



DILLON
CONSULTING

MONTGOMERY SISAM ARCHITECTS INCORPORATED

Environmental Impact Statement

**1161 Old Montreal Road
City of Ottawa, ON**

Table of Contents

1.0	Introduction	1
1.1	Background and Purpose	1
1.2	Property Information	1
2.0	Planning Context	3
2.1	Provincial Policy Statement, 2020	4
2.2	Endangered Species Act, 2007	5
2.3	City of Ottawa Official Plan, 2003	5
2.4	Rideau Valley Conservation Authority (Ontario Regulation 170/06).....	6
3.0	Natural Heritage Background Review	8
3.1	Aquatic Environment	8
3.1.1	Watershed Summary	8
3.2	Terrestrial Environment	8
3.2.1	Landforms, Soils, and Geology	8
3.2.2	Wetlands	9
3.2.3	Woodlands	9
3.2.4	Valleylands	9
3.2.5	Areas of Natural and Scientific Interest	9
3.2.6	Significant Wildlife Habitat	9
3.2.7	Species at Risk	10
4.0	Field Work Methodology	12
4.1	Ecological Land Classification.....	12
4.2	Vegetation Inventory	12
4.3	Tree Inventory.....	13
4.4	Wildlife Habitat Assessment	15
4.5	Breeding Bird Surveys	15
4.6	Incidental Wildlife	15
5.0	Results of Biophysical Inventory	16
5.1	Ecological Land Classification.....	16
5.2	Vegetation.....	19
5.2.1	Tree Inventory.....	19
5.3	Woodlands	21

5.4	Significant Wildlife Habitat	21
5.4.1	Breeding Bird Surveys	21
5.5	Species at Risk	22
5.6	Incidental Wildlife	22
6.0	Ecological Function	23
7.0	Description of Development	24
8.0	Potential Impact Assessment	26
8.1	Direct Impacts	26
8.1.1	Impacts to Surface Water Flows	26
8.1.2	Erosion and Sedimentation	26
8.1.3	Tree and Vegetation Removal.....	27
8.1.4	Loss of and/or Disturbance to Wildlife and Wildlife Habitat	27
8.2	Indirect Impacts	28
8.2.1	Anthropogenic disturbance	28
8.2.2	Colonization of Non-native and/or Invasive Species	28
9.0	Potential Mitigation Measures	29
9.1	Functional Servicing and Stormwater Management	29
9.2	Erosion and Sediment Control Plan	30
9.3	Landscaping and Planting Plan.....	30
9.4	Wildlife Impact Mitigation Plan	31
9.5	Environmental Monitoring Plan.....	32
10.0	Summary and Next Steps	33
	Figures (follows text)	
	Figure 1: Project Location.....	2
	Figure 2: Designated Natural Heritage Features	7
	Figure 3: Survey Locations and Field Investigation Results.....	18
	Figure 4: Proposed Development and Potential Impacts.....	25
	Tables	
	Table 1: Policies, Legislation and Background Resources Searched	3
	Table 2: Species of Conservation Concern with potential to occur within the Property	10
	Table 3: Species at Risk with potential to occur within the Property	11

Table 4: Dates and Weather Conditions of Field Surveys (2021) 12

Table 5: Tree/Grouping Condition Rating Categories 14

Table 6: Ecological Land Classification 17

Table 7: Tree Species Documented within the Property..... 20

Table 8: 2021 Breeding Bird Survey Results 21

Table 9: Incidental Wildlife Observations 22

Appendices

A Official Plan Schedules

B Photographic Inventory

C Vegetation Inventory

D Detailed Tree Inventory

E Preliminary Landscape and Planting Plan

F Functional Servicing Report

G City of Ottawa Tree Protection Specification

References

1.0 Introduction

1.1 Background and Purpose

Dillon Consulting Limited (Dillon) was retained by Montgomery Sisam Architects Incorporated (MSAI) to complete an Environmental Impact Statement (EIS) and a Tree Conservation Report (TCR) in support of Site Plan Control Approvals for the proposed development of a Long Term Care home located at 1161 Old Montreal Road in the City of Ottawa (referred to herein as the “Property”), legally described as Part of Lot 28 Concession 1, City of Ottawa (the “City”) (**Figure 1**). The landowner is planning to sever the property into two lots for development. The 1.19 ha lot has been proposed for the development of a Long Term Care (LTC) facility; while the 0.81 ha lot is planned to be used for low-density housing.

The purpose of the EIS is to document existing conditions of the natural environment, determine the potential limits of development, and evaluate potential for environmental impacts associated with the proposed development of the LTC facility. The EIS will further outline recommendations for mitigation, restoration, enhancement measures, and/or compensation measures, where necessary, to avoid impacts to the natural environment as a result of the proposed development. The EIS has been prepared in general accordance with the City’s Environmental Impact Statement Guidelines (2015) and Policies of the City’s Official Plan (OP; 2003). This EIS has also incorporated a Tree Conservation Report (TCR) within its contents, the purpose of which is to summarize the results of the tree inventory for trees documented within the Property and to demonstrate how tree cover will be retained within the Property, including mature trees, stands of trees using a design with nature approach to planning and engineering where feasible. The EIS and TCR will form one comprehensive report in accordance with applicable City guidelines. The TCR contained within this EIS has been prepared following the City’s Tree Protection By-law (No. 2020-340) policies as a guideline, and was completed in general accordance with Schedule E – Tree Conservation Report Guidelines of By-law No. 2020-340.

1.2 Property Information

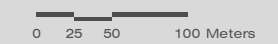
Owner:	City of Ottawa
Address:	1161 Old Montreal Road, Ottawa, ON K4A 3N6
Lot and concession:	Lot 28, Concession 1
Property Identification Number(s):	145300473
Zoning:	Rural Institutional (RI5)
OP designation:	General Urban Area



**ORLEANS LONG TERM
CARE HOME**
ENVIRONMENTAL IMPACT STATEMENT

PROJECT LOCATION
FIGURE 1

- ▬ Property Boundary
- Highway
- Major Road
- Local Road
- Watercourse
- Waterbody



SCALE 1:5,000

MAP DRAWING INFORMATION:
DATA PROVIDED BY MNR, OPEN OTTAWA

MAP CREATED BY: MEC
MAP CHECKED BY: CE
MAP PROJECTION: NAD 1983 UTM Zone 18N



PROJECT: 21-2647
STATUS: DRAFT
DATE: 2021-11-19

2.0 Planning Context

The following sections have been prepared to identify the applicable land use planning policies related to the natural environment. Various regulatory agencies and legislative authorities have established a number of policies with the purpose of protecting ecological features and functions. **Table 1** lists the relevant policies and legislation that apply to the protection of natural heritage features within the City, as well as supporting guidance documents and resources consulted respective to each policy. This table also includes additional background information sources used to help identify and define natural heritage features within the province of Ontario, and Ecoregion 6E specifically. This section is not intended to constitute a complete land use planning assessment as it focuses on the relevant environmental policies and regulations. The documents referenced below should be read in their entirety for a more detailed understanding of the land use policy framework applicable to the Property.

Table 1: Policies, Legislation and Background Resources Searched

Policy/Regulations	Guidelines and Supporting Documents
Federal Government of Canada	
Migratory Birds Convention Act (1994)	Environment and Climate Change Canada (ECCC)
Species at Risk Act (2002)	Federal Species at Risk Public Registry, accessed (accessed November 2021) Fisheries and Oceans Canada (DFO) Aquatic Species at Risk Map (August 2019), accessed July 2021
Province of Ontario	
<i>Planning Act, 1990: Provincial Policy Statement (2020)</i>	Policies within Section 2.1 and 2.2 related to natural heritage features
	Ministry of Natural Resources and Forestry (MNRF) Natural Heritage Information Centre (NHIC) Make a Map LIO Mapping Application square #: 18VR6639; 18VR6640; 18VR6739; 18VR6740; 18VR6741; 18VR6839; 18VR6840; 18VR6841; 18VR6938; 18VR6939; 18VR6940; 18VR6941; 18VR7038; 18VR7039; 18VR7040; 18VR7041. <ul style="list-style-type: none"> • Species of Conservation Concern • Species at Risk • Natural heritage features.
	Ecological Land Classification for Southern Ontario, Second Approximation, 2008
	Natural Heritage Reference Manual, Second Edition, March 2010
Endangered Species Act (2007)	MNRF Significant Wildlife Habitat Technical Guide (2000) <ul style="list-style-type: none"> • Significant Wildlife Habitat Eco-region 6E Criterion Schedules, 2015
	Ministry of the Environment, Conservation and Parks (MECP) Species at Risk (SAR) in Ontario (SARO) List (O. Reg. 230/08), October 2021 MNRF's Land Information Ontario (LIO) Database (MNRF, 2019) NHIC Squares #: 18VR6639; 18VR6640; 18VR6739; 18VR6740; 18VR6741; 18VR6839; 18VR6840; 18VR6841; 18VR6938; 18VR6939; 18VR6940; 18VR6941; 18VR7038; 18VR7039; 18VR7040; 18VR7041

Policy/Regulations	Guidelines and Supporting Documents
	<ul style="list-style-type: none"> SAR occurrence records. Accessed November 2021. Ontario Breeding Birds Atlas (OBBA) Square #18VR63; 18VR64; 18VR73; 18VR74 - online data accessed November 2021. Ontario Reptile and Amphibian Atlas - online data accessed November 2021 Ontario Butterfly Atlas - online data accessed November 2021 Mammals of the Western Hemisphere v3.0, released in 2007 and compiled in 2010
City of Ottawa	Schedules B, K, and L1 City of Ottawa's "geoOttawa" online mapping service Protocol for Wildlife Protection During Construction (2015) City Of Ottawa, 2011. Characterization of Ottawa's Watersheds City of Ottawa, 2020. Tree Protection (By-law No. 2020-340)
Conservation Authority	Rideau Valley Conservation Authority (RVCA) <ul style="list-style-type: none"> RVCA Regulation Area online mapping application Summary of the Ottawa East Subwatershed Existing Conditions, RVCA.

2.1 Provincial Policy Statement, 2020

The Provincial Policy Statement, 2020 (PPS) provides overall policy direction on matters of provincial interest related to land use planning and development in Ontario. The PPS sets forth a vision for Ontario's land use planning system by managing and directing land use to achieve efficient development and land use patterns, wise use and management of resources, and protecting public health and safety. This report deals specifically with Policy 2.1, Natural Heritage, and Policy 2.2, Water, which provides for the protection and management of natural heritage and water resources, which include the following:

- Significant wetlands
- Significant coastal wetlands
- Significant woodlands
- Significant valleylands
- Significant wildlife habitat
- Significant areas of natural and scientific interest (ANSIs)
- Fish habitat
- Sensitive surface water features
- Sensitive ground water features.

The PPS defines "significant" to mean:

- In regard to wetlands, coastal wetlands and areas of natural and scientific interest, an area identified as provincially significant by the Ontario Ministry of Natural Resources using evaluation procedures established by the Province, as amended from time to time

- In regard to woodlands, an area which is ecologically important in terms of features such as species composition, age of trees and stand history; functionally important due to its contribution to the broader landscape because of its location, size or due to the amount of forest cover in the planning area; or economically important due to site quality, species composition, or past management history. These are to be identified using criteria established by the Ontario Ministry of Natural Resources
- In regard to other features and areas in policy in 2.1, ecologically important in terms of features, functions, representation or amount, and contributing to the quality and diversity of an identifiable geographic area or natural heritage system”.

The PPS defines “sensitive” to mean:

- In regard to surface water features and ground water features, means areas that are particularly susceptible to impacts from activities or events, including, but not limited to, water withdrawals, and additions of pollutants.

Potential significance of natural heritage features may be evaluated based on size, age, presence of rare or sensitive species, species diversity, and linkage functions, taking into consideration factors such as adjacent land use and degree of disturbance. Criteria for determining significance follow guidance outlined in the Natural Heritage Reference Manual (MNRF, 2010) and the Significant Wildlife Habitat Technical Guide Ecoregion 6E Criterion Schedules (MNRF, 2015), where applicable.

Significance of natural features identified within the Property is further discussed in **Section 5.0** of this report.

2.2 Endangered Species Act, 2007

In June 2008, the Endangered Species Act (ESA), 2007 came into effect in Ontario. The purpose of the ESA is to identify Species at Risk (SAR) based on the best available scientific information; to protect SAR and their habitats, to promote the recovery of SAR; and to promote stewardship activities to assist in the protection and recovery of SAR in Ontario. There are two applicable regulations under the ESA; Ontario Regulation 230/08 (the SARO List); and, Ontario Regulation 242/08 (General). These regulations serve to identify which species and habitat receive protection and provide direction on the current implementation of the ESA by the MECP.

The potential for SAR and SAR habitat to be impacted within the Property is discussed further in **Section 5.5** of this report.

2.3 City of Ottawa Official Plan, 2003

The City of Ottawa Official Plan (OP) provides a vision for the future growth of the City and a policy framework to guide the City's physical development to the year 2031 (City of Ottawa 2019). The OP was adopted in 2003 and applies city wide. The OP also includes Secondary Plans and Site Specific Policies to provide more detailed guidance in specific circumstances or locations. Based on the most recent

consolidation of the City's Official Plan (OP), the Property is designated as General Urban Area in Schedule B. Cardinal Creek and the City's Natural Heritage System occurs well outside of and west of the Property as shown in Schedule K and Schedule L1, respectively (**Appendix A**).

2.4 Rideau Valley Conservation Authority (Ontario Regulation 174/06)

In accordance with Section 28 of the Conservation Authorities Act, 1990, the Rideau Valley Conservation Authority (RVCA) is authorized to implement and enforce the Development, Interference with Wetlands and Alterations to Shorelines and Watercourses Regulation (Ontario Regulation 174/06). Section 2(1) of this Regulation lists areas within the RVCA's jurisdiction where development is prohibited without proper permissions from the RVCA. Such areas include, but are not limited to, river or stream valleys, hazardous lands, and wetlands.

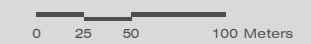
The Property occurs nearby Cardinal Creek, however it remains outside of the RVCA's Regulated Area.



ORLEANS LONG TERM CARE HOME
 ENVIRONMENTAL IMPACT STATEMENT

DESIGNATED NATURAL HERITAGE FEATURES
 FIGURE 2

-  Property Boundary
-  Highway
-  Major Road
-  Local Road
-  Watercourse
-  Candidate ANSI, Life Science
-  Provincially Significant Wetland
-  Unevaluated Wetland
-  MNRF Wooded Area



SCALE 1:4,000

MAP DRAWING INFORMATION:
 DATA PROVIDED BY MNRF, OTTAWA

MAP CREATED BY: MEC
 MAP CHECKED BY: PK
 MAP PROJECTION: NAD 1983 UTM Zone 18N



PROJECT: 21-2647
 STATUS: DRAFT
 DATE: 2021-11-19

3.0 Natural Heritage Background Review

A desktop review of aerial imagery indicates that the Property contains a meadow with strip of wooded area along the eastern boundary. The surrounding area directly adjacent to the Property consists of a residential subdivision and rural residential properties. Further west of the adjacent residential areas woodlands and a watercourse are present; further south and southeast beyond Highway 34 woodlands and agricultural fields occur. Based on a review of historical aerial imagery dating back to 1976, the Property was previously part of a larger agricultural property until approximately 2005, when it was left to fallow and transitioned to meadow, and has remained generally unchanged since that time.

The following sections provide a brief summary of the existing environmental conditions within the Property. This information provides the background information upon which the EIS was based.

3.1 Aquatic Environment

3.1.1 Watershed Summary

The Property is located within the Rideau Valley Watershed which covers an area of 4,234 km² and includes seven subwatersheds. More specifically, the Property is located within the Cardinal Creek Catchment of the Ottawa River East subwatershed, which cover areas of 265 km² and is located at the northern-most portion of the larger Rideau Valley watershed. The Cardinal Creek catchment is composed of approximately 56% crop and pasture land, 4% meadow and thicket, 16% settlement, and 10% wooded areas, and 6% evaluated and unevaluated wetland. The rest of the land use for this catchment is under transportation and unclassified (RVCA, n.d.). Cardinal Creek occurs approximately 200 m west of the Property and generally meandering north where flow discharges into the Ottawa River.

3.2 Terrestrial Environment

3.2.1 Landforms, Soils, and Geology

The Property includes geology from the Paleozoic Era with middle Ordovician bedrock consisting of limestone, dolostone, shale, arkose, and sandstone (Ontario Geologic Survey, 1980). The entirety of the Property lies within the Ottawa Valley Clay Plains physiographic region (Chapman and Putnam, 1984). The Ottawa Valley Clay Plains region is described by Chapman & Putnam (1984) as an area containing clayey abandoned river channel deposits with silt and silty clay as well as sand lenses underlain by unmodified marine clay.

Physiographic mapping reveals that the Property lies within a clay plain with an undrumlinized till plain feature that partially transects the lower half of the Property in a southwest to northeast orientation (Chapman and Putnam, 1984). A review of Report 33 of the Ontario Soil Survey of Russell County indicates that the Property consists of Wendover clay, which is stone free, grey clay soils with non-

calcareous layered, red and grey clay parent material. This type of soil has imperfect drainage, and is known to be good cropland for hay, pasture, and grain.

3.2.2 Wetlands

Wetlands within the City of Ottawa area are considered southern wetlands based on their location south of the northern limit of Ecoregions 5E, 6E, and 7E as shown on Figure 1 of the PPS, 2014. No wetlands were identified within or adjacent to the Property based on the MNRF Land Information Ontario (LIO) online mapping application as shown on **Figure 2**.

3.2.3 Woodlands

A review of available aerial imagery and background resources indicates that woodlands may occur within the Property. A narrow strip of trees that align with a portion of the eastern Property boundary occur in relation to the MNRF wooded area as shown on **Figure 2**.

Assessment of this wooded area as a woodland is further investigated as part of the ELC and vegetation surveys and is discussed further in **Section 5.3**.

3.2.4 Valleylands

No significant valleylands were identified within or adjacent to the Property.

3.2.5 Areas of Natural and Scientific Interest

No Areas of Natural and Scientific Interest (ANSI) were identified as occurring within or adjacent to the Property.

3.2.6 Significant Wildlife Habitat

The Significant Wildlife Habitat Technical Guide (MNRF, 2000) defines Species of Conservation Concern as globally, nationally, provincially, regionally, or locally rare (S-Rank of S1, S2, or S3) as well as federally endangered and threatened species, but do not include SAR (listed as endangered or threatened under the ESA, 2007). Through background review, several Species of Conservation Concern have been identified with the potential to occur within or adjacent to the Property (**Table 2**). The species listed in **Table 2** helped to identify that potential for Significant Wildlife Habitat (SWH) as defined in the Ecoregion 6E Criterion Schedules (MNRF, 2015) within the Property.

Table 2: Species of Conservation Concern with potential to occur within the Property

Scientific Name	Common Name	SARA ¹	ESA ²	S-RANK ³	Info Source ⁴
Avian					
<i>Contopus virens</i>	Eastern Wood-pewee	SC	SC	S4B	OBBA
Herpetozoa					
<i>Thamnophis sauritus</i>	Eastern Ribbonsnake (Great Lakes population)	SC	SC	S3	ON
Lepidoptera					
<i>Danaus plexippus</i>	Monarch	SC	SC	S2N, S4B	TEA

¹Federal Species at Risk Act (THR= *Threatened*, END= *Endangered*, SC = *Special Concern*); ²Provincial Endangered Species Act (SC= Special Concern); ³S-Rank is an indicator of commonness in the Province of Ontario. A scale between 1 and 5, with 5 being very common and 1 being the least common; N= Non-Breeding pop., B= Breeding pop. ⁴Information sources include: OBBA = Ontario; Breeding Bird Atlas; ON = Ontario Nature; Ontario Reptile and Amphibian Atlas; TEA = Toronto Entomologists' Association; --- denotes no information or not applicable.

A review of the MNRF background data suggests that there is low likelihood for SWH to occur within or adjacent to the Property given the lack of natural features (i.e., wetlands, woodlands, etc.). As a result, no specific types of SWH have been brought forward; however there is still the potential for the Property to provide Habitat for Special Concern and Rare Wildlife Species, should SCC be observed on site or other types of habitats not readily identified through background review (i.e., snake hibernacula). It should be noted that due to the linear nature of the wooded area (fencerow), SWH for bat maternity colonies are not likely to be present within the Property. Bats will however be considered under SAR in **Section 3.2.7**.

The potential for SWH is discussed further in **Section 5.4**.

3.2.7 Species at Risk

A number of SAR listed as *endangered* and *threatened* under the ESA have been identified with potential to occur within the vicinity of the Property (see **Table 3**).

Table 3: Species at Risk with potential to occur within the Property

Scientific Name	Common Name	SARA ¹	ESA ²	S-RANK ³	Info Source ⁴
Vascular Plants					
<i>Juglans cinerea</i>	Butternut	END	END	S3?	NHIC, TOC
<i>Platanthera leucophaea</i>	Eastern Prairie Fringed-orchid	END	END	S2	MECP
Avian					
<i>Sturnella magna</i>	Eastern Meadowlark	THR	THR	S4B	NHIC, OBBA
<i>Dolichonyx oryzivorus</i>	Bobolink	THR	THR	S4B	NHIC, OBBA
<i>Hirundo rustica</i>	Barn Swallow	THR	THR	S4B	OBBA
<i>Chaetura pelagica</i>	Chimney Swift	THR	THR	S4B,S4N	OBBA
Mammals					
<i>Myotis leibii</i>	Eastern Small-footed Myotis	---	END	S2S3	MWH
<i>Myotis lucifugus</i>	Little Brown Myotis	END	END	S4	MWH
<i>Myotis septentrionalis</i>	Northern Myotis	END	END	S3	MWH
<i>Pipistrellus subflavus</i>	Tri-coloured Bat	END	END	S3?	MWH
Herpetozoa					
<i>Emydoidea blandingii</i>	Blanding's Turtle	THR	THR	S3	ON

¹SARA= Federal Species at Risk Act 2004 (THR = *Threatened*, END = *Endangered*); ²ESA = Ontario Endangered Species Act 2007 (THR = *Threatened*, END = *Endangered*); ³S-Rank is an indicator of commonness in the Province of Ontario. A scale between 1 and 5, with 5 being very common and 1 being the least common. These provincial ranks may further be modified; ? - A question mark following the rank indicates that there is some uncertainty with the classification due to insufficient information; S2S3 - Indicates that an element is rare, but insufficient information exists to accurately assign a single rank; N= Non-Breeding pop., B= Breeding pop. ⁴Information sources include: MECP = Ministry of Environment, Conservation and Parks; NHIC = MNRF's Natural Heritage Information Centre; MWH = Digital Distribution Maps of the Mammals of the Western Hemisphere; OBBA = Ontario Breeding Bird Atlas; ON = Ontario Nature: Ontario Reptile and Amphibian Atlas; TOC = Trees of Canada; --- denotes no information or not applicable.

Based on further background review as part of this EIS the following SAR and/or SAR habitat may be found within the Property and warranted further consideration as part of the EIS:

- Butternut
- Barn Swallow
- Eastern Meadowlark and Bobolink
- SAR bats.

Further discussion related to SAR is included in **Section 5.5**.

4.0 Field Work Methodology

The results of the background review were used to assist in scoping the 2021 field program. The fieldwork conducted for the EIS consisted of a SWH/SAR habitat search, Ecological Land Classification (ELC) of vegetation communities, botanical surveys, a tree inventory and breeding bird surveys (BBS). Incidental wildlife observations made during the surveys were also documented during field surveys. Fieldwork conducted for the EIS occurred between June 2021 and September 2021 when weather conditions and timing were deemed suitable based on the survey protocols being implemented (Table 4).

Table 4: Dates and Weather Conditions of Field Surveys (2021)

Date	Time	Weather Conditions	Air Temp (°C)	Purpose of Visit
June 14, 2021	06:31	Partly Cloudy, Calm	18	BBS, Incidental Wildlife Observations
June 25, 2021	06:50	Overcast, Light Breeze	20	BBS, Incidental Wildlife Observations
September 16, 2021	10:01	Slightly Cloudy, Calm	13	ELC, Vegetation Inventory, Tree Inventory, Incidental Wildlife Observations
November 17, 2021	11:30	Overcast, Moderate Breeze	-2	Tree Inventory, Incidental Wildlife Observations

4.1 Ecological Land Classification

During the field investigations, vegetation was characterized using the ELC System for Southern Ontario (Lee et al., 1998) in September 2021 in order to classify and map ecological communities to the vegetation level. The ecological community boundaries were determined through the review of aerial photography and then further refined through on site vegetation surveys and soil sampling.

The ELC protocol recommends that a vegetation community be a minimum of 0.5 ha in size before it is defined. Based on the composition of vegetation communities within the Property, patches of vegetation less than 0.5 ha or disturbed/planted vegetation will be described, provided they clearly fit within an ELC vegetation type.

Results of the ELC surveys are discussed in **Section 5.1**.

4.2 Vegetation Inventory

Vegetation surveys were conducted during the ELC survey in September 2021, and consisted of wandering transects and/or area searches to determine the presence, richness and abundance of floral species within the Property as well as presence/absence of botanical SAR. Species nomenclature recorded is based on the Ontario Plant List (Newmaster et al., 1998).

Results of the vegetation survey are discussed in **Section 5.2**.

4.3 Tree Inventory

On September 16, 2021 and November 17, 2021 a Dillon biologist approved by the City of Ottawa to conduct arborist work as a qualified professional, conducted an inventory of trees within the Property. City owned trees are protected regardless of size as per Part 2 of the City's Tree Protection By-law No. 2020-340. Therefore, City owned trees that are recommended for removal to accommodate the development were also inventoried. The following information was collected during the inventory of trees that would need to be removed to facilitate the development or be preserved and therefore protected during construction activities:

- Identification of species
- Measurement of diameter-at-breast-height (DBH) at 1.38 m from the ground
- A Level 2 (basic) qualitative visual assessment to obtain an opinion of the health condition of each tree over 10 cm diameter-at-breast-height (DBH), or stand of trees/groupings following the condition health rating system detailed in **Table 5**
- The locations of individual trees were recorded using an ArcGIS Collector mobile data collection application
- If determinable and/or applicable, providing recommendations regarding preservation, protection, or removal.

Further, stand classification was conducted for dense groupings of trees, which involved a tally of each tree and range of diameters, and individual trees with a DBH of 10 cm or greater. Large Trees with a DBH of 50 cm or greater that occur within the City's suburban area (urban lands outside the greenbelt) or 30 cm DBH or greater within the inner urban area (urban lands inside the greenbelt) are considered Distinctive Trees as outlined in the Tree Protection By-law No. 2020-340. The Property is considered within the City's suburban area, therefore as per Tree Protection By-law No. 2020-340 and for the purposes of this TCR to aid in the identification of candidate trees for preservation, trees with a 50 cm DBH or greater were surveyed by an approved professional as outlined in the City's TCR guidelines and were considered Distinctive Trees. The survey for all Large Trees included the identification of species, DBH, condition, and location. Trees measuring less than 50 cm DBH were estimated based on their density, average size, and overall health.

A Level 2 (basic) health assessment was completed for inventoried trees and consisted of a visual inspection of the tree and surrounding area to obtain an opinion of the health condition of each tree. It included a non-invasive inspection of each tree, and an assessment of immediate surrounding site conditions, buttress roots, trunk, and branches. This Level 2 (basic) health assessment is the standard assessment that is performed by arborists, and only includes conditions that are readily detected from ground level. As such, it should be noted that the results obtained from a Level 2 (basic) health assessment should not be relied on for internal, below-ground, and/or upper-crown conditions or defects as these areas may be difficult to see and/or assess from ground-level. The condition rating designated to each tree will be based on the results of the Level 2 basic health assessment. The hazard potential of trees were assessed using the method outlined in the International Society of Arboriculture

publication, *A Photographic Guide to the Evaluation of Hazard Trees in Urban Area - 2nd Edition* (Mattheny and Clark, 1994). Using this guide, an overall condition rating (i.e., dead, poor, fair, good or excellent) was given to each tree inventoried. In the event of a significant change in site conditions prior to development activities, such as severe weather events (i.e., ice storm, tornado, etc.) or if considerable time passes (i.e., approximately five to seven years) since the original assessment, it will be recommended that all inventoried trees be reassessed.

Table 5: Tree/Grouping Condition Rating Categories

Condition	Description
Dead	A specimen tree/grouping is considered dead when it has no living tissue.
Hazard	The specimen tree could either be alive or dead but the tree in its part could pose an imminent hazard to people or property during normal weather conditions. These trees have the potential for splitting, breaking and/or falling over during inclement weather, and because of their proximity to various targets (i.e., people or property), could cause personal injury and/or severe damage to municipal infrastructure and/or private property.
Poor	Trees in poor condition show major symptoms of decline. At least 50% of main scaffold branches are dead, missing or in diseased state. The trunk shows evidence of advanced rot, deadwood or is hollow throughout. Twig development on the main branches or throughout the canopy is poor and may have limited sucker growth. Callus growth around wounds is minimal. A tree in poor condition could decline further to become a safety hazard. Removal prior to development should be considered if it is considered a hazard tree.
Fair	Trees in fair condition show moderate symptoms of decline in lower canopy or scaffold branches, but more than 50% of scaffold branches are present and viable. The trunk shows limited evidence of rot or insect damage. Good callus growth is present near wound areas. Trees that have scaffold branches that are healthy, but are in a "Y" formation, may also be included in this category, if "included-bark" is evident as the risk of splitting or breakage increases as the tree matures. Removal or preservation of these trees depends on the location of the specimen and associated target potential, and would depend on the species, and its tolerance to grading, trenching and surviving in an urban environment. Some major arboricultural maintenance may be required and may include major scaffold or secondary branch removal, bracing and/or cabling.
Good	Trees in good condition show no symptoms of decline in the trunk, and all scaffold branches are present and are in good condition. Most scaffold branches are at right angles to the trunk, and show good vigour. Small amounts of dead wood may be present in secondary branches, but account for less than 25% of the canopy. Depending on the grading in the immediate area, a tree in good condition would be recommended for preservation. Such a tree would typically survive to maturity without major arboricultural maintenance.
Excellent	Trees in excellent condition show no symptoms of decline in trunk, scaffold or secondary branches. Trees in this condition have an excellent growth habit and should typically survive to maturity without major arboricultural maintenance.

The results of the tree inventory have been included in **Section 5.2.1**.

4.4 Wildlife Habitat Assessment

Based on the list of SAR and SCC with potential to be found within the Property, during the site visits from June 2021 to September 2021, the Property was surveyed to identify the potential for natural heritage features including woodlands, wetlands, SWH as well as SAR habitat.

Observations recorded included presence of snags, cavity trees, and other mature trees with evidence of loose, peeling bark etc. which may be suitable for bat maternity roosts and/or colonies; potential for amphibian breeding habitat (woodland) in the form of vernal pools, wetland pockets, etc., potential sunny canopy openings that could foster habitat for Butternut tree, and other incidental wildlife observations.

The results of the habitat assessment have been incorporated into **Section 5.4** and **5.5**.

4.5 Breeding Bird Surveys

Diurnal breeding bird surveys took place in June 2021, and were conducted within the Property followed the methods outlined in the Ontario Breeding Bird Atlas Guide for Participants (Ontario Breeding Bird Atlas, 2001).

Specifically, surveys consisted of point counts generally conducted between dawn and five hours after sunrise to establish quantitative estimates of bird abundance in suitable habitat types within the Property. During the surveys evidence of breeding behaviour was recorded which generally includes, but is not limited to, males singing, nest building, egg incubation, territorial defence, carrying food, and feeding their young.

To supplement the surveys, area searches of the habitat were completed using binoculars to observe species presence and breeding activity between point counts. Area searches involved noting all individual bird species and their corresponding breeding evidence while traversing the habitat on foot.

Results of breeding bird studies are discussed in **Section 5.4.1**.

4.6 Incidental Wildlife

A general wildlife assessment was completed within the Property through incidental observations made during the field surveys in 2021. Incidental observations of wildlife were noted, as well as other wildlife evidence such as dens, tracks, and scat where possible. For each observation, notes, and when possible, photos were taken. These observations helped to determine potential ecological functions, linkages, etc., within the Property.

Results relating to incidental wildlife within the Property have been included in **Section 5.6**.

5.0 Results of Biophysical Inventory

A biophysical inventory of natural features within the Property was completed in accordance with the methods detailed in **Section 4.0**. The analysis of data collected from secondary source information and during field studies in 2021 was used to evaluate the significance of natural heritage features within the Property. Results of these field studies is summarized below.

5.1 Ecological Land Classification

A total of two ecological communities were observed within the Property during ELC surveys, both of which are considered natural vegetation communities. The location, type, and boundaries of these communities are delineated on **Figure 3**. All vegetation communities surveyed within the Property are considered common in Ontario. **Table 6** outlines the communities documented during ELC surveys and summarizes the dominant vegetation cover. Reference photos for each of the plant communities observed can be found in **Appendix B**.

Vegetation communities within the Study have been disturbed based on the Property's historical use as an agricultural field and the recent development that has occurred adjacently within the last few years, further the Property contains a high occurrence of botanical species recognized as invasive and/or noxious in Ontario including Common Buckthorn (*Rhamnus cathartica*), Reed Canary Grass (*Phalaris arundinacea*), Annual Ragweed (*Ambrosia artemisiifolia*), Rydberg's Poison Ivy (*Toxicodendron rydbergii*), Brown Knapweed (*Centaurea jacea*) and Bull Thistle (*Cirsium vulgare*).

Table 6: Ecological Land Classification

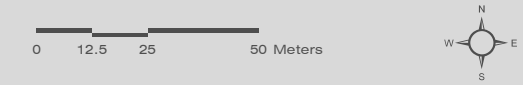
ELC Code	Classification	Vegetation	Photo Appendix B
MEG	Graminoid Meadow	<p>This meadow consisted predominately of graminoid species such as:</p> <ul style="list-style-type: none"> • Reed Canary Grass (<i>Phalaris arundinacea</i>) • Common Panicgrass (<i>Panicum capillare</i>) • Redtop (<i>Agrostis gigantea</i>) • Green Foxtail (<i>Setaria viridis</i>) • Yellow Foxtai (<i>Setaria pumila</i>) • Large Barnyard Grass (<i>Echinochloa crus-galli</i>) • Kentucky Bluegrass (<i>Poa pratensis ssp. pratensis</i>). <p>Occasional abundance of forbs such as:</p> <ul style="list-style-type: none"> • Bird’s-foot Trefoil (<i>Lotus corniculatus</i>) • Canada Goldenrod (<i>Solidago canadensis var. canadensis</i>) • Wild Carrot (<i>Daucus carota</i>) • Prickly Lettuce (<i>Lactuca serriola</i>) • Bull Thistle (<i>Cirsium vulgare</i>). <p>A row of six Thornless Honey-locust (<i>Gleditsia triacanthos inermis</i>) trees occurs within the northern extent of the community believed to be a remnant of landscaping plantings.</p> <p>A gravel ditch parallel to Famille-Laporte Avenue directs surface water flows to a municipal sewer grate within the northwest extent of the Property.</p>	1, 2, 3, 4, 5, 6, 7, 8
TAGM5	Fencerow	<p>This community consisted of a strip of trees aligned with the eastern boundary of the Property demarcated by a wooden plank fence and a post and wire fence. The canopy of this community was dominated by young to mature Bur Oak (<i>Quercus macrocarpa</i>) with occasional Green Ash (<i>Fraxinus pennsylvanica</i>), Black Ash (<i>Fraxinus nigra</i>), American Elm (<i>Ulmus Americana</i>) associates and rare young to mid-age Trembling Aspen (<i>Populus tremuloides</i>). The understory of this community was dominated by Common Buckthorn (<i>Rhamnus cathartica</i>) and the ground layer contained occasional seedlings and saplings of the trees observed within the community as well as seedling Common Buckthorn and Reed Canary Grass.</p>	1, 6, 9, 10



ORLEANS LONG TERM CARE HOME
ENVIRONMENTAL IMPACT STATEMENT

SURVEY LOCATIONS AND FIELD INVESTIGATION RESULTS
FIGURE 3

- Property Boundary
- Major Road
- Local Road
- Watercourse
- Breeding Bird Survey Locations
- Ecological Land Classification**
- MEG - Graminoid Meadow
- TAGM5 - Fencerow
- Tree Inventory**
- Individual Inventoried Tree
- Tree Grouping Inventory
- Distinctive Tree



SCALE 1:1,700
 MAP DRAWING INFORMATION:
 DATA PROVIDED BY MNR, OPEN OTTAWA
 MAP CREATED BY: MEC
 MAP CHECKED BY: CE
 MAP PROJECTION: NAD 1983 UTM Zone 18N



PROJECT: 21-2647
 STATUS: DRAFT
 DATE: 2021-11-19

5.2 Vegetation

A total of 45 plant species were documented during the 2021 field studies. Of the 45 species, approximately 82% are listed as native species considered to be common (S4) to very common (S5) in the province of Ontario; and approximately 18% are listed as introduced species, therefore a status ranking is not applicable as the species is not a suitable target for conservation activities (SE or SNA rank).

The Co-efficient of Conservatism (CC) provides additional information on the nature of the vegetation communities within the Property. The CC values range from 0 to 10 and represent an estimated probability that a plant is likely to occur in a landscape that is relatively unaltered or is in a pre-settlement condition. For example, a CC of 0 is given to plants such as Manitoba Maple that demonstrate little fidelity to any remnant natural community (i.e., may be found almost anywhere). Similarly, a CC of 10 is applied to plants like Shrubby Cinquefoil (*Potentilla fruticosa*) that are almost always restricted to a pre-settlement remnant, (i.e., a high quality natural area). Introduced plants were not part of the pre-settlement flora, so no CC values have been applied to these species.

Of the 45 species identified within the Property, the average CC value recorded is 2.5 which is typical of an altered landscape (i.e., historical agricultural field); although several species were recorded with CC values of greater than six, including, but not limited to; Daisy Fleabane (*Erigeron hyssopifolius*), Black Ash (*Fraxinus nigra*), and Slippery Elm (*Ulmus rubra*). A full list of the vegetation species observed within the Property has been included in **Appendix C**.

Potential impacts related to vegetation within the Property are included in **Section 8.1.3**.

5.2.1 Tree Inventory

An inventory of trees 10 cm DBH or greater on the subject Property and within the Property resulted in the identification of one tree grouping (Grouping 1) contained within the Fencerow (TAGM5) community and 15 individually inventoried trees based on the solitary location of the trees and/or due to the tree being qualified as a Distinctive Tree based on size and condition of health. In total seven species and 155 live and dead trees were inventoried as part of a tally count within Grouping 1 and as part of the individually inventoried trees. **Table 7** below includes a consolidated list of tree species documented within the Property. Detailed Tree Inventory results of individual trees and groupings, including species, DBH, condition and other relevant information recorded during the Tree Inventory survey are provided in **Appendix D**.

Table 7: Tree Species Documented within the Property

Scientific Name	Common Name	SARA ¹	ESA ²	SRank ³
<i>Fraxinus nigra</i>	Black Ash	---	---	S4
<i>Fraxinus pennsylvanica</i>	Green Ash	---	---	S4
<i>Gleditsia triacanthos inermis</i>	Thornless Honey-locust	---	---	SNA
<i>Populus tremuloides</i>	Trembling Aspen	---	---	S5
<i>Quercus macrocarpa</i>	Bur Oak	---	---	S5
<i>Ulmus americana</i>	American Elm	---	---	S5
<i>Ulmus rubra</i>	Slippery Elm	---	---	S5

In general trees within the Property, primarily Grouping 1 exist as a remnant of trees left to develop along the perimeter of the agricultural field. Individually inventoried trees along the northern portion of the Property (master tree ID #'s 1 – 6, **Appendix D**) are believed to be the remnant of past landscaping based on the aligned/spacing of the trees and the species being a specialized variant (Thornless Honey-locust) popular for urban and residential area planting. Two Distinctive Trees were identified during the inventory both of which are Bur Oak and are part of Grouping 1 identified as master tree ID #07 and #08, **Appendix D**. City owned trees are protected regardless of size as per Part 2 of the City's Tree Protection By-law No. No. 2020-340. Individually inventoried trees master tree ID #'s 9 – 15, **Appendix D** represent municipal trees outside of the Property but were included as per Part 2 of the City's Tree Protection By-law No. 2020-340 in the inventory due to being identified for removal to accommodate the construction of entrances for the proposed development as detailed in the Landscape and Planting Plan (LPP) prepared by Ron Koudys Landscape Architects Inc. dated October, 2021 and available in **Appendix E**.

Grouping 1 – Fencerow (TAGM5) Community

Trees within Grouping 1 were mainly young to mid-age Bur Oak with a few larger mature specimens such as master tree ID #07 and #08. In addition, occasional young Green Ash, Black Ash, and American Elm occurred, however many were observed to be declining in condition ranging from in fair to poor health or dead. The declining condition of these specific trees is likely explained by the lethal influence of the Emerald Ash Borer (*Agrilus planipennis*) (EAB) and European Elm Bark Beetle (*Scolytus multistriatus*), the presence of these pests evidenced by galleries (see Photo 9 – **Appendix B**) and entrance beetle bores consistent with the pest species noted on dead American Elm and Ash tree trunks. The evidence of galleries on American Elm trunks indicates that Elm trees within the woodlot were likely exposed to Dutch Elm Disease (DED) fungus (*Ophiostoma spp.*). Rare occurrence of Slippery Elm and Trembling Aspen occur within this grouping. The understory of this grouping is dominated by Common Buckthorn.

