

Thursday, July 16, 2020

City of Mississauga
Culture and Heritage Planning Section
201 City Centre Drive, Suite 202
Mississauga, ON L5B 4E4

Attention: John Dunlop
Paula Wubbenhorst

Background/Business Requirements:

The purpose of this memorandum is to request your approval to Rebuild Alectra's (Legacy Enersource's) existing hydro pole line along Mississauga Road South from Lake St. to High St. West along the east boulevard. This is to reinstate the current temporary condition of the poles along the east boulevard of Mississauga Road from Lake Street to Lake Shore Road West. The existing poles were trimmed due to condition of the assets and safety reasons. The customers had been temporarily accommodated from the existing pole line on the west boulevard of Mississauga Road, which is also of the same vintage.

We have a request from the adjacent development site which requires the existing pole line on the west boulevard to be relocated to construct the new Storm line along the west side of the road. The pole line does not have enough clearance from the excavation to install the storm. The original Alectra plan was to reconstruct the permanent pole line on the east Boulevard.

In addition to the above, the existing servicing voltage in this area is 4.16kV and 27.6kV. Alectra is proposing to install (1) 27.6kV and (1) 4.16kV circuit on the new pole line to current standards and requirements. Alectra is prepping the installation of the 4.16kV for easy conversion to 27.6kV to meet the future demand. There is a small section of underground installation due to limitation of the existing building structures in the area not meeting clearances for safety requirements and existing utilities. Most of the underground is along the west boulevard except for in the areas of terminations poles on east boulevard.

Examinations of Alternation Solutions:

We had conducted our study for the temporary relocation of the pole line on to the private lands, which would require excessive amount of underground installation on east boulevard and customers premises. It would also require conversions of the existing services from overhead to underground and modifications to the exterior of the existing building and meter bases. Any workscope on private property is not

carried out by Alectra, which would require the customer to hire a private contractor to complete the works. These costs would not be justifiable and most of all it would not meet the HCD's requirements and our time lines.

Regarding location:

The new locations were selected based on both engineering calculation and aesthetics. The poles at the cross streets must be maintained, so they were used as fixed points in determining the span lengths between poles. The poles between streets were placed in such a way to reduce the obstruction of views for the residents and the necessary tree trimming/pruning required. Ultimately, the engineering calculations and existing landscape needed to be adhered to, so the poles were not all proposed on property lines, but in the most convenient locations that still pass the calculations.

Regarding light standards:

There are currently no light standards within the construction limits. All poles are owned by Alectra, and the luminaires attached to the existing poles will be transferred to the new pole line. This has been coordinated with the City's Streetlighting department through Alectra Power Services.

Regarding pole height:

The new concrete poles (CP) will be taller and has been considered based on existing utilities which are being installed or transferred to the new pole line based on current standards and requirements from approving authorities as well as needs of future conversion, keeping in mind the safety of the General Public and boulevard aesthetics for Heritage Planning Requirements. The pole setting depth, framing and elevation is shown on the attached drawing D07-633540-002, Detail #1 and #2. The High Voltage conducts will be installed on the road side of the poles due to the design limitation for no aerial trespassing.

Alectra's Design & Utilities Consultation:

Alectra has conducted Public Utility Coordination (PUCC) and obtained the approval for attached detailed design attached drawings D07-633540-001 to -004. The following work scope describes the rebuild of the existing pole line from Lake St to Lakeshore Road West (East Blvd.):

- Remove 2 x 55' Concrete Poles (CP) (at Lake St. & Mississauga Rd.
- Remove 9 x 55' Wood Poles (WP) (From Lake St. to Lakeshore Rd. W.).
- Install 9 x 70' Concrete Poles (From Lake St. to Lakeshore Rd. W.)

- Install 3 x 35' Concrete Poles on West side of Mississauga Rd. to support the poles on the east boulevard.
- Install 2 risers on termination poles (P20 & P21) to accommodate the connection from north side of Lakeshore Rd. W.
- Install 3-Phase Transformer bank to step down voltage on P19 to service the existing commercial properties (#167-169 Lakeshore Rd. West).
- Install 2 – Single Phase transformers to step down voltage on poles (P18 & P20) to service existing residential customers from Lakeshore Road West to Lake St.
- Install 7-556kcmil overhead wires on the poles from Pole P13 to P21.
- Install secondary overhead wires to service the existing customers.
- Prepare Poles (P14 & P18) for future Risers. (Similar to Poles P21)

Arborist Review & Report:

Alectra had engaged had engaged Consulting Arborist at Davey Resources Group to prepare the attached Tree pruning/protection plan based on City of Mississauga's requirements. There are no trees to be removed on the east boulevard of Mississauga Road between Lakes St & Lakeshore Blvd. The report is attached with photos of the existing landscaping along Mississauga Road South.

