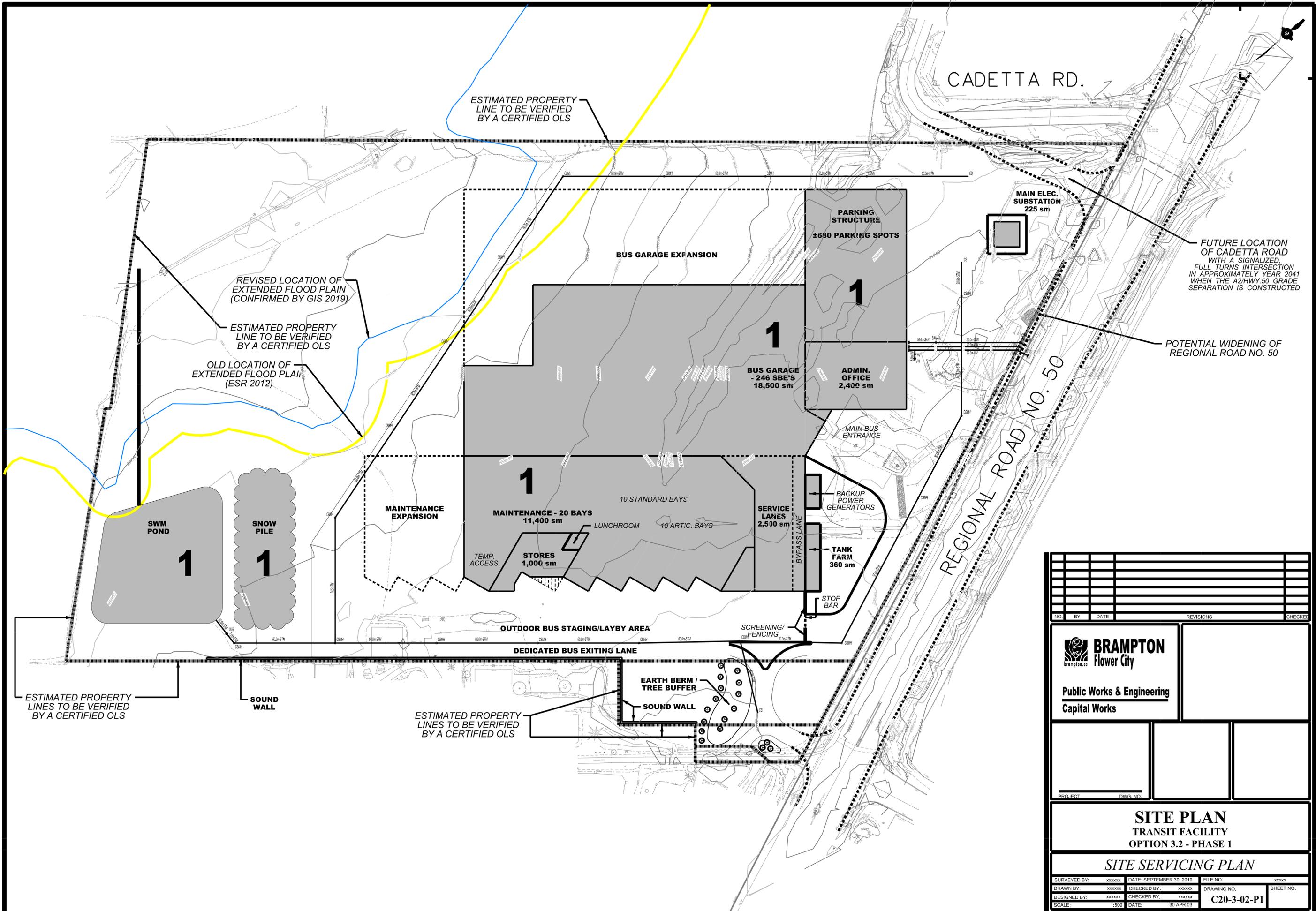
PROJECT	DWG. NO.
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SITE PLAN
TRANSIT FACILITY
OPTION 3.2 - PHASE 1

SITE GRADING PLAN

SURVEYED BY: xxxxxxx	DATE: SEPTEMBER 30, 2019	FILE NO.	xxxxxx
DRAWN BY: xxxxxxx	CHECKED BY: xxxxxxx	DRAWING NO.	SHEET NO.
DESIGNED BY: xxxxxxx	CHECKED BY: xxxxxxx	C10-3-02-P1	
SCALE: 1:500	DATE: 30 APR 03		

LAST UPDATED 23 JAN 17 - PKZ



NO.	BY	DATE	REVISIONS	CHECKED
		Public Works & Engineering Capital Works		
PROJECT	DWG. NO.	SITE PLAN TRANSIT FACILITY OPTION 3.2 - PHASE 1 SITE SERVICING PLAN		
SURVEYED BY: xxxxxxx	DATE: SEPTEMBER 30, 2019	FILE NO.	xxxxxx	
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LAST UPDATED 23 JAN 17 - PKZ