Based on the current preliminary design all trees inventoried are planned to be removed as removal is necessary to accommodate the proposed development plans. Removal of tree groupings and individual trees are recommended to be compensated for by installing landscape and restoration plantings, to be

finalized during the detailed design phase in a finalized LPP. Landscape and restoration plantings are detailed in the preliminary LPP (October 2021) (**Appendix E**). The LPP (October 2021) also shows the surveyed location and approximated size of live trees that forms part of the inventory for trees within Grouping 1.

Potential impacts related to tree removal within the Property have been included in **Section 8.1.3**.

5.3 Woodlands

Guidelines for Identification, Evaluation, and Impact Assessment (City of Ottawa, 2018), Significant Woodlands within the urban area are defined as the following:

- i. Any trees area meeting the definition of woodlands in the Forestry Act, R.S.O. 1990, c. F. 26 or forest in the ELC for Southern Ontario.
- ii. In the urban area, any area 0.8 hectares (ha) in size or larger, supporting woodland 60 years of age and older at the time of evaluation.

Tree Grouping 1 was characterized as a Fencerow (TAGM5) community (**Figure 3**) which would not be considered a forest based on ELC and does not achieve a size of 0.8 ha, therefore, no woodlands occur within the Property.

5.4 Significant Wildlife Habitat

The Property was further considered SWH through field work and incidental observations during the 2021 field program. No SWH types were identified within the Property. The results of the baseline breeding bird surveys are presented below.

5.4.1 Breeding Bird Surveys

A total of 14 avian species were observed during breeding bird surveys in 2021 (**Table 8**). Of the 14 species observed, all are considered secure (S4) to very common (S5) in the province of Ontario, with the exception of species with SNA S-Ranks. Of these species no SAR were observed.

Table 8: 2021 Breeding Bird Survey Results

Scientific Name	Common Name	SRank ²	SARA ³	ESA ⁴
<i>Passer domesticus</i>	House Sparrow	SNA	---	---
<i>Sturnus vulgaris</i>	European Starling	SNA	---	---
<i>Turdus migratorius</i>	American Robin	S5B	---	---
<i>Carduelis tristis</i>	American Goldfinch	S5B	---	---
<i>Corvus brachyrhynchos</i>	American Crow	S5B	---	---
<i>Spizella passerina</i>	Chipping Sparrow	S5B	---	---
<i>Agelaius phoeniceus</i>	Red-winged Blackbird	S4	---	---
<i>Poecile atricapillus</i>	Black-capped Chickadee	S5	---	---

Scientific Name	Common Name	SRank ²	SARA ³	ESA ⁴
<i>Cardinalis cardinalis</i>	Northern Cardinal	S5	---	---
<i>Larus delawarensis</i>	Ring-billed Gull	S5B,S4N	---	---
<i>Cyanocitta cristata</i>	Blue Jay	S5	---	---
<i>Melospiza melodia</i>	Song Sparrow	S5B	---	---
<i>Quiscalus quiscula</i>	Common Grackle	S5B	---	---
<i>Geothlypis trichas</i>	Common Yellowthroat	S5B	---	---

¹Federal Species at Risk Act, 2002; ²Ontario Endangered Species Act, 2007; ³Ontario SRank; S5= secure; S4= apparently secure; SNA = Not Applicable - a conservation status rank is not applicable because the species is not a suitable target for conservation activities; N = non-breeding population; B = breeding population; --- denotes no information or not applicable.

Potential impacts to wildlife are discussed in **Section 8.1.4**.

5.5 Species at Risk

Specific surveys for bat maternity colonies were not conducted as part of this EIS. However, during other field work the Dillon Biologist noted that several dead Ash and Elm trees were observed but upon closer inspection most were found to be too small in DBH to be considered bat habitat and/or did not contain suitable bat maternity roost features (i.e., cracks, crevices and cavities). Furthermore, larger live trees with a suitable size to potentially support bat maternity habitat did not contain defining features for bat roosting such as cracks, crevices and cavities. As a result, the likelihood for SAR bats to be utilizing the Property is low. No other SAR were identified within the Property as the result of the 2021 field studies.

Potential impacts to wildlife are discussed in Section **8.1.4**.

5.6 Incidental Wildlife

Incidental wildlife species observed within the Property during the 2021 field season are listed in **Table 9** below. All species observed are common in the Province of Ontario and have an S-Rank of SNA or S5.

Table 9: Incidental Wildlife Observations

Scientific Name	Common Name	SRank ¹	SARA ²	ESA ³
Avian				
<i>Corvus brachyrhynchos</i>	American Crow	S5B	---	---
<i>Cyanocitta cristata</i>	Blue Jay	S5	---	---
<i>Meleagris gallopavo</i>	Wild Turkey	S5	---	---
<i>Dryocopus pileatus</i>	Pileated Woodpecker	S5	---	---
<i>Passer domesticus</i>	House Sparrow	SNA	---	---

¹Federal Species at Risk Act, 2002; ²Ontario Endangered Species Act, 2007; ³Ontario SRank; S5= secure; S4= apparently secure; N= non-breeding population; B= breeding population; --- denotes no information or not applicable.

6.0 Ecological Function

As part of this EIS, natural features within the Property were analyzed to determine their ecological function. At a broader landscape scale, the Property exists as part of the Cardinal Creek catchment of the Rideau Valley Watershed and the natural heritage system of the St. Lawrence River and Ottawa River Valleys. The Property occurs within a landscape that has been historically and is currently disturbed due to agricultural activity and residential development, limiting the suitability of the Property in general to sensitive wildlife species.

As stated in **Section 5.2**, the vegetation documented within the Property reflects current and historical disturbances with a mean CC value for the site as 2.5 out of a possible 10, indicating an altered landscape containing many invasive or non-native species, although several higher CC value plants exist on site indicating a historical connectivity with the lands native state. This score is typical of disturbed environments as compared to naturally occurring environments. Nonetheless, the meadow and Fencerow (TAGM5) community within the Property still provide some ecological function by providing habitat to a number of common native plant and wildlife species including avian wildlife, insects and mammals that are tolerant to proximity to anthropogenic influence.

General ecological functions of the natural portions within the Property include prevention of erosion and runoff, facilitating hydrological and nutrient cycling, and improving localized soil, water and air quality. Within the Property, the woodlands and meadow may provide cover, foraging, refuge, and nesting habitat for avian and mammalian terrestrial wildlife.

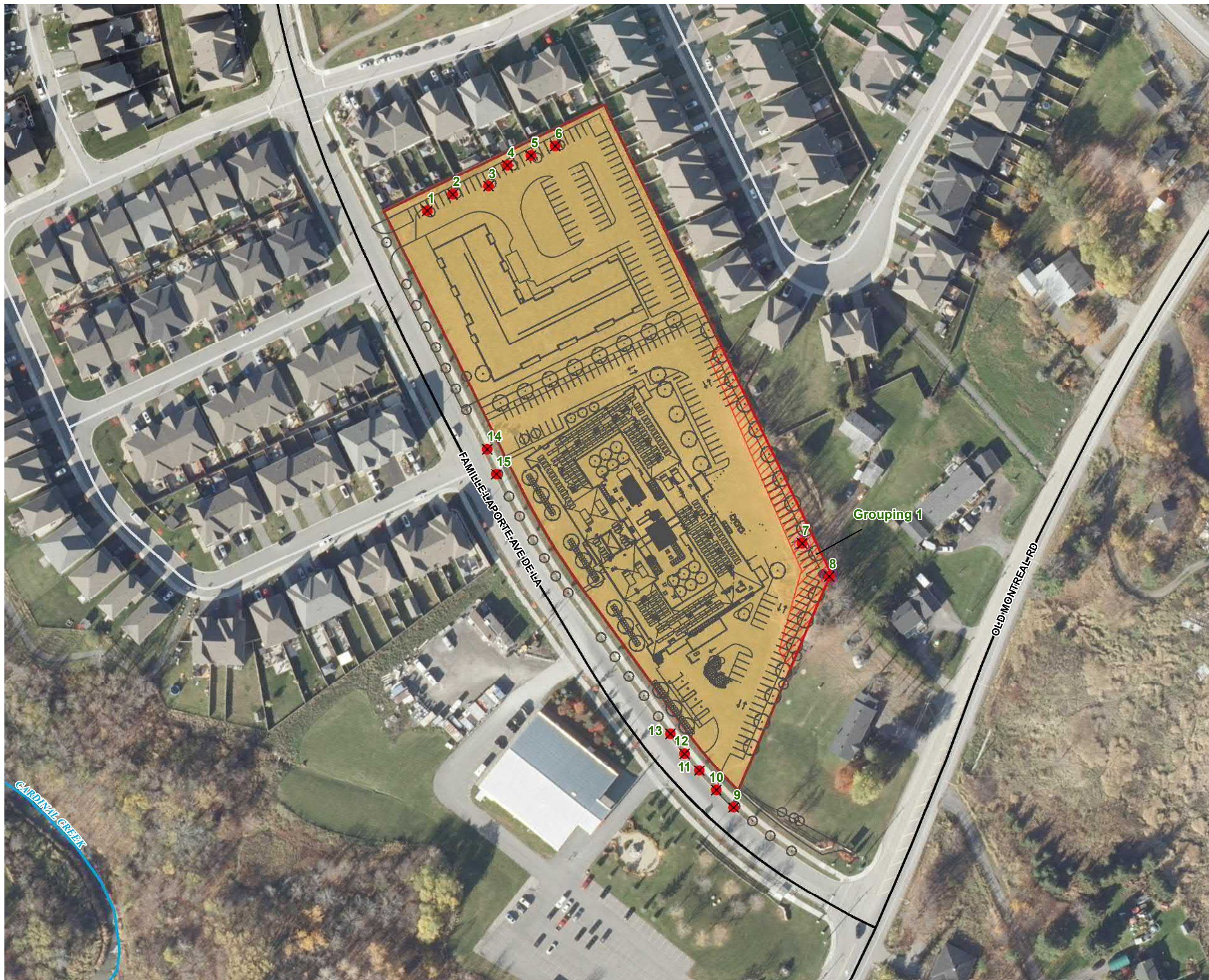
7.0 Description of Development

The proposed development, as shown on **Figure 4**, includes a mix of uses including the following:

- An LTC facility (0.32 Ha)
- Parking lot, yards etc. (0.87 Ha)
- Low Density Development (LDD) Housing (0.81 Ha).

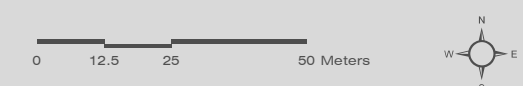
Access points into the development are proposed via Laporte Avenue (**Figure 4**). Plans of the proposed development include the removal of existing trees and vegetation along the boundary of the Property, and construction of dwellings, placement of hardscape (parking spaces), and underground servicing for stormwater and sanitary water. Landscaping may include, but is not limited to, the installation of patios, fencing, sod, and tree/vegetation plantings.

The potential impacts of the development and the mitigation measures are discussed in **Sections 8 and 9**.



ORLEANS LONG TERM CARE HOME
CARE HOME
 ENVIRONMENTAL IMPACT STATEMENT
PROPOSED DEVELOPMENT PLAN AND POTENTIAL IMPACTS
 FIGURE 4

- Property Boundary
- Major Road
- Local Road
- Watercourse
- Proposed Development Plan
- Distinctive Tree
- ✗ Individual Inventoried Tree to be removed
- ▨ Tree Grouping Inventory to be removed
- Approximate Vegetation Removal Area (~2.0 ha)



SCALE 1:1,400
 MAP DRAWING INFORMATION:
 DATA PROVIDED BY MNR, OPEN OTTAWA
 MAP CREATED BY: MEC
 MAP CHECKED BY: CE
 MAP PROJECTION: NAD 1983 UTM Zone 18N



PROJECT: 21-2647
 STATUS: DRAFT
 DATE: 2021-11-19

8.0 Potential Impact Assessment

8.1 Direct Impacts

Direct impacts are those that are immediately evident as a result of development. Typically, the adverse effects of direct impacts are most evident during the site preparation and construction phase of a development. At a high level, potential direct impacts of future development of the Property may include, but are not limited to, the following:

- Diversion of surface water flows
- Erosion and sedimentation of adjacent areas
- Tree and vegetation removal
- Loss of/disturbance to wildlife and wildlife habitat.

Each of these potential impacts is discussed in subsequent sections.

8.1.1 Impacts to Surface Water Flows

The potential impacts of changes to land use and land cover on the health of a watershed have been well documented and can include changes to groundwater infiltration, run off, stream flow regime, water quality, stream channel erosion, and wildlife habitat (TRCA, 2008). More specifically, changes may include:

- Direct “footprint” effects such as the loss of natural land cover
- Direct effects from effluent discharge such as change in flow volumes and water chemistry of receiving water bodies
- Indirect “flow related” effects such as increased frequency of high stream flows, accelerated stream channel erosion and deterioration of water quality
- Cumulative effects such as changes in aquatic community composition that may arise from a combination of changes affecting upstream areas (North-South Environmental, 2009).

The most notable difference is the addition of impervious surfaces (i.e., roads, parking lots, rooftops, etc.). Impervious surfaces prevent infiltration of water into the soils and the removal of the vegetation removed the evapotranspiration component of the natural water balance. These changes affect the watershed's capacity to infiltrate precipitation and attenuate stream flow (TRCA, 2008).

Refer to **Section 9.1** for mitigation relating to surface flows.

8.1.2 Erosion and Sedimentation

Construction activity, especially operations involving the handling of earthen material, dramatically increases the availability of sediment for erosion and transport by surface drainage. In order to mitigate the adverse environmental impacts caused by the release of sediment-laden runoff into receiving watercourses, measures for erosion and sediment control are required for construction sites. This is an

extremely important component of projects that plays a large role in the protection of downstream watercourses and aquatic habitat.

In addition, the potential impacts of changes to land use and land cover can include changes to surface water infiltration, run off, stream flow regime, water quality, downstream channel erosion, and wildlife habitat. As a result, there is the potential for impacts to occur if construction best management practices are not implemented.

Potential impacts to these features may include, but are not limited to:

- Reduced water quality and degradation of nearby watercourses or drainage ditches with potential to contain fish habitat
- Disturbance to or loss of additional vegetation due to the deposition of dust and/or overland mobilization of soil.

Refer to **Section 9.2** for mitigation measures related to erosion and sedimentation.

8.1.3 Tree and Vegetation Removal

The proposed development plan indicates tree and ground vegetation removal limited to the development area as shown on **Figure 4**.

The proposed development will result in approximately 2 ha of vegetation removal, all of which is Graminoid Meadow (MEG) and Fencerow (TAGM5) as the site plan indicates the removal of trees within the Property as it is necessary to accommodate the development plans (**Figure 4**). This will result in loss of marginal wildlife habitat and alteration of soil conditions. On a site level, the impacts of tree and vegetation removal may include:

- Direct loss of trees
- Decreased floral species richness and abundance
- Negative edge effects, include altered soil conditions and water availability
- Alteration of microclimate
- Loss of native seed banks
- Physical injury, root damage, and compaction of trees not intended for removal that may result from construction operations.

Refer to **Section 9.3** for mitigation and enhancement opportunities associated with trees and vegetation documented within the Property.

8.1.4 Loss of and/or Disturbance to Wildlife and Wildlife Habitat

Although no specific SAR / SWH wildlife or habitat were identified within the Property, there is potential for wildlife and general wildlife habitat to be impacted in the following ways:

- Loss of wildlife habitat

- Displacement, injury, or death resulting from contact with heavy equipment during clearing and grading activities
- Disturbance to wildlife as a result of noise associated with construction activities, particularly during breeding periods
- Conflict between wildlife and humans or domestic pets following development, including predation, mortality from vehicles, and poisoning.

Accordingly, general wildlife impact mitigation measures have been recommended and are included in **Section 9.4**.

8.2 Indirect Impacts

Indirect impacts are those that do not always manifest in the core development area, but in the lands adjacent to the development. Indirect impacts can begin in the construction phase; however, they can continue post-construction. Potential indirect impacts of a development include anthropogenic disturbance and colonization of non-native and/or invasive species.

8.2.1 Anthropogenic disturbance

Disturbance to local wildlife communities due to indirect impacts on lands adjacent to a proposed development could result if left unmitigated. Noise, light, vibration and human presence are indirect impacts that can adversely influence the population size and breeding success of local wildlife. These effects are more pronounced when new development is introduced in non-urban areas. The Property currently experiences anthropogenic disturbance given it is located within a residential subdivision.

Mitigation measures that further address anthropogenic disturbance have been included in **Section 9.0**.

8.2.2 Colonization of Non-native and/or Invasive Species

Physical site disturbance may increase the likelihood that non-native and/or invasive flora species will be introduced to the surrounding vegetation communities. Invasive flora can establish in disturbed sites more efficiently than native flora and can then encroach into adjacent undisturbed areas. Although invasive species are already present within the Property, given natural features of the City's Natural Heritage System occurs nearby in association with Cardinal Creek, mitigation measures to address impacts associated with colonization of invasive species are recommended.

Mitigation measures related to control of invasive species are addressed in **Section 9.0**.

9.0 Potential Mitigation Measures

Mitigation involves the avoidance or minimization of developmental impacts through good design, construction practices and/or restoration and enhancement activities. The feasibility of mitigation options has been evaluated based on the natural features within and adjacent to the Property. The impact assessment highlighted four potential direct impacts: diversion of surface water flows, erosion and sedimentation of natural features, tree and vegetation removal, and loss of and/or disturbance to wildlife.

A variety of mitigation techniques can be used to minimize or eliminate the above-mentioned impacts. These measures include implementation of a Landscaping and Planting Plan, a Functional Servicing Report, Erosion and Sediment Control Plan and an Environmental Monitoring Plan. Mitigation measures recommended for the proposed development are introduced below. Detailed mitigation measures will be confirmed in consultation with the RVCA and the City as part of the Detailed Design of the development.

9.1 Functional Servicing and Stormwater Management

A Functional Servicing Report (FSR) was prepared by Dillon in October 2021, which includes details and servicing strategy including the required supporting studies and related information for the transportation, sanitary, stormwater management, and water main servicing for the site. More specifically, the plan includes the following measures:

- The future detailed design of the sanitary sewer and service is to be consistent with the requirements of the City of Ottawa and the MECF
- All sanitary flows from within the proposed development will be conveyed via local sanitary sewers. It is proposed that the local sanitary sewer will outlet to the existing Private Drain Connection Manhole located at the Famille-Laporte Avenue right-of-way limit
- It is proposed that the site's stormwater outlet to the existing storm sewer that is currently located within the Famille-Laporte Avenue right-of-way, located west of the site
- Onsite detention will be provided in accordance with City of Ottawa and RVCA's Design Guidelines
- Pre-consultation with the City is required, but in general the site storm outlet rate is to be restricted to the pre-development outlet rates for the two, five and 100 year storm events
- The site will be graded to allow for overland flow to be captured onsite and directed to the storm sewer network. Rain events in excess of the 100 year event will spill over the site entrances and drain overland within the existing City road network
- The watermain servicing for the proposed development states that the new building will be serviced by a new domestic watermain connected to the existing main on Famille-Laporte Avenue
- Both fire hydrants will be connected to the existing main on Famille-Laporte Avenue.

Please refer to the full FSR (Dillon, 2021) in **Appendix F** for more details.

9.2 Erosion and Sediment Control Plan

An Erosion and Sediment Control Plan will be required for the project. The plan may include, but is not limited to measure such as installation of geotextile silt fences, rock check dams, ditch checks, temporary sediment ponds, designated topsoil stockpile areas, and cut-off swales and ditches to divert surface flows to the appropriate sediment control area. More specifically, the plan may include the following measures:

- Standard duty silt fencing (OPSD 219.110) and/or other equivalent erosion and sediment controls should be installed around the perimeter of the work area to clearly demarcate the development area and prevent erosion and sedimentation into adjacent habitats. Erosion and sediment control measures should be monitored regularly to ensure they are functioning properly and if issues are identified should be dealt with promptly
- Stockpiling of excavated material should not occur outside the delineated work area. If stockpiling is to occur outside of this area, silt fencing should be used to contain any spoil piles to prevent sedimentation into adjacent areas. Further, stockpiling of excavated materials will not occur within 30 m of watercourses or wetlands
- A spill response plan should be developed and implemented as required
- The use of silt socks, dewatering ponds, etc. should be implemented to avoid sedimentation and erosion in adjacent areas as required. If dewatering requires more than 50,000 L of water to be pumped per day, appropriate permits must be obtained from the MECP prior to the dewatering.

9.3 Landscaping and Planting Plan

The proposed development plan will require the removal of trees and other woody and non-woody vegetation within the Property. A preliminary LPP has been prepared by Ron Koudys Landscape Architects Inc. which includes proposed live tree removal as well as the locations of proposed restoration plantings (**Appendix E**). The LPP is required for the proposed development to off-set any vegetation removal using native tree and shrub species. The finalized LPP should include restoration / compensation plantings of trees generally based on the number of removals required to facilitate construction of the development. The exact number of compensation plantings and locations is to be determined through final Detailed Design in coordination with the finalized LPP.

The following monitoring and maintenance measures may also be recommended:

- Removal of invasive tree and shrubs, where applicable
- Watering and weeding of newly planted areas as required for proper establishment of plantings
- Replacement of dead material from previous year's planting.

Furthermore, in accordance with the City Tree Protection By-law No. 2020-340, the following measures should be followed as per the City's Tree Protection Specification (**Appendix G**) where trees are to be retained:

- Erect a fence at the critical root zone (CRZ) of trees to be retained
- Do not place any material or equipment within the CRZ of the tree (or the 10 m retained woodland buffer)
- Do not attach any signs, notices or posters to any tree
- Do not raise or lower the existing grade within the CRZ without approval
- Tunnel or bore when digging within the CRZ of a tree
- Do not damage the root system, trunk or branches of any tree
- Ensure that exhaust fumes from all equipment are NOT directed towards any tree's canopy.

9.4 Wildlife Impact Mitigation Plan

The best practices outlined in the *Protocol for Wildlife Protection during Construction* (City of Ottawa, 2015) should be followed during all construction activities associated with a development. The following measures are consistent with the City protocol:

- Minimize impacts to breeding birds by clearing naturalized vegetation outside of the breeding bird season (April 1 – August 31). Should any clearing be required during the breeding bird season, nest searches conducted by a qualified person must be completed 48 hours prior to clearing activities. If nests are found, work within the vicinity of the nest should cease until the nest has fledged. If no nests are present, clearing may occur. This is in accordance with the federal *Migratory Birds Convention Act*
- Tree removal should be conducted outside of the bat active window (May - October) to avoid impacts to bat maternal roosts
- Pre-stress the area on a regular basis leading up to construction to encourage wildlife to leave the area before construction starts. Other recommendations for pre-stressing are outlined in the *Protocol for Wildlife Protection during Construction* (City of Ottawa, 2015)
- Orange snow fencing should be installed around the perimeter of the work area to clearly demarcate the development area and prevent wildlife from entering the construction zone. Fencing should be monitored regularly to ensure they are functioning properly and if issues are identified should be dealt with promptly
- Ensure perimeter fencing does not prevent wildlife from leaving the site during clearing activities by clearing the area prior to installing the fence
- Wildlife located within the construction area will be re-located to an area outside of the development into an area of appropriate habitat, as necessary
- Construction crews working on site should be educated on local wildlife and take appropriate measures for avoiding wildlife
- Should an animal be injured or found injured during construction, they should be transported to an appropriate wildlife rehabilitation center for care (i.e., Rideau Valley Wildlife Sanctuary).

9.5 Environmental Monitoring Plan

An Environmental Monitoring Plan (EMP) should be carried out through the duration of construction activities on-site to ensure that the erosion and sediment control measures operate effectively and to monitor the potential impact, if any, upon the natural environment. The duration of construction is defined as the period of time from the beginning of earthworks until the site is stabilized. Site stabilization is defined as the point in time when the roads have been paved, buildings have been built, lawns have been sodded, and restoration plantings have been completed.

The EMP would consist of monitoring the erosion and sediment measures and the restoration/compensation plantings. Erosion and sediment control measures would be regularly monitored, and they will require periodic cleaning (i.e., removal of accumulated silt), maintenance and/or re-construction. Inspections of all of the erosion and sediment controls on the construction site should be undertaken by a certified sediment and erosion control monitor. If damaged control measures are found they should be repaired and/or replaced promptly.

The EMP would be implemented during active construction periods in the development area with the following frequency:

- On a bi-weekly basis
- After every 10 mm or greater rainfall event.

Restoration planting and protected vegetation areas will require periodic monitoring to ensure that they are not impacted by adjacent development. Should any impacts be observed, necessary steps would be taken to ensure that the impacted vegetation is either restored or replaced.

10.0 Summary and Next Steps

This EIS and TCR was prepared in support of Site Plan Control Approvals for the proposed development of a Long Term Care home located at 1161 Old Montreal Road in the City of Ottawa, Ontario. The findings of the background review, and field program including BBS, ELC, vegetation inventory, SAR/SWH wildlife habitat assessments and tree inventory form one combined comprehensive report containing both an EIS and TCR in accordance with applicable City guidelines.

Lands within the proposed development area mainly consist of a Graminoid Meadow (MEG) with Fencerow (TAGM5) along the eastern boundary of the Property. Woody vegetation including a total of 155 trees documented individually and as a tally count within Tree Grouping 1 (two of which were identified as Distinctive Trees) will be removed to accommodate the proposed development footprint. Compensation/restoration plantings for the removal of trees associated with the proposed development as conceptualized within the LPP will be finalized during detailed design aimed at restoring the original amount of tree cover within the Property.

Potential ecological impacts of development may include tree and vegetation removal, diversion of surface water flows and the loss general wildlife habitat. These impacts will be avoided or minimized by implementing the mitigation, restoration, and management measures described in this report.

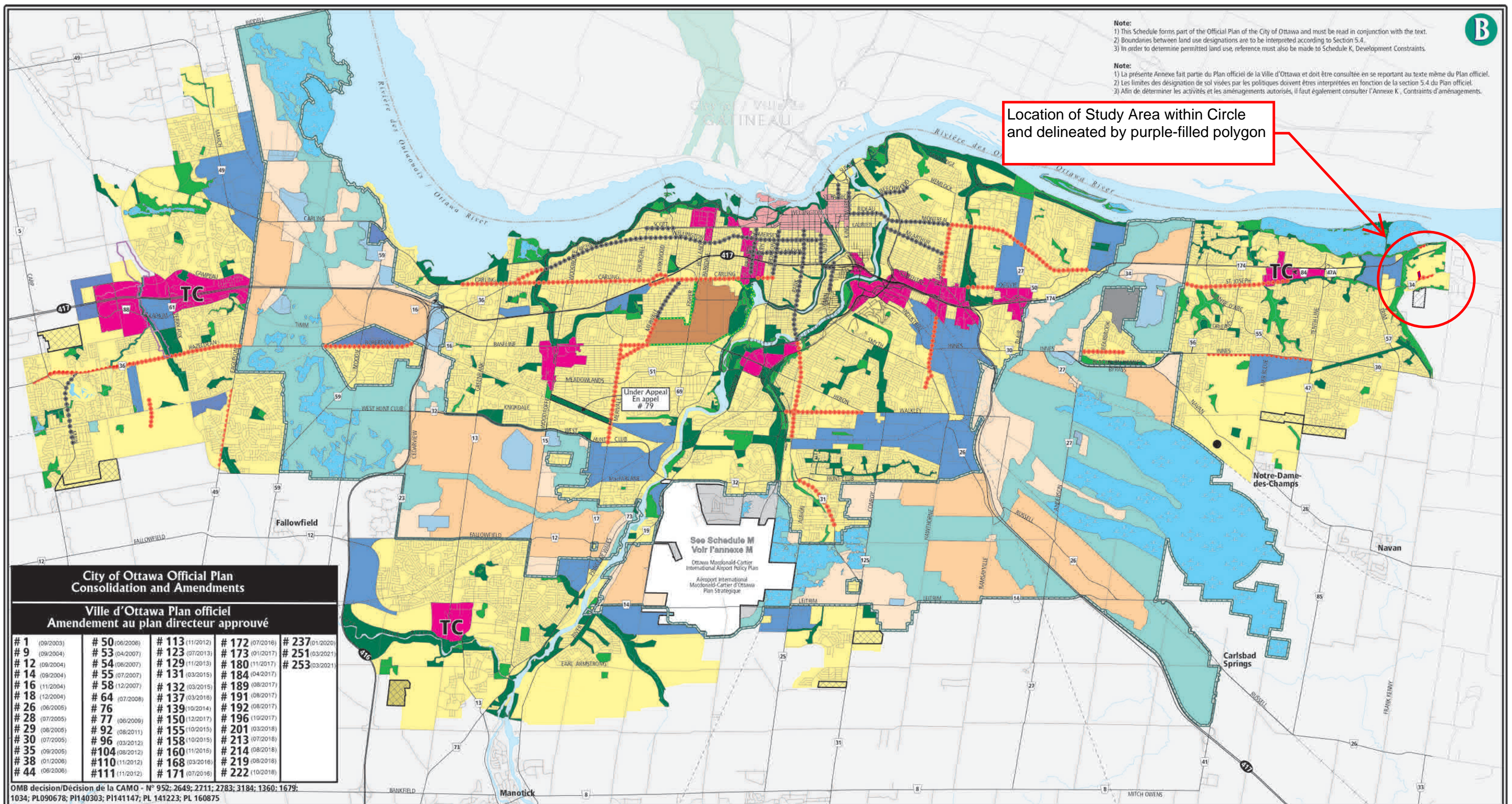
Appendix A

Official Plan Schedules

Note:
 1) This Schedule forms part of the Official Plan of the City of Ottawa and must be read in conjunction with the text.
 2) Boundaries between land use designations are to be interpreted according to Section 5.4.
 3) In order to determine permitted land use, reference must also be made to Schedule K, Development Constraints.

Note:
 1) La présente Annexe fait partie du Plan officiel de la Ville d'Ottawa et doit être consultée en se reportant au texte même du Plan officiel.
 2) Les limites de désignation de sol visées par les politiques doivent être interprétées en fonction de la section 5.4 du Plan officiel.
 3) Afin de déterminer les activités et les aménagements autorisés, il faut également consulter l'Annexe K, Contraintes d'aménagements.

Location of Study Area within Circle and delineated by purple-filled polygon



City of Ottawa Official Plan Consolidation and Amendments
Ville d'Ottawa Plan officiel Amendement au plan directeur approuvé

# 1 (09/2003)	# 50 (06/2006)	# 113 (11/2012)	# 172 (07/2016)	# 237 (01/2020)
# 9 (09/2004)	# 53 (04/2007)	# 123 (07/2013)	# 173 (01/2017)	# 251 (03/2021)
# 12 (09/2004)	# 54 (08/2007)	# 129 (11/2013)	# 180 (11/2017)	# 253 (03/2021)
# 14 (09/2004)	# 55 (07/2007)	# 131 (03/2015)	# 184 (04/2017)	
# 16 (11/2004)	# 58 (12/2007)	# 132 (03/2015)	# 189 (08/2017)	
# 18 (12/2004)	# 64 (07/2008)	# 137 (03/2016)	# 191 (08/2017)	
# 26 (06/2005)	# 76 (07/2008)	# 139 (10/2014)	# 192 (08/2017)	
# 28 (07/2005)	# 77 (08/2009)	# 150 (12/2017)	# 196 (10/2017)	
# 29 (08/2005)	# 92 (08/2011)	# 155 (10/2015)	# 201 (03/2018)	
# 30 (07/2005)	# 96 (03/2012)	# 158 (10/2015)	# 213 (07/2018)	
# 35 (09/2005)	# 104 (08/2012)	# 160 (11/2015)	# 214 (08/2018)	
# 38 (01/2006)	# 110 (11/2012)	# 168 (03/2016)	# 219 (08/2018)	
# 44 (06/2006)	# 111 (11/2012)	# 171 (07/2016)	# 222 (10/2018)	

OMB decision/Décision de la CAMO - N° 952; 2649; 2711; 2783; 3184; 1360; 1679; 1034; PL090678; P1140303; P1141147; PL 141223; PL 160875

Official Plan - Schedule B Urban Policy Plan
Plan officiel - Annexe B Plan des politiques en milieu urbain
 Prepared by: Planning, Infrastructure and Economic Development Department
 Préparé par : Services de la planification, de l'infrastructure et du développement économique

General Urban Area	Zone urbaine générale	Natural Environment Area	Zone écologique naturelle	Major Open Space	Grand espace vert
Urban Expansion Study Area	Zone d'étude d'expansion urbaine	Agricultural Resource Area	Zone de ressources agricoles	Urban Natural Features	Caractéristiques naturelles zone urbaine
Central Area	Zone centrale	Agricultural Research Area	Zone de recherche agricoles	Bedrock Resource Area	Zone de ressources en substrat rocheux
Town Centre	Centre ville	Macdonald-Cartier International Airport	Aéroport international Macdonald-Cartier	Significant Wetlands	Terres humides d'importance
Traditional Mainstreet	Rue principale traditionnelle	Greenbelt Employment and Institutional Area	Zone d'emploi et d'équipement collectif de la Ceinture de verdure	Central Experimental Farm	Ferme expérimentale centrale
Arterial Mainstreet	Artère principale	Urban Employment Area	Zone d'emploi urbaine	Greenbelt Boundary	Limite de la Ceinture de verdure
Mixed Use Centre	Centre polyvalent	Greenbelt Rural	Ceinture de verdure - secteur rural	Solid Waste Disposal Site	Site d'enfouissement des déchets solides
Carp River Restoration Policy Area Overlay	Zone sous-jacente de restauration de la rivière Carp	Sand and Gravel Resource Area	Zone de ressources de sable et de gravier	Lands leased by the Ottawa International Airport Authority	Terrains Loués par l'administration de l'aéroport international d'Ottawa
Developing Community (Expansion Area)	Communauté en développement (zone d'expansion)				

Location of Study Area within Circle and delineated by purple-filled polygon

or / Zone sous-jacente du Système du patrimoine naturel

NOTE: this Schedule forms part of the Official Plan of the City of Ottawa and must be read in conjunction with the text. It provides a partial map of the City's natural heritage system, including designated significant wetlands, urban natural features and Earth Science ANSIs as well as certain other features believed or proven to meet the definitions established in Section 2.4.2 of the Plan. This schedule does not represent the entire natural heritage system for the City of Ottawa. The policies in Section 2.4.2 will be applied to all features meeting the definitions in Section 2.4.2 regardless of whether or not they are included on this schedule. Detailed on-site analysis and interpretation is required to confirm and delineate individual features and the City will update this schedule by Official Plan Amendment as more detailed information becomes available.

AVIS : cette annexe fait partie intégrante du Plan officiel de la Ville d'Ottawa et doit être lue en même temps que le texte. Elle présente une carte partielle du Système du patrimoine naturel d'Ottawa, comprenant des zones désignées terres humides d'importance et caractéristiques urbaines naturelles et éléments topographique de la ZINS, ainsi que d'autres caractéristiques dont on estime ou possède la preuve qu'elles correspondent aux définitions établies dans la section 2.4.2 du Plan officiel. Cette annexe ne présente pas le Système du patrimoine de la Ville d'Ottawa au complet. Les politiques énoncées à la section 2.4.2 s'appliqueront à toutes les caractéristiques correspondant aux définitions à la section 2.4.2, qu'elles fassent ou non partie de cette annexe. La détermination des différentes caractéristiques suppose une analyse sur place ainsi qu'une interprétation détaillée, et la Ville mettra cette annexe à jour, par voie de modification du Plan officiel lorsque des renseignements plus précis seront disponibles.

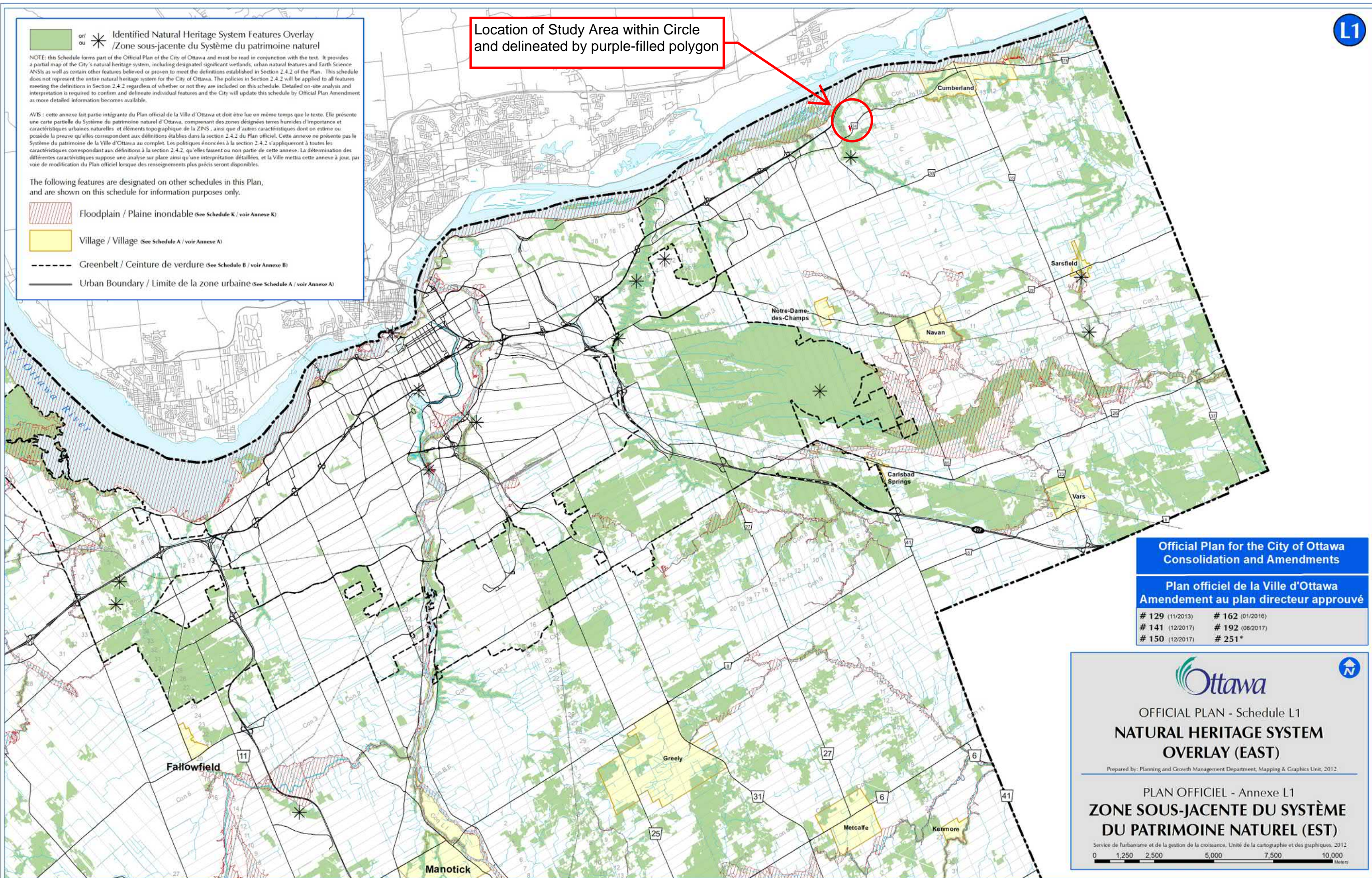
The following features are designated on other schedules in this Plan, and are shown on this schedule for information purposes only.