Your support in this request is appreciated. Should you require any clarification please let me know.

Regards,

Tirath Garcha

Tirath Garcha, C.E.T
Design Technologist – Distribution Design, Customer Capital

CC:

Chris Kafel, P.Eng – Manager, Distribution Design, Customer Capital
Joel Lacombe, C.E.T. – Supervisor, Distribution Design, Customer Capital

HIGH STREET WEST TO YS24160, C2717, L2716,
C2616, C24202, S2824

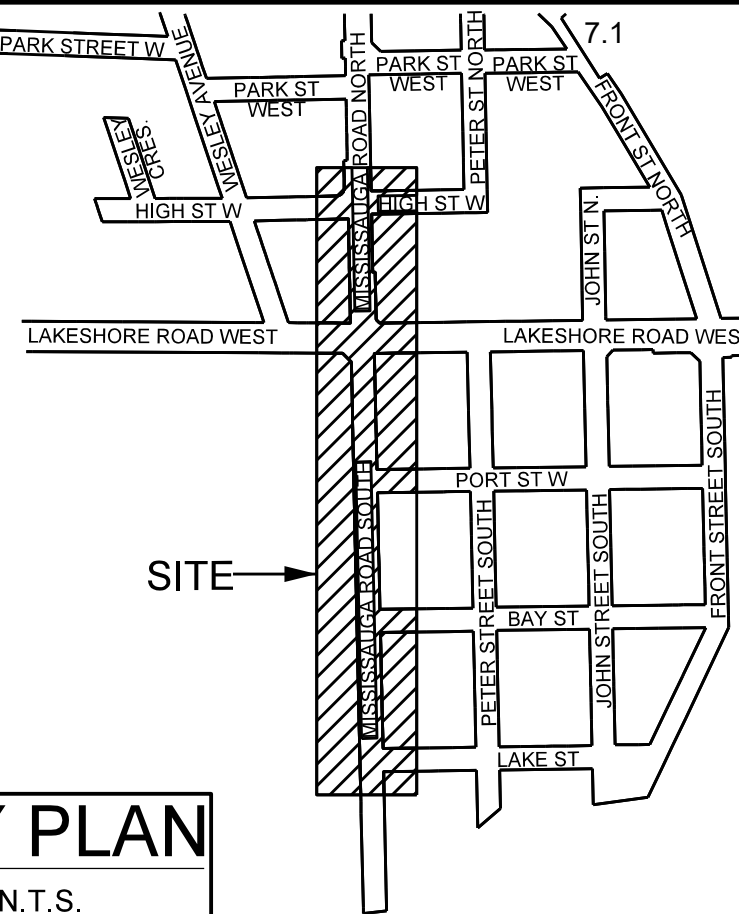
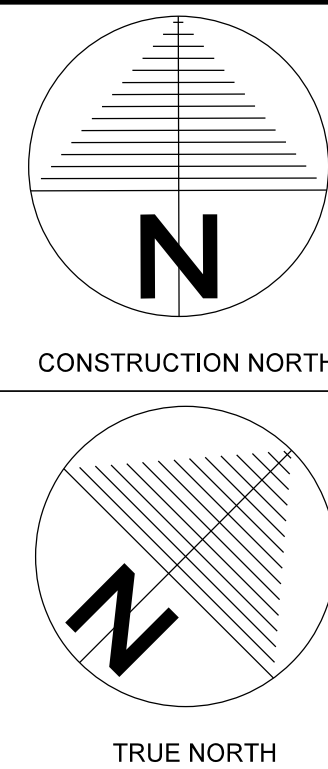
HIGH STREET WEST

NOTE:
When crossing Region of Peel Water main, maintain 300mm vertical separation from top of W/M to bottom of road crossing trench. If required change configuration of the ducts to maintain separation. All locates must be obtained prior to starting any construction. All H.V. cables to be minimum of 0.6m any existing utilities within the boulevard. Any works within 0.6m of existing utilities must be Hand-Dug.

NOTE:
Use Extreme Caution when working in close proximity of other utilities. All measures must be taken to ensure the stability of all existing infrastructure adjacent to proposed work location. All locates must be obtained prior to starting any construction. All H.V. cables to be minimum of 0.6m any existing utilities within the boulevard. Any works within 0.6m of existing utilities must be Hand-Dug.