Floodplain / Plaine inondable (See Schedule K / voir Annexe K)

Village / Village (See Schedule A / voir Annexe A)

Greenbelt / Ceinture de verdure (See Schedule B / voir Annexe B)

Urban Boundary / Limite de la zone urbaine (See Schedule A / voir Annexe A)



Official Plan for the City of Ottawa Consolidation and Amendments

Plan officiel de la Ville d'Ottawa Amendement au plan directeur approuvé

- # 129 (11/2013)
- # 141 (12/2017)
- # 150 (12/2017)
- # 162 (01/2016)
- # 192 (08/2017)
- # 251*



OFFICIAL PLAN - Schedule L1
NATURAL HERITAGE SYSTEM
OVERLAY (EAST)

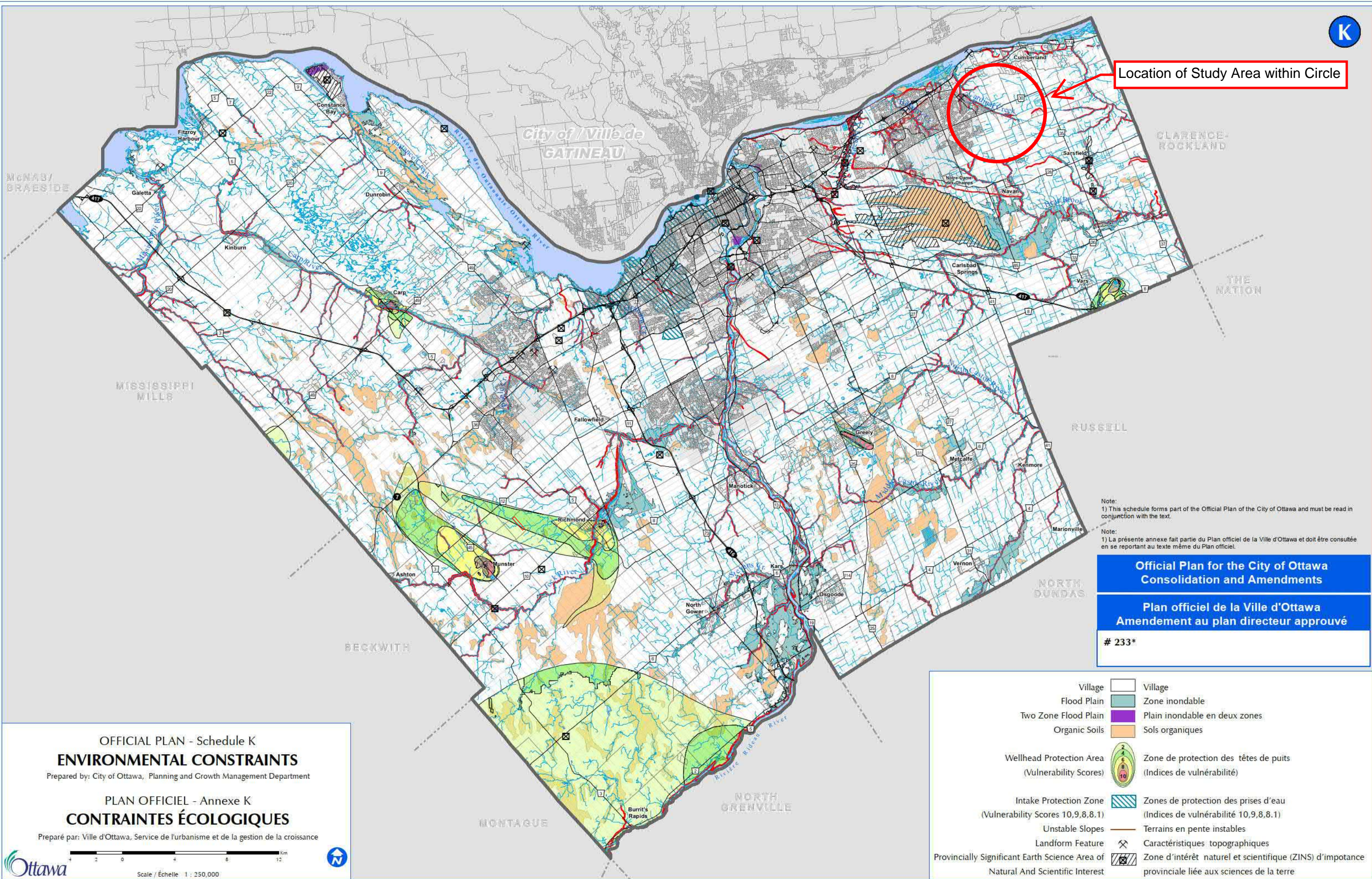
Prepared by: Planning and Growth Management Department, Mapping & Graphics Unit, 2012.

PLAN OFFICIEL - Annexe L1
ZONE SOUS-JACENTE DU SYSTÈME
DU PATRIMOINE NATUREL (EST)

Service de l'urbanisme et de la gestion de la croissance, Unité de la cartographie et des graphiques, 2012.



Location of Study Area within Circle



Note:
1) This schedule forms part of the Official Plan of the City of Ottawa and must be read in conjunction with the text.

Note:
1) La présente annexe fait partie du Plan officiel de la Ville d'Ottawa et doit être consultée en se reportant au texte même du Plan officiel.

**Official Plan for the City of Ottawa
Consolidation and Amendments**

**Plan officiel de la Ville d'Ottawa
Amendement au plan directeur approuvé**

233*

Village		Village
Flood Plain		Zone inondable
Two Zone Flood Plain		Plain inondable en deux zones
Organic Soils		Sols organiques
Wellhead Protection Area (Vulnerability Scores)		Zone de protection des têtes de puits (Indices de vulnérabilité)
Intake Protection Zone (Vulnerability Scores 10,9,8,8.1)		Zones de protection des prises d'eau (Indices de vulnérabilité 10,9,8,8.1)
Unstable Slopes		Terrains en pente instables
Landform Feature		Caractéristiques topographiques
Provincially Significant Earth Science Area of Natural And Scientific Interest		Zone d'intérêt naturel et scientifique (ZINS) d'importance provinciale liée aux sciences de la terre

OFFICIAL PLAN - Schedule K
ENVIRONMENTAL CONSTRAINTS
Prepared by: City of Ottawa, Planning and Growth Management Department

PLAN OFFICIEL - Annexe K
CONTRAINTES ÉCOLOGIQUES
Préparé par: Ville d'Ottawa, Service de l'urbanisme et de la gestion de la croissance

Scale / Échelle: 1 : 250,000

Appendix B

Photographic Inventory

Photo Comments

Photo

Photo #1
June 14, 2021

Notes:
Facing east from at Graminoid Meadow (MEG) (foreground) and the Fencerow (TAGM5) (background) from Famille-Laporte Avenue.



Photo #2
September 16, 2021

Notes:
Facing north from central portion of the Graminoid Meadow (MEG).



Photo Comments

Photo

Photo #3
September 16 2021

Notes:
Facing north from western central portion of the Graminoid Meadow (MEG) at a dirt/gravel ditch that occurs parallel to Famille-Laporte Avenue and directs surface water flows north into a municipal sewer grate.



Photo #4
September 16 2021

Notes:
Facing south from northwest portion of the Graminoid Meadow (MEG) at a dirt/gravel ditch that occurs parallel to Famille-Laporte Avenue and directs surface water flows north into a municipal sewer grate.



Photo Comments

Photo

Photo #5
September 16 2021

Notes:
Facing southwest at
municipal sewer grate
located at north end of
dirt/gravel ditch.



Photo #6
September 16 2021

Notes:
Facing east from at
Graminoid Meadow (MEG)
(foreground) and the
Fencerow (TAGM5) / Tree
Grouping 1 (background)
from Famille-Laporte
Avenue.



Photo Comments

Photo

Photo #7
September 16 2021

Notes:
Facing north within the northern portion of the Property at a flock of Wild Turkeys foraging.



Photo #8
September 16 2021

Notes:
Facing east at Graminoid Meadow (MEG) and individually inventoried Trees # 1 – 6.

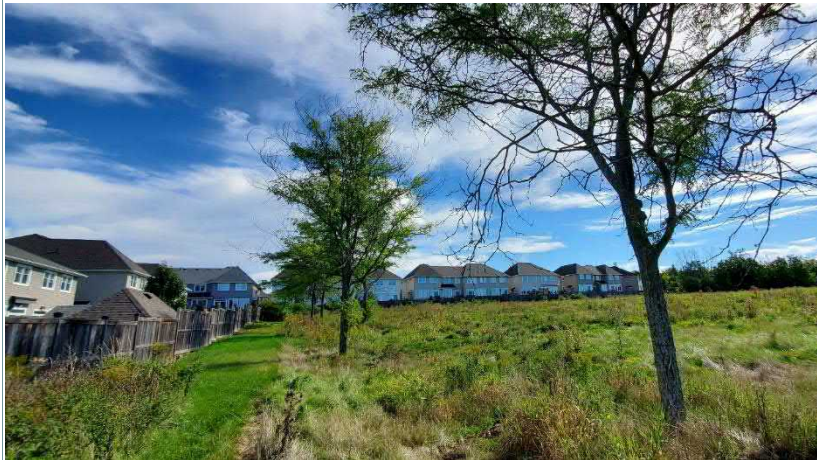


Photo Comments

Photo

Photo #9
September 16 2021

Notes:
Emerald Ash Borer Beetle gallery on Ash tree within Fencerow (TAGM5).



Photo #10
September 16 2021

Notes:
Facing south from north extent of Fencerow (TAGM5) at Fencerow (TAGM5) adjacent to Graminoid Meadow (MEG).



Appendix C

Vegetation Inventory

Appendix C - Vegetation Inventory

Scientific Name	Common Name	SARA ¹	ESA ²	SRank ³	CC ⁴	CW ⁵	Invasive Ranking ⁶	Noxious ⁷
<i>Ulmus americana</i>	American Elm	---	---	S5	3	-2	---	---
<i>Ambrosia artemisiifolia</i>	Annual Ragweed	---	---	S5	0	3	---	Y
<i>Bromus inermis</i>	Awnless Brome	---	---	SNA	---	5	4	---
<i>Echinochloa crus-galli</i>	Large Barnyard Grass	---	---	SNA	---	-3	---	---
<i>Artemisia biennis</i>	Biennial Wormwood	---	---	SNA	---	-2	---	---
<i>Fraxinus nigra</i>	Black Ash	---	---	S4	7	-4	---	---
<i>Gleditsia triacanthos inermis</i>	Thornless Honey-locust	---	---	SNA	3	0	---	---
<i>Centaurea jacea</i>	Brown Knapweed	---	---	SNA	---	5	---	Y
<i>Cirsium vulgare</i>	Bull Thistle	---	---	SNA	---	4	---	Y
<i>Quercus macrocarpa</i>	Bur Oak	---	---	S5	5	1	---	---
<i>Solidago canadensis var. canadensis</i>	Canada Goldenrod	---	---	S5	1	3	---	---
<i>Cirsium arvense</i>	Canada Thistle	---	---	SNA	---	3	6	---
<i>Cichorium intybus</i>	Chicory	---	---	SNA	---	5	---	---
<i>Toxicodendron rydbergii</i>	Rydberg's Poison Ivy	---	---	S5	5	-1	---	Y
<i>Rhamnus cathartica</i>	Common Buckthorn	---	---	SNA	---	3	9	Y
<i>Taraxacum officinale</i>	Common Dandelion	---	---	SNA	---	3	---	---
<i>Oenothera biennis</i>	Common Evening Primrose	---	---	S5	0	3	---	---

Scientific Name	Common Name	SARA ¹	ESA ²	SRank ³	CC ⁴	CW ⁵	Invasive Ranking ⁶	Noxious ⁷
<i>Asclepias syriaca</i>	Common Milkweed	---	---	S5	0	5	---	---
<i>Panicum capillare</i>	Common Panicgrass	---	---	S5	0	0	---	---
<i>Sonchus oleraceus</i>	Common Sow-thistle	---	---	SNA	---	3	---	---
<i>Echium vulgare</i>	Common Viper's-bugloss	---	---	SNA	---	5	---	---
<i>Rumex crispus</i>	Curly Dock	---	---	SNA	---	-1	---	---
<i>Erigeron hyssopifolius</i>	Daisy Fleabane	---	---	S5	10	-3	---	---
<i>Hesperis matronalis</i>	Dame's Rocket	---	---	SNA	---	5	4	---
<i>Carex vulpinoidea</i>	Fox Sedge	---	---	S5	3	-5	---	---
<i>Lotus corniculatus</i>	Garden Bird's-foot Trefoil	---	---	SNA	---	1	---	---
<i>Euthamia graminifolia</i>	Grass-leaved Goldenrod	---	---	S5	2	-2	---	---
<i>Fraxinus pennsylvanica</i>	Green Ash	---	---	S4	3	-3	---	---
<i>Setaria viridis</i>	Green Foxtail	---	---	SNA	---	5	---	---
<i>Poa pratensis ssp. pratensis</i>	Kentucky Bluegrass	---	---	S5	0	1	6	---
<i>Stachys byzantina</i>	Lamb's Ears	---	---	SNA	1	3	---	---
<i>Symphotrichum novae-angliae</i>	New England Aster	---	---	S5	2	-3	---	---
<i>Lactuca serriola</i>	Prickly Lettuce	---	---	SNA	---	0	---	---
<i>Trifolium pratense</i>	Red Clover	---	---	SNA	---	2	---	---
<i>Agrostis gigantea</i>	Redtop	---	---	SNA	---	0	---	---
<i>Phalaris arundinacea</i>	Reed Canary Grass	---	---	S5	0	-4	9	---

Scientific Name	Common Name	SARA ¹	ESA ²	SRank ³	CC ⁴	CW ⁵	Invasive Ranking ⁶	Noxious ⁷
<i>Vitis riparia</i>	Riverbank Grape	---	---	S5	0	-2	---	---
<i>Ulmus rubra</i>	Slippery Elm	---	---	S5	6	0	---	---
<i>Amaranthus hybridus</i> <i>ssp. hybridus</i>	Smooth Amaranth	---	---	SNA	---	5	---	---
<i>Rhus hirta</i>	Staghorn Sumac	---	---	S5	1	5	---	---
<i>Cyperus strigosus</i>	Straw-colored Flatsedge	---	---	S5	5	-3	---	---
<i>Populus tremuloides</i>	Trembling Aspen	---	---	S5	2	0	---	---
<i>Vicia cracca</i>	Tufted Vetch	---	---	SNA	---	5	---	---
<i>Daucus carota</i>	Wild Carrot	---	---	SNA	---	5	3	---
<i>Setaria pumila</i>	Yellow Foxtail	---	---	SNA	---	0	---	---

1 – as designated under Schedule 1 of the federal *Species at Risk Act*, 2002; 2 – as designated under the provincial *Endangered Species Act*, 2007; 3 – provincial conservation rankings as determined by the NHIC, S1 - Extremely rare in Ontario; usually 5 or fewer occurrences in the province, or only a couple remaining hectares, S2 - Very rare in Ontario; usually between 6 and 20 occurrences in the province, or only a few remaining hectares, S3 - Rare to uncommon in Ontario; usually between 21 and 80 occurrences in the province; may have fewer occurrences, but with some extensive examples remaining, S4 - Considered to be common in Ontario. It denotes a species that is apparently secure, with over 80 occurrences in the province, S5 - Indicates that a species is widespread in Ontario. It is demonstrably secure in the province - A question mark (?) following the rank indicates that there is some uncertainty with the classification due to insufficient information. These provincial ranks may further be modified, S2S3 - Indicates that an element is rare, but insufficient information exists to accurately assign a single rank, SNR - Unranked — conservation status Not Ranked, SNA - Not Applicable – a conservation status rank is not applicable because the species is not a suitable target for conservation activities, SX - Indicates that an element is extirpated from the province, SU - Indicates that the status is uncertain due to insufficient information, SE - Exotic species, non-native to Ontario; 4 - Coefficient of Conservatism (CC) as determined by the NHIC's Floristic Quality Assessment System for Southern Ontario (1995); 5 - Coefficient of Wetness (CW) as determined by the NHIC's Floristic Quality Assessment System for Southern Ontario (1995); 6 – Invasive Ranking as determined by the *Invasive Exotic Plant Species Rankings for Southern Ontario (Draft - Urban Forest Associates/MNRF, 2014)*, species that are designated as 4,5,6 are more locally invasive and tend to be naturalized whereas 7,8,9 are highly invasive often forming monocultures; 7 – Noxious designation as determined by the Schedule of Noxious Weeds under the Ontario Weed Control Act, RSO 1990

Appendix D

Detailed Tree Inventory

LTC Detailed Tree Inventory Table

Master ID ¹	Scientific Name	Common Name	Ownership	DBH (cm)	Tally	Condition	Level 2 Assessment Notes	Action	Rationale for Removal or Preservation	Protection Measures ²
1	<i>Gleditsia triacanthos inermis</i>	Thornless Honey-locust	Private	23	1	Fair/poor	Occasional to abundant epicormic growth present, foliage in canopy is stressed with frequent twig dieback and rare branch dieback.	Remove	Trees occur within the development footprint.	n/a
2				25	1	Fair/poor	Occasional to abundant epicormic growth present, foliage in canopy is stressed with frequent twig dieback and rare branch dieback.			
3				23	1	Fair/poor	Occasional to abundant epicormic growth present, foliage in canopy is stressed with frequent twig dieback and rare branch dieback.			
4				21	1	Fair	Occasional to abundant epicormic growth present, foliage in canopy is stressed with frequent twig dieback.			
5				23	1	Fair	Occasional to abundant epicormic growth present, foliage in canopy is stressed with frequent twig dieback.			
6				23	1	Fair	Occasional to abundant epicormic growth present, foliage in canopy is stressed with frequent twig dieback.			
Grouping 1 Including Tree # 7 and Tree # 8	<i>Fraxinus nigra</i>	Black Ash	Private	10 – 29	12	Fair (of the live tree <10 cm DBH)	The condition of live trees that occurred ranged from poor to good with many believed to have been or currently being affected by Emerald Ash Borer (<i>Agrilus planipennis</i>) (EAB) based on the galleries present on dead trees as well as entrance bores characteristic of EAB. All of the larger trees (approximately 10 – 29 cm DBH) were dead. Some regeneration growth present sized at 7 – 9 cm DBH.	Remove	Trees occur within the development footprint.	n/a
	<i>Fraxinus pennsylvanica</i>	Green Ash		10 – 29	14	Fair (of the live tree <10 cm DBH)	The condition of live trees that occurred ranged from poor to good with many believed to have been or currently being affected by Emerald Ash Borer (<i>Agrilus planipennis</i>) (EAB) based on the galleries present on dead trees as well as entrance bores characteristic of EAB. All of the larger trees (approximately 10 – 29 cm DBH) were dead. Some regeneration growth present sized at 7 – 9 cm DBH.			
	<i>Populus tremuloides</i>	Trembling Aspen		10 - 25	5	Good	All trees were in good condition with the exception to one dead tree.			
	<i>Quercus macrocarpa</i>	Bur Oak		10 – 50 (all trees) *50 (Tree #7) *55 (Tree #8)	87	Fair to Good	The condition of live trees that occurred ranged from fair to good. Several smaller (10 – 15 cm DBH) trees occurred as dead. Many of the trees contained epicormic growth and the larger mid-age to			

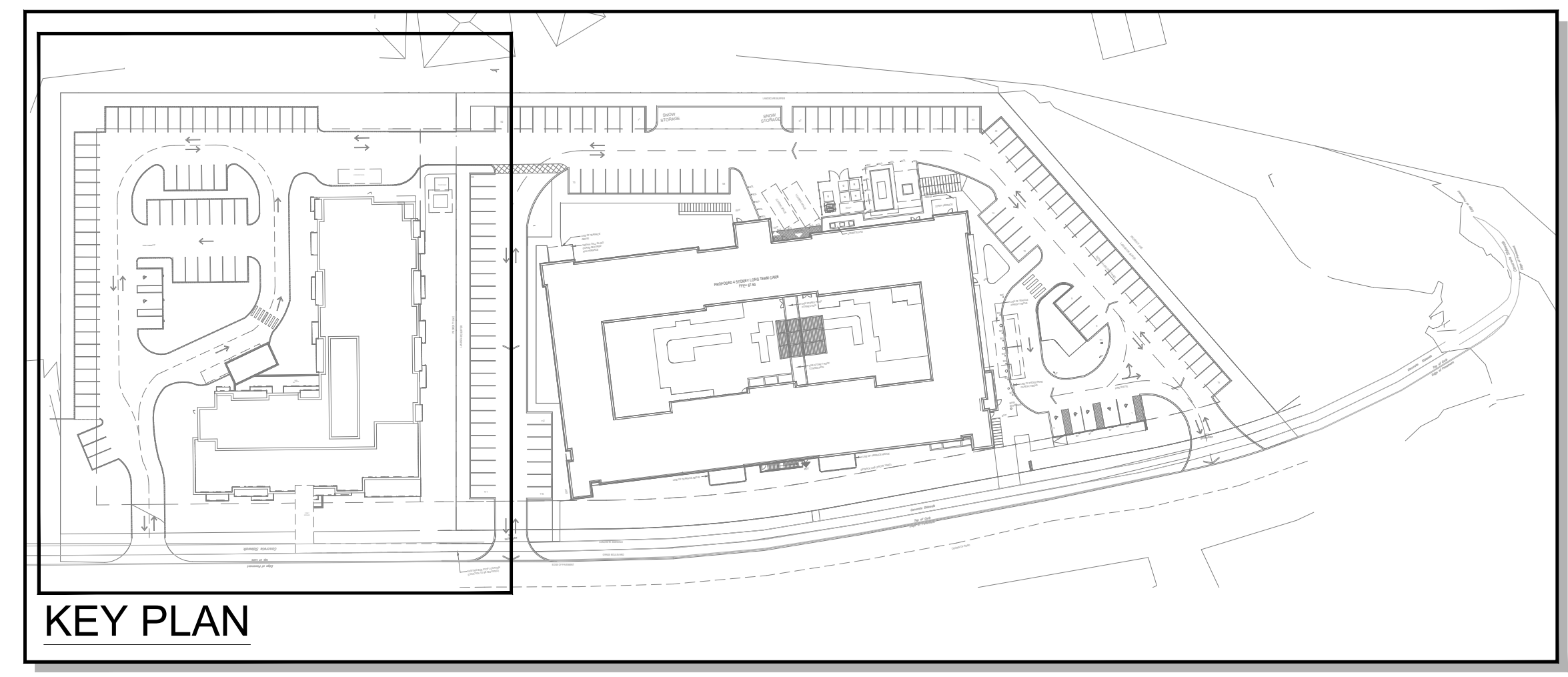
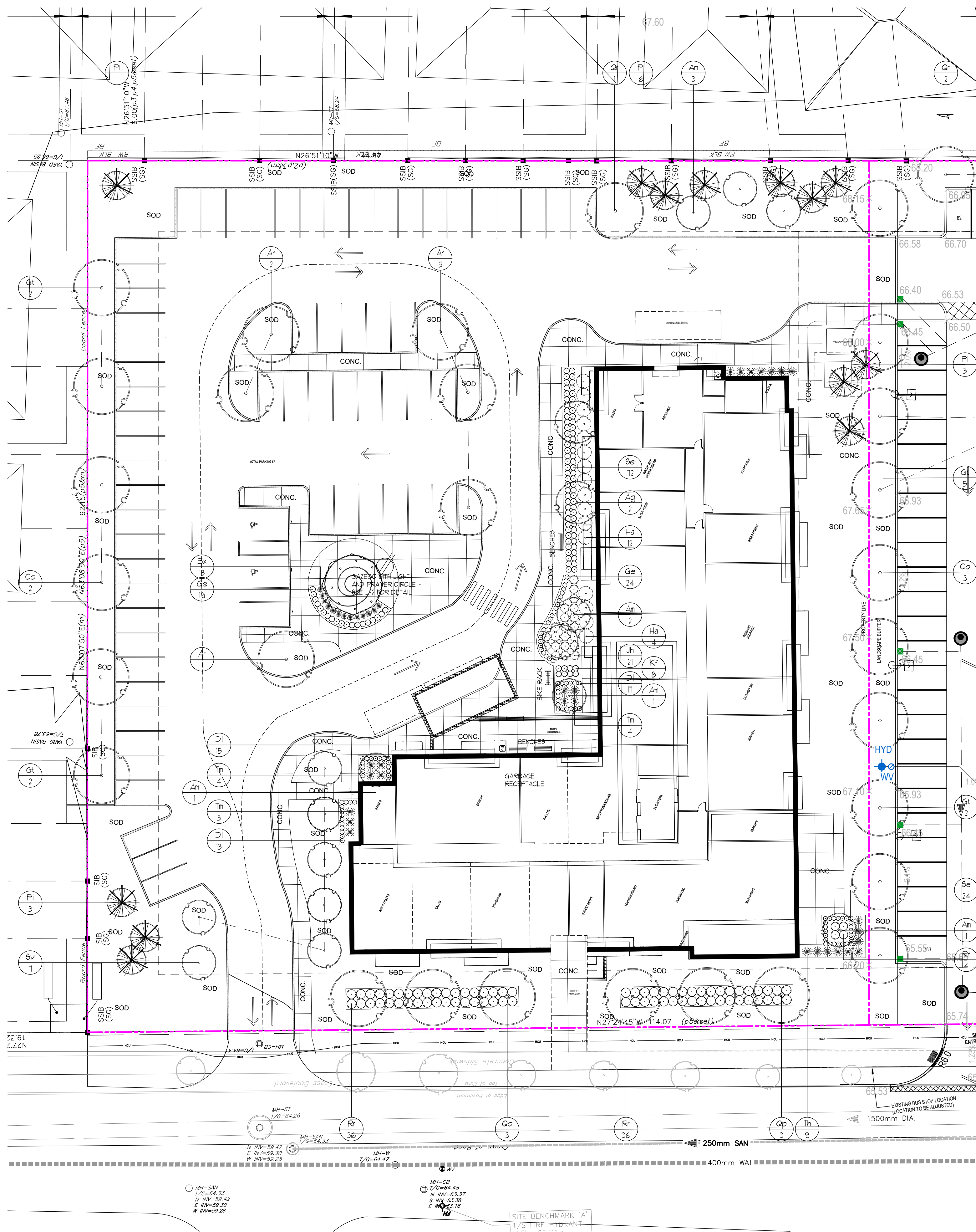
LTC Detailed Tree Inventory Table

Master ID ¹	Scientific Name	Common Name	Ownership	DBH (cm)	Tally	Condition	Level 2 Assessment Notes	Action	Rationale for Removal or Preservation	Protection Measures ²
							mature trees contained two or three stems. Both Tree #7 and Tree #8 were assessed as being in good condition.			
	<i>Ulmus americana</i>	American Elm		10 - 15	20	Poor to Good	The condition of live trees that occurred ranged from poor to good with many believed to have been or currently being affected by Dutch Elm Disease (DED) fungus (<i>Ophiostoma spp.</i>) based on the entrance bores characteristic of Elm Bark Beetle (<i>Scolytus multistriatus</i>).			
	<i>Ulmus rubra</i>	Slippery Elm		10 - 15	4	Poor to Good	The condition of live trees that occurred ranged from fair to good.			
9	<i>Celtis occidentalis</i>	Common Hackberry	City of Ottawa	8	1	Good	---	Remove	Trees occur within the development footprint.	n/a
10	<i>Acer rubrum</i>	Red Maple		9	1	Fair	Epicormic growth at base.			
11	<i>Quercus rubra</i>	Northern Red Oak		7	1	Excellent/Good	---			
12	<i>Acer rubrum</i>	Red Maple		6	1	Good	---			
13	<i>Acer rubrum</i>	Red Maple		9	1	Fair/Poor	Abundant epicormic growth at base. Sparse foliage in canopy.			
14	<i>Celtis occidentalis</i>	Common Hackberry		9	1	Good	---			
15	<i>Quercus rubra</i>	Northern Red Oak		7	1	Good	---			

¹ – Master Tree/Group ID for reference in **Figure 3** and **Figure 4**; ² – For individual trees: CRZ = Critical Root Zone, as defined by the City of Ottawa: CRZ = Diameter of trunk in centimetres (cm) x 10 cm; For woodlots: where possible, a standard 10 m buffer from the canopy dripline is recommended. * Larger Trees (50 cm DBH or greater) within the suburban area are considered “Distinctive Trees” as per the City’s Tree Protection By-law No. 2020-340

Appendix E

Preliminary Landscape and Planting Plan



PLANT MATERIAL

KEY	COMMON NAME	BOTANICAL NAME	QTY	SIZE	COND
Ag	AMUR MAPLE	<i>Acer ginnala</i> (multi-stem)	3	40cmcl	UB
Am	MULTI-STEM SERVICEBERRY	<i>Aelaeocharis canadensis</i> multi-stem	10	50cm	POT
Ar	RED MAPLE	<i>Acer rubrum</i> 'Sunset'	12	60cmcl	UB
Bx	GREEN GEM BOXWOOD	<i>Buxus x 'Green Gem'</i>	30	3gall	POT
Co	HACKBERRY TREE	<i>Celtis occidentalis</i>	9	60cmcl	UB
DI	PARDON ME DAYLILY	<i>Hemerocallis 'Pardon Me'</i>	89	2yrgal	POT
Ge	ROZANNE GERANIUM	<i>Geranium 'Rozanne'</i>	134	2yrgal	POT
Gt	SHADEMASTER LOCUST	<i>Gladiolus 'Shademaster'</i>	11	60cmcl	UB
Hl	ANNABELLE HYDRANGEA	<i>Hydrangea arborescens</i> 'Annabelle'	10	2yrgal	POT
Jh	PRINCE OF WALES JUNCUS	<i>Juncus horizontalis</i> 'Prince of Wales'	21	60cm	POT
Kf	KARL FOENSTER REED GRASS	<i>Calamagrostis acutifolia</i> 'Karl Foerster'	21	2yrgal	POT
Pi	WHITE SPRUCE	<i>Picea glauca</i>	16	50cm	UB
Qr	PIN OAK	<i>Quercus palustris</i>	12	60cmcl	UB
Qr	RED OAK	<i>Quercus rubra</i>	9	60cmcl	UB
Rr	FLOWER CARPET SHRUB ROSE	<i>Rosa</i> 'Flower Carpet'	214	60cm	POT
Se	AUTUMN JOY SEDUM	<i>Sedum spectabile</i> 'Autumn Joy'	139	2yrgal	POT
Sv	IVORY SILK TREE LILAC	<i>Syringa reticulata</i>	14	2yrgal	POT
Ta	BASSWOOD	<i>Tilia americana</i>	9	60cmcl	UB
Tn	HICK'S YEW	<i>Taxus x media</i> 'Hicksii'	44	60cm	POT
Tr	DENSE YEW	<i>Taxus x media</i> 'Densiformis'	19	40cm	POT

LEGEND

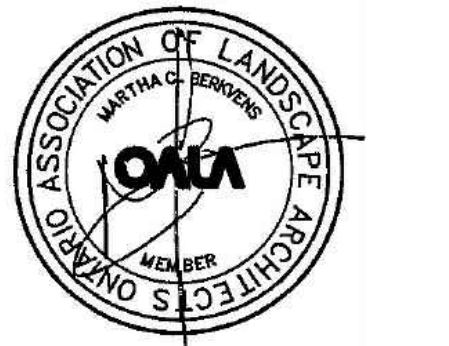
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- PROPOSED CONIFEROUS TREES
- PROPOSED PLANTINGS
- PLANT KEYS - SEE PLANT MATERIALS LIST ON L-1
- PROPOSED CONCRETE PAVING
- PROPOSED CONCRETE PAVING SWIRL PATTERN
- SEEDING - SEE NOTES
- PROPOSED RAISED PLANTER SEE DETAIL
- PROPOSED BENCH SEE DETAIL
- PROPOSED TRASH RECEPTACLE SEE DETAIL
- PROPOSED BIKE RACK SEE DETAIL
- PROPOSED FIRE HYDRANT LOCATION
- PROPOSED LIGHTING SEE ELECTRICAL PLAN
- EXISTING DECIDUOUS TREES TO REMAIN
- CRITICAL ROOT ZONE - 10cm RADIUS PER 1cm DBH



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THIS DRAWING SHALL NOT BE USED FOR CONSTRUCTION OR TENDER PURPOSES UNLESS SIGNED AND DATED BY RONALD H. KOUDYS, O.A.L.A. C.S.L.A. LANDSCAPE ARCHITECT, LONDON, ONTARIO (519) 687-3322.

Ronald H. Koudys, O.A.L.A. C.S.L.A. DATE



#	date:	revision:	by:
9	AUG 19 2022	ISSUED FOR SITE PLAN CONTROL APPLICATION	MCB
8	AUG 19 2022	ISSUED FOR ZONING BY-LAW AMENDMENT	MCB
7	JUL 29 2022	ISSUED FOR ZONING BY-LAW AMENDMENT	MCB
6	FEB 04 2022	ISSUED FOR ZONING BY-LAW AMENDMENT	MCB
5	DEC 02 2021	ISSUED FOR SPA & ZONING BY-LAW AMENDMENT	MCB
4	NOV 19 2021	ISSUED FOR 100% DD	MCB
3	NOV 19 2021	ISSUED FOR 25% SPA	MCB
2	OCT 22 2021	ISSUED FOR 50% DD	MCB
1	AUG 26 2021	ISSUED FOR 100% SD	MCB

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1161 OLD MONTREAL RD,
ORLEANS ON, K4A 3N6

LANDSCAPE PLAN
1of2

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drawn by: MCB

reviewed by: MCB

job number: 21-164Ln

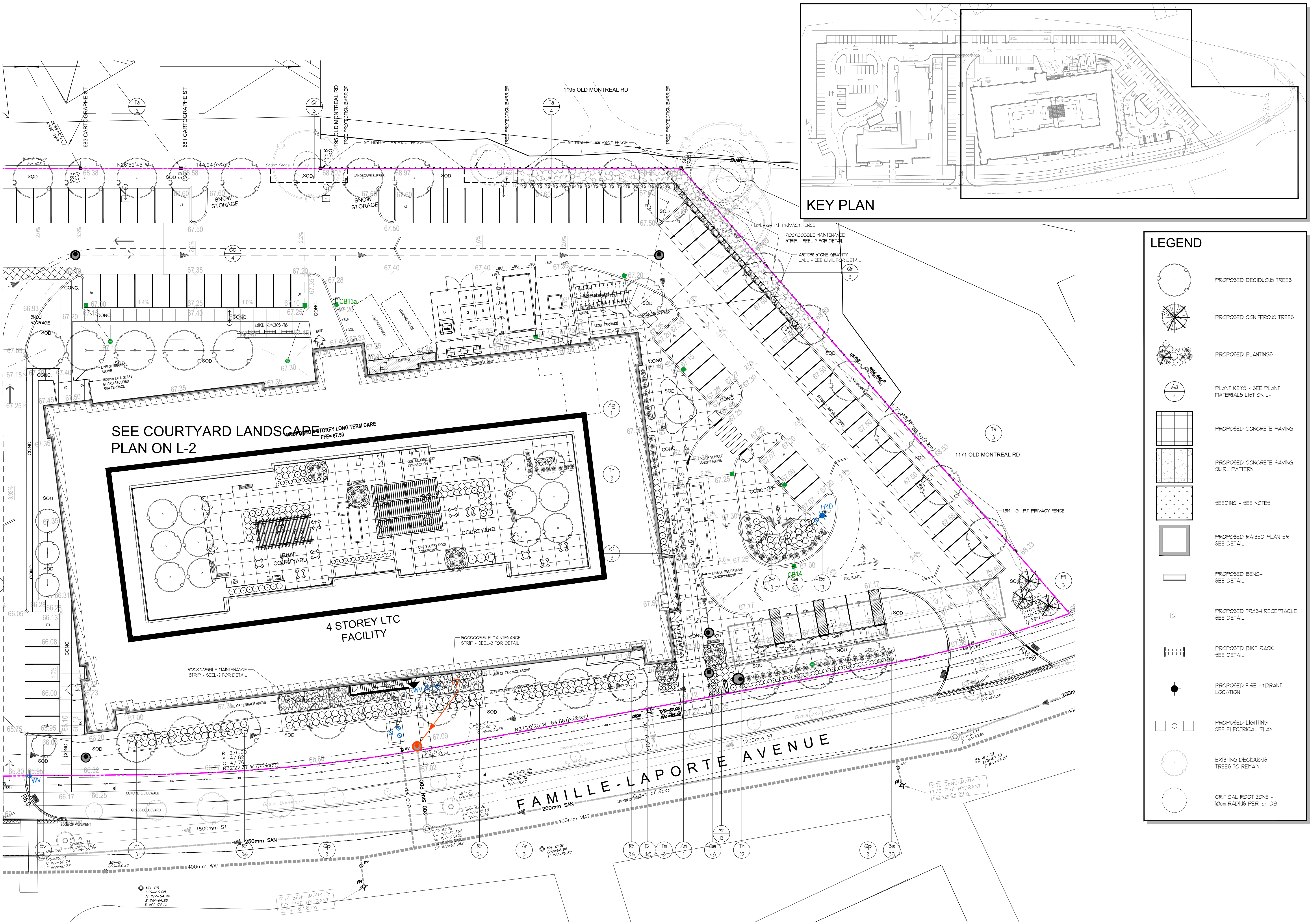
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drawing number:

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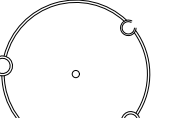

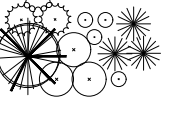
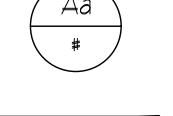
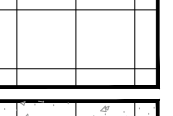
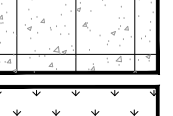
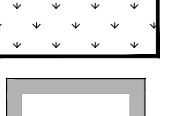



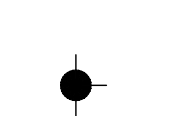
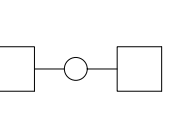



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KEY PLAN

LEGEND

-  PROPOSED DECIDUOUS TREES
-  PROPOSED CONIFEROUS TREES
-  PROPOSED PLANTINGS
-  PLANT KEYS - SEE PLANT MATERIALS LIST ON L-1
-  PROPOSED CONCRETE PAVING
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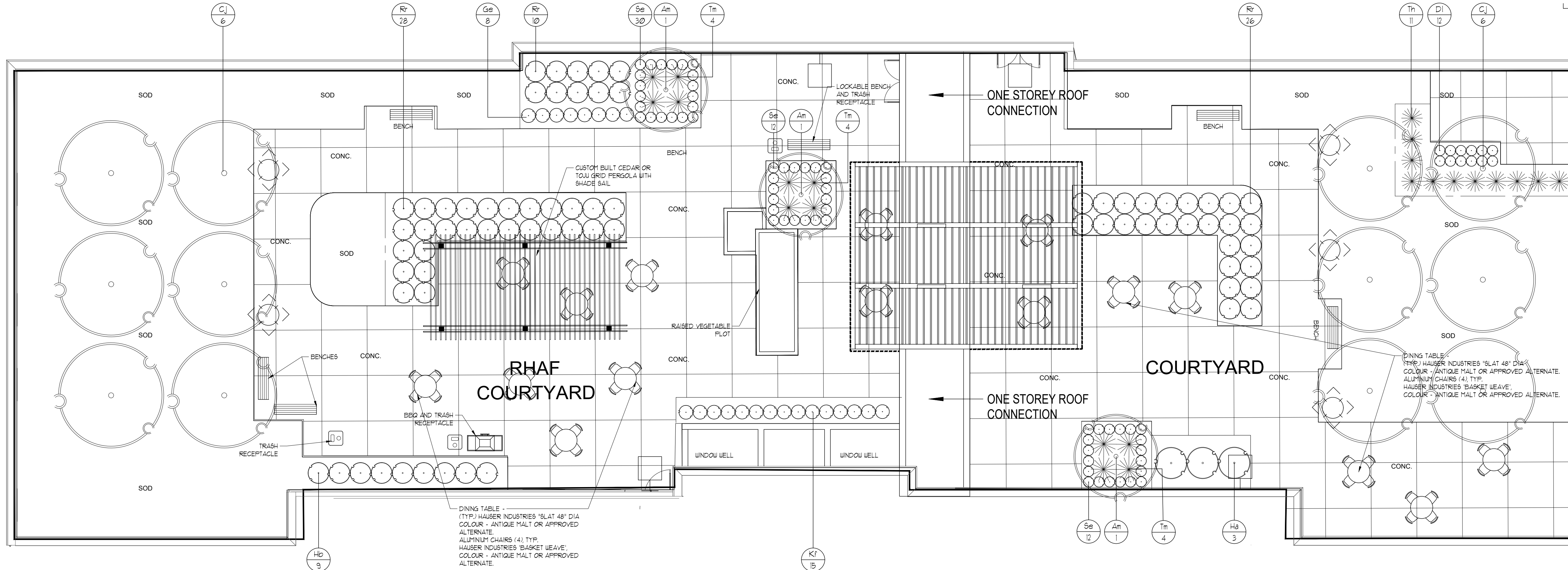
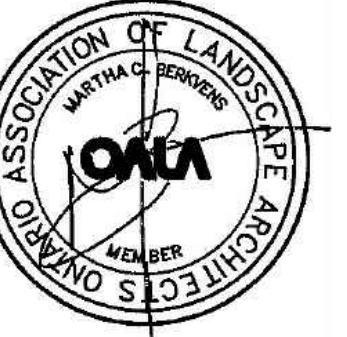
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**LANDSCAPE PLAN
2of2**

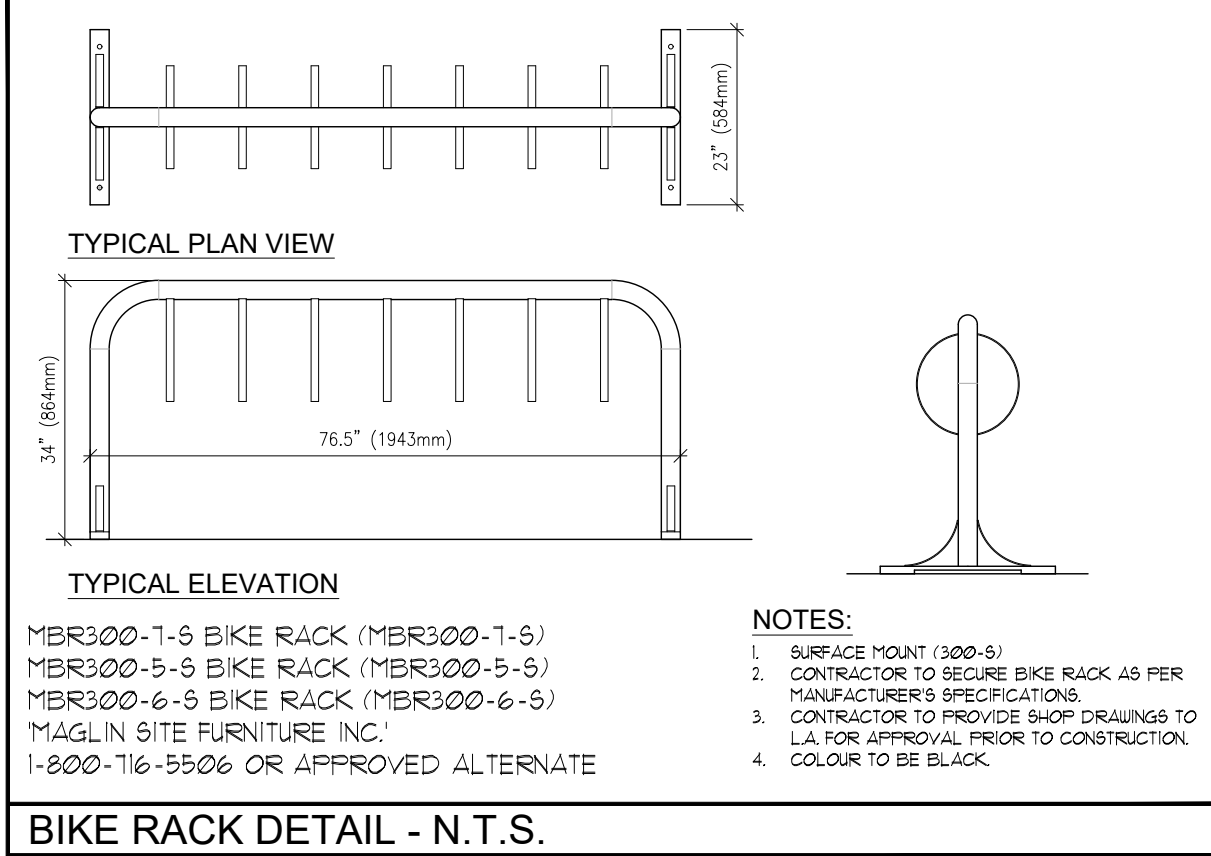
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reviewed by: MCB
job number: 21-164Ln
plot date: 22-08-19
drawing number:



COURTYARD LANDSCAPE PLAN
SCALE = 1:100



KEY	COMMON NAME	BOTANICAL NAME	QTY	SIZE	COND
Am	MULTI-STEM SERVICEBERRY	<i>Amelanchier canadensis</i> multi-stem	3	150cm	POT
Cj	KATSURU TREE	<i>Cercidiphyllum japonicum</i>	2	60cm x 60cm	UB
Dj	PARSONS PE DAYLILY	<i>Hemerocallis 'Parson Pe'</i>	2	2yr gal	POT
Ge	ROZANNE GERANIUM	<i>Geranium 'Rozanne'</i>	8	2yr gal	POT
Hu	ANNABELLE HYDRANGEA	<i>Hydrangea arborescens 'Annabelle'</i>	3	2yr gal	POT
Ho	PALACE PURPLE CORAL BELL	<i>Hesperis matronalis 'Palace Purple'</i>	5	2yr gal	POT
Kf	KARL FORSTERER REED GRASS	<i>Calamagrostis acutifolia 'Karl Forsterer'</i>	3	2yr gal	POT
Rr	SHRUB ROSE	<i>Rosa rugosa</i>	64	60cm	POT
Se	ALUMINUM JOY SEDUM	<i>Sedum spectabile 'Alum Joy'</i>	54	2yr gal	POT
Th	HICKS YEW	<i>Taxus x media 'Hicksii'</i>	11	60cm	POT
Tm	DENSE YEW	<i>Taxus x media 'Densiformis'</i>	11	40cm	POT

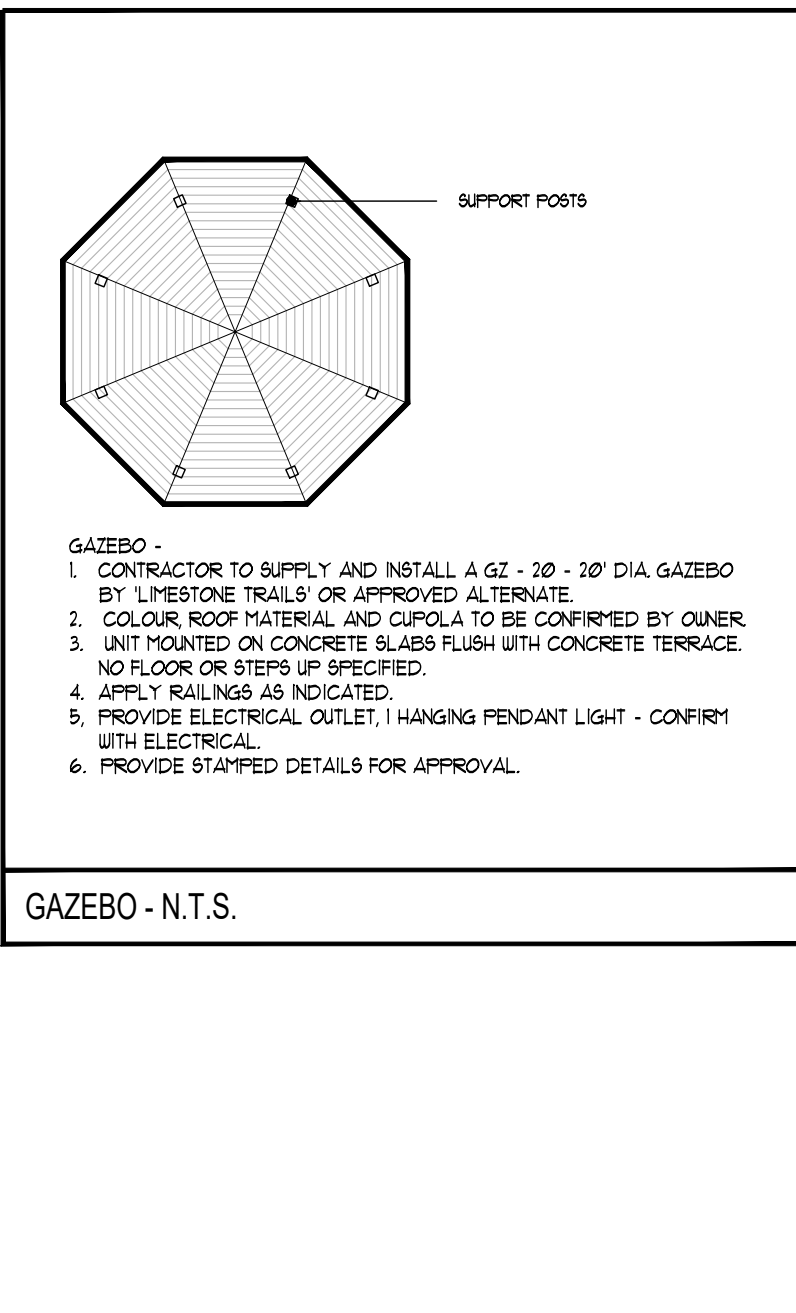
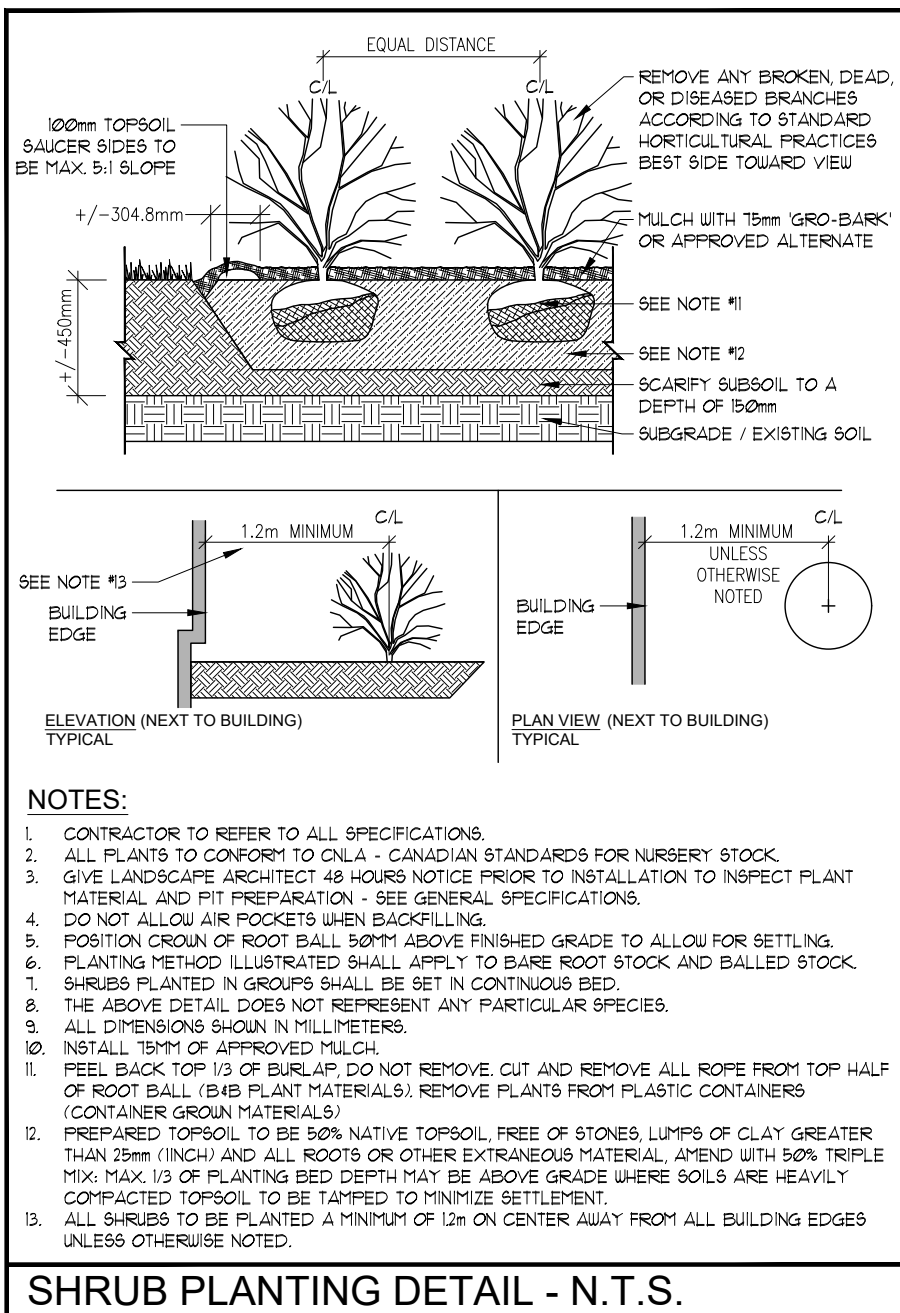
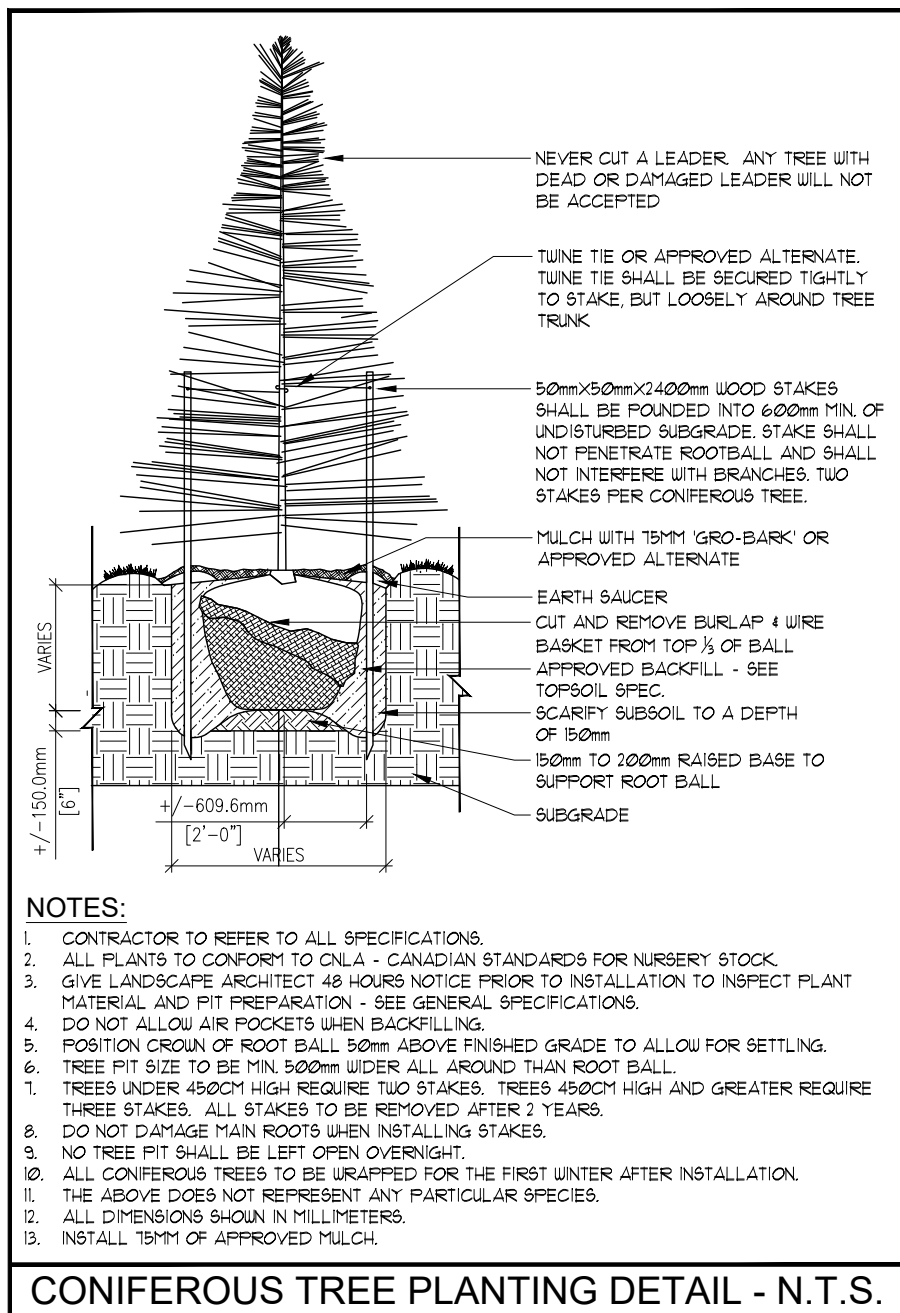
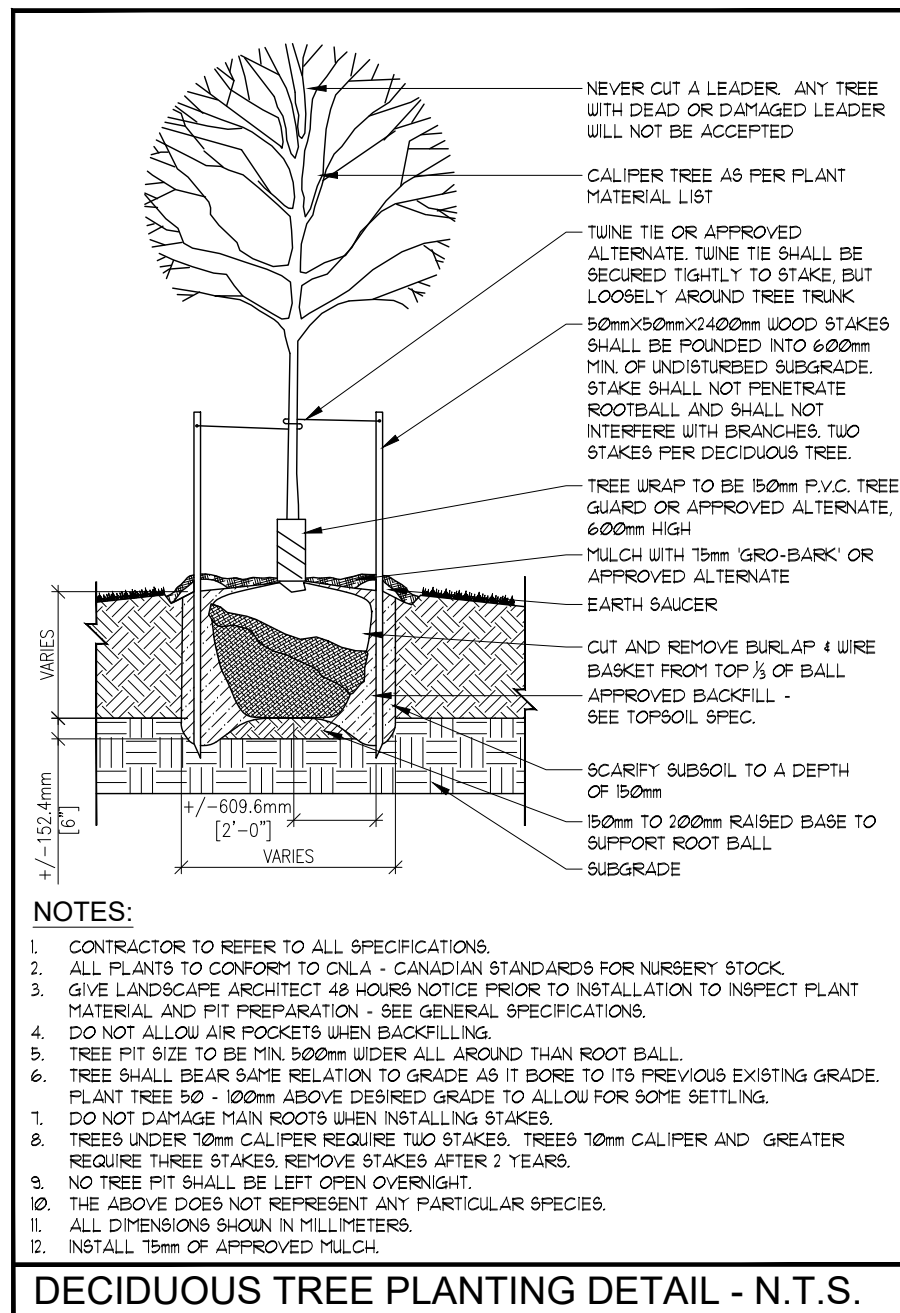


GENERAL PLANTING SPECIFICATIONS:

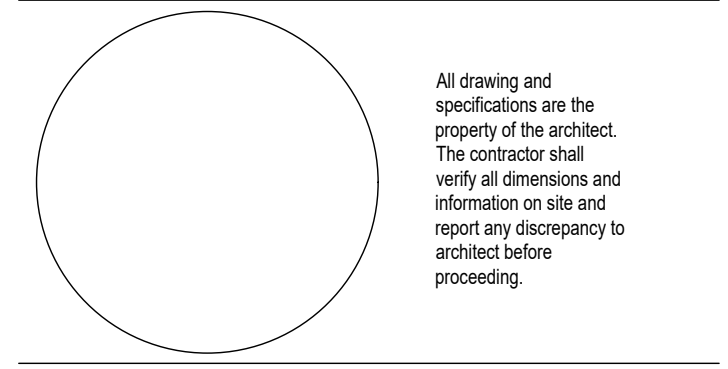
- BASE INFORMATION SUPPLIED BY MONSIEUR'S SIXAM ARCHITECTS INC.
 - ENGINEERING INFORMATION SUPPLIED BY DILLON.
 - CONTRACTOR TO MAKE THEMSELVES FAMILIAR WITH ALL RELATED SPECIFICATIONS.
 - CONTRACTORS ARE RESPONSIBLE FOR REVIEW OF ALL SPECIFICATIONS AND RELATED DRAWINGS WITH SELECTED SUB-CONTRACTORS AS THEY PERTAIN TO WORK AS OUTLINED ON LANDSCAPE ARCHITECTURAL WORKING DRAWINGS AND SPECIFICATIONS.
 - REPORT ALL DISCREPANCIES TO THE LANDSCAPE ARCHITECT DURING TENDERING PROCESS. ERRORS AND/OR OMISSIONS WILL BE THE RESPONSIBILITY OF THE CONTRACTOR.
 - CONTRACTOR SHALL MAINTAIN ALL LANDSCAPED AREAS UNTIL OWNER ACCEPTANCE OF PROJECT. CONTRACTOR TO NOTIFY LANDSCAPE ARCHITECT IN WRITING ON COMPLETION OF PROJECT FOR A SITE WORK COMPLETION CERTIFICATE AS WELL AS THE COMPLETION OF THE ACCEPTANCE OF PROJECT.
 - ALL WORKMANSHIP TO BE MAINTAINED FOR ONE YEAR UNLESS OTHERWISE STATED. WARRANTY PERIOD WILL BEGIN ON FINAL ACCEPTANCE OF PROJECT.
 - ALL WORKMANSHIP TO COMPLY WITH THE CANADIAN LANDSCAPE STANDARDS.
 - ALL NURSERY STOCK TO BE "NURSERY GROWN AND MUST COMPLY WITH THE CANADIAN NURSERY LANDSCAPE ASSOCIATION'S 'CANADIAN NURSERY STOCK STANDARD', LATEST EDITION.
 - ALL LANDSCAPING IS TO BE INSTALLED PRIOR TO THE END OF THE FIRST GROWING SEASON FOLLOWING THE OCCUPANCY OF THE SITE. DEVELOPMENT UNLESS OTHERWISE STATED.
 - CONTRACTOR IS RESPONSIBLE FOR ALL UNDERGROUND UTILITIES AND MUST SUPPLY THE LANDSCAPE ARCHITECT WITH COPIES OF LOCATE CERTIFICATES PRIOR TO COMMENCEMENT OF WORK.
- GRADING**
- CONTRACTOR TO ENSURE POSITIVE DRAINAGE IN ALL AREAS.
 - ALL GRADING TO BE IN ACCORDANCE WITH SITE ENGINEERS DRAWINGS.
 - SOIL SHALL BE SCARIFIED FREE OF ALL STONES, ROOTS, BRANCHES LARGER THAN 1" (25mm) AND COMPACTED TO 95% S.P.D.
 - ALL SUBSOIL TO BE REMOVED TO A DEPTH OF 150mm PRIOR TO THE INSTALLATION OF TOPSOIL TO ENSURE NO HARDPAN CONDITIONS.
 - CONTRACTOR TO NOTIFY LANDSCAPE ARCHITECT PRIOR TO INSTALLATION OF TOPSOIL TO APPROVE SUBBASE.
 - DIRECT ALL RAINLEADERS AND SUMP LEADERS AWAY FROM PLANTING BEDS AND TO THE DESIGNATED SWALES.
 - NOTIFY LANDSCAPE ARCHITECT IN WRITING OF ANY SUBSTANTIAL SET CONDITIONS.
- TOPSOIL**
- AT THE CONTRACTORS EXPENSE A SOIL TEST IS TO BE COMPLETED BY A REPUTABLE LABORATORY. THE SOIL TEST IS TO BE COMPLETED AND IF NECESSARY, RECOMMENDATIONS FROM THE LABORATORY ARE TO BE INCLUDED. THE RESULTS OF SOIL TESTS AND RECOMMENDATIONS ARE TO BE PROVIDED TO THE LANDSCAPE ARCHITECT AT LEAST ONE WEEK PRIOR TO WORK COMMENCING.
 - TOPSOIL FOR PLANTING BEDS IS TO BE A FERTILE, FRAGILE, NATURAL LOAM TO A MINIMUM DEPTH OF 8" (400mm) AND A MINIMUM DEPTH OF 4" (100mm) FOR TURF AREAS - UNLESS OTHERWISE STATED. TOPSOIL SHALL CONTAIN NOT LESS THAN 4% ORGANIC MATTER FOR CLAY LOAMS AND NOT LESS THAN 2% ORGANIC MATTER FOR SANDY LOAM TO A MAXIMUM OF 5% AND CAPABLE OF SUSTAINING VIGOROUS PLANT GROWTH FREE OF SUBSOIL CONTAMINATION, ROOTS AND STONES OVER 50mm DIAMETER REASONABLY FREE OF WEEDS AS DETERMINED BY THE LANDSCAPE ARCHITECT, AND HAVING A pH RANGING FROM 6.0 TO 7.0.
 - TOPSOIL IS TO BE STOCKPILED FOR USE ON SITE DEVELOPMENT. AVOID MIXING TOPSOIL WITH SUBSOIL. LIMIT HEIGHT OF STOCKPILE TO 3M TO RETAIN SOIL MICROORGANISMS AND SOIL VIABILITY AND FERTILITY.
 - IF APPLICABLE, ALL WORK IN ANY CHICAGO ALLENANCE SHALL MEET THE MINIMUM SPECIFICATIONS OF THE MUNICIPALITY. ENSURE A MINIMUM OF 100mm TOPSOIL IS INSTALLED IN BOULEVARDS.
 - PROTECT THE MUNICIPALITY OWNED ROAD ALLOWANCE(S) (BOULEVARD) FROM COMPACTION OR SOIL CONTAMINATION.
- MULCH**
- ALL TREES, SHRUBS AND PLANTING AREAS ARE TO BE MULCHED UNLESS OTHERWISE NOTED.
 - CONTRACTOR TO INSTALL 3" (75mm) OF 600-BARK REDUP MULCH IN ALL AREAS.
 - ALTERNATIVES MAY BE ACCEPTED - CONTRACTOR TO PROVIDE 3 SAMPLES FOR WRITTEN APPROVAL TO THE LANDSCAPE ARCHITECT.
- PLANT MATERIALS**
- CONTRACTOR TO VERIFY ALL PLANT MATERIAL ON DRAWINGS AND PLANT MATERIAL LIST(S). REPORT ALL DISCREPANCIES AT TENDERING PROCESS.
 - SUBSTITUTIONS WILL NOT BE ACCEPTED WITHOUT WRITTEN CONFIRMATION BY THE LANDSCAPE ARCHITECT.
 - PLANTINGS MAY BE ADJUSTED TO SUIT UTILITIES STRUCTURES AND AESTHETIC CONCERNS. ADJUSTMENTS ARE TO BE MADE UNDER THE DIRECTION OF THE LANDSCAPE ARCHITECT. ADJUSTMENTS TO PLANTING WITHOUT CONSENT OF LANDSCAPE ARCHITECT OR PROJECT MANAGER MAY NOT MEET INTENT OF DESIGN AND/OR MUNICIPAL APPROVALS. PLANT MATERIAL THAT HAS TO BE RELOCATED AS A RESULT WILL BE AT THE COST OF THE CONTRACTOR.
 - LANDSCAPE ARCHITECT TO INSPECT ALL PLANT MATERIAL ON SITE OR AT ITS SOURCE PRIOR TO INSTALLATION. CONTRACTOR IS TO GIVE LANDSCAPE ARCHITECT 48 HRS NOTICE FOR INSPECTION.
 - CONTRACTOR TO NOTIFY LANDSCAPE ARCHITECT IN WRITING IF ADVERSE WEATHER MAY IMPACT THE HEALTH OF THE PLANT MATERIALS AT THE TIME OF PLANTING. IF TEMPERATURE PRECIPITATION.
 - ALL TREE FITS SHALL BE AT LEAST 1 1/2" (40mm) WIDER THAN BALL OF THE TREE TO BE PLANTED AND SHALL BE DEEP ENOUGH SO THAT THE TOP OF BALL IS AT THE SAME LEVEL AS SURROUNDING GRADE. A MINIMUM OF 6" (150mm) OF BACKFILL SHALL BE PLACED UNDER BALL. TREE FITS ARE NOT TO BE LEFT OPEN OVER NIGHT.
 - SHRUB BEDS SHALL BE EXCAVATED TO A DEPTH OF 8" (40mm) AND FILLED WITH APPROVED BACKFILL MATERIAL. SHRUB BEDS ARE TO BE LEFT OPEN OVER NIGHT.
 - ALL TREES SHALL HAVE AN EARTH SALTER AT ITS BASE WITH A DIAMETER AS LARGE AS EXCAVATED AREA AND SHAPED TO RETAIN WATER (SEE DETAIL). EARTH SALTER SHALL BE 1/2" (12.5mm) WIDER THAN BALL OF THE TREE TO BE PLANTED AND SHALL BE DEEP ENOUGH TO HOLD WATER (SEE DETAIL). EARTH SALTER SHALL BE CUT AND BURIED BELOW SURFACE DURING PLANTING.
 - ALL EVERGREENS ARE TO UNRAFFED THE FIRST WINTER AT THE EXPENSE OF THE LANDSCAPE ARCHITECT.
 - ALL PLANTING AREAS SHALL BE WATERED SO AS TO SATURATE SOIL AND SOIL IN ACCORDANCE WITH THE CLASSIFICATIONS OF THE NURSERY SOO GROWERS ASSOCIATION OF ONTARIO AT THE TIME OF SALE IT SHALL HAVE A STRONG FIBROUS ROOT SYSTEM AND SHALL BE CUT IN PIECES APPROXIMATELY ONE 50% (150mm) IN AREA WITH THE SOIL. PORTION BEING 3/4" (19mm).
 - SOIL TO BE FERTILIZED AT THE APPROPRIATE RATES AS INDICATED BY SOIL TESTS COMPLETED BY A REPUTABLE SOILS LABORATORY.
 - UPON INSTALLATION AREAS SHOULD BE WATERED SO AS TO SATURATE SOIL AND THE UPPER 4" (100mm) OF BACKFILL TOPSOIL. AFTER SOIL AND SOIL HAVE BEEN SUFFICIENTLY TO PREVENT DAMAGE, IT SHALL BE ROLLED WITH A ROLLER PROVIDING 1500 LBS (680kg) PRESSURE PER SQFT.
 - CONTRACTOR TO REPAIR ALL DAMAGED AREAS TO THE SATISFACTION OF THE LANDSCAPE ARCHITECT AND/OR CLIENT.
- WATERING**
- DURING THE WARRANTY PERIOD, BETWEEN MAY 15 AND SEPTEMBER 15 OF EACH YEAR, WATERING OF ALL PLANTS SHALL BE CARRIED OUT NO LESS THAN 6 TIMES PER YEAR IN ACCORDANCE WITH THE WATERING SCHEDULE TO BE DETERMINED BY THE OWNER UNLESS OTHERWISE STATED ON THE DRAWINGS. CRITICAL WATERING MONTHS ARE JUNE, JULY & AUGUST.
 - NO AUTOMATIC IRRIGATION SYSTEM HAS BEEN PROVIDED FOR WATERING OPERATIONS. CONTRACTOR TO PROVIDE WATER TO THE SITE IF HOSE BIBS WITH THE BUILDING ENVELOPE ARE NOT AVAILABLE.
 - MANUAL WATERING SHOULD ENSURE DEEP WATERING OF TREES, SHRUBS, GRASS COVERS AND GRASSED AREAS. WATERING OF GRASSED AREAS TO COMPEHNSION ON A REGULAR BASIS AND CONTINUE WITH INTENSITY DEPENDING ON AMOUNT OF RAINFALL. NEW SOIL THAT HAS BEEN LAID SHOULD BE KEPT MOIST FOR 4 TO 5 WEEKS UNTIL IT HAS FINELY ROOTED INTO THE EXISTING SOIL.
 - ALL CONIFEROUS TREES SHALL BE WATERED 1" LATER FLANK PRIOR TO FREEZING UP.
 - WATER SHALL BE APPLIED SO THAT THE WASHING OF THE SOIL OR DISLOGGING OF MULCH OR TREE GUARDS DOES NOT OCCUR. DAMAGE SHALL BE IMMEDIATELY REPAIRED TO THE SATISFACTION OF THE OWNER AT NO ADDITIONAL COST.

LEGEND

- PROPOSED DECIDUOUS TREES
- PROPOSED CONIFEROUS TREES
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- PROPOSED BIKE RACK
- SEE DETAIL
- PROPOSED FIRE HYDRANT LOCATION
- PROPOSED LIGHTING
- SEE ELECTRICAL PLAN