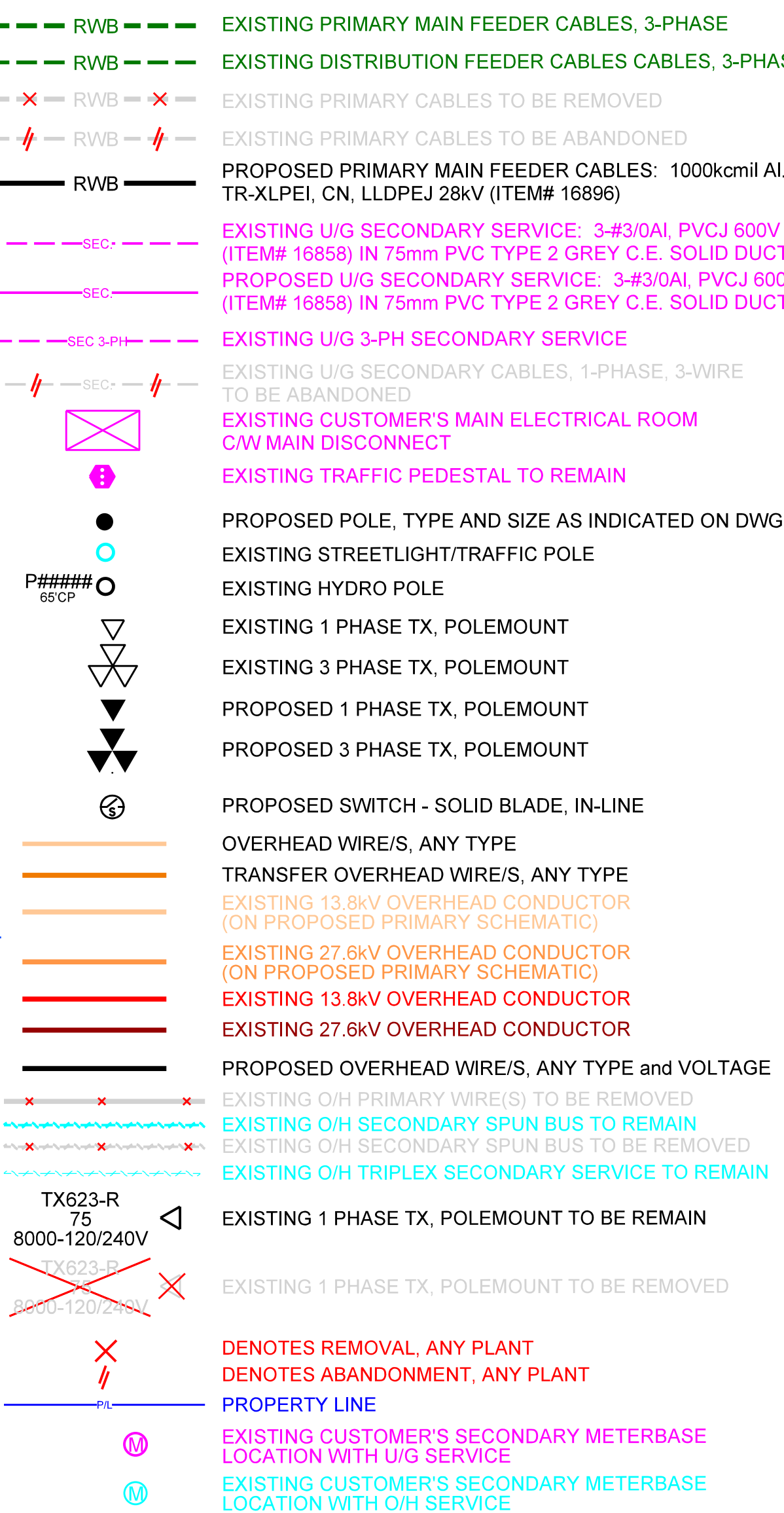
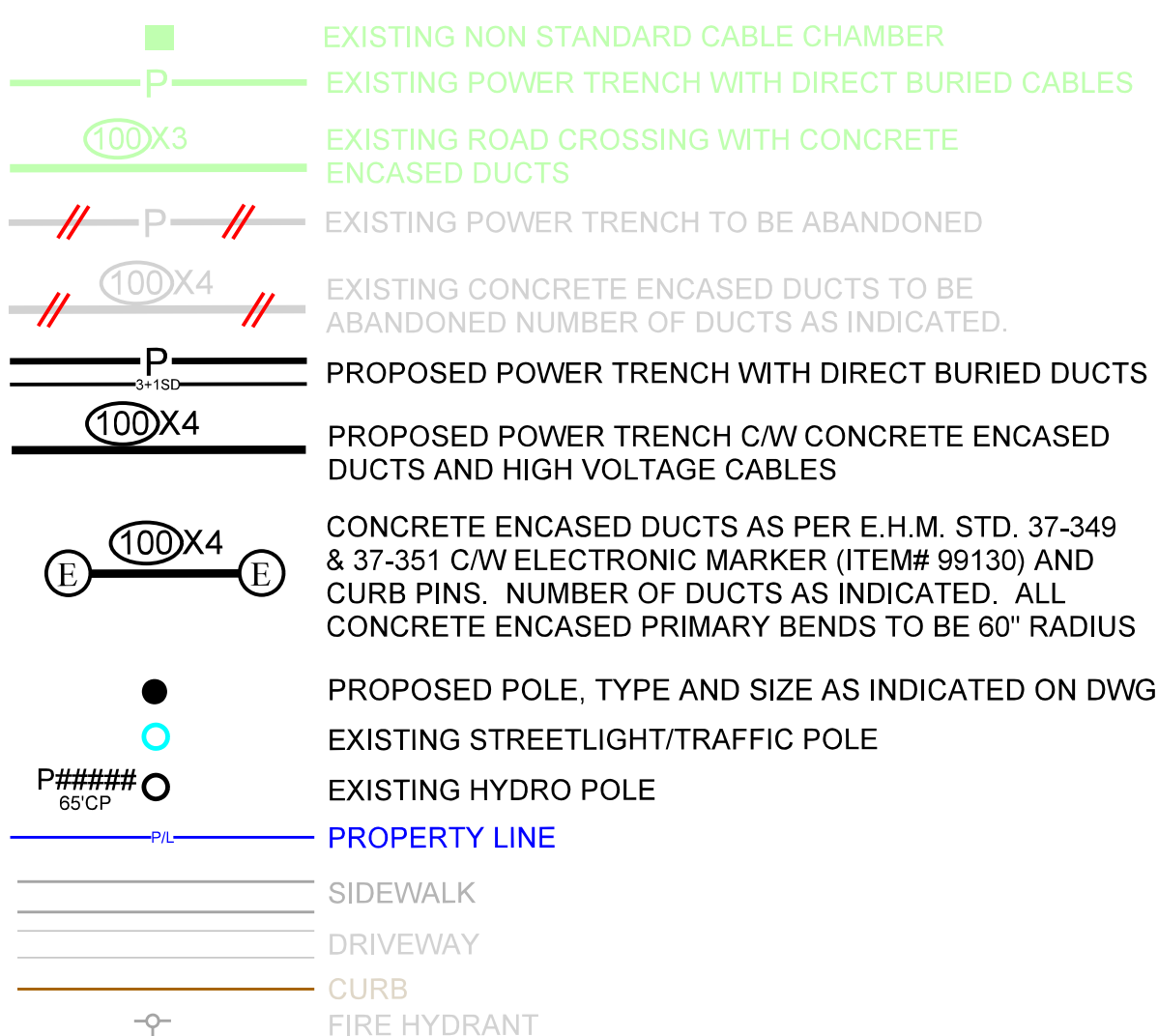