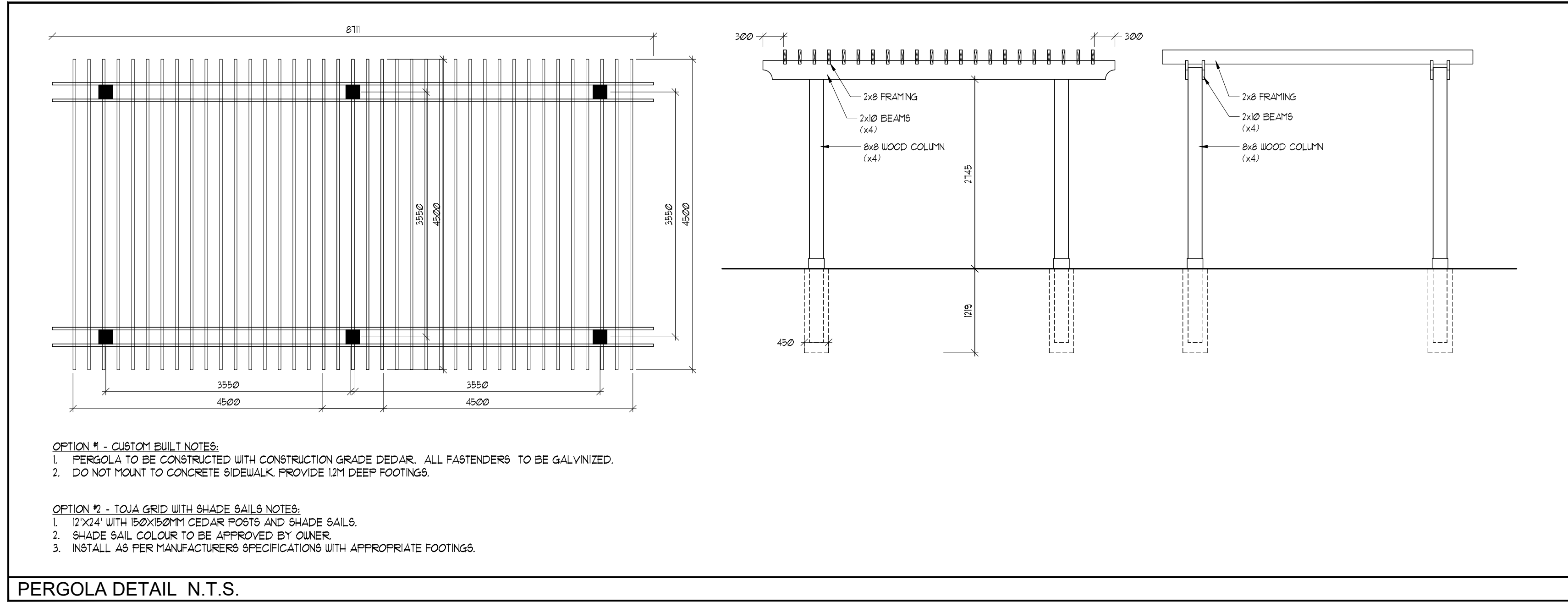
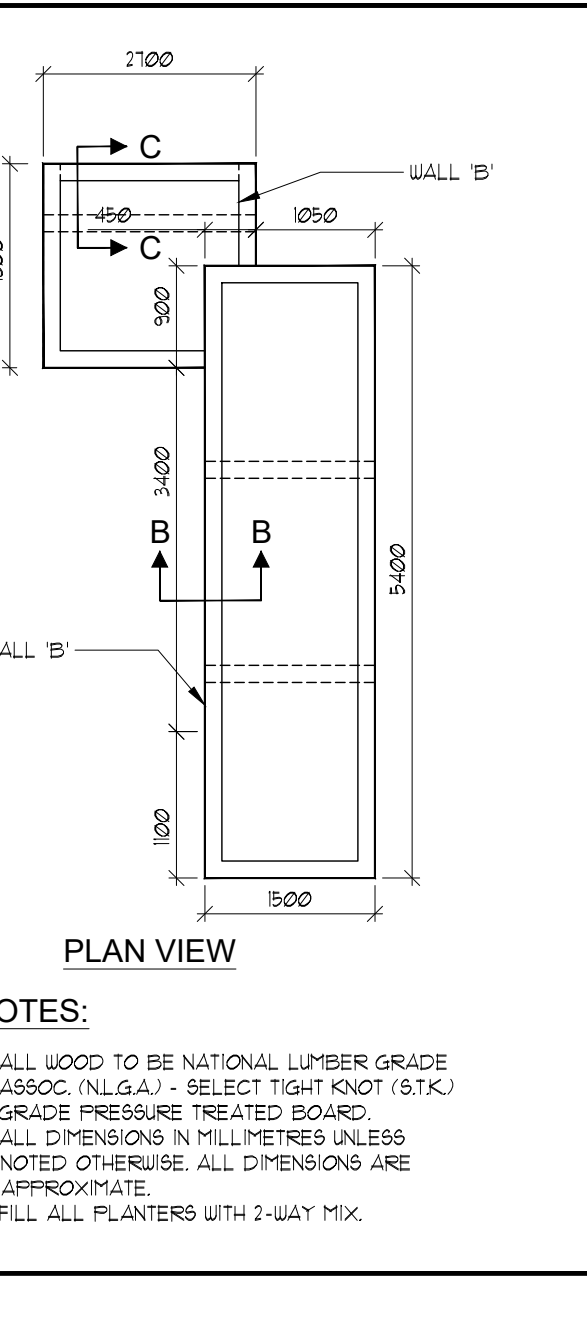
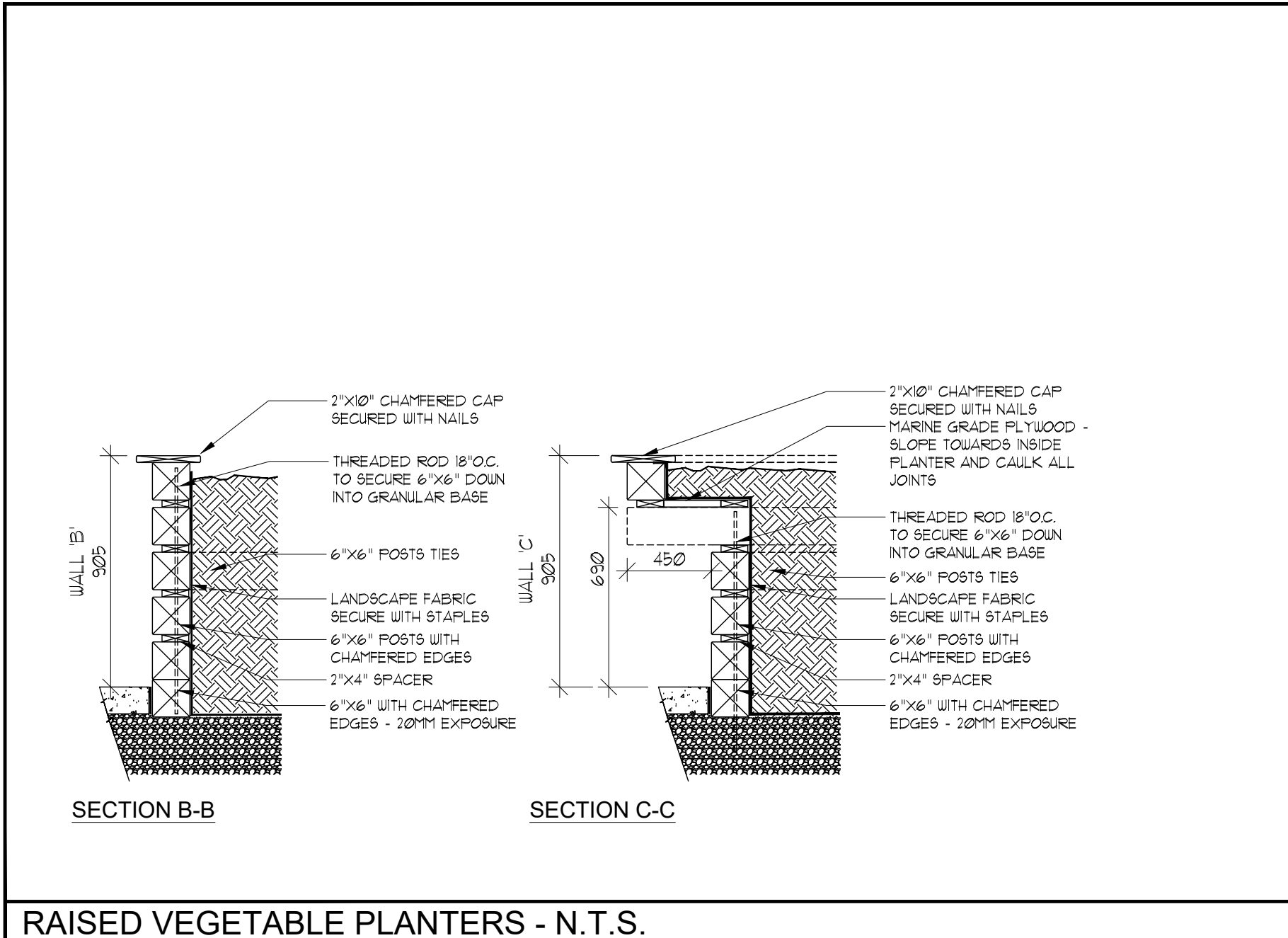
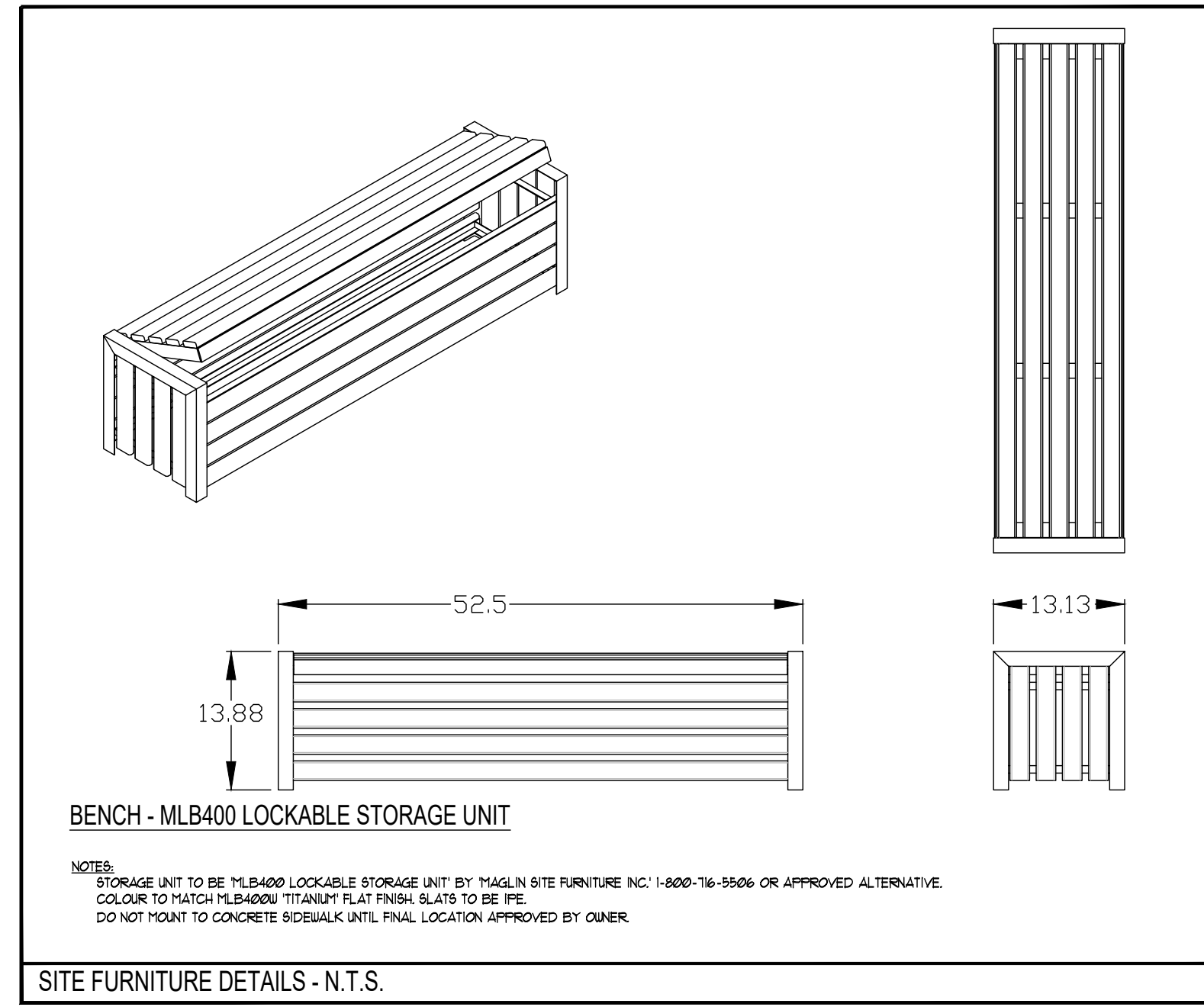
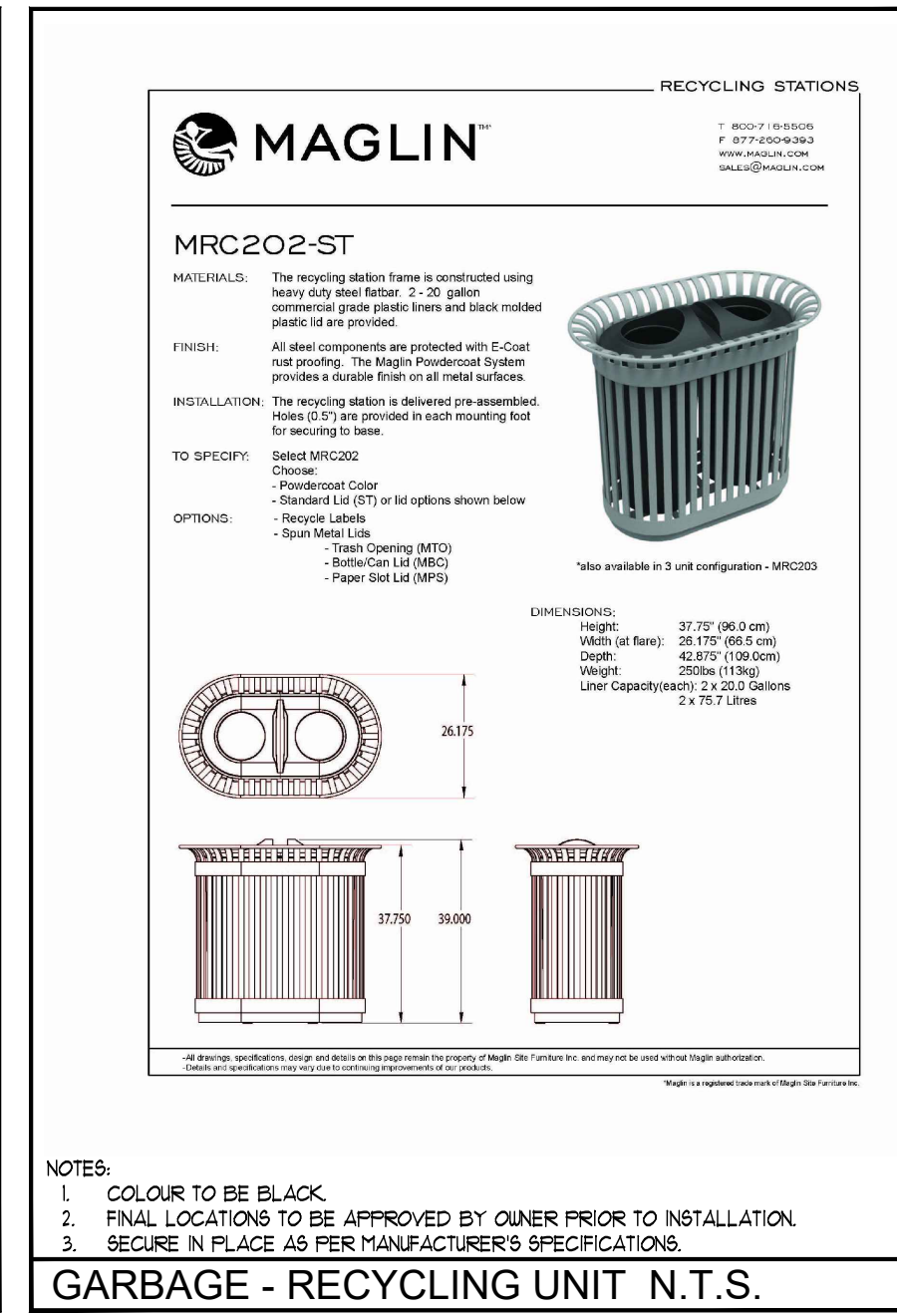
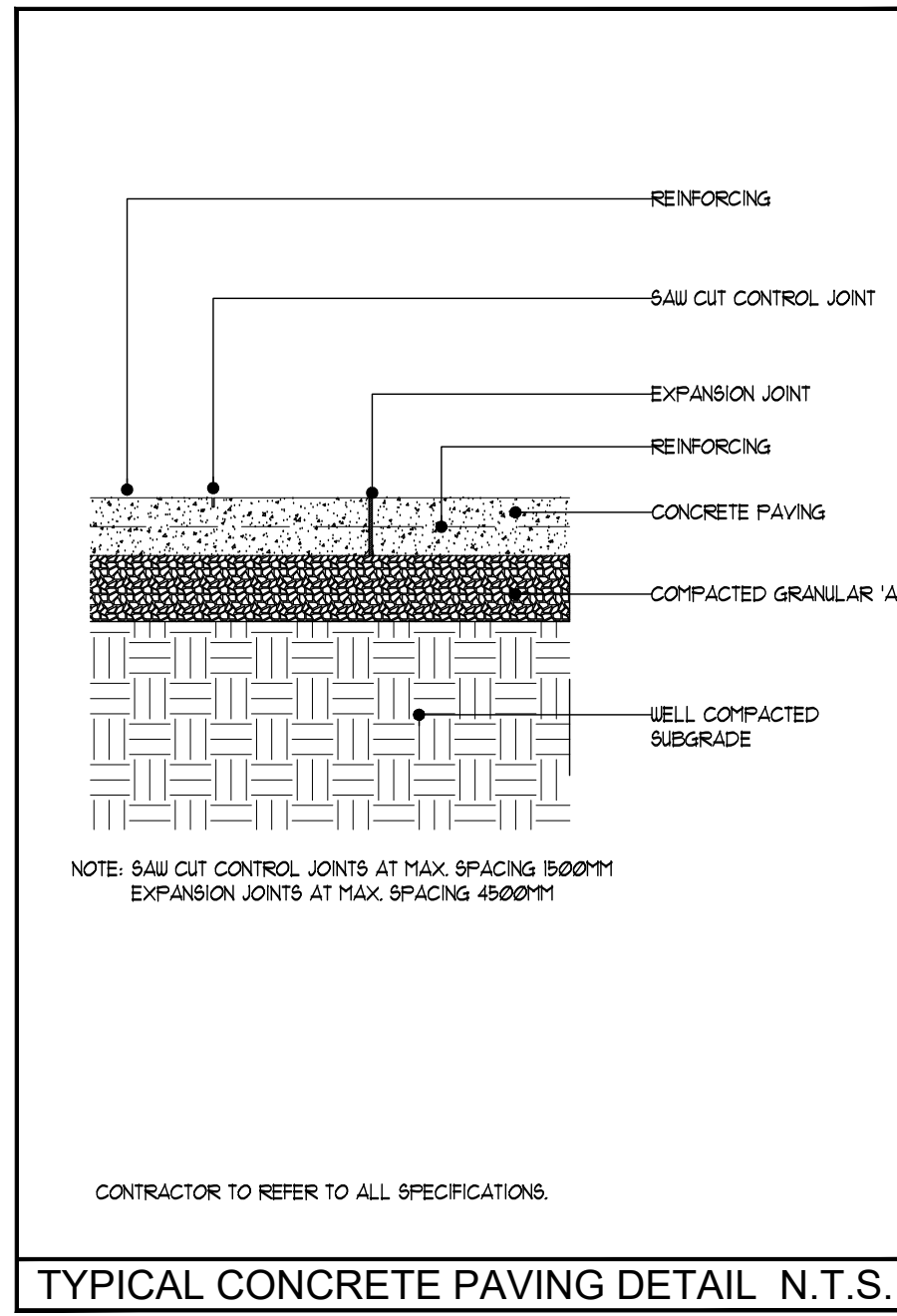
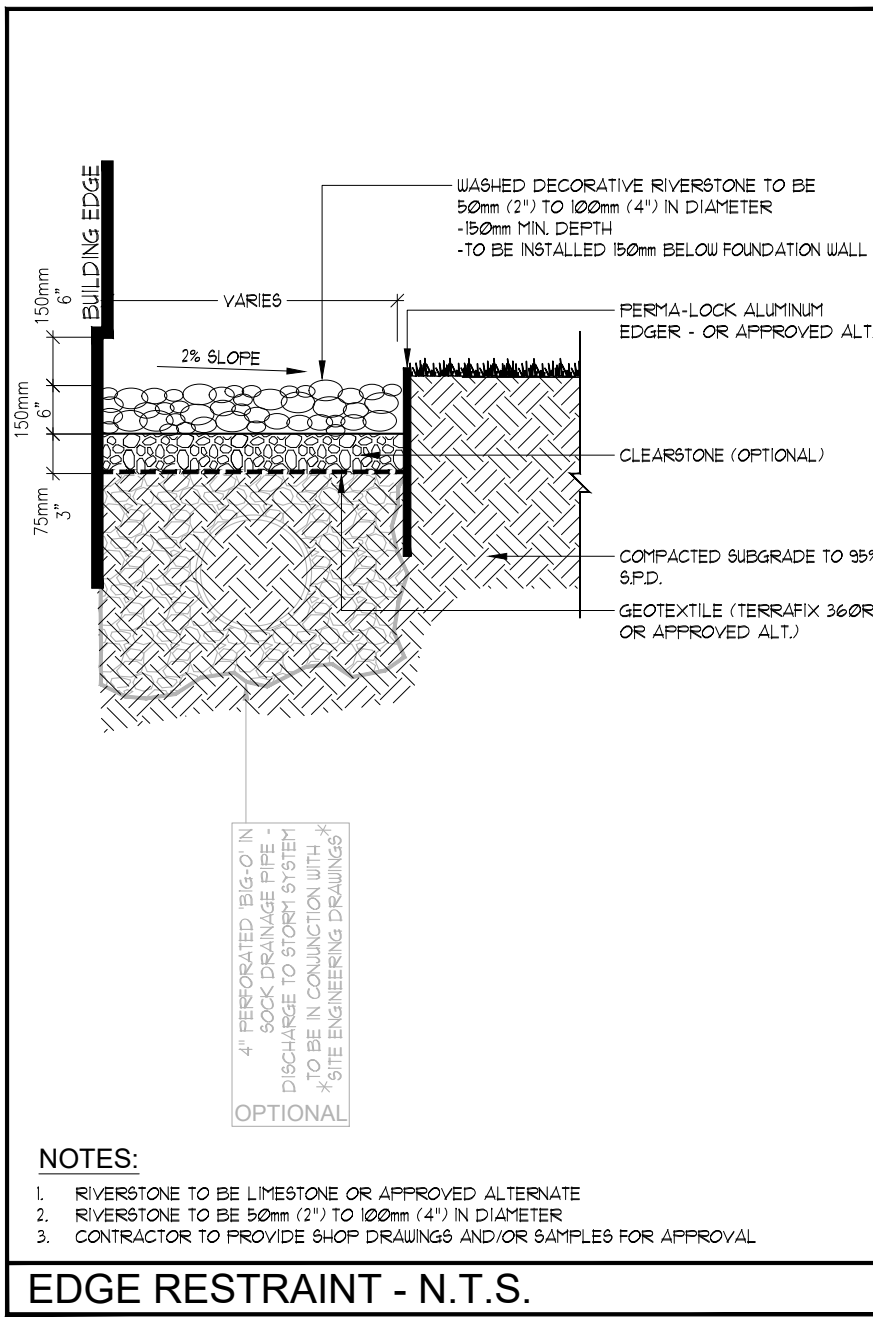
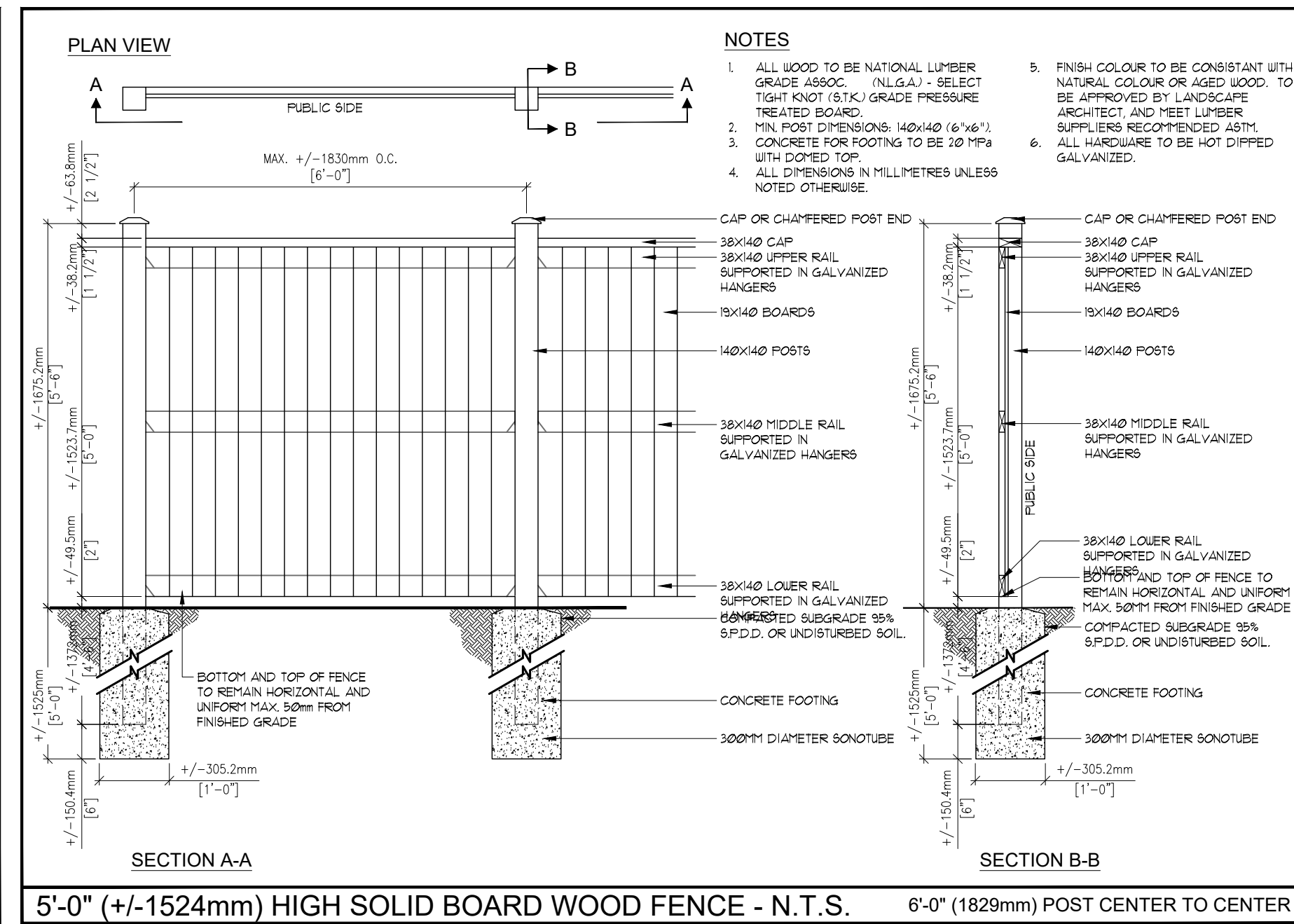
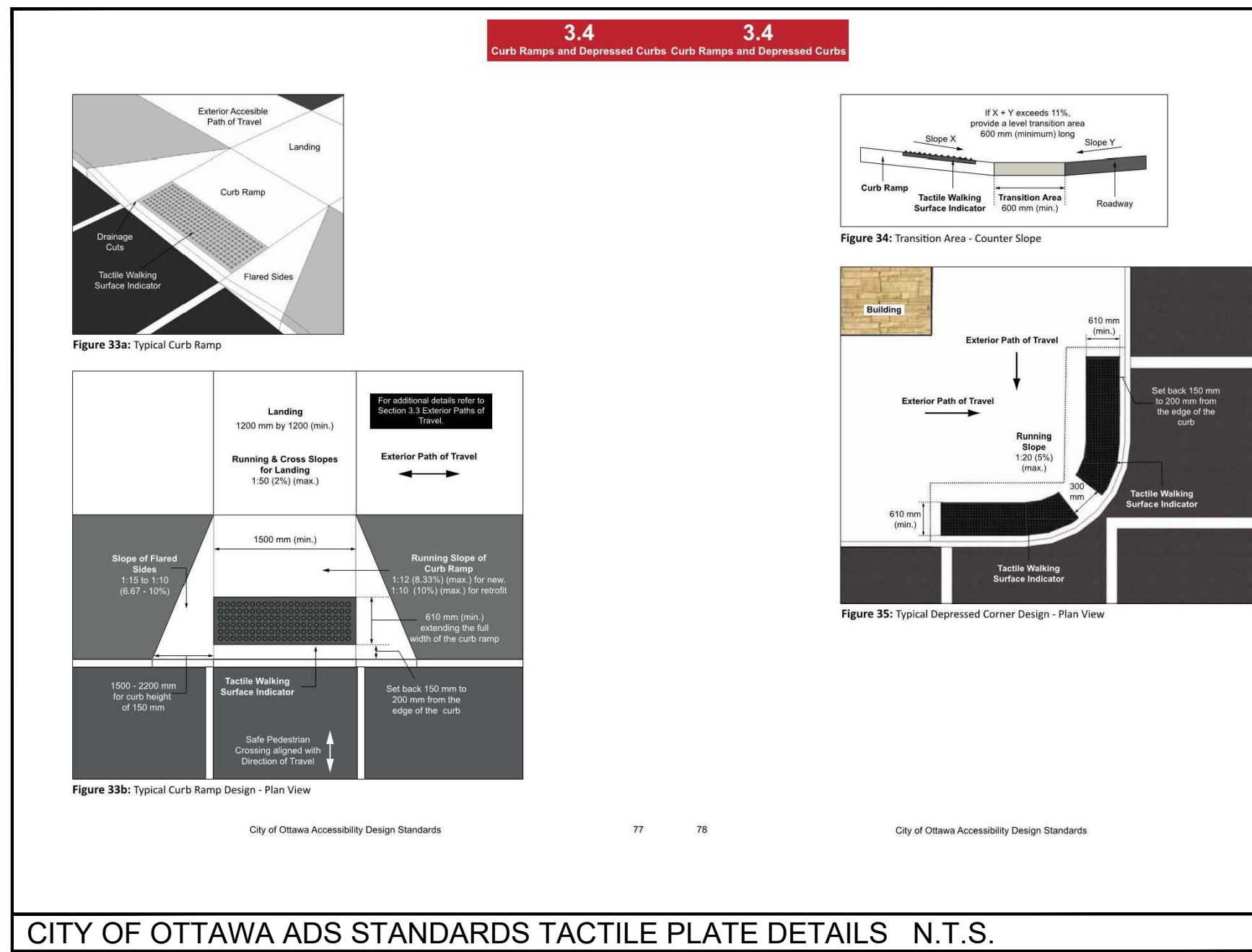
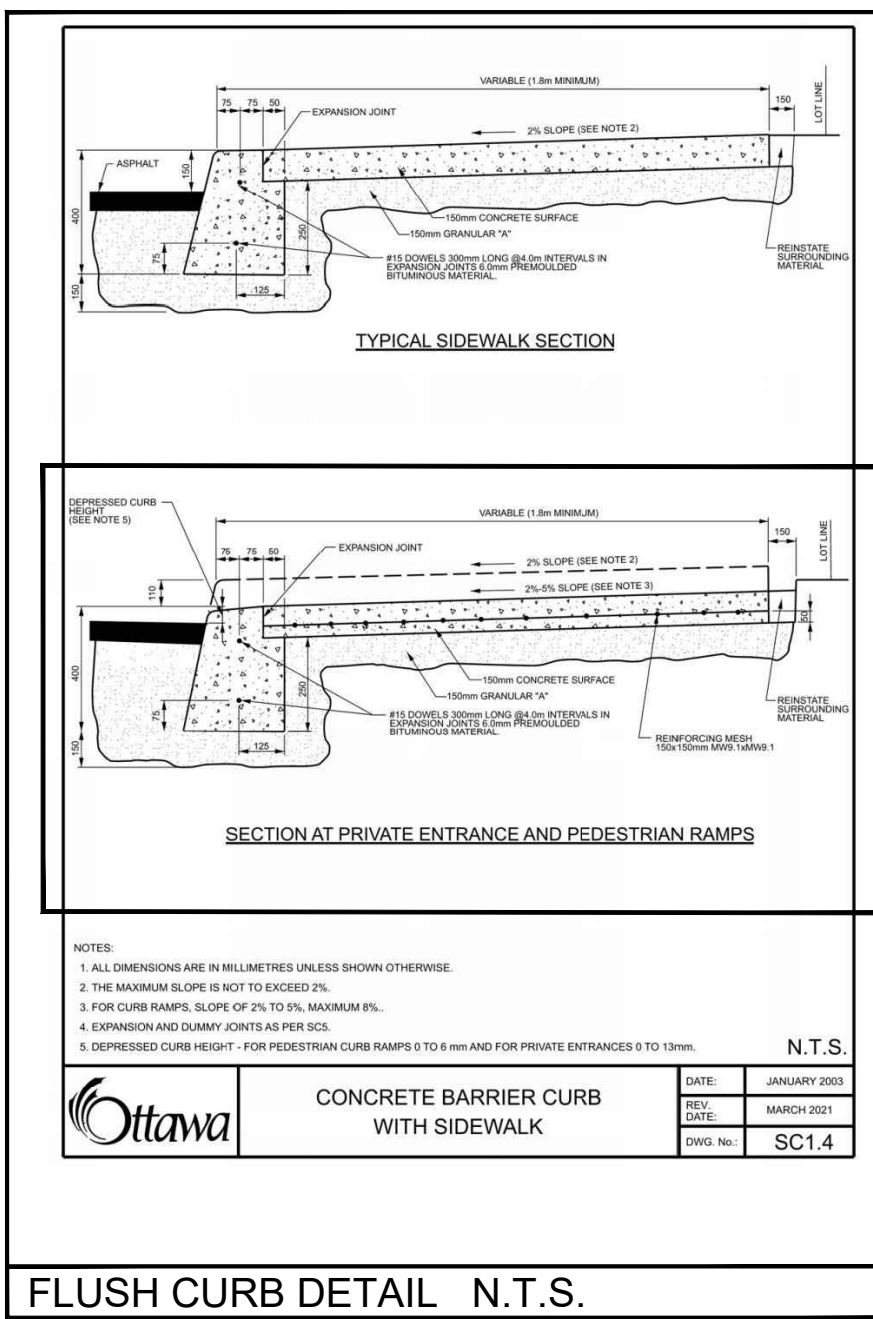
#	date	revision	by
9	AUG 19 2022	ISSUED FOR SITE PLAN CONTROL APPLICATION	MCB
8	AUG 19 2022	ISSUED FOR ZONING BY-LAW AMENDMENT	MCB
7	JUL 23 2022	ISSUED FOR ZONING BY-LAW AMENDMENT	MCB
6	FEB 24 2022	ISSUED FOR ZONING BY-LAW AMENDMENT	MCB
5	DEC 02 2021	ISSUED FOR SPA & ZONING BY-LAW AMENDMENT	MCB
4	NOV 19 2021	ISSUED FOR 100% DD	MCB
3	NOV 19 2021	ISSUED FOR 25% SPA	MCB
2	OCT 22 2021	ISSUED FOR 50% DD	MCB
1	AUG 26 2021	ISSUED FOR 100% SD	MCB



Arch Corp - Orleans
1161 OLD MONTREAL RD,
ORLEANS ON, K4A 3N6

LANDSCAPE DETAILS
10f2

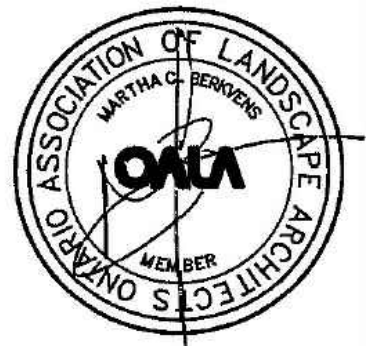
scale	AS NOTED
drawn by:	MCB
reviewed by:	MCB
job number:	21-164Ln
plot date:	22-08-19
drawing number:	



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Ronald H. Koudys, O.A.L.A. C.S.L.A. DATE



#	date	revision	by
9	AUG 19 2022	ISSUED FOR SITE PLAN CONTROL APPLICATION	MCB
8	AUG 19 2022	ISSUED FOR ZONING BY-LAW AMENDMENT	MCB
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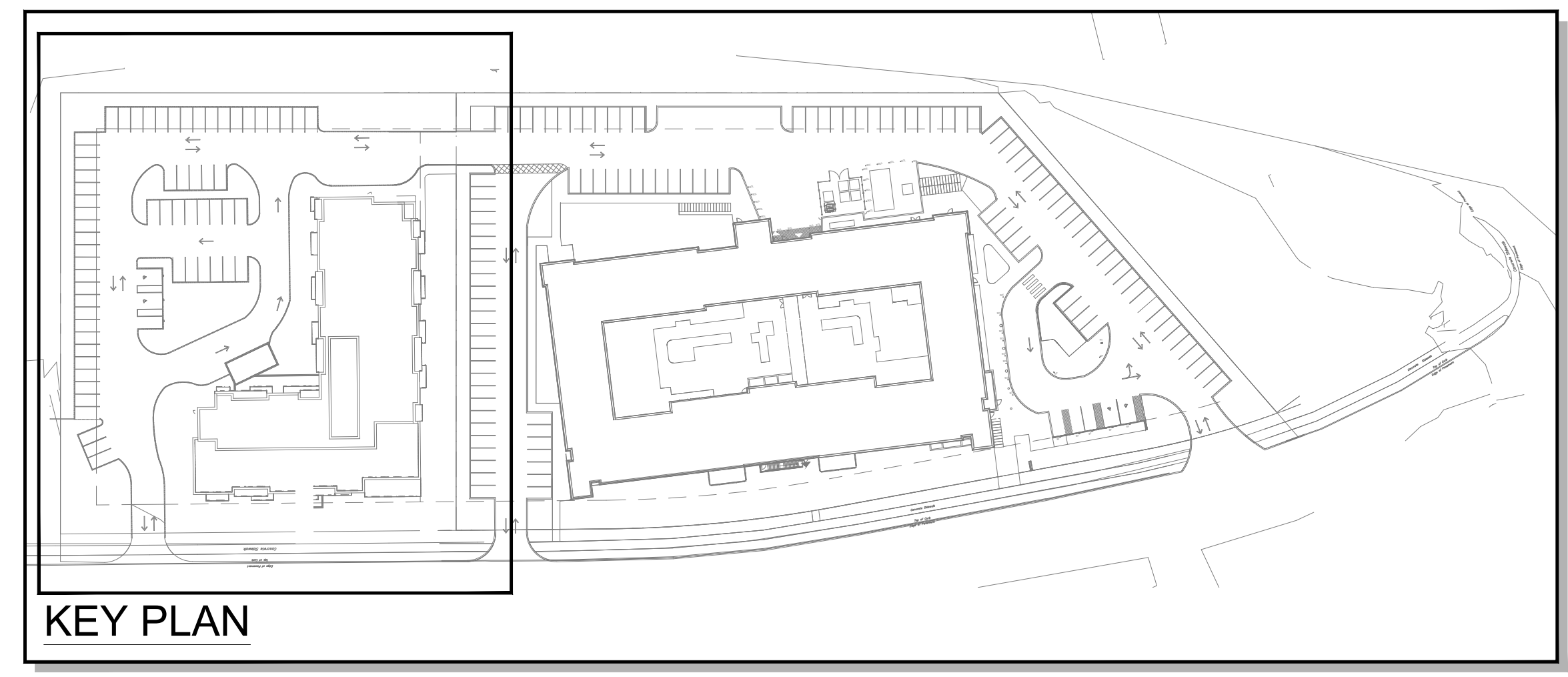
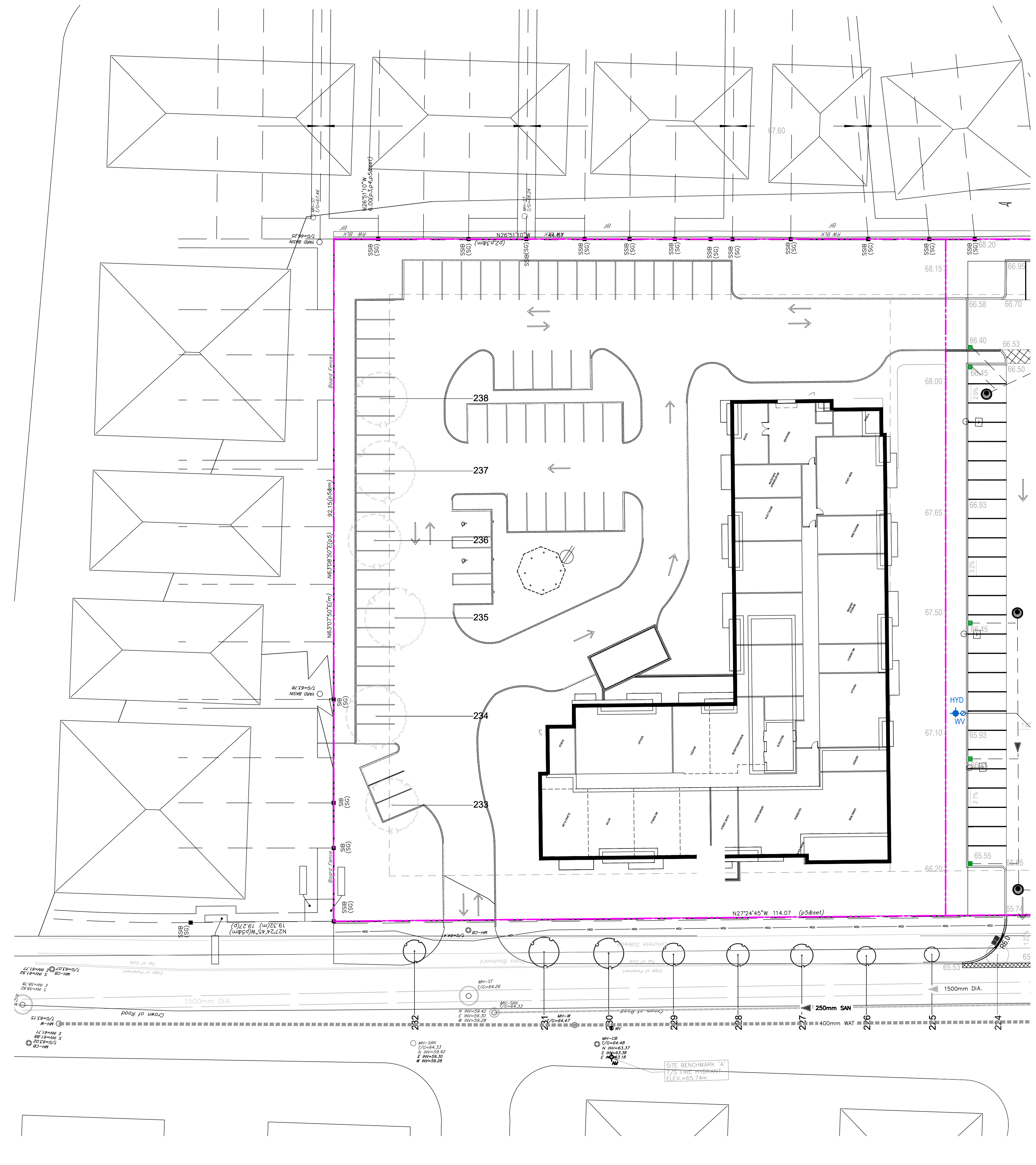
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1161 OLD MONTREAL RD, ORLEANS ON, K4A 3N6

LANDSCAPE DETAILS
2of2

scale: AS NOTED
 drawn by: MCB
 reviewed by: MCB
 job number: 21-164Ln
 plot date: 22-08-19
 drawing number:



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Ronald H. Koudys, O.A.L.A. C.S.L.A. DATE



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3.	NOV 19 2021	ISSUED FOR 25% SPA	MCB
2.	OCT 22 2021	ISSUED FOR 50% DD	MCB
1.	AUG 26 2021	ISSUED FOR 100% SD	MCB

date: revision: by:

revisions

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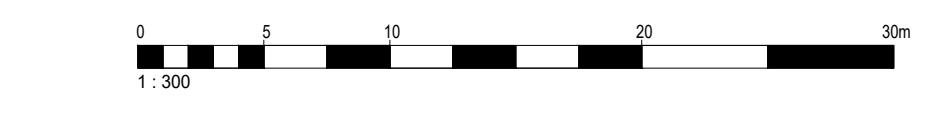
1161 OLD MONTREAL RD, ORLEANS ON, K4A 3N6

TREE PRESERVATION PLAN
1 of 5

scale: AS NOTED
drawn by: MCB
reviewed by: MCB
job number: 21-164Ln
plot date: 22-08-19
drawing number:

T-1

EXISTING VEGETATION PLAN 1 of 2
SCALE = 1:300



REFER TO TREE CONSERVATION REPORT FOR ADDITIONAL INFORMATION AND DETAIL ABOUT THE INVENTORY AND ASSESSMENT PROCESS

REFER TO PAGE T-3 FOR THE FOLLOWING TABLES:
- TREES TO BE PRESERVED
- TREES TO BE REMOVED

LEGEND

	5	EXISTING DECIDUOUS TREES TO REMAIN
	8	EXISTING DECIDUOUS TREES TO BE REMOVED
	6	EXISTING CONIFEROUS TREES TO REMAIN
	9	EXISTING CONIFEROUS TREES TO BE REMOVED
		CRITICAL ROOT ZONE - 10cm RADIUS PER 1cm DBH
		TREE PROTECTION BARRIER - SEE DETAIL

TREE PROTECTION SPECIFICATION

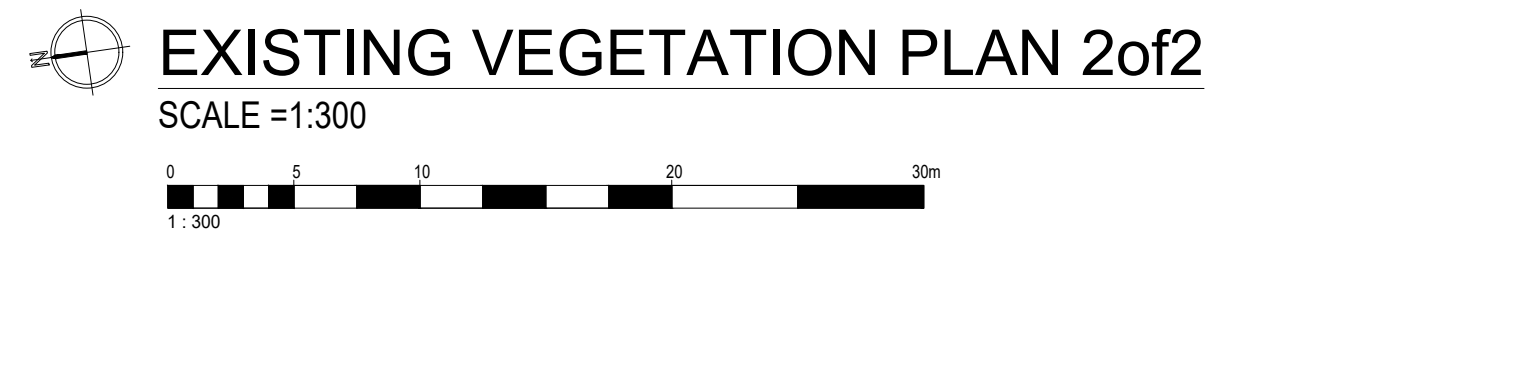
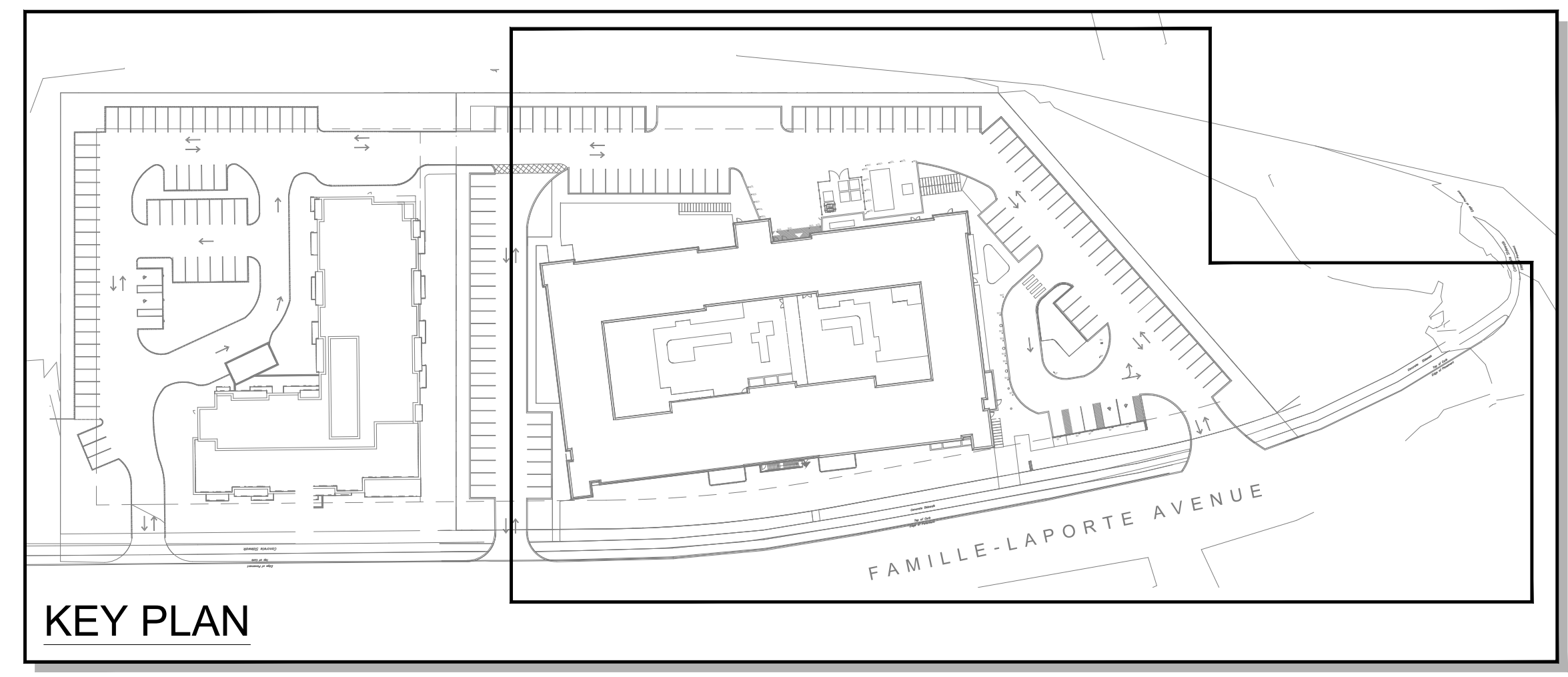
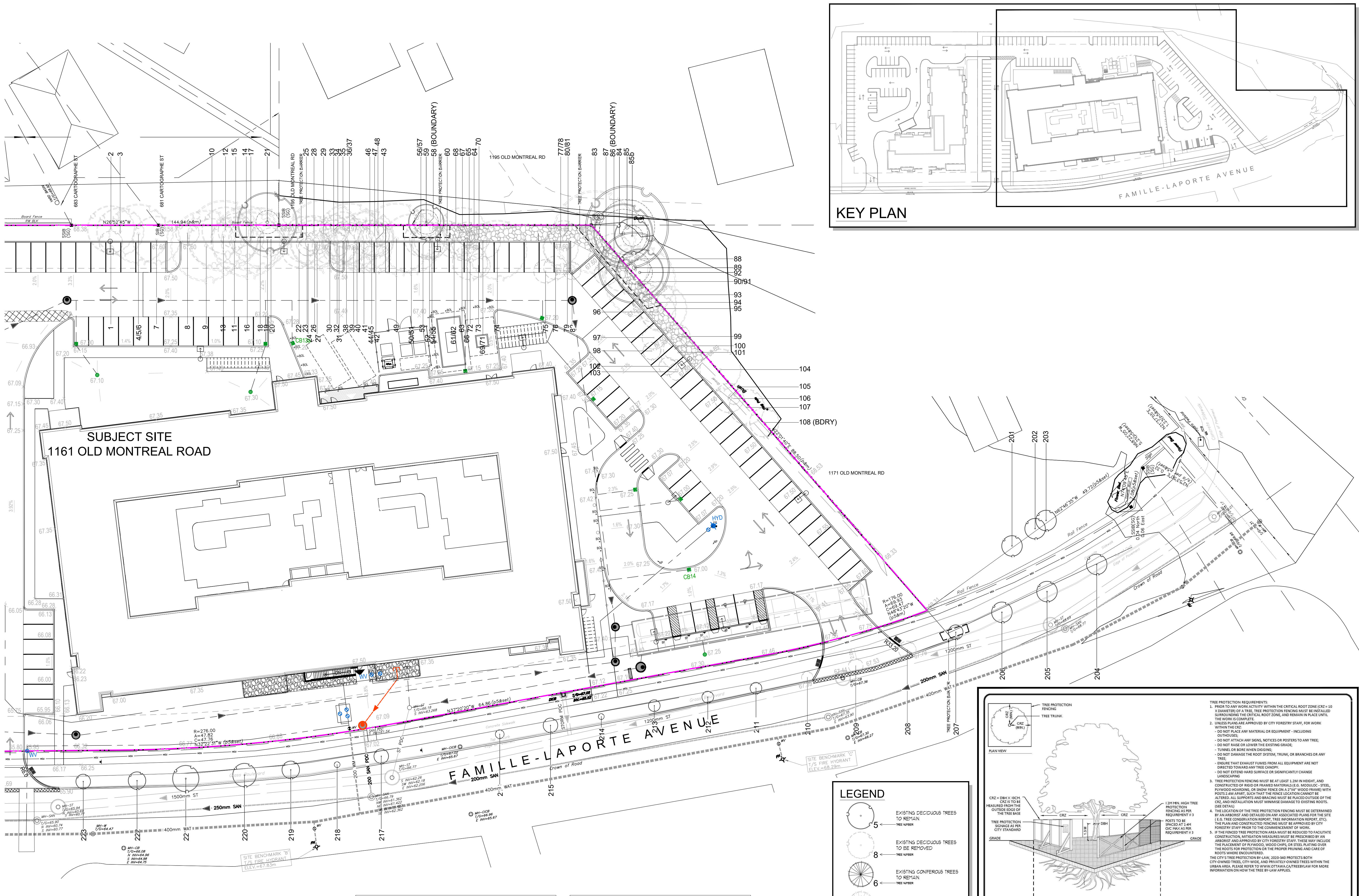
TO BE IMPLEMENTED FOR RETAINED TREES, BOTH ON SITE AND ON ADJACENT SITES, PRIOR TO ANY TREE REMOVAL OR SITE WORKS AND MAINTAINED FOR THE DURATION OF WORK ACTIVITIES ON SITE.

SCALE: NTS
DATE: MARCH 2021
DRAWING NO.: 1 of 1



TREE PROTECTION SPECIFICATION
TO BE IMPLEMENTED FOR RETAINED TREES, BOTH ON SITE AND ON ADJACENT SITES, PRIOR TO ANY TREE REMOVAL OR SITE WORKS AND MAINTAINED FOR THE DURATION OF WORK ACTIVITIES ON SITE.

SCALE: NTS
DATE: MARCH 2021
DRAWING NO.: 1 of 1



REFER TO TREE CONSERVATION REPORT FOR ADDITIONAL INFORMATION AND DETAIL ABOUT THE INVENTORY AND ASSESSMENT PROCESS

REFER TO PAGE T-3 FOR THE FOLLOWING TABLES:
 - TREES TO BE PRESERVED
 - TREES TO BE REMOVED

LEGEND

	EXISTING DECIDUOUS TREES TO REMAIN
	EXISTING DECIDUOUS TREES TO BE REMOVED
	EXISTING CONIFEROUS TREES TO REMAIN
	EXISTING CONIFEROUS TREES TO BE REMOVED
	CRITICAL ROOT ZONE - 10cm RADIUS PER 1cm DBH
	TREE PROTECTION BARRIER - SEE DETAIL

TREE PROTECTION SPECIFICATION

TO BE IMPLEMENTED FOR RETAINED TREES, BOTH ON SITE AND ON ADJACENT SITES, PRIOR TO ANY TREE REMOVAL OR SITE WORKS AND MAINTAINED FOR THE DURATION OF WORK ACTIVITIES ON SITE.

SCALE: NTS
 DATE: MARCH 2021
 DRAWING NO.: 1 of 1

TREE PROTECTION REQUIREMENTS:

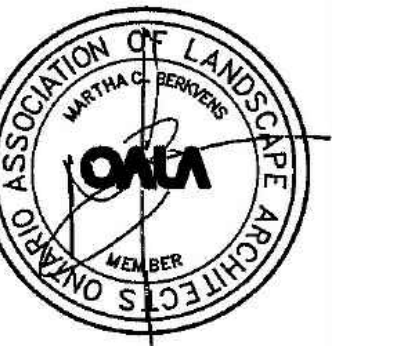
1. PRIOR TO ANY WORK ACTIVITY WITHIN THE CRITICAL ROOT ZONE (CRZ) - 10x DIAMETER OF A TREE, THE PROTECTION FENCING MUST BE INSTALLED SURROUNDING THE CRITICAL ROOT ZONE, AND REMAIN IN PLACE UNTIL THE WORK IS COMPLETE.
2. UNLESS PLANS ARE APPROVED BY CITY FORESTRY STAFF, FOR WORK WITHIN THE CRZ:
 - DO NOT PLACE ANY MATERIAL OR EQUIPMENT - INCLUDING OUTRIGGERS;
 - DO NOT ATTACH ANY SIGNS, NOTICES OR POSTERS TO ANY TREE;
 - DO NOT BASK OR COVER THE EXISTING GRADE;
 - TUNNEL OR BORE WHEN DIGGING;
 - DO NOT DAMAGE THE ROOT SYSTEM, TRUNK, OR BRANCHES OF ANY TREE;
 - ENSURE THAT EXHAUST FROM ALL EQUIPMENT ARE NOT DIRECTED TOWARD ANY TREE CANOPY;
 - DO NOT EXTEND HARD SURFACE OR SIGNIFICANTLY CHANGE LANDSCAPING.
3. TREE PROTECTION FENCING MUST BE AT LEAST 1.2M IN HEIGHT, AND CONSTRUCTED OF RIGID OR FRAMED MATERIALS (E.G. MODULUS-STEEL, PLYWOOD HOARDING, OR SNOW FENCE ON A 2"x4" WOOD FRAME) WITH POSTS 2.4M APART, SUCH THAT THE FENCE LOCATION CANNOT BE ALTERED. ALL SUPPORTS AND BRACING MUST BE PLACED OUTSIDE OF THE CRZ, AND INSTALLATION MUST MINIMIZE DAMAGE TO EXISTING ROOTS. (SEE DETAIL)
4. THE LOCATION OF THE TREE PROTECTION FENCING MUST BE DETERMINED BY AN ARBORIST AND DETAILED ON ANY ASSOCIATED PLANS FOR THE SITE (E.G. TREE CONSERVATION REPORT, TREE INFORMATION REPORT, ETC.). THE PLAN AND CONSTRUCTED FENCING MUST BE APPROVED BY CITY FORESTRY STAFF PRIOR TO THE COMMENCEMENT OF WORK.
5. IF THE FENCED TREE PROTECTION AREA MUST BE REDUCED TO FACILITATE CONSTRUCTION MITIGATION MEASURES MUST BE PRESCRIBED BY AN ARBORIST AND APPROVED BY CITY FORESTRY STAFF. THESE MAY INCLUDE THE PLACEMENT OF PAVED, WOOD CHIP, OR STEEL PLATING OVER THE ROOTS FOR PROTECTION OR THE PROPER PRUNING AND CARE OF ROOTS WHERE ENCOUNTERED.

THE CITY'S TREE PROTECTION BY-LAW, 2010-240 PROTECTS BOTH CITY-OWNED TREES, CITY-NEEDED AND PRIVATELY OWNED TREES WITHIN THE URBAN AREA. PLEASE REFER TO WWW.CITYOFTAMPA.CA/TREEPLAN FOR MORE INFORMATION ON HOW THE TREE BY-LAW APPLIES.

ACCESSIBLE FORMATS AND COMMUNICATION SUPPORTS ARE AVAILABLE, UPON REQUEST

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Ronald H. Koudys, O.A.L.A. C.S.L.A. DATE



#	date:	revision:	by:
9	AUG 19 2022	ISSUED FOR SITE PLAN CONTROL APPLICATION	MCB
8	AUG 19 2022	ISSUED FOR ZONING BY-LAW AMENDMENT	MCB
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 1161 OLD MONTREAL RD,
 ORLEANS ON, K4A 3N6

TREE PRESERVATION PLAN
 2of5

scale: AS NOTED
 drawn by: MCB
 reviewed by: MCB
 job number: 21-164Ln
 plot date: 22-08-19
 drawing number:

TREES TO BE PRESERVED (35 TOTAL)

Table with 12 columns: ID#, Botanical Name, Common Name, Location/Ownership, Size, Health & Condition, Recommendations, and Notes. Lists 35 trees to be preserved with details on their status and care requirements.

MUNICIPAL TREES (25)

Table with 12 columns: ID#, Botanical Name, Common Name, Location/Ownership, Size, Health & Condition, Recommendations, and Notes. Lists 25 municipal trees with details on their location and condition.

REFER TO TREE CONSERVATION REPORT FOR ADDITIONAL INFORMATION AND DETAIL ABOUT THE INVENTORY AND ASSESSMENT PROCESS

TREES TO BE REMOVED (100 TOTAL)

Table with 12 columns: ID#, Botanical Name, Common Name, Location/Ownership, Size, Health & Condition, Recommendations, and Notes. Lists 100 trees to be removed with detailed reasons for removal.

Table with 12 columns: ID#, Botanical Name, Common Name, Location/Ownership, Size, Health & Condition, Recommendations, and Notes. Continuation of the trees to be removed list.

Table with 12 columns: ID#, Botanical Name, Common Name, Location/Ownership, Size, Health & Condition, Recommendations, and Notes. Continuation of the trees to be removed list.

TREES WITHIN PRIVATE PROPERTY ADJACENT TO SUBJECT SITE (1)

Table with 12 columns: ID#, Botanical Name, Common Name, Location/Ownership, Size, Health & Condition, Recommendations, and Notes. Lists 1 tree on adjacent property.

MUNICIPAL TREES (4)

Table with 12 columns: ID#, Botanical Name, Common Name, Location/Ownership, Size, Health & Condition, Recommendations, and Notes. Lists 4 municipal trees.

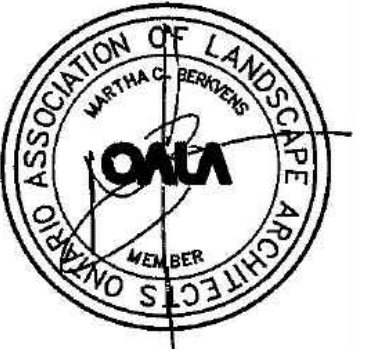
BOUNDARY TREES (5)

Table with 12 columns: ID#, Botanical Name, Common Name, Location/Ownership, Size, Health & Condition, Recommendations, and Notes. Lists 5 boundary trees.



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Ronald H. Koudy's, O.A.L.A. C.S.L.A. DATE



Revision table with columns for date, description, and revision number. Lists revisions from 1 to 9.

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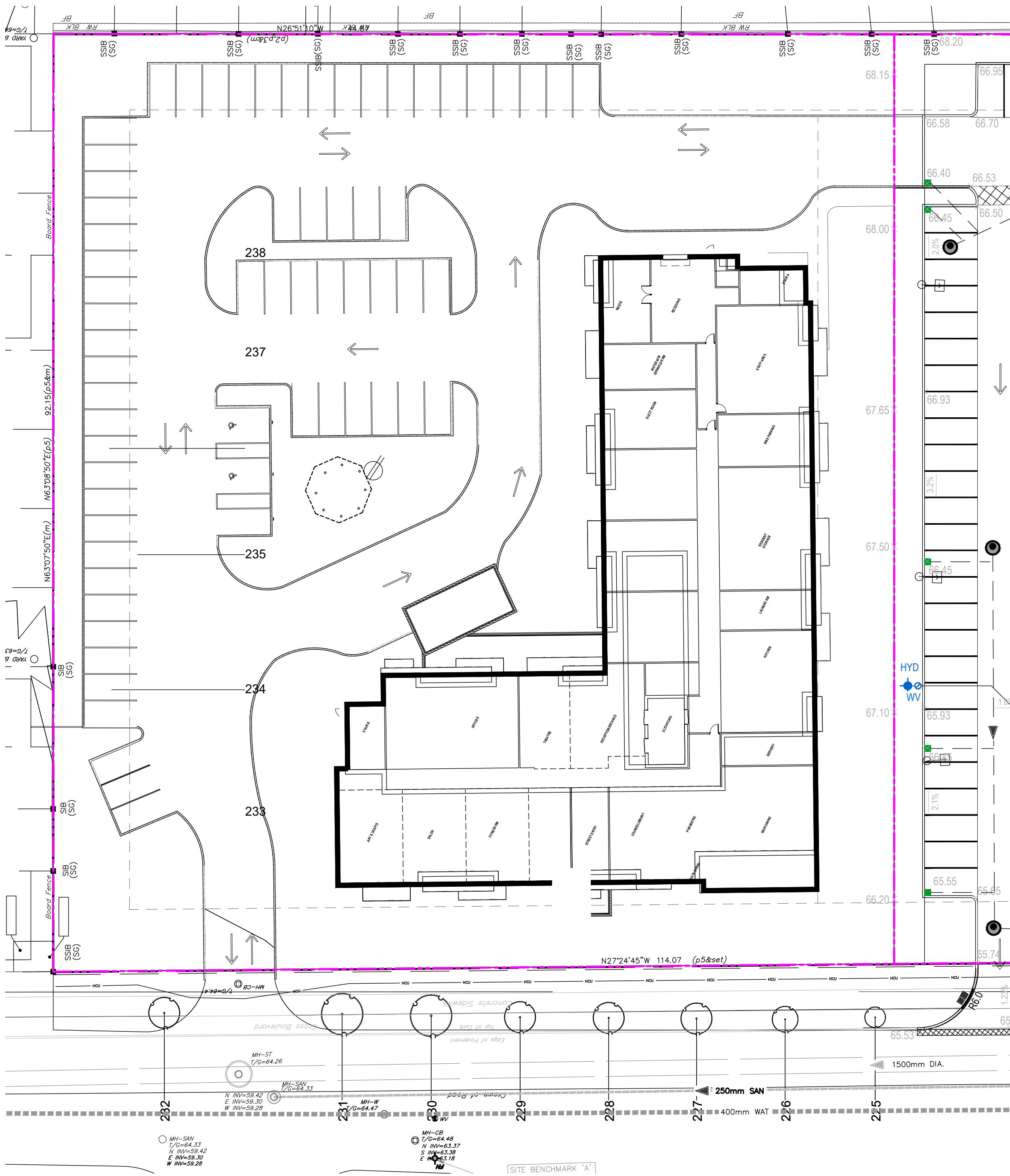
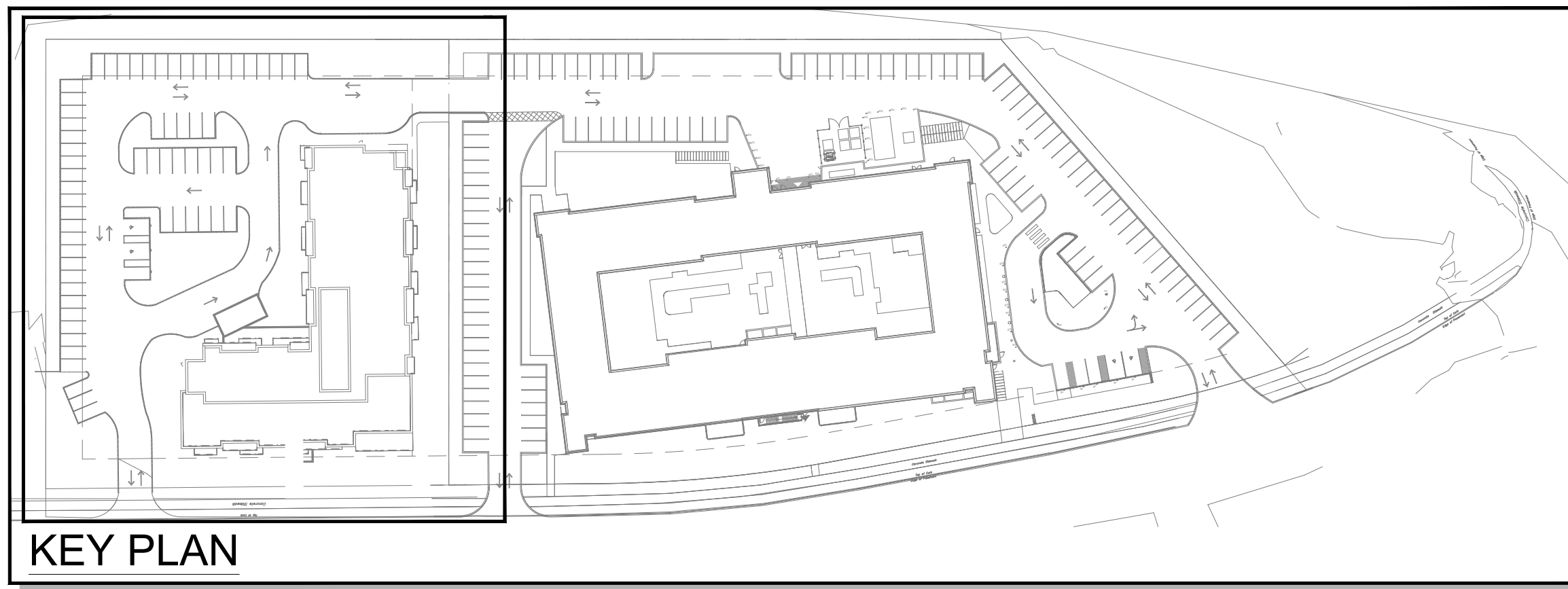
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1161 OLD MONTREAL RD, ORLEANS ON, K4A 3N6

TREE PRESERVATION DETAILS 3of5

Scale: AS NOTED
Drawn by: MCB
Reviewed by: MCB
Job number: 21-164Ln
Plot date: 22-08-19
Drawing number:

T-3



PROPOSED DEVELOPMENT & CONSERVED VEGETATION PLAN 1 of 2
 SCALE = 1:300

REFER TO TREE CONSERVATION REPORT FOR ADDITIONAL INFORMATION AND DETAIL ABOUT THE INVENTORY AND ASSESSMENT PROCESS

TREES TO BE PRESERVED (41 TOTAL)

ID #	GENERAL INFORMATION			SIZE		HEALTH & CONDITION		RECOMMENDATIONS	
	BOTANICAL NAME	COMMON NAME	LOCATION/ OWNERSHIP	DBH (cm)	HEIGHT (m)	STRUCTURAL INTEGRITY	COMMENTS	EXPECTED CONSTRUCTION IMPACT (CRZ = critical root zone)	PRESERVE OR REMOVE

TREES WITHIN SUBJECT SITE (6)

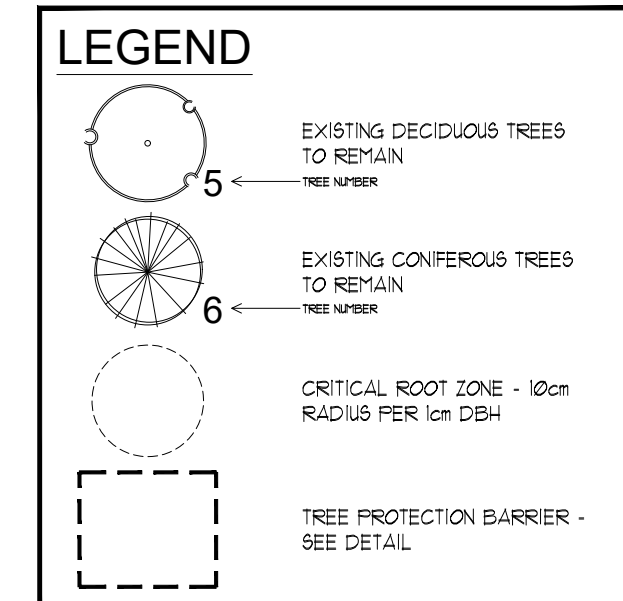
233	<i>Q. macrocarpa</i>	Honeylocust	Subject site	22	3.5	5	fair	lichen on trunk, crossing branches, no flare	none	preserve	none
234	<i>Q. macrocarpa</i>	Honeylocust	Subject site	24	4	5	fair	lichen on trunk, crossing branches	none	preserve	none
235	<i>Q. macrocarpa</i>	Honeylocust	Subject site	22	4	5	fair	lichen on trunk, no flare, minor epicormic growth, minor dead wood	none	preserve	none
236	<i>Q. macrocarpa</i>	Honeylocust	Subject site	20	3.5	5	fair	Minor dead wood	none	preserve	none
237	<i>Q. macrocarpa</i>	Honeylocust	Subject site	22	4	5	fair	Unbalanced crown	none	preserve	none
238	<i>Q. macrocarpa</i>	Honeylocust	Subject site	21	3.5	5	fair	Minor dead wood	none	preserve	none

TREES WITHIN PRIVATE PROPERTY ADJACENT TO SUBJECT SITE (10)

20	<i>Ulmus spp.</i>	elm	171 Old Montreal Rd	25	3	5	good	loose crown	none	preserve	none	
202	<i>Quercus macrocarpa</i>	Bur Oak	171 Old Montreal Rd	14	2	5	good	low branched	none	preserve	none	
203	<i>Quercus macrocarpa</i>	Bur Oak	171 Old Montreal Rd	10	2	5	fair	low branched	none	preserve	none	
21	<i>Quercus macrocarpa</i>	Bur Oak	40 Cartographie St	15	5	5	fair	Multistem S, dense crown	approx. 20% of critical root zone expected to be removed	preserve	tree protection barrier	
59	<i>Quercus macrocarpa</i>	Bur Oak	195 Old Montreal Rd	21	3	4	fair	low branched	approx. 20% of critical root zone expected to be removed	preserve	tree protection barrier	
84	<i>Quercus macrocarpa</i>	Bur Oak	171 Old Montreal Rd	42	5	5	fair	Epicormic growth	approx. 5% of critical root zone expected to be removed	preserve	tree protection barrier	
85	<i>Quercus macrocarpa</i>	Bur Oak	171 Old Montreal Rd	48	7	5	fair	poor	codominant leaders, trunk cavity at primary union, dead wood and rot	less than 5% of critical root zone expected to be removed	preserve	tree protection barrier
85b	<i>Quercus macrocarpa</i>	Bur Oak	171 Old Montreal Rd	18	3	5	fair	good	Suppressed	none	preserve	tree protection barrier
89	<i>Quercus macrocarpa</i>	Bur Oak	171 Old Montreal Rd	28	6	5	fair	good	Unbalanced crown	approx. 5% of critical root zone expected to be removed	preserve	tree protection barrier
92	<i>Quercus macrocarpa</i>	Bur Oak	171 Old Montreal Rd	22	4	5	good	good	Suppressed	approx. 5% of critical root zone expected to be removed	preserve	tree protection barrier

MUNICIPAL TREES (25)

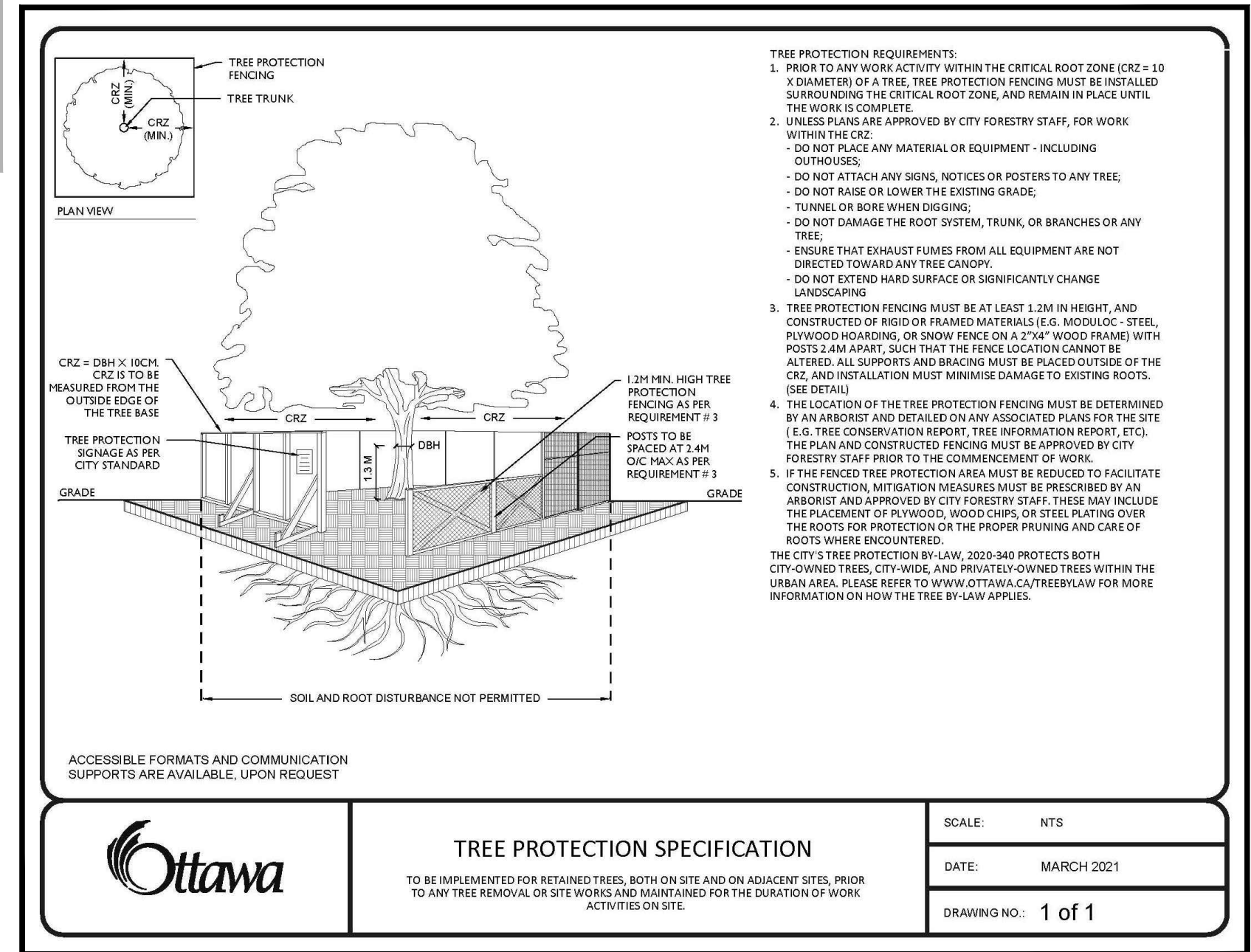
204	<i>Acer rubrum</i>	Red Maple	City ROW - Familie Laporte Ave	5	1	2	fair	poor	Bvd, significant trunk damage and wounds	none	preserve	none
205	<i>Acer rubrum</i>	Red Maple	City ROW - Familie Laporte Ave	8	1.5	5	good	good	Bvd, suckering from base, low crown	none	preserve	none
206	<i>Quercus rubra</i>	Red Oak	City ROW - Familie Laporte Ave	5	1.25	5	good	good	Bvd, low crown	none	preserve	none
207	<i>Celtis occidentalis</i>	Hackberry	City ROW - Familie Laporte Ave	5	1.25	5	good	good	Bvd, full form	none	preserve	tree protection fence
211	<i>Acer rubrum</i>	Red Maple	City ROW - Familie Laporte Ave	7	1	3	poor	poor	Bvd, dead leader, entire "crown" is epicormic growth	none	preserve	none
212	<i>Quercus rubra</i>	Red Oak	City ROW - Familie Laporte Ave	6	1	4	fair	fair	Bvd, basal damage, dead wood	none	preserve	none
218	<i>Celtis occidentalis</i>	Hackberry	City ROW - Familie Laporte Ave	8	1	5	good	good	Bvd, basal damage	none	preserve	none
214	<i>Acer saccharum</i>	Sugar Maple	City ROW - Familie Laporte Ave	3	0.5	5	fair	fair	Bvd, basal damage, early defoliation	none	preserve	none
215	<i>Quercus rubra</i>	Red Oak	City ROW - Familie Laporte Ave	7	1.25	5	good	good	Bvd, unbalanced crown	none	preserve	none
216	<i>Acer saccharum</i>	Sugar Maple	City ROW - Familie Laporte Ave	4	0.75	5	fair	good	Bvd, narrow form	none	preserve	none
217	<i>Acer rubrum</i>	Red Maple	City ROW - Familie Laporte Ave	9	1.25	5	fair	fair	Bvd, suckering from base, sealing vertical trunk wounds	none	preserve	none
218	<i>Acer rubrum</i>	Red Maple	City ROW - Familie Laporte Ave	4	0.5	5	fair	fair	Bvd, trunk wounds	none	preserve	none
219	<i>Acer rubrum</i>	Red Maple	City ROW - Familie Laporte Ave	9	1.5	5	fair	fair	Bvd, significant suckering from base	none	preserve	none
220	<i>Quercus rubra</i>	Red Oak	City ROW - Familie Laporte Ave	8	2	5	fair	fair	Bvd, minor basal damage, 5 leaders	none	preserve	none
221	<i>Acer rubrum</i>	Red Maple	City ROW - Familie Laporte Ave	8	2.25	5	fair	fair	Bvd, suckering from base, basal wound, diminished leader	none	preserve	none
222	<i>Acer saccharum</i>	Sugar Maple	City ROW - Familie Laporte Ave	6	1.5	5	good	good	Bvd, basal wound	none	preserve	none
223	<i>Quercus rubra</i>	Red Oak	City ROW - Familie Laporte Ave	6	1.25	5	good	good	Bvd, full form	none	preserve	none
225	<i>Quercus rubra</i>	Red Oak	City ROW - Familie Laporte Ave	7	1	1	poor	poor	Bvd, central leader dead and gone, all remaining living stems are rooted from base	none	preserve	none
226	<i>Acer saccharum</i>	Sugar Maple	City ROW - Familie Laporte Ave	7	1.25	5	excellent	good	Bvd, full form	none	preserve	none
227	<i>Acer rubrum</i>	Red Maple	City ROW - Familie Laporte Ave	9	1.5	5	good	fair	Bvd, basal wound, sealed vertical wounds	none	preserve	none
228	<i>Quercus rubra</i>	Red Oak	City ROW - Familie Laporte Ave	7	1.5	5	fair	good	Bvd, minor basal wound	none	preserve	none
229	<i>Celtis occidentalis</i>	Hackberry	City ROW - Familie Laporte Ave	10	1.5	5	fair	good	Bvd, full form	none	preserve	none
230	<i>Acer rubrum</i>	Red Maple	City ROW - Familie Laporte Ave	10	2	5	fair	good	Bvd, minor suckering from base, girdled leader	none	preserve	none
231	<i>Quercus rubra</i>	Red Oak	City ROW - Familie Laporte Ave	7	2	5	fair	good	Bvd, curved leader	none	preserve	none
232	<i>Acer saccharum</i>	Sugar Maple	City ROW - Familie Laporte Ave	7	1.5	5	good	good	Bvd, minor trunk wounds	none	preserve	none



TREES TO BE PRESERVED (35 TOTAL)

- PRE-CONSTRUCTION RECOMMENDATIONS**
- a) PRIOR TO ANY CONSTRUCTION ACTIVITY, TREE PRESERVATION FENCING IS TO BE INSTALLED AS PER THE ATTACHED TREE PRESERVATION DRAWINGS AND DETAIL.
 - b) WHERE HIGH QUALITY SPECIMENS TO BE PRESERVED ARE ADJACENT TO AREAS SUBJECT TO INTENSIVE CONSTRUCTION ACTIVITIES, THESE TREES ARE TO HAVE ADDITIONAL PROTECTION MEASURES IMPLEMENTED TO PROTECT THEIR TRUNKS FROM MECHANICAL DAMAGE. THESE MEASURES MAY INCLUDE SURROUNDING THE TRUNK WITH WOOD PLANKS. TREES THAT REQUIRE ADDITIONAL PROTECTION WILL BE CLEARLY IDENTIFIED ON THE TREE PRESERVATION PLAN WITH DETAILED INFORMATION ON SPECIFIC PROTECTION MEASURES.
 - c) TREES APPROVED FOR REMOVAL ARE TO BE CLEARLY INDICATED IN THE FIELD (MARKED WITH SPRAY PAINT OR OTHER AGREED UPON METHOD) BY THE PROJECT ARBORIST OR LANDSCAPE ARCHITECT PRIOR TO ANY TREE REMOVAL OPERATIONS. ALL REMOVALS TO BE UNDERTAKEN BY AN ISA CERTIFIED ARBORIST.
 - d) IN ACCORDANCE WITH THE MIGRATORY BIRDS CONVENTION ACT, 1994, ALL REMOVALS MUST TAKE PLACE BETWEEN SEPTEMBER 1ST AND MARCH 31ST TO AVOID DISTURBING NESTING MIGRATORY BIRDS. IF TREE REMOVAL OCCURS BETWEEN APRIL 1ST AND AUGUST 31ST, A BIOLOGIST IS REQUIRED TO COMPLETE A SEARCH FOR NESTS. ONCE CLEARED, THE CONTRACTOR HAS 48 HOURS TO REMOVE. IF REMOVAL DOES NOT OCCUR WITHIN 48 HOURS, ANOTHER SEARCH WILL BE REQUIRED.
 - e) CARE SHOULD BE TAKEN DURING THE FELLING OPERATION TO AVOID DAMAGING THE BRANCHES, STEMS, TRUNKS, AND ROOTS OF NEARBY TREES TO BE PRESERVED. WHERE POSSIBLE, ALL TREES ARE TO BE FELLED TOWARDS THE CONSTRUCTION ZONE TO MINIMIZE IMPACTS ON ADJACENT VEGETATION. ALL REMOVALS TO BE UNDERTAKEN BY AN ISA CERTIFIED ARBORIST.
 - f) IT IS RECOMMENDED THAT THE EXISTING GROUND-LAYER VEGETATION AT THE BASE OF TREES TO BE PRESERVED REMAIN INTACT WITHIN THE CRITICAL ROOT ZONE SO AS NOT TO DISTURB THE SOIL AROUND THE BASE OF THE EXISTING TREES.
 - g) FINAL SITE GRADING PLANS SHOULD ENSURE THAT THE EXISTING SOIL MOISTURE CONDITIONS ARE MAINTAINED.

- RECOMMENDATIONS RELATED TO THE CONSTRUCTION PROCESS**
- a) TREE PRESERVATION FENCING IS TO BE MAINTAINED IN GOOD CONDITION AND EFFECTIVE FOR THE DURATION OF CONSTRUCTION UNTIL ALL CONSTRUCTION ACTIVITY IS COMPLETE OR AS PER THE PROJECT ARBORIST OR LANDSCAPE ARCHITECT.
 - b) NO CONSTRUCTION EXCAVATION, ADDING OF FILL, STOCKPILING OF CONSTRUCTION MATERIAL, OR HEAVY EQUIPMENT IS PERMITTED WITHIN THE CRITICAL ROOT ZONE WITHIN THE TREE PRESERVATION FENCING.
 - c) WHEN EXCAVATION NEAR A TREE IS REQUIRED, AND IT IS ANTICIPATED THAT ROOTS WILL BE SEVERED AND EXPOSED, DURATION OF EXPOSURE IS TO BE MINIMIZED TO PREVENT ROOT DESICCATION.
 - d) DURING THE EXCAVATION PROCESS, ROOTS 25MM OR LARGER THAT ARE SEVERED AND EXPOSED SHOULD BE HAND PRUNED TO LEAVE A CLEAN-CUT SURFACE. TO BE UNDERTAKEN BY AN ISA CERTIFIED ARBORIST. EXPOSED SEVERED ROOTS THAT CANNOT BE COVERED IN SOIL ON THE SAME DAY AS THE CUTS ARE MADE ARE TO BE KEPT MOIST. EXPOSED ROOTS ARE TO BE KEPT MOIST BY COVERING THEM WITH WATER SOAKED BURLAP OR ANY OTHER MEANS AVAILABLE TO PREVENT THEM FROM DRYING OUT.
 - e) AVOID IDLING HEAVY EQUIPMENT UNDER/WITHIN CLOSE PROXIMITY TO TREES TO BE PRESERVED TO PREVENT CANOPY DAMAGE FROM EXPOSURE TO EXHAUST HEAT.
- POST-CONSTRUCTION RECOMMENDATIONS**
- a) AVOID DISCHARGING RAIN WATER LEADERS ADJACENT TO RETAINED TREES, AS THIS MAY RESULT IN AN OVERLY MOIST ENVIRONMENT WHICH CAN CAUSE ROOT ROT.
 - b) AFTER ALL WORK IS COMPLETED, TREE PRESERVATION FENCES AND ANY OTHER IMPACT MITIGATION PARAPHERNALIA MUST BE REMOVED.
 - c) A FINAL REVIEW MUST BE UNDERTAKEN BY THE PROJECT ARBORIST TO ENSURE THAT ALL MITIGATION MEASURES AS DESCRIBED ABOVE HAVE BEEN MET.



RON KOUDYS LANDSCAPE ARCHITECTS INC.