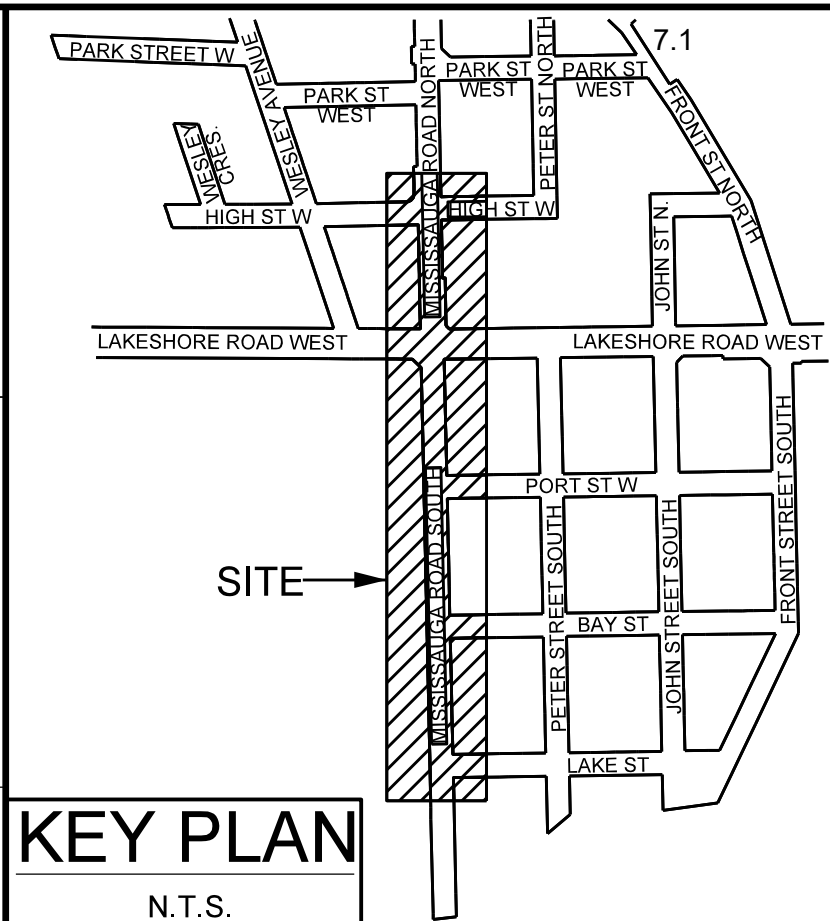
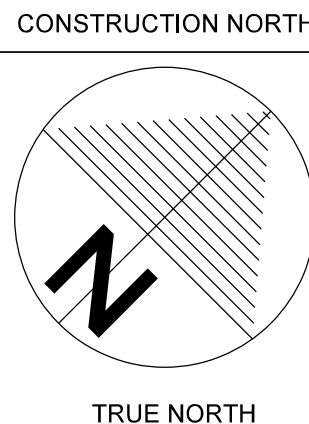
Bell Disclaimer:

- 1) When digging within 1m of existing Bell Canada structure/cable, hand dig/HVAC is required at the locations to be excavated.
- 2) Any damage to Bell Canada infrastructure will need to be reported to Bell Canada as soon as possible to assess damage and completed all required repairs/ replacement of cable and structure. All costs will be borne by the contractor doing the work.
- 3) Locates must be obtained prior to construction.
- 4) Bell Canada advises the contractor doing the work to operate with extreme caution.
- 5) The following conditions approved by Bell Canada: The City or its contractors' working on their behalf will need to contact Bell Canada for any supporting of Bell Cables and infrastructure required at the time of work. Any cost to support the Bell cables and structure will be negotiated to the Bell approved contractor directly and borne by City or their contractors.



LEGEND

- | | |
|-----|---|
| CP | CONCRETE POLE (HEIGHT AS INDICATED ON DRAWING) |
| WP | WOOD POLE (HEIGHT AS INDICATED ON DRAWING) |
| EP1 | EXISTING HYDRO POLE, ANY TYPE |
| P1 | PROPOSED POLE LOCATION NUMBER |
| TP1 | PROPOSED TEMPORARY HYDRO POLE, ANY TYPE |
| EP1 | EXISTING HYDRO POLE, ANY TYPE |
| (—) | PROPOSED DOWN GUY AND ANCHOR |
| ○ | EXISTING POLE TO REMAIN |
| ⊗ | EXISTING POLE AND ASSOCIATED HARDWARE TO BE REMOVED |
| ○ | EXISTING STREETLIGHT/TRAFFIC POLE |
| ● | PROPOSED POLE, TYPE AND SIZE AS INDICATED ON DRAWING |
| · | PROPOSED GUARD POST AS PER STD. 10-103A |
| ⊗ | DENOTES REMOVAL, ANY PLANT |
| ⊗ | DENOTES ABANDON, U/G PLANT OR O/H PLANT REMOVAL |
| ⏏ | PROPOSED GROUNDING |
| PL | EXISTING PROPERTY LINE |
| — | EXISTING ROAD CURB |
| — | EXISTING SIDEWALKS |
| ▽ | EXISTING 1 PHASE TX, POLEMOUNT |
| △ | EXISTING 3 PHASE TX, POLEMOUNT |
| ▽ | PROPOSED 1 PHASE TX, POLEMOUNT |
| △ | PROPOSED 3 PHASE TX, POLEMOUNT |
| TM | EXISTING CUSTOMER'S SECONDARY METERBASE LOCATION WITH U/G SERVICE |
| TM | EXISTING CUSTOMER'S SECONDARY METERBASE LOCATION WITH O/H SERVICE |
| — | PROPOSED OVERHEAD WIRE/S. ANY TYPE AND VOLTAGE |



Region of Peel Disclaimer:

OPEN CUT = water & sewer locations must be verified prior to construction. Minimum 1.2m horizontal clearance & 0.3m (crossing above) or 0.5m (crossing below) vertical clearance. Must daylight all corners when crossing our infrastructure.

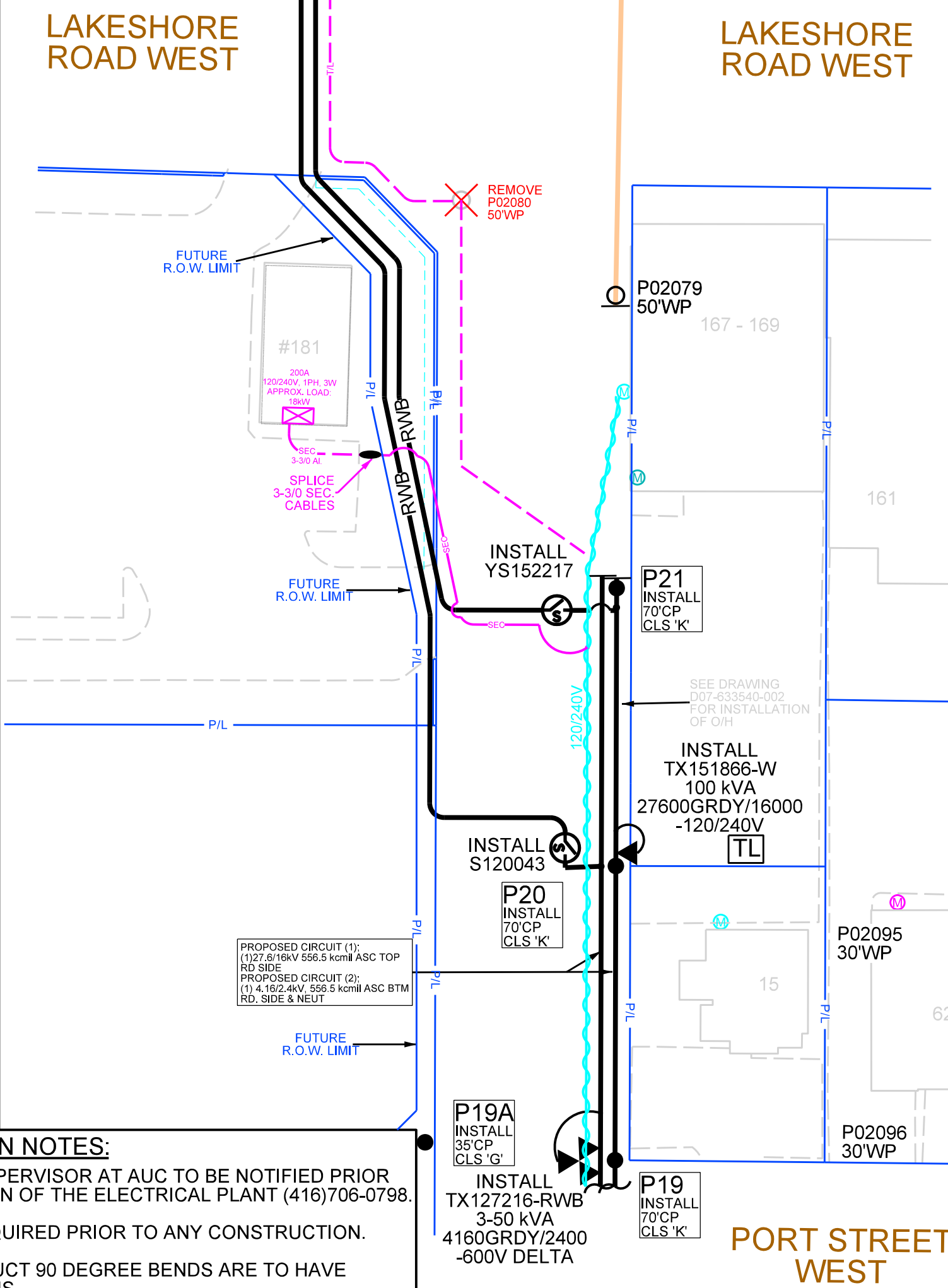
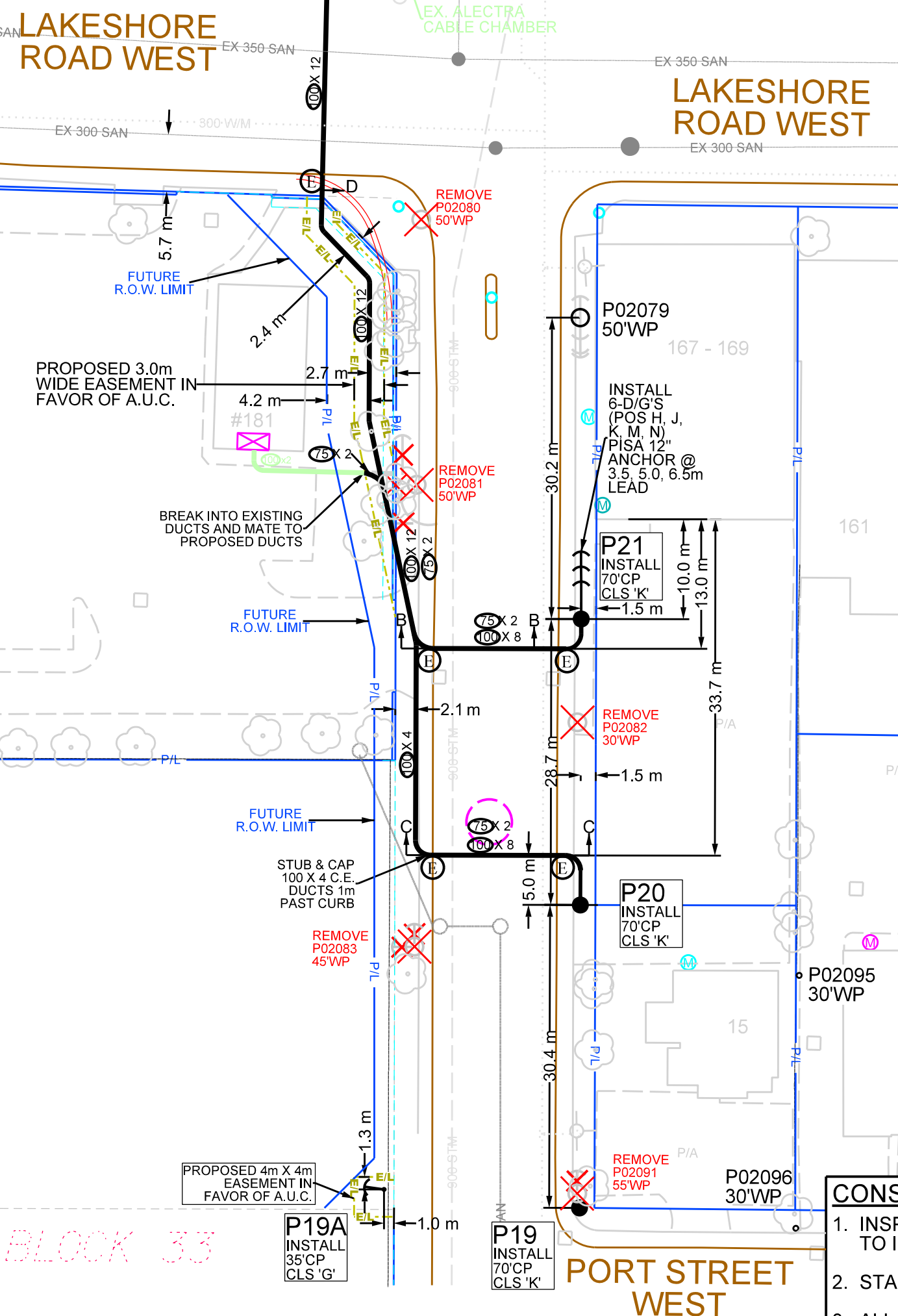
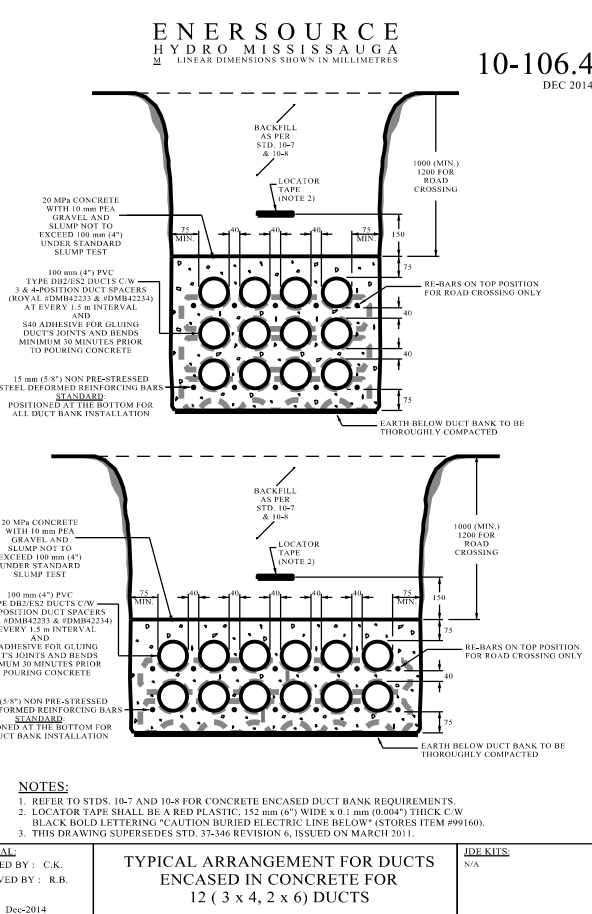
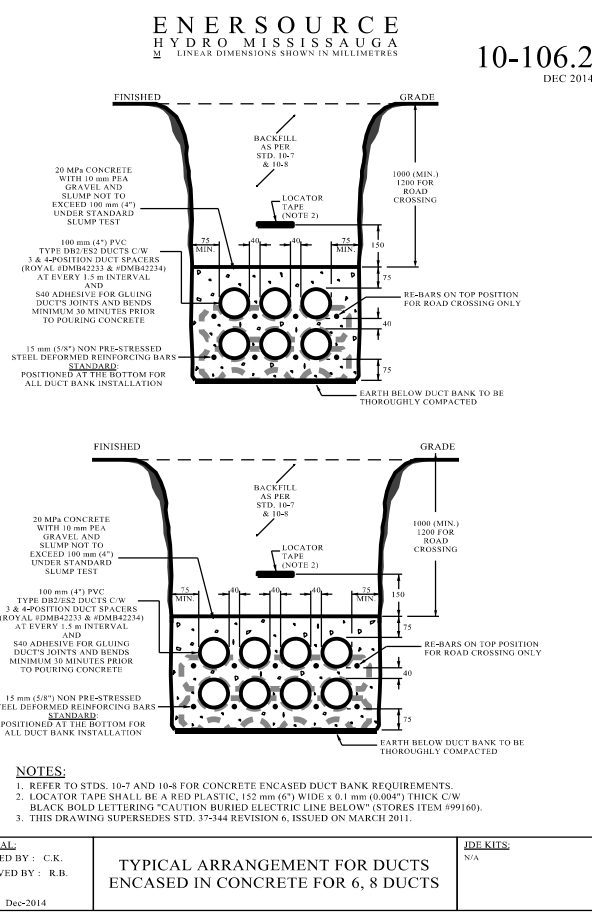
TRENCHLESS LESS 500MM BORE = water & sewer locations must be verified prior to construction. Minimum 1.2m horizontal clearance & 0.5m (crossing above) or 1.0m (crossing below) vertical clearance. Must daylight all corners when crossing our infrastructure

TRENCHES MORE 500MM BORE = conditionally approved. water & sewer locations must be verified prior to construction. Min. 1.2m horizontal clearance. Min. vertical clearance 2x diameter bore size when crossing above & below. must daylight all corners when crossing our infrastructure.

NOTE:
Use Extreme Caution when working in close proximity of other utilities. All measures must be taken to ensure the stability of all existing infrastructure adjacent to proposed work location. All locates must be obtained prior to starting any construction. All H.V. cables to be minimum of 0.6m any existing utilities within the boulevard. Any works within 0.6m of existing utilities must be Hand-Dug.

Bell Disclaimer:

- 1) The contractor shall be responsible for the removal of all cable structure/cable, hand up/RVC is required at the locations to be excavated.
- 2) Any damage to Bell Canada infrastructure will need to be reported to Bell Canada as soon as possible to assess damage and completed all required repairs/ replacement of cable and structure. All costs will be borne by the contractor doing the work.
- 3) Locates must be obtained prior to construction.
- 4) Bell Canada advises the