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Ronald H. Koudys, O.A.L.A. C.S.L.A. DATE



#	date	revision	by
9	AUG 19 2022	ISSUED FOR SITE PLAN CONTROL APPLICATION	MCB
8	AUG 19 2022	ISSUED FOR ZONING BY-LAW AMENDMENT	MCB
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1	AUG 26 2021	ISSUED FOR 100% SD	MCB

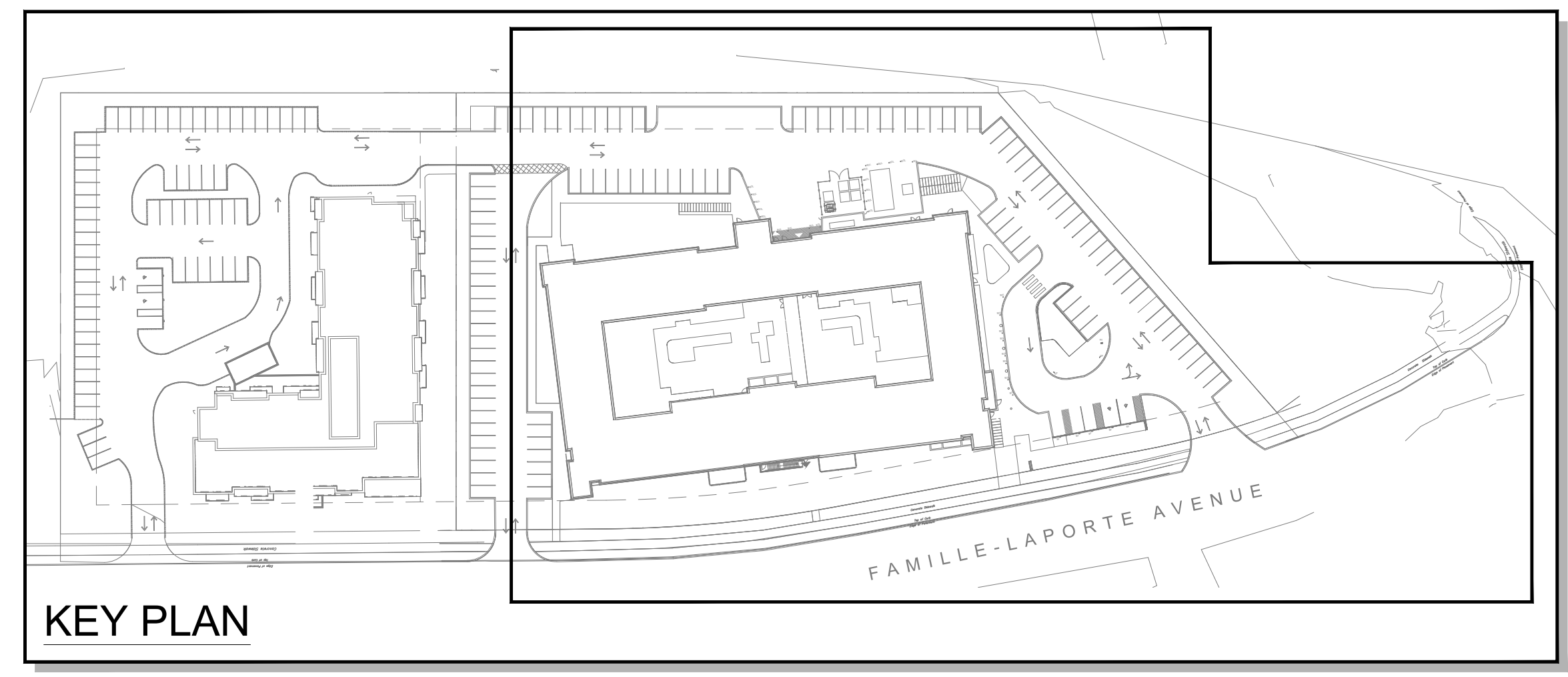
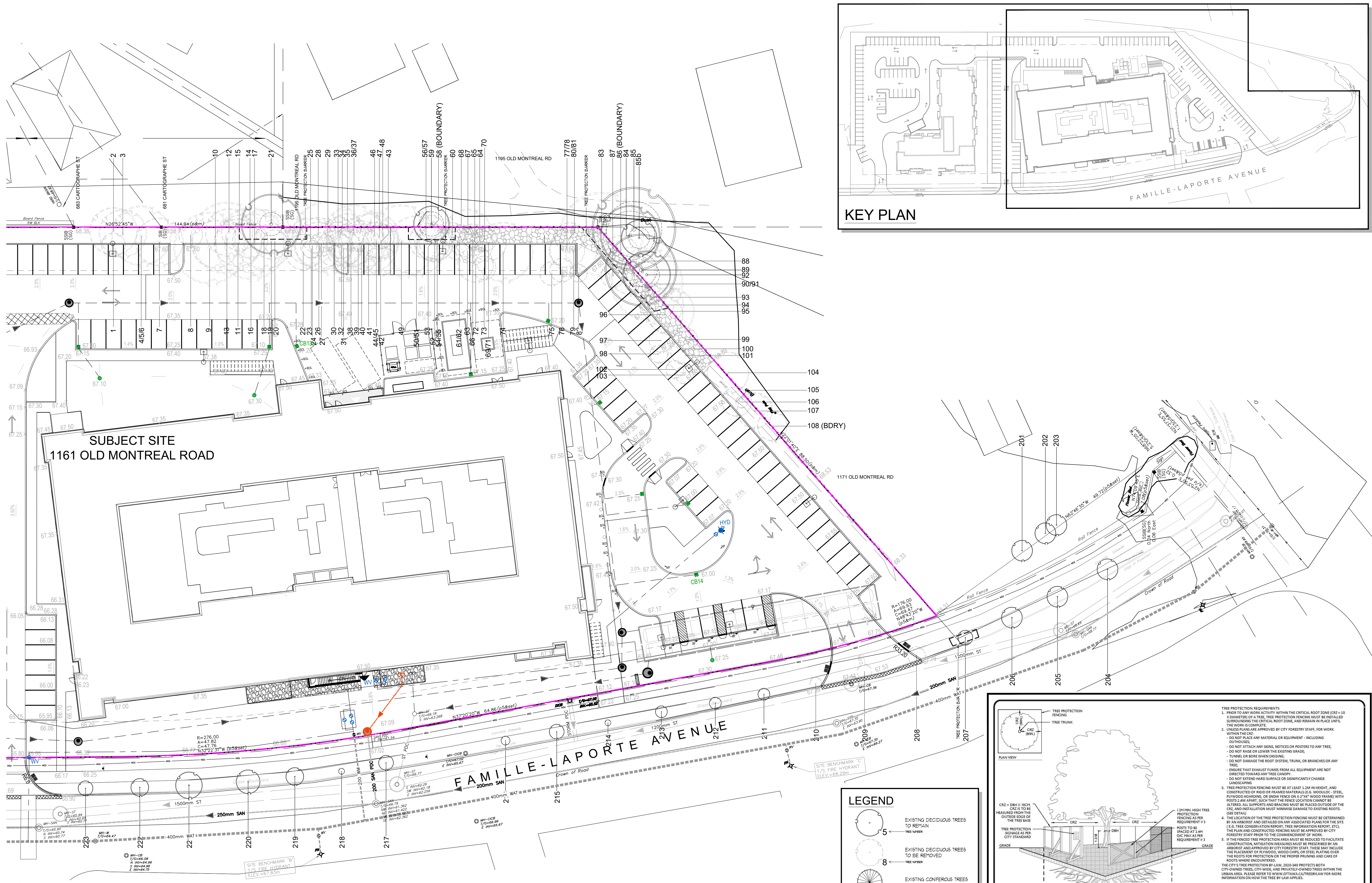
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TREE PRESERVATION PLAN 4 of 5

scale: AS NOTED
 drawn by: MCB
 reviewed by: MCB
 job number: 21-164Ln
 plot date: 22-08-19
 drawing number:

T-4



PROPOSED DEVELOPMENT & CONSERVED VEGETATION PLAN 2 of 2
 SCALE = 1:300

REFER TO TREE CONSERVATION REPORT FOR ADDITIONAL INFORMATION AND DETAIL ABOUT THE INVENTORY AND ASSESSMENT PROCESS

REFER TO PAGE T-4 FOR THE FOLLOWING TABLES:
 - TREES TO BE PRESERVED

LEGEND

	EXISTING DECIDUOUS TREES TO REMAIN
	EXISTING DECIDUOUS TREES TO BE REMOVED
	EXISTING CONIFEROUS TREES TO REMAIN
	EXISTING CONIFEROUS TREES TO BE REMOVED
	CRITICAL ROOT ZONE - 10cm RADIUS PER 1cm DBH
	TREE PROTECTION BARRIER - SEE DETAIL

TREE PROTECTION SPECIFICATION

TO BE IMPLEMENTED FOR RETAINED TREES, BOTH ON SITE AND ON ADJACENT SITES, PRIOR TO ANY TREE REMOVAL OR SITE WORKS AND MAINTAINED FOR THE DURATION OF WORK ACTIVITIES ON SITE.

TREE PROTECTION REQUIREMENTS:

1. PRIOR TO ANY WORK ACTIVITY WITHIN THE CRITICAL ROOT ZONE (CRZ) - 10 CM DIAMETER OF A TREE, THE PROTECTION FENCING MUST BE INSTALLED SURROUNDING THE CRITICAL ROOT ZONE, AND REMAIN IN PLACE UNTIL THE WORK IS COMPLETE.
2. UNLESS PLANS ARE APPROVED BY CITY FORESTRY STAFF, FOR WORK WITHIN THE CRZ:
 - DO NOT PLACE ANY MATERIAL OR EQUIPMENT - INCLUDING OUTRIGGERS;
 - DO NOT ATTACH ANY SIGNS, NOTICES OR POSTERS TO ANY TREE;
 - DO NOT BASE OR COVER THE EXISTING GRADE;
 - TUNNEL OR BORE WHEN DIGGING;
 - DO NOT DAMAGE THE ROOT SYSTEM, TRUNK, OR BRANCHES OF ANY TREE;
 - ENSURE THAT EXHAUST PIPES FROM ALL EQUIPMENT ARE NOT DIRECTED TOWARD ANY TREE CANOPY;
 - DO NOT EXTEND HARD SURFACE OR SIGNIFICANTLY CHANGE LANDSCAPING.
3. TREE PROTECTION FENCING MUST BE AT LEAST 1.3M IN HEIGHT, AND CONSTRUCTED OF RIGID OR FRAMED MATERIALS (E.G. MODULOC, STEEL, PLYWOOD HOARDING, OR SNOW FENCE ON A 2"x4" WOOD FRAME) WITH POSTS 1.8M APART, SUCH THAT THE FENCE LOCATION CANNOT BE ALTERED. ALL SUPPORTS AND BRACING MUST BE PLACED OUTSIDE OF THE CRZ, AND INSTALLATION MUST MINIMIZE DAMAGE TO EXISTING ROOTS.
4. THE LOCATION OF THE TREE PROTECTION FENCING MUST BE DETERMINED BY AN ARBORIST AND DETAILED ON ANY ASSOCIATED PLANS FOR THE SITE (E.G. TREE CONSERVATION REPORT, TREE INFORMATION REPORT, ETC.). THE PLAN AND CONSTRUCTED FENCING MUST BE APPROVED BY CITY FORESTRY STAFF PRIOR TO THE COMMENCEMENT OF WORK.
5. IF THE FENCED TREE PROTECTION AREA MUST BE REDUCED TO FACILITATE CONSTRUCTION MITIGATION MEASURES MUST BE PRESCRIBED BY AN ARBORIST AND APPROVED BY CITY FORESTRY STAFF. THESE MAY INCLUDE THE PLACEMENT OF PLYWOOD, WOOD CHIPS, OR STEEL PLATING OVER THE ROOTS FOR PROTECTION OR THE PROPER PRUNING AND CARE OF ROOTS WHERE ENCOUNTERED.

THE CITY'S TREE PROTECTION BY-LAW, 2010-240 PROTECTS BOTH CITY-OWNED TREES, CITY-NEEDED, AND PRIVATELY OWNED TREES WITHIN THE URBAN AREA. PLEASE REFER TO WWW.CITY.OTTAWA.CA/TREEPLAN FOR MORE INFORMATION ON HOW THE TREE BY-LAW APPLIES.

ACCESSIBLE FORMATS AND COMMUNICATION SUPPORTS ARE AVAILABLE UPON REQUEST

Tree Protection Specification Detail: Shows a cross-section of a tree with the CRZ, DBH, and the 1.3m high tree protection fencing. Notes include: 'SOIL AND ROOT DISTURBANCE NOT PERMITTED' and '1.3M HIGH TREE PROTECTION FENCING AS PER REQUIREMENT # 3'. A note also states: 'CRZ - DBH x 10cm - CRZ TO BE MEASURED FROM THE OUTSIDE EDGE OF THE TREE BASE'.

Scale: NTS
Date: MARCH 2021
Drawings No.: 1 of 1



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Ronald H. Koudys, O.A.L.A. C.S.L.A. DATE



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date: revision: by:

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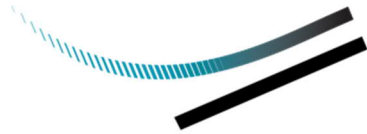
TREE PRESERVATION PLAN
 5of5

scale: AS NOTED
 drawn by: MCB
 reviewed by: MCB
 job number: 21-164Ln
 plot date: 22-08-19
 drawing number:

T-5

Appendix F

Functional Servicing Report



DILLON
CONSULTING

MONTGOMERY SISAM ARCHITECTS INC.

Orleans Long Term Care Facility Functional Servicing Report

1161 Old Montreal Road, City of Ottawa

Table of Contents

1.0	Introduction	1
1.1	Reference Documents	1
2.0	Transportation Servicing	2
2.1	Existing Conditions	2
2.2	Proposed Roadways	2
3.0	Sanitary Servicing	3
3.1	Existing Conditions	3
3.2	Design Criteria.....	3
3.3	Proposed Servicing	4
4.0	Stormwater Servicing	5
4.1	Background Information.....	5
4.2	Design Criteria.....	5
4.3	Proposed Servicing	6
4.3.1	Stormwater Design Calculations	7
4.3.2	Drainage Areas.....	8
4.3.3	Site Detention	8
4.3.4	Water Quality.....	8
4.3.5	Erosion Controls	8
5.0	Watermain Servicing	9
5.1	Existing Conditions	9
5.2	Proposed Servicing	9
6.0	Utilities	10
6.1	Gas.....	10
6.2	Telecommunications	10
6.3	Hydro	10

7.0	Conclusion	11
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Tables

Table 1:	Sanitary Sewer Design Criteria.....	3
Table 2:	Storm Sewer Design Criteria.....	5
Table 3:	Water Boundary Conditions	9

Appendices

A	Functional Servicing Plan	
B	Sanitary Sewer and Storm Sewer Design Sheets	
C	Stormwater Management Calculations	
D	Water Boundary Conditions	



1.0

Introduction

Dillon Consulting Limited (Dillon) was retained by Montgomery Sisam Architects Inc. to develop a functional servicing strategy for the undeveloped property fronting Famille-Laporte Avenue, located at 1161 Old Montreal Road in the City of Ottawa. This document outlines the servicing strategy including supporting studies and related information for the transportation, sanitary, stormwater management, and water main servicing for the site.

The total area of the entire site is approximately 2.01 Ha. The Developer is planning on severing the property into two separate development lots. The proposed Long Term Care development site is approximately 1.25 Ha, and the remaining undeveloped lands area are approximately 0.76 Ha. The overall site is presently zoned R15 Rural Institutional and currently consists of a vacant/grassed field. The proposed Long Term Care Facility development will be located on the southern portion of the site within the limits of the vacant field.

This document is intended for use for the Long Term Care facility portion of the site only. A separate FSR will be prepared for the future development lands to be north.

1.1

Reference Documents

The following documents and drawings were referenced when completing this study:

- City of Ottawa– Sewer Design Guidelines (Ottawa, 2012)
- City of Ottawa – GIS Interactive Mapping (Ottawa)
- Design Guidelines for Sewage Works (MOE, 2008)
- Cardinal Creek Master Servicing Study (David Schaeffer Engineering Ltd., 2013)
- Cardinal Creek Village, Phase 1A As-Built Drawings (David Schaeffer Engineering Ltd., 2014)

2.0 Transportation Servicing

2.1 Existing Conditions

There is no existing access to the proposed development. The property is bounded on the north limit, east limit, and south limit by residential homes.

2.2 Proposed Roadways

The proposed access points to this development will be from Famille-Laporte Avenue at the west limit of the site. Staff, visitors, EMS, services and deliveries will access the site via Famille-Laporte Avenue. The site layout is shown in *Appendix A*. The pavement structure of the proposed internal roads will be consistent with geotechnical recommendations and the City's Development Manual. A Traffic Impact Study (TIS) has been completed for the site and is included as a separate submission.

3.0 Sanitary Servicing

3.1 Existing Conditions

Currently, there is an existing 200 mm diameter sanitary sewer located underneath Famille-Laporte Avenue, which is located west of the proposed development. The existing sanitary sewer heads northwards, ultimately discharges to the City of Ottawa Robert O. Pickard Environmental Centre treatment plant.

3.2 Design Criteria

The following sanitary sewer design criteria for this property are outlined in Table 1. The design criteria was established by the City of Ottawa's Design Guidelines (2012).

Table 1: Sanitary Sewer Design Criteria

Criteria	City of Ottawa's Design Guidelines (2012)
Hydraulic Sewer Sizing	Manning's Equation
Minimum Sewer Size (mm)	135 mm diameter
Minimum Cover Depth (m)	2.5
Manning's Roughness Coefficient 'n'	0.013
Velocity:	
Minimum (m/s)	0.60
Maximum (m/s)	3.00
Hydraulic Losses Across Manholes:	
• Straight Run (m)	Grade of Sewer
• 45 degree turn of less (m)	0.03
• Greater than 45 degree turn to 90 degree turn (m)	0.06
Infiltration Allowance/Peak Extraneous Flow	0.28 L/Ha/s
Peaking Factor	Based on Harmon Formula
Population Densities For Facility:	224 Bed Facility Assumed 30 Staff Members Total Population = 254 ppl
Average Daily Sewage	50,000 L/Gross Ha/Day [Per City Sewer Guidelines for Institutional Lands] 350 L/Cap/Day [Residential Average Flow]
Sewer Surcharging	Maximum hydraulic grade line

Proposed Servicing

Refer to the attached *Appendix A* which illustrates the proposed sanitary servicing layout. The sanitary servicing for the proposed development is as follows:

- All sanitary flows from the proposed building will be conveyed via a new 200mm site sanitary sewer.
- The site sanitary sewer will outlet to the existing Private Drain Connection stub located at the Famille-Laporte Avenue right-of-way limit. The existing PDC sewer is 200mm in diameter, connects to an existing sanitary manhole within the Famille-Laporte right-of-way, and drains northerly via an existing 250mm diameter sewer.
- A new Sanitary Manhole will be installed at the property line/PDC stub.
- A service connection will be installed from the west side of the building and directed to the new manhole at the property line.
- Due to the elevation drop at the new manhole at the right-of-way (greater than 1.5m), an external drop structure shall be included to provide a smooth transition for effluent across the manhole.

The sanitary sewer functional design sheets are provided in *Appendix B*. Criteria used in flow calculation is listed in Table 1.

The future detailed design of the sanitary sewer and service is to be consistent with the requirements of the City of Ottawa, Cardinal Creek Master Servicing Study and the Ministry of Environment, Conservation and Parks (MECP).

4.0 Stormwater Servicing

4.1 Background Information

The proposed development is of approximately 1.21 Ha and is zoned R15 Rural Institutional, currently consists of a vacant field. The City of Ottawa has previously installed a storm sewer stub for the proposed development at this location. There is an existing 1200 mm diameter municipal storm sewer within the Famille-Laporte Avenue right-of-way along east side of the road heading northwards, which drains to the downstream Cardinal Creek stormwater management facility and ultimately discharges to the Ottawa River. An outlet sewer/drain connection for the site drain to City of Ottawa manhole MHST74214. According to the as-built drawings provided by the City, the private drain connection is a 600mm diameter concrete pipe at 0.50% slope that terminates at the property with a manhole.

The development parcel is within the Cardinal Creek Development area. Cardinal Creek is subject to the Cardinal Creek Master Servicing Study (2013). As a part of that Master Servicing Study, a regional stormwater management pond was constructed. For the purposes of determining stormwater management criteria for the site, the subject parcel was assigned an existing Runoff Coefficient of 0.70 as per the Storm Drainage Plan for the Development (Sheet 65 – Cardinal Creek Village Phase 1A, David Schaeffer Engineering Ltd, 2014). The Storm Drainage Plan is included in *Appendix B*.

Areas to the south and southeast of the property presently grade towards the subject parcel. The offsite parcels are existing residential properties, mainly grassed with various structures. Overland flows from larger rain events will drain towards and onto the subject parcel. The offsite areas are also included in the Cardinal Creek Master Servicing Study (2013) and are also assigned an existing Runoff Coefficient of 0.70.

4.2 Design Criteria

The following storm sewer design criteria for this property are outlined in Table 2. The design criteria were established by the City of Ottawa's Design Guidelines (2012) and the Cardinal Creek Master Servicing Study (2013).

Table 2: Storm Sewer Design Criteria

Criteria	City of Ottawa's Design Guidelines (2012)
Hydraulic Sewer Sizing	Rational Method / Mannings Equation
Sewer Sizing Rainfall Event	5 year storm event
Minimum Cover Depth (m)	2
Manning's Roughness Coefficient 'n'	0.013

Criteria	City of Ottawa's Design Guidelines (2012)
Velocity:	
• Minimum (m/s)	0.80
• Maximum (m/s)	3.0
Roof Downspouts	Connected directly to site service connection
Rooftop Storage	Permitted (maximum 150mm depth)
Inlet Times:	
• Institutional	10 minute maximum
Runoff Coefficients:	Calculated per Site Conditions
• Paved and Roof Surfaces	0.90
• Landscaped/Open Space	0.20
Sewer Surcharging	<ul style="list-style-type: none"> • No surface ponding during 5 year storm event • 100 year Hydraulic Grade Line 0.3m below building footing
Stormwater Storage Requirements	<ul style="list-style-type: none"> • Storage of 100 year storm event • Outlet rate to be confirmed through consultation with City
Water Quality Treatment	Required per Rideau Valley Conservation Authority (RVCA)

4.3

Proposed Servicing

It is proposed that the site's stormwater outlet to the existing 1200 mm diameter storm sewer that is currently located within the Famille-Laporte Avenue right-of-way, located west of the site.

Refer to *Appendix A* for the proposed servicing. The stormwater servicing for the proposed development is as follows:

- The proposed site, and paved area will be serviced through a new storm sewer network constructed within the site.
- Onsite detention will be provided in accordance with City of Ottawa and Rideau Valley Conservation Authority Design Guidelines. The site storm outlet rate is to be restricted to the pre-development outlet rates for the 5 and 100 year storm events.
- Required restricted flows for the 100 year storm event are to be detained in an underground storage facility. The anticipated 100 year high water line will be at the top of the detention facility, which is below the lowest point on the site.
- The site will be graded to allow for overland flow to be captured onsite and directed to the storm sewer network. Rain events in excess of the 100 year event will pond onsite, then drain overland within the existing City road network.

Refer to *Appendix B* for the storm sewer design and *Appendix C* for the Stormwater Management Calculations.

4.3.1

Stormwater Design Calculations

The entire development (1.25 Ha) is located within the Cardinal Creek Village, and is subject to the Cardinal Creek Master Servicing Study. The study completed in 2013, outlines the stormwater management requirements for the site. In general, the site is tributary to a downstream regional stormwater management facility. The site was assigned an existing Rational Method runoff coefficient of 0.70. As the site is presently all grassed, the Master Servicing Study assumed the site was fully developed in the roadway sewer sizing and downstream detention facility design. The increased runoff coefficient allows for the LTC site to have a reduced volume of onsite detention from what would be typically expected when a grassed site is converted to a fully developed site.

As per City of Ottawa requirements, the rooftop drainage from the site will have a direct connection to the storm drain connection for the site. The rooftop drainage will be permitted to flow uncontrolled. As such, the release rate for the roof tops has been subtracted from the allowable release rate for the remainder of the site.

Presently there are residential lands to the south and southeast of the site that have overland drainage towards the subject parcel. The properties are 1171, 1183, 1195, 1199 and 1201 Old Montreal Road. The total additional area that drains to the site is approximately 0.92 Ha of mainly grassed lots with homes and structures. Unless the City requires that these parcels improve their site drainage, the existing overland flow routes from these homes will be generally maintained. As such, these lands have been included in the overall drainage calculations for the LTC site. These lands were also included in the Cardinal Creek Master Servicing Study, as such, the tributary area to the existing City sewers and pond will not be increased. Like the LTC site, the residential lands have been allocated an existing runoff coefficient of 0.70. If these lands were to be redeveloped in the future, it is understood that the properties would accommodate their own site drainage and regrade the lands to prevent overland flows from reaching the LTC site.

In order to properly account for the offsite areas, the detention system has been sized to account for the additional 0.92 Ha of residential lands. However, to prevent any required site improvements in the future, the outlet rate and associated outlet orifice plate have been sized to the allowable release rate from the LTC site only. As shown in the design calculation in *Appendix C*, the calculated outlet rate for the 5 year event for the LTC site is 0.254 m³/s. The 5 year design requirements utilized for the site were identified in the Cardinal Creek Master Servicing Study.

As noted above, the rooftop will drain uncontrolled into the site storm drain connection. As shown in the design calculation in *Appendix C*, the calculated outlet rate for the rooftop and courtyard area (which is connected to the building drainage system) is 0.171 m³/s.

The remaining available allowable release rate for the site is 0.086 m³/s. This is the outlet rate that was used to calculate the required storage for the site.

4.3.2 Drainage Areas

The proposed site drainage areas can be found on Sheet DRG-1 in *Appendix B*. These can be read in conjunction with the sewer design sheets for the development area. The drainage areas tributary to the site include the above noted offsite residential lands/areas that presently drain overland to the subject parcel. These offsite lands will be deleted from the overall site drainage area if/when the offsite lands redevelop.

4.3.3 Site Detention

The required site 100 year event detention volume was calculated using the outlet rate detailed in Section 4.3.1. The total required volume for the site, including the identified offsite residential areas, is 242.2 m³. The site architect has confirmed that there is no planned rooftop storage.

The total required storage will be provided in ADS StormTech system, which includes open bottom chambers to permit some infiltration if feasible. Given the native soils are clay, it is anticipated that infiltration rates will be slow, although no site testing has been conducted. Details for the detention chambers are included with Civil Design Plans.

4.3.4 Water Quality

Based on the Cardinal Creek Master Servicing Study, the drainage area requires enhanced quality treatment, with a long-term average removal of 80% of suspended solids. The existing Cardinal Creek detention facility includes a wet pond to permit some removal of TSS. However, the Master Servicing Study recommends that a treatment train approach be implemented for the drainage area. As such, on top of the water quality treatment included in the downstream stormwater management pond, the site will include a water quality unit on the downstream side of the detention system.

A Hydro International First Defence FDHC-4 is proposed for the site. Refer to *Appendix C* for product information.

4.3.5 Erosion Controls

Erosion and sediment controls will be implemented by the General Contractor onsite, and within the Famille-Laporte right-of-way, prior to any earth disturbances on the site. Erosion control requirements are detailed within the civil plan drawing set. Erosion controls, including all catch basin silt bags, are to be inspected on a daily basis and/or after major rain events. Any repairs or required maintenance shall be completed promptly. Site erosion controls are to remain in place until site works and vegetative restoration has been completed and approved.

5.0 Watermain Servicing

5.1 Existing Conditions

An existing 400 mm diameter watermain is located within the Famille-Laporte Avenue right-of-way, located in the west boulevard. The site currently has one (1) 200mm diameter service connection terminated with a valve at the property line.

5.2 Proposed Servicing

Please refer to the attached *Appendix A* which illustrates the proposed watermain servicing. The watermain servicing for the proposed development is as follows:

- The new building will be serviced by a new 100 mm diameter domestic watermain connected to the existing main on Famille-Laporte Avenue. The building service lines are split prior to entering the building into a 100mm diameter domestic service, and a 150mm diameter fire service. A backflow preventer will be installed inside the building mechanical room. A meter chamber per City Standard W32.1 will be installed at the property line.
- Two (2) new fire hydrants and 150 mm diameter leads are proposed for the site. One is located in the south parking area to be in close proximity to the building FDC connection, the second is located in the north boulevard.
- One new water service crossing of Famille-Laporte Avenue will be completed via open cut to the roadway. The new water service will connect to the existing 400mm main. The roadway will be restored to its predevelopment condition following the connection.
- The Site Contractor will be responsible for acquiring all necessary City permits and traffic controls prior to commencement of work within the roadway.

A Fire Flow Boundary Condition Analysis was completed/estimated for the proposed five storey structure using the Fire Underwriters Survey Guidelines. The inputs and results can be found in *Appendix D*.

Table 3: **Water Boundary Conditions**

Item	Results
Gross Floor Area	12,516 m ²
Average Daily Demand	1.03 L/s (88.9 m ³ /day)
Maximum Daily Demand	2.57 L/s
Fire Flow	20,160,000 L/d
Maximum Day + Fire Flow	20,382,250 L/d

The detailed design of the watermain service are to be consistent with the requirements of the City of Ottawa and will be coordinated during the detailed design process.

6.0 Utilities

6.1 Gas

Existing natural gas infrastructure is located along the Famille-Laporte Avenue right-of-way, located west of the site. There is no existing natural gas service currently servicing the proposed site. During detailed design, future conversation on loading will be required with Enbridge.

6.2 Telecommunications

The existing site is not currently serviced by telecommunications. It is anticipated that existing telecommunications infrastructure exists within the Famille-Laporte Avenue right-of-way, located west of the site. Detailed design, additional consultation will be held with utility owner to confirm internal servicing requirements.

6.3 Hydro

Existing hydro infrastructure is buried along the east side of the Famille-Laporte Avenue right-of-way. There is no existing hydro currently servicing the proposed site. During detailed design, future conversation on loading will be required with the hydro provider.

7.0

Conclusion

The review of the adjacent services have been found to be sufficient for the proposed development. The design of the proposed internal services will be finalized during detailed design.

Yours sincerely,

DILLON CONSULTING LIMITED



Chris Patten, P.Eng.
Project Manager



Appendix A

Functional Servicing Plan



Conditions of Use

Verify elevations and/or dimensions on drawing prior to use. Report any discrepancies to Dillon Consulting Limited.

Do not scale dimensions from drawing.

Do not modify drawing, re-use, or use for purposes other than those intended at the time of its preparation without prior written permission from Dillon Consulting Limited.



2	19/08/2021	RE-ISSUED FOR SITE PLAN CONTROL APPLICATION AND ZONING BY-LAW AMENDMENT	CDP, DS
1	12/02/2021	SPA / ZBA SUBMISSION	CDP
#	date:	revision:	by:



All drawing and specifications are the property of the architect. The contractor shall verify all dimensions and information on site and report any discrepancy to architect before proceeding.

Arch Corp - Orleans

1161 OLD MONTREAL RD.
ORLEANS ON, K4A 3N6

SITE SERVICING PLAN

scale: 1 : 250
drawn by: DS
reviewed by: CDP
job number: 21-2647
plot date: August 22, 2022

CIV-1

LEGEND:

- WATER VALVE
- FIRE HYDRANT
- CATCH BASIN
- MANHOLE
- CATCHBASIN MANHOLE
- WATER QUALITY UNIT

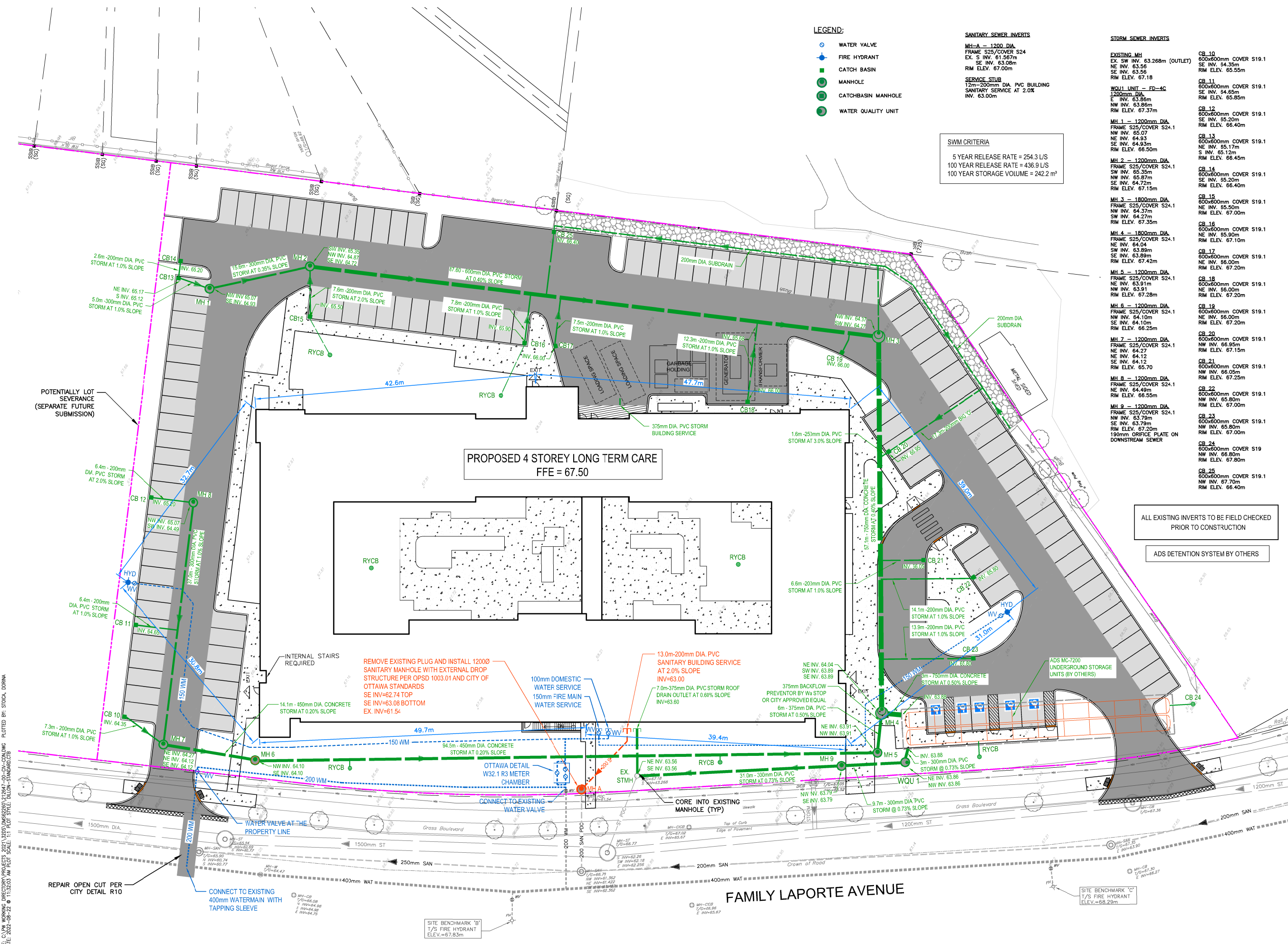
- SANITARY SEWER INVERTS**
- MH-A - 1200 DIA**
FRAME S25/COVER S24
EX. S INV. 61.567m
SE INV. 63.06m
RIM ELEV. 67.00m
- SERVICE STUB**
12m-200mm DIA. PVC BUILDING
SANITARY SERVICE AT 2.0%
INV. 63.00m

STORM SEWER INVERTS

- EXISTING MH**
EX. S INV. 63.268m (OUTLET)
SE INV. 63.56
NE INV. 63.56
RIM ELEV. 67.18
- WQ1 UNIT - FD-4C**
1200mm DIA
E INV. 63.86m
NW INV. 63.86m
SW INV. 63.86m
RIM ELEV. 67.37m
- MH 1 - 1200mm DIA**
FRAME S25/COVER S24.1
NW INV. 65.07
NE INV. 64.93
SE INV. 64.93m
RIM ELEV. 68.50m
- MH 2 - 1200mm DIA**
FRAME S25/COVER S24.1
SW INV. 65.35m
NW INV. 65.87m
SE INV. 64.72m
RIM ELEV. 67.15m
- MH 3 - 1800mm DIA**
FRAME S25/COVER S24.1
NE INV. 64.04
SW INV. 63.89m
SE INV. 63.89m
RIM ELEV. 67.42m
- MH 4 - 1800mm DIA**
FRAME S25/COVER S24.1
NE INV. 64.04
SW INV. 63.89m
SE INV. 63.89m
RIM ELEV. 67.42m
- MH 5 - 1200mm DIA**
FRAME S25/COVER S24.1
NW INV. 65.35m
NE INV. 63.91
RIM ELEV. 67.28m
- MH 6 - 1200mm DIA**
FRAME S25/COVER S24.1
NW INV. 64.10m
SE INV. 64.10m
RIM ELEV. 66.25m
- MH 7 - 1200mm DIA**
FRAME S25/COVER S24.1
NE INV. 64.27
NE INV. 64.12
SE INV. 64.12
RIM ELEV. 65.70
- MH 8 - 1200mm DIA**
FRAME S25/COVER S24.1
NE INV. 64.49m
RIM ELEV. 66.55m
- MH 9 - 1200mm DIA**
FRAME S25/COVER S24.1
NW INV. 63.79m
SE INV. 63.79m
RIM ELEV. 67.20m
- MH 10 - 1200mm DIA**
FRAME S25/COVER S24.1
NW INV. 65.05m
SE INV. 64.93m
RIM ELEV. 67.00m
- MH 11 - 1200mm DIA**
FRAME S25/COVER S24.1
NW INV. 65.05m
SE INV. 64.93m
RIM ELEV. 67.00m
- MH 12 - 1200mm DIA**
FRAME S25/COVER S24.1
NE INV. 65.50m
RIM ELEV. 67.00m
- MH 13 - 1200mm DIA**
FRAME S25/COVER S24.1
NE INV. 65.00m
RIM ELEV. 67.20m
- MH 14 - 1200mm DIA**
FRAME S25/COVER S24.1
NW INV. 66.95m
RIM ELEV. 67.15m
- MH 15 - 1200mm DIA**
FRAME S25/COVER S24.1
NE INV. 64.27
NE INV. 64.12
SE INV. 64.12
RIM ELEV. 65.70
- MH 16 - 1200mm DIA**
FRAME S25/COVER S24.1
NE INV. 64.49m
RIM ELEV. 66.55m
- MH 17 - 1200mm DIA**
FRAME S25/COVER S24.1
NW INV. 63.79m
SE INV. 63.79m
RIM ELEV. 67.20m
- MH 18 - 1200mm DIA**
FRAME S25/COVER S24.1
NW INV. 65.05m
SE INV. 64.93m
RIM ELEV. 67.00m
- MH 19 - 1200mm DIA**
FRAME S25/COVER S24.1
NW INV. 65.05m
SE INV. 64.93m
RIM ELEV. 67.00m
- MH 20 - 1200mm DIA**
FRAME S25/COVER S24.1
NW INV. 65.05m
SE INV. 64.93m
RIM ELEV. 67.00m
- MH 21 - 1200mm DIA**
FRAME S25/COVER S24.1
NW INV. 65.05m
SE INV. 64.93m
RIM ELEV. 67.00m
- MH 22 - 1200mm DIA**
FRAME S25/COVER S24.1
NW INV. 65.05m
SE INV. 64.93m
RIM ELEV. 67.00m
- MH 23 - 1200mm DIA**
FRAME S25/COVER S24.1
NW INV. 65.05m
SE INV. 64.93m
RIM ELEV. 67.00m
- MH 24 - 1200mm DIA**
FRAME S25/COVER S24.1
NW INV. 65.05m
SE INV. 64.93m
RIM ELEV. 67.00m
- MH 25 - 1200mm DIA**
FRAME S25/COVER S24.1
NW INV. 65.05m
SE INV. 64.93m
RIM ELEV. 67.00m

SWM CRITERIA

5 YEAR RELEASE RATE = 254.3 US
100 YEAR RELEASE RATE = 436.9 US
100 YEAR STORAGE VOLUME = 242.2 m³



PLANES, CIVIL ENGINEERING WORKSHEET, AREA, VARIOUS INVERTS, SLOPE, etc. BY INCLUDING PLOTTED BY: STOKA, DORINA
 PLOT DATE: 2022-08-22 11:22:03 AM FILED: 2022-08-22 11:22:03 AM

Appendix B

Sanitary Sewer and Storm Sewer Design Sheets

**ORLEANS LONG TERM CARE FACILITY - CITY OF OTTAWA
SANITARY SEWER DESIGN SHEET**

Project Name: Orleans LTC
Project No: 21-4926

The Peaking Factor was derived:
Using Harmon Formula= Y (Y or N)
From a Table= N
Value from table=

Residential Average Daily Flow= 350 L/Cap.D
Peak Extraneous Flow= 0.280 L/Ha.S

Outlet Invert Elevation= 60.770

Mannings 'n'= 0.013

Basement Floor Elevation = 0.000

Ground Elevation at Outlet = 66.790

Total Area= 1.220

Hydraulic Grade Line Cover = 2.00

HGL at Outlet = 61.590

Location			Flow Characteristics								Sewer Design/Profile								Cover			Hydraulic Grade Line				
ROAD/STN	LOCATION		INDIVIDUAL		CUMULATIVE		PEAKING FACTOR M	POP FLOW Q(p) (L/s)	PEAK EXTR. FLOW Q(i) (L/s)	PEAK DESIGN FLOW Q(d) (L/s)	CAPACITY (L/s)	LENGTH (m)	PIPE DIA. (mm)	Wall Thickness (mm)	SLOPE (%)	UPPER INVERT (m)	LOWER INVERT (m)	FALL (m)	VELOCITY (m/s)	DROP IN LOWER MANHOLE (m)	Ground Elevation Upper MH	Cover @ Up MH (m)	Cover @ Low MH (m)	HGL Elev at Upstream MH	HGL Elev vs. Grnd Elev @ Up MH	HGL Elev vs. Obvert @ Up MH
	FROM MH	TO MH	POP	AREA (ha.)	POP	AREA (ha.)																				
LTC	BLDG	DROP	254.0	1.22	254	1.22	4.108	4.227	0.342	4.57	46.38	13.0	200	15	2.00	63.000	62.740	0.260	1.48	1.140	67.450	4.235	4.045	61.598	OKAY	OKAY
Fam. Laporte	DROP	MH A	0.0	0.00	254	1.22	4.108	4.227	0.342	4.57	0.03	0.1	200	15	0.00	61.600	61.600	0.000	0.00	0.058	67.000	5.185	5.185	61.596	OKAY	OKAY
Fam. Laporte	MH A	MAIN	0.0	0.00	254	1.22	4.108	4.227	0.342	4.57	29.34	12.5	200	15	0.80	61.542	61.442	0.100	0.93	0.080	67.000	5.243	5.133	61.596	OKAY	OKAY
Fam. Laporte	MAIN	MAIN	0.0	0.00	254	1.22	4.108	4.227	0.342	4.57	60.03	58.1	250	15	1.02	61.362	60.770	0.592	1.22	0.000	66.790	5.163	5.755	61.593	OKAY	OKAY

ORLEANS LTCF
STORM SEWER DESIGN SHEET

Project Name: Orleans LTCF
Project Number: 21-2647

Intensity Option # 1

1) Intensity (i) = a/(t+b)^c 2) Intensity (i) = a*t^b 3) Insert Intensity

Manning's n = 0.013

Based on 1:5 Year Storm Event
City of Ottawa (Cardinal Creek MSP)

a= 998.071
b= 6.053
c= 0.814

a=
b=

i=

Total Area (ha)= 2.17 Outlet Invert Elevation= 63.200 Ground Elevation @ Outlet = 66.77 High Water Level at Outlet= 63.33

Location				Sewer Design / Profile													Cover		Hydraulic Grade Line							
Road /Stations	From MH	To MH	Area (ha)	Run. Coef.	2.78AC	Accum. 2.78AC	T of In (min)	T of F (min)	T of Conc. (min)	Intensity (mm/hr)	Exp. Flow (L/s)	Capacity (L/s)	Velocity (m/s)	Wall Thickness (mm)	Length (m)	Pipe Dia. (mm)	Slope (%)	Invert Up MH	Invert Low MH	Fall (m)	Drop Across Low MH (m)	Ground Elev Up MH	Cover @ Up MH (m)	Cover @ Low MH (m)	HGL Elevation at Upstream MH	HGL Elev vs. Grnd Elev @ Up MH
	MH1	MH2	0.08	0.82	0.18	0.18	10.0	0.32	10.00	104.19	18.53	57.21	0.81	11	15.6	300	0.35	64.93	64.87	0.05	0.150	66.500	1.26	1.97		
	MH2	MH3	0.82	0.82	1.88	2.05	10.0	1.06	10.32	102.53	210.58	388.33	1.37	15	87.6	600	0.40	64.72	64.37	0.35	0.100	67.150	1.81	2.36		
	MH3	MH4	0.61	0.82	1.40	3.45	10.0	0.60	11.38	97.41	336.41	704.10	1.59	100	57.1	750	0.40	64.27	64.04	0.23	0.150	67.350	2.23	2.53		
	MH4	STORAGE	0.00	0.82	0.00	3.79	10.0	0.03	12.83	91.28	346.12	787.21	1.78	100	3.0	750	0.50	63.89	63.88	0.02		67.420	2.68	2.67		
	STORAGE	WQU	0.00	0.82	0.00	3.79	10.0	0.04	12.86	91.17	345.72	82.62	1.17	100	3.0	300	0.73	63.88	63.86	0.02		67.400	3.12	3.11		
	WQU	MH9	0.01	0.82	0.00	3.79	10.0	0.14	12.90	91.00	345.11	82.62	1.17	100	9.7	300	0.73	63.86	63.78	0.07		67.370	3.11	3.12		
	MH9	EX MH	0.00	0.82		4.75	10.0	0.44	13.04	90.46	429.89	82.62	1.17	100	31.1	300	0.73	63.78	63.56	0.23	0.300	67.300	3.12	3.22		
	MH MH	MAIN	0.00	0.82		4.75		0.12	13.49	88.79	421.93	434.17	1.54	100	11.5	600	0.50	63.26	63.20	0.06		67.180	3.22	2.87	63.86	Okay
					#REF!	#REF!																				
	MH8	MH7	0.12	0.82	0.28	0.28	10.0	0.45	10.00	104.19	29.45	96.70	1.37	15	37.0	300	1.00	64.49	64.12	0.37		66.550	1.74	1.26		
	MH7	MH6	0.00	0.82	0.00	0.28	10.0	0.29	10.45	101.87	28.80	125.90	0.79	15	14.0	450	0.20	64.12	64.10	0.03		65.700	1.11	1.69		
	MH6	MH5	0.10	0.20	0.06	0.34	10.0	1.99	10.75	100.41	33.97	125.90	0.79	15	94.5	450	0.20	64.10	63.91	0.18		66.250	1.69	2.90		
	MH5	MH4	0.00	0.70	0.00	0.34	10.0	0.10	12.74	91.67	31.01	161.28	1.01	15	6.0	450	0.32	63.91	63.89	0.02		67.280	2.90	3.06		
	ROOF	EX. MH	0.42	0.82	0.96	0.96	10.0	0.09	10.00	104.19	100.00	135.81	1.23	15	7.0	375	0.60	63.60	63.56	0.04	0.300	67.400	3.41	3.23	63.97	Okay

HWL GOVERNED BY
SWM CHAMBER AND
OUTLET ORIFICE

HWL GOVERNED BY
SWM CHAMBER AND
OUTLET ORIFICE

INCLUDES OFFSITE AREAS
TO SOUTH AND SOUTHEAST
(0.92 Ha Total Area)

**ORLEANS LTCF
STORM SEWER DESIGN SHEET**

Project Name: Orleans LTCF
Project Number: 21-2647

Intensity Option # **1**

1) Intensity (i) = a/(t+b)^c 2) Intensity (i) = a*t^b 3) Insert Intensity

Manning's n = **0.013**

Based on 1:100 Year Storm Event
City of Ottawa

a= 1735.700
b= 6.014
c= 0.820

a=
b=

i=

Total Area (ha)= **2.17** Outlet Invert Elevation= **63.200** Ground Elevation @ Outlet = **66.77** High Water Level at Outlet= **63.33**

Location				Sewer Design / Profile														Cover		Hydraulic Grade Line						
Road /Stations	From MH	To MH	Area (ha)	Run. Coef.	2.78AC	Accum. 2.78AC	T of In (min)	T of F (min)	T of Conc. (min)	Intensity (mm/hr)	Exp. Flow (L/s)	Capacity (L/s)	Velocity (m/s)	Wall Thickness (mm)	Length (m)	Pipe Dia. (mm)	Slope (%)	Invert Up MH	Invert Low MH	Fall (m)	Drop Across Low MH (m)	Ground Elev Up MH	Cover @ Up MH (m)	Cover @ Low MH (m)	HGL Elevation at Upstream MH	HGL Elev vs. Grnd Elev @ Up MH
	MH1	MH2	0.08	0.82	0.18	0.18	10.0	0.32	10.00	178.56	31.75	57.21	0.81	11	15.6	300	0.35	64.93	64.87	0.05	0.150	66.500	1.26	1.97		
	MH2	MH3	0.82	0.82	1.88	2.05	10.0	1.06	10.32	175.68	360.82	388.33	1.37	15	87.6	600	0.40	64.72	64.37	0.35	0.100	67.150	1.81	2.36		
	MH3	MH4	0.61	0.82	1.40	3.45	10.0	0.60	11.38	166.82	576.14	704.10	1.59	100	57.1	750	0.40	64.27	64.04	0.23	0.150	67.350	2.23	2.53		
	MH4	STORAGE	0.00	0.82	0.00	3.79	10.0	0.03	12.83	156.23	592.41	787.21	1.78	100	3.0	750	0.50	63.89	63.88	0.02		67.420	2.68	2.67		
	STORAGE	WQU	0.00	0.82	0.00	3.79	10.0	0.04	12.86	156.04	591.72	82.62	1.17	100	3.0	300	0.73	63.88	63.86	0.02		67.400	3.12	3.11		
	WQU	MH9	0.01	0.82	0.00	3.79	10.0	0.14	12.90	155.75	590.66	82.62	1.17	100	9.7	300	0.73	63.86	63.78	0.07		67.370	3.11	3.12		
	MH9	EX MH	0.00	0.82		4.75	10.0	0.44	13.04	154.82	735.72	82.62	1.17	100	31.1	300	0.73	63.78	63.56	0.23	0.300	67.300	3.12	3.22		
	MH MH	MAIN	0.00	0.82		4.75		0.12	13.49	151.93	721.98	434.17	1.54	100	11.5	600	0.50	63.26	63.20	0.06		67.180	3.22	2.87	63.86	Okay
					#REF!	#REF!																				
	MH8	MH7	0.12	0.82	0.28	0.28	10.0	0.45	10.00	178.56	50.47	96.70	1.37	15	37.0	300	1.00	64.49	64.12	0.37		66.550	1.74	1.26		
	MH7	MH6	0.00	0.82	0.00	0.28	10.0	0.29	10.45	174.54	49.34	125.90	0.79	15	14.0	450	0.20	64.12	64.10	0.03		65.700	1.11	1.69		
	MH6	MH5	0.10	0.20	0.06	0.34	10.0	1.99	10.75	172.02	58.19	125.90	0.79	15	94.5	450	0.20	64.10	63.91	0.18		66.250	1.69	2.90		
	MH5	MH4	0.00	0.70	0.00	0.34	10.0	0.10	12.74	156.90	53.08	161.28	1.01	15	6.0	450	0.32	63.91	63.89	0.02		67.280	2.90	3.06		
	ROOF	EX. MH	0.42	0.82	0.96	0.96	10.0	0.09	10.00	178.56	171.37	135.81	1.23	15	7.0	375	0.60	63.60	63.56	0.04	0.300	67.400	3.41	3.23	63.97	Okay

HWL GOVERNED BY
SWM CHAMBER AND
OUTLET ORIFICE

HWL GOVERNED BY
SWM CHAMBER AND
OUTLET ORIFICE

INCLUDES OFFSITE AREAS
TO SOUTH AND SOUTHEAST
(0.92 Ha Total Area)

Conditions of Use

Verify elevations and/or dimensions on drawing prior to use.
Report any discrepancies to Dillon Consulting Limited.
Do not scale dimensions from drawing.
Do not modify drawing, re-use it, or use it for purposes other than those intended at the time of its preparation without prior written permission from Dillon Consulting Limited.



#	date:	revision:	by:
2	19/08/2021	RE-ISSUED FOR SITE PLAN CONTROL APPLICATION AND ZONING BY-LAW AMENDMENT	CDP, DS
1	12/02/2021	SPA / ZBA SUBMISSION	CDP

All drawing and specifications are the property of the architect. The contractor shall verify all dimensions and information on site and report any discrepancy to architect before proceeding.

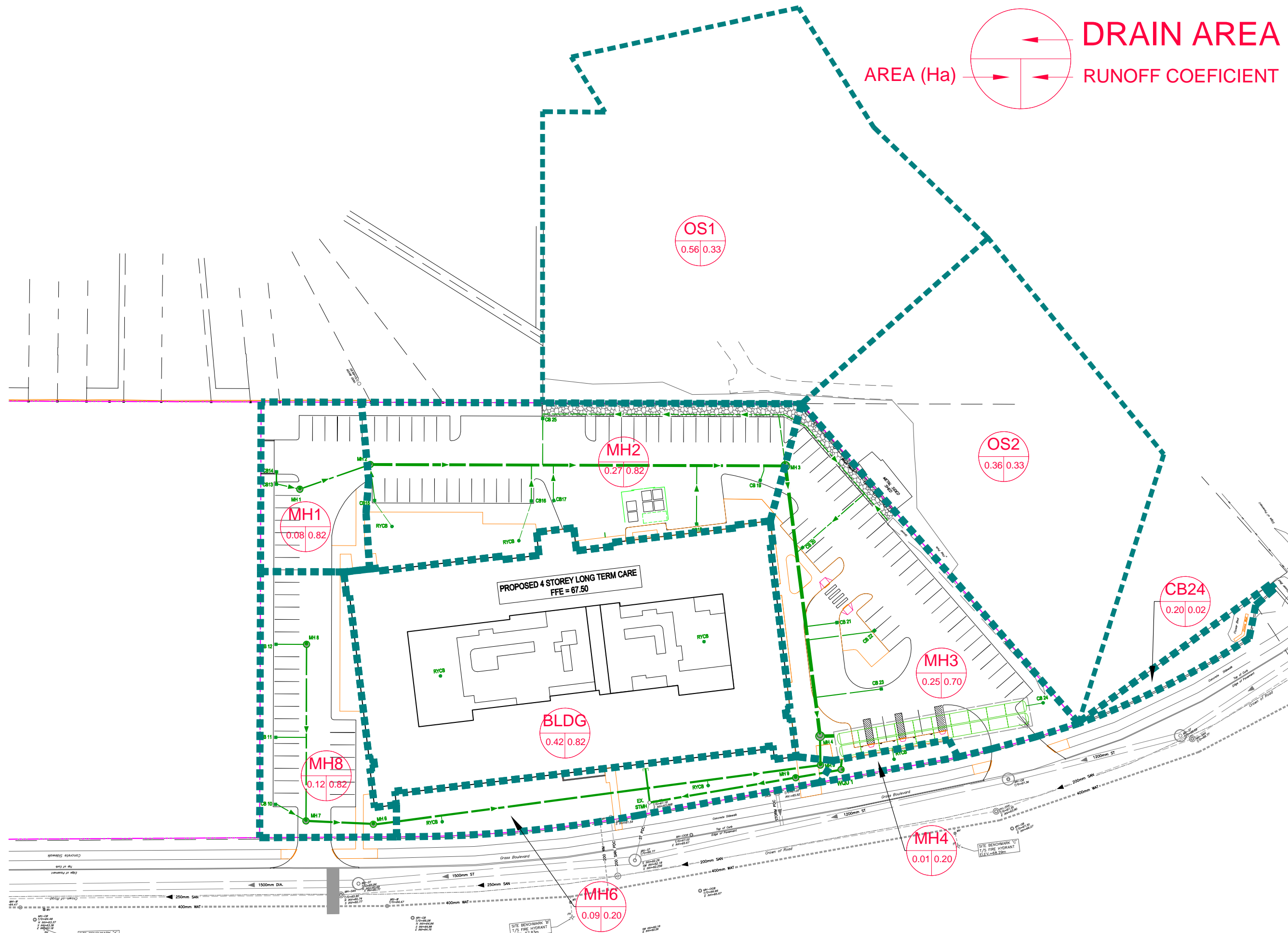
Arch Corp - Orleans

1161 OLD MONTREAL RD.
ORLEANS ON, K4A 3N6

SITE DRAINAGE PLAN

scale: 1 : 350
drawn by: AAM
reviewed by: CDP
job number: 21-2647
plot date: August 19, 2022

drawing number: **DRG-1**

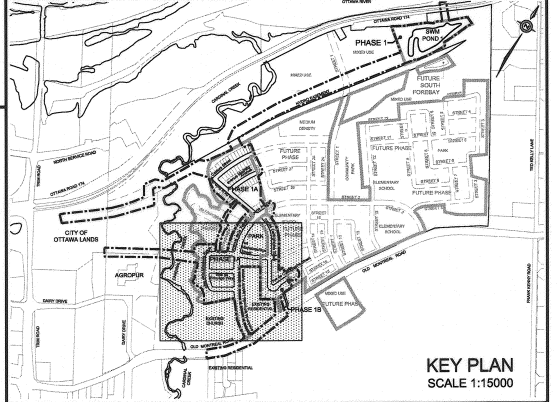


Appendix C

Stormwater Management Calculations



REVIEWED BY DEVELOPMENT REVIEW BRANCH
 SIGNED: [Signature]
 DATE: AUGUST 14, 2014
 PLAN NUMBER: 16715-14-08-13



- LEGEND**
- 0.25Ha 0.75 DRAINAGE AREA IN HECTARES RUN-OFF COEFFICIENT
 - 0.29Ha 0.65 EXTERNAL DRAINAGE AREA IN HECTARES RUN-OFF COEFFICIENT
 - OVERLAND FLOW DIRECTION
 - EXTERNAL OVERLAND FLOW DIRECTION
 - STORM MANHOLE
 - STORM MANHOLE IN OTHER PHASES
 - CATCHBASIN MANHOLE
 - RIGBS - ELBOW SECTION (CITY STD. S31) / T SECTION (CITY STD. S30), AS NOTED ON THE DRAWING
 - SINGLE/DOUBLE CATCHBASIN
 - CATCHBASIN WITH INLET CONTROL DEVICE IPEX TEMPEST A (Q max = 19.9 l/s)
 - CATCHBASIN WITH INLET CONTROL DEVICE IPEX TEMPEST B (Q max = 28.4 l/s)
 - CATCHBASIN WITH INLET CONTROL DEVICE IPEX TEMPEST C (Q max = 35.5 l/s)
 - CATCHBASIN WITH INLET CONTROL DEVICE IPEX TEMPEST D (Q max = 50.1 l/s)
 - CATCHBASIN WITH INLET CONTROL DEVICE IPEX TEMPEST E (Q max = 69.1 l/s)
 - STORM SEWER TRIBUTARY BOUNDARY
 - STORM SEWER SUB TRIBUTARY BOUNDARY
 - EXTERNAL STORM SEWER TRIBUTARY BOUNDARY
 - PHASE LINE
 - SINGLE STORM HOUSE CONNECTION
 - NOT INCLUDED IN PRE-SERVICING AGREEMENT FOR PHASE 1A

TOPOGRAPHIC INFORMATION
 TOPOGRAPHIC INFORMATION PROVIDED BY STANTEC GEOMATICS LTD, PROJECT NO. 161611900-111 RECEIVED ON JULY 6, 2012 AND PROJECT NO. 16162924-111 RECEIVED ON OCTOBER 24, 2013 AND NOVEMBER 29, 2013

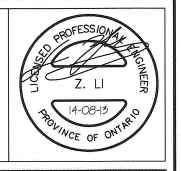
LEGAL INFORMATION
 CALCULATED M-PLAN PROVIDED BY STANTEC GEOMATICS LTD, PROJECT NO. 161613098-132 RECEIVED ON JUNE 27, 2014.

PRE-SERVICING SUBMISSION FOR PHASE 1A ONLY 14-08-13

ELEVATION NOTE
 ELEVATIONS HEREON ARE GEODETIC AND ARE DERIVED FROM THE CAN-NET VRS NETWORK.

No.	DATE	BY	DESCRIPTION
4.	14-08-13	Z.L.	PRE-SERVICING SUBMISSION FOR PHASE 1A
3.	14-05-27	Z.L.	3rd SUBMISSION
2.	14-05-01	Z.L.	2nd SUBMISSION
1.	14-02-07	Z.L.	1st SUBMISSION

Ottawa CITY OF OTTAWA




PROJECT No. 11-513 B-1

STORM DRAINAGE PLAN © DSEL

TAMARACK (CARDINAL CREEK) CORPORATION	CARDINAL CREEK VILLAGE PHASE 1A
DSEL david schaeffer engineering ltd	120 Ibor Road, Unit 203 Stittville, ON K2S 1E9 Tel: (613) 836-0856 Fax: (613) 836-7183 www.DSEL.ca
DRAWN BY: W.L./H.P. CHECKED BY: K.M. DRAWING NO. SHEET NO.	DESIGNED BY: K.M. CHECKED BY: Z.L. 65
SCALE: 1:1000	DATE: FEBRUARY 2014

16715

	Stormwater Management Calculations	Project: Perth LTCF	No.: 212317
	Rational Method Calculations Pre-Development	By: SZ	Date: 2022-08-19
		Checked: JVM	Scenario: Existing

Calculation of existing runoff rate is undertaken using the Rational Method:

$$Q = CiA$$

Where: Q = Peak flow rate (litres/second)
 C = Runoff coefficient
 I = Rainfall intensity (mm/hour)
 A = Catchment area (hectares)

Project Area, A hectares Soil type Agg Maps

Composite Runoff Coefficient		
Land Use	Area (m ²)	C*
Existing Site	12,543	0.70
Composite Runoff Coefficient	12,543	0.70

<- C Factor assumed for site in Cardinal Creek MP

* - Per the Cardinal Creek Master Servicing Study

Time of Concentration		
Per Cardinal Creek Master Servicing Study	t_c (min) =	10.0

Rainfall intensity calculated in accordance with the Governing Standards/Reports:
 (if only two parameters are provided, enter B as "0" and C as positive number)

$$I = \frac{A}{(B + t_c)^C}$$

Where: A, B, and C = IDF Parameters From Local Municipality Guidelines
 I = Rainfall intensity (mm/hour)
 T = Time of concentration (hours)

Return Period (Years)	5*	100**
A	998.071	1735.688
B	6.053	6.014
C	0.814	0.820
T (mins) **	10.0	10.0
I (mm/hr)	104.2	178.6
Q (L/s)	254.3	435.9
Q (m ³ /s)	0.254	0.436

Notes:

* - Per the Cardinal Creek Master Servicing Study

** - Per the City of Ottawa Sewer Design Standards

<- Allowable Release Rate for LTC Site Only (1.25 Ha)



Stormwater Management Calculations Storage Calculations	Project: Orleans LTCF	No.: 21-2647	
	By: SZ	Date: 2022-08-19	Page:
	Checked: JVM	Scenario: Proposed	2

Calculation of existing runoff rate is undertaken using the Rational Method: $Q = CiA$

Where: Q = Peak flow rate (litres/second)
 C = Runoff coefficient
 I = Rainfall intensity (mm/hour)
 A = Catchment area (hectares)

Site Area

1.25	hectares
------	----------

 Dranage Area

2.17	hectares
------	----------

 [Includes 1.25 Ha onsite and 0.92 Ha from offsite]

Composite Runoff Coefficient			
Land Use	Area (m ²)	C	
Building (Including Courtyard)	4,209	0.82	Rooftop Drainage Uncontrolled
Asphalt/Concrete Pavement	4,630	0.90	Remainder of Site to be Detained and Released at a controlled rate
Rocks, Misc Landscape	1,211	0.80	
Grass	2,494	0.25	When Developed will control flows
Offsite (South and Southeast of Site)	9,200	0.30	
Composite Runoff Coefficient	21,743	0.55	
	12,543	0.73	
Total Area of Rooftops/Courtyard, Ar	4,209	0.82	
Total Area of Remainder of Site, As	8,334	0.69	
Offsite Area, Ao	9,200	0.30	
Storage Area, As + Ao	17,534	0.49	

Allowable Discharge, Qa (m³/s):

0.254

 <- 1:5 Year Existing Design Storm Outlet Rate For Subject Parcel Only

Rooftop Discharge, Qr (m³/s):

0.171

 <- 1:100 Year Existing Design Storm Outlet Rate
 Assumed to discharge unrestricted to roadway sewer system

Remainder of Site Discharge, Qs (m³/s):

0.083

 <- Total Allowable Q - Rooftop Q (Qs = Qa - Qr)

Remainder of Site Discharge, Qs (L/s):

83.0

 <- Total Allowable Q - Rooftop Q (Qs = Qa - Qr)

Design Event

100-Year Storm - From Ottawa SWM Guidelines 2012 /Cardinal Creek Master Servicing Study

A =	1735.7
B =	6.014
C =	0.820
Time Step =	10 min

(if only two paramters are provided, enter B as "0" and C as positive number)

Where: A, B, and C = IDF Parameters From City

I = Rainfall intensity (mm/hour)

t_c = Time of concentration (hours)

$$I = \frac{A}{(B + t_c)^c}$$

Event Duration (mins)	Rainfall Intensity (mm/hr)	Peak Runoff Rate (L/s)	Release Rate (L/s)	Storage Rate (L/s)	Required Storage Volume (m3)
10	178.56	422.87	83.0	339.9	203.9
20	119.95	284.07	83.0	201.1	241.3
30	91.87	217.56	83.0	134.6	242.2
40	75.15	177.96	83.0	95.0	227.9
50	63.95	151.46	83.0	68.5	205.4
60	55.89	132.37	83.0	49.4	177.7
70	49.79	117.91	83.0	34.9	146.6
80	44.99	106.55	83.0	23.5	113.0
90	41.11	97.36	83.0	14.4	77.5
100	37.90	89.76	83.0	6.8	40.6
110	35.20	83.37	83.0	0.4	2.4
120	32.89	77.90	83.0	-5.1	-36.7

Maximum Required Storage (m ³)	Peak Duration
242.2	30

* Per City of Ottawa Design Standards

Calculation of Required Orifice (Inlet Control Device) Diameter

Q (cms) = 0.61 x A x sqrt(2 x g x H)

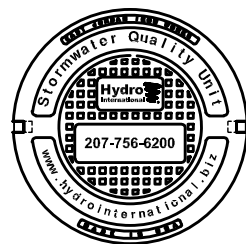
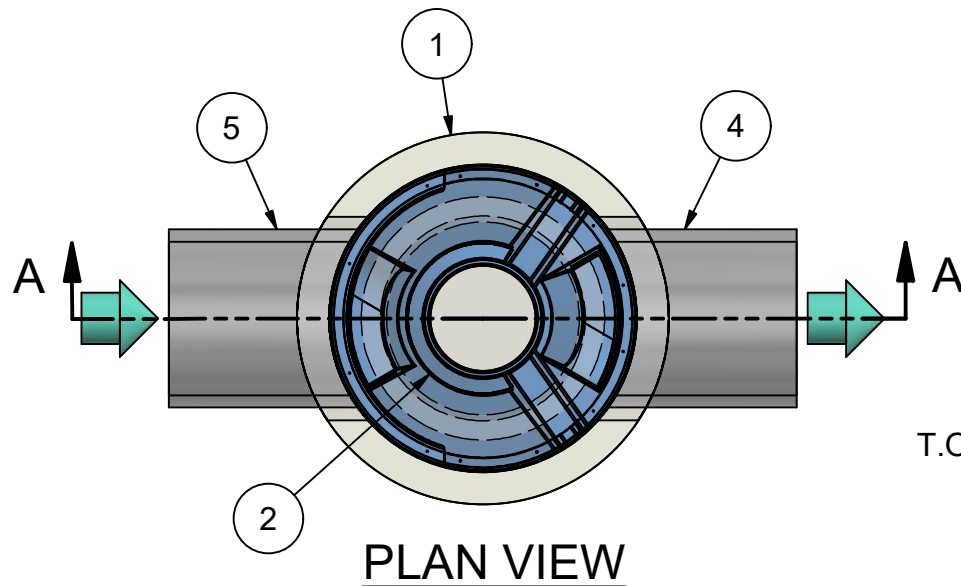
- Where: Q = Peak flow rate (cubic metres/second)
 0.61 = Orifice Coefficient
 A = Area of Orifice (m²)
 g = Gravitational Constant (9.81 m/s²)
 H = Maximum Head above the centerline of the orifice (m)

Maximum Allowable Outlet Rate (Qt) = 0.254 m³ / s <- Total Site Release Rate including rooftop area
 Detention Allowable Outlet Rate (Qd) = 0.083 m³ / s <- Excludes rooftop runoff (for use in sizing orifice)

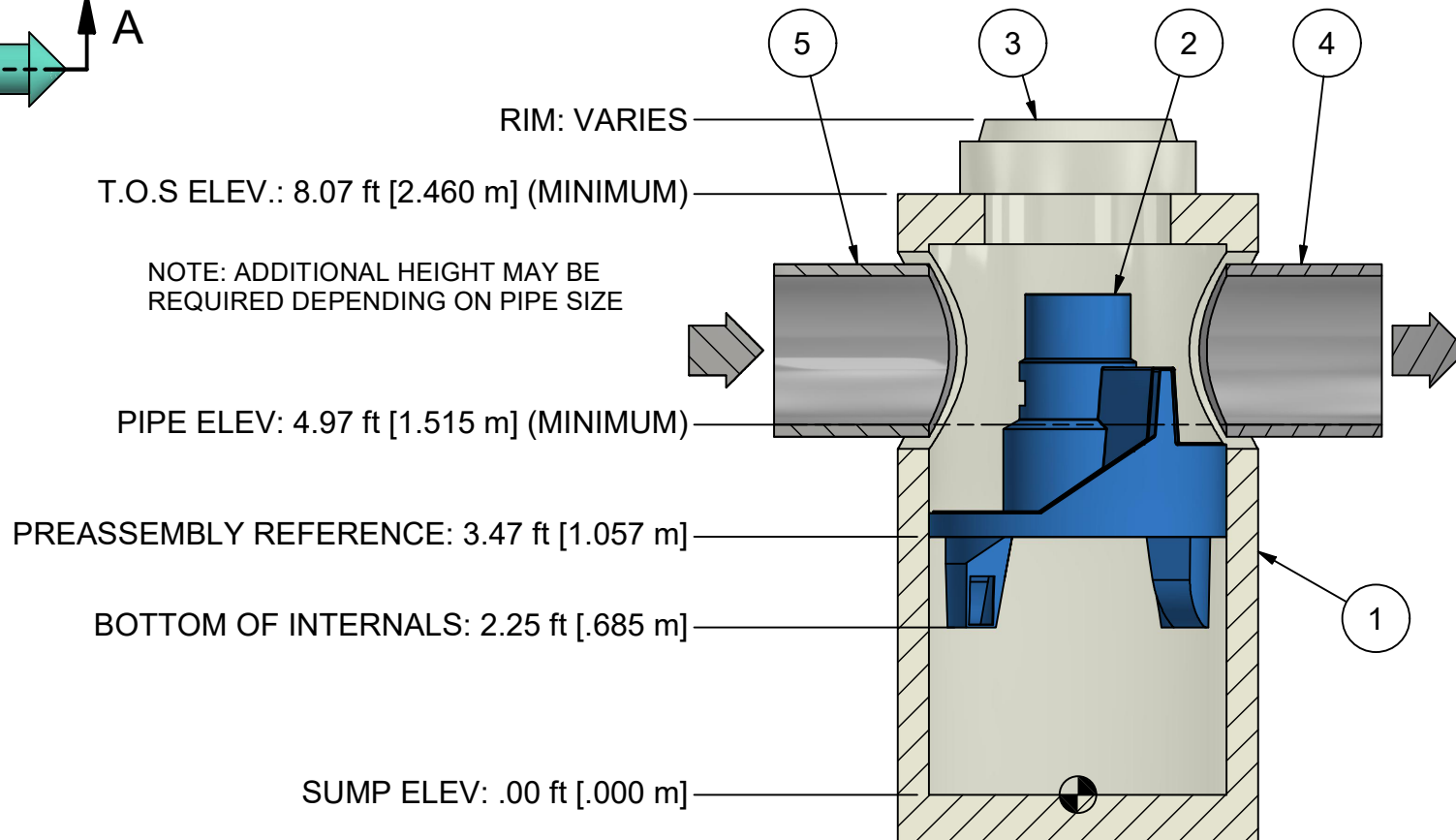
Equation Inputs		
Input	Value	Unit
H1 = Outlet Sewer Invert (at Orifice MH)	63.86	m
H2 = 100 Year High Water Line	65.00	m
100 Year Head (H2 - H1)	1.14	m
Trial Orifice Diameter	0.190	m

Orifice Equation (Peak Outflow)	0.082	m ³ / s
--	-------	--------------------

Peak Site Outflow is less than Maximum Allowable Site Outlet Rate
Utilize an orifice of 190mm in diameter.



HYDRO FRAME AND COVER (INCLUDED)
GRADE RINGS BY OTHERS AS REQUIRED



1. MANHOLE WALL AND SLAB THICKNESSES ARE NOT TO SCALE.
2. CONTACT HYDRO INTERNATIONAL FOR A BOTTOM OF STRUCTURE ELEVATION PRIOR TO SETTING FIRST DEFENSE MANHOLE.
3. CONTRACTOR TO CONFIRM RIM, PIPE INVERTS, PIPE DIA. AND PIPE ORIENTATION PRIOR TO RELEASE OF UNIT TO FABRICATION.

PROJECTION

IF IN DOUBT ASK

DATE: 11/2/2021 SCALE: 1:30

DRAWN BY: ER CHECKED BY: MRJ APPROVED BY:

Title
4-ft DIAMETER
FIRST DEFENSE

GENERAL ARRANGEMENT

Hydro International
hydro-int.com
HYDRO INTERNATIONAL

WEIGHT: MATERIAL:

STOCK NUMBER:

DRAWING NO.:
FD GA-4

SHEET SIZE: B SHEET: 1 OF 1 Rev: -

PRODUCT SPECIFICATION:

1. Peak Hydraulic Flow: 18.0 cfs (510 l/s)
2. Min Sediment Storage Capacity: 0.7 cu. yd. (0.5 cu. m.)
3. Maximum Inlet/Outlet Pipe Diameters: 24 in. (600 mm)
4. The Treatment System Shall Use An Induced Vortex To Separate Pollutants From Stormwater Runoff.
5. For More Product Information Including Regulatory Acceptances, Please Visit <https://hydro-int.com/en/products/first-defense>

GENERAL NOTES:

1. General Arrangement drawings only. Contact Hydro International for site specific drawings.
2. The diameter of the inlet and outlet pipes may be no more than 24".
3. Multiple inlet pipes possible (refer to project plan).
4. Inlet/outlet pipe angle can vary to align with drainage network (refer to project plans).
5. Peak flow rate and minimum height limited by available cover and pipe diameter.
6. Larger sediment storage capacity may be provided with a deeper sump depth.

PARTS LIST				
ITEM	QTY	SIZE (in)	SIZE (mm)	DESCRIPTION
1	1	48	1200	I.D. PRECAST MANHOLE
2	1			INTERNAL COMPONENTS (PRE-INSTALLED)
3	1	30	750	FRAME AND COVER (ROUND)
4	1	24 (MAX)	600 (MAX)	OUTLET PIPE (BY OTHERS)
5	1	24 (MAX)	600 (MAX)	INLET PIPE (BY OTHERS)

RIM: VARIES

T.O.S ELEV.: 8.07 ft [2.460 m] (MINIMUM)

NOTE: ADDITIONAL HEIGHT MAY BE REQUIRED DEPENDING ON PIPE SIZE

PIPE ELEV: 4.97 ft [1.515 m] (MINIMUM)

PREASSEMBLY REFERENCE: 3.47 ft [1.057 m]

BOTTOM OF INTERNALS: 2.25 ft [.685 m]

SUMP ELEV: .00 ft [.000 m]

Appendix D

Water Boundary Conditions

Water Demand Calculations

Project: Long Term Care Home, Famile-Laporte Avenue, Orleans ON
 Project #: 21-2647
 Location: Orleans, Ontario

Watermains shall be sized to accommodate the greater of:

1. Maximum day demand plus fire flow or;
2. Peak Hour Demand

Water Demand Design Criteria (Ottawa Water Distribution Design Guidelines, July 2010):

Maximum Hour Factor	2.2
Maximum Day Factor	2.5
Average Daily Demand per Capita (Residential) (l/c/d)	350
Persons Per Bed (1 + employees)	1

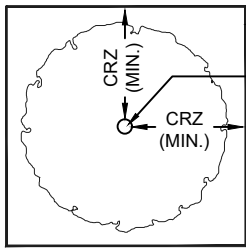
Water Demand Calculations:

Building	Gross Floor Area (m ²)	Number of Beds	Number of Employees	Population	Avg. Daily Demand (L/s)	Max Daily Demand (L/s)	Max Hourly Demand (L/s)	Fire Flow (L/d)	Fire Flow Duration (hr.)	Max Day + Fire Flow (L/d)
Long Term Care Facility	12,516	224	30	254	1.03	2.57	2.26	20,160,000.00	3.25	20,382,250.00
Total					88.9 m3/day					20,382,250.00

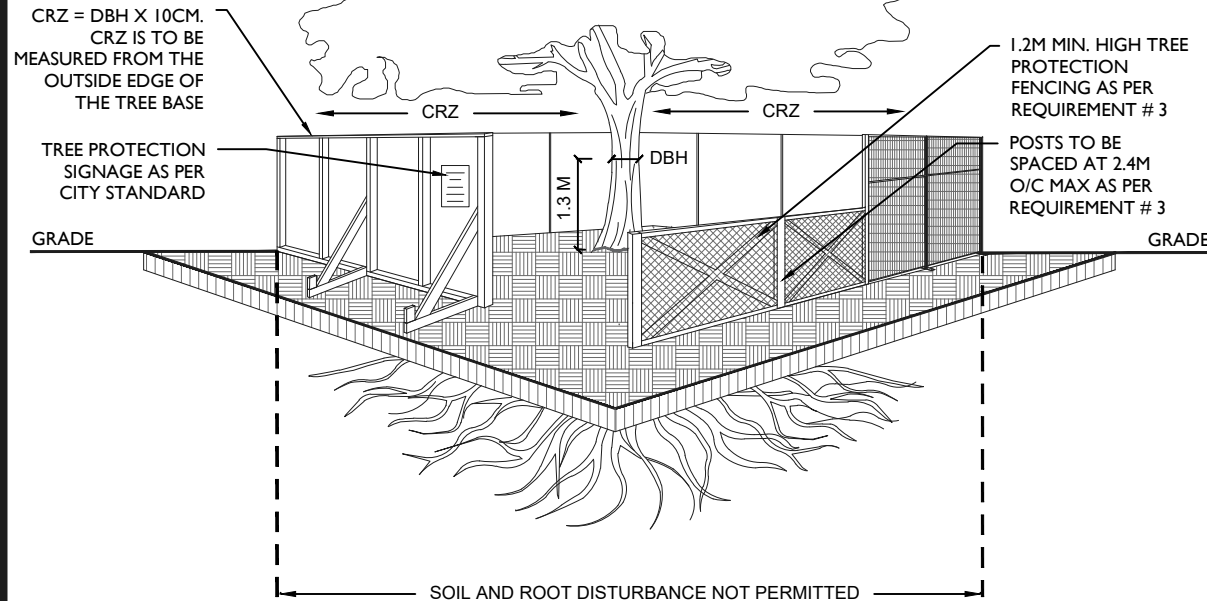
Appendix G

City of Ottawa

Tree Protection Specification



PLAN VIEW



TREE PROTECTION REQUIREMENTS:

1. PRIOR TO ANY WORK ACTIVITY WITHIN THE CRITICAL ROOT ZONE (CRZ = 10 X DIAMETER) OF A TREE, TREE PROTECTION FENCING MUST BE INSTALLED SURROUNDING THE CRITICAL ROOT ZONE, AND REMAIN IN PLACE UNTIL THE WORK IS COMPLETE.
2. UNLESS PLANS ARE APPROVED BY CITY FORESTRY STAFF, FOR WORK WITHIN THE CRZ:
 - DO NOT PLACE ANY MATERIAL OR EQUIPMENT - INCLUDING OUTHOUSES;
 - DO NOT ATTACH ANY SIGNS, NOTICES OR POSTERS TO ANY TREE;
 - DO NOT RAISE OR LOWER THE EXISTING GRADE;
 - TUNNEL OR BORE WHEN DIGGING;
 - DO NOT DAMAGE THE ROOT SYSTEM, TRUNK, OR BRANCHES OR ANY TREE;
 - ENSURE THAT EXHAUST FUMES FROM ALL EQUIPMENT ARE NOT DIRECTED TOWARD ANY TREE CANOPY.
 - DO NOT EXTEND HARD SURFACE OR SIGNIFICANTLY CHANGE LANDSCAPING
3. TREE PROTECTION FENCING MUST BE AT LEAST 1.2M IN HEIGHT, AND CONSTRUCTED OF RIGID OR FRAMED MATERIALS (E.G. MODULOC - STEEL, PLYWOOD HOARDING, OR SNOW FENCE ON A 2"X4" WOOD FRAME) WITH POSTS 2.4M APART, SUCH THAT THE FENCE LOCATION CANNOT BE ALTERED. ALL SUPPORTS AND BRACING MUST BE PLACED OUTSIDE OF THE CRZ, AND INSTALLATION MUST MINIMISE DAMAGE TO EXISTING ROOTS. (SEE DETAIL)
4. THE LOCATION OF THE TREE PROTECTION FENCING MUST BE DETERMINED BY AN ARBORIST AND DETAILED ON ANY ASSOCIATED PLANS FOR THE SITE (E.G. TREE CONSERVATION REPORT, TREE INFORMATION REPORT, ETC). THE PLAN AND CONSTRUCTED FENCING MUST BE APPROVED BY CITY FORESTRY STAFF PRIOR TO THE COMMENCEMENT OF WORK.
5. IF THE FENCED TREE PROTECTION AREA MUST BE REDUCED TO FACILITATE CONSTRUCTION, MITIGATION MEASURES MUST BE PRESCRIBED BY AN ARBORIST AND APPROVED BY CITY FORESTRY STAFF. THESE MAY INCLUDE THE PLACEMENT OF PLYWOOD, WOOD CHIPS, OR STEEL PLATING OVER THE ROOTS FOR PROTECTION OR THE PROPER PRUNING AND CARE OF ROOTS WHERE ENCOUNTERED.

THE CITY'S TREE PROTECTION BY-LAW, 2020-340 PROTECTS BOTH CITY-OWNED TREES, CITY-WIDE, AND PRIVATELY-OWNED TREES WITHIN THE URBAN AREA. PLEASE REFER TO WWW.OTTAWA.CA/TREEBYLAW FOR MORE INFORMATION ON HOW THE TREE BY-LAW APPLIES.

ACCESSIBLE FORMATS AND COMMUNICATION SUPPORTS ARE AVAILABLE, UPON REQUEST



TREE PROTECTION SPECIFICATION

TO BE IMPLEMENTED FOR RETAINED TREES, BOTH ON SITE AND ON ADJACENT SITES, PRIOR TO ANY TREE REMOVAL OR SITE WORKS AND MAINTAINED FOR THE DURATION OF WORK ACTIVITIES ON SITE.

SCALE: NTS

DATE: MARCH 2021

DRAWING NO.: 1 of 1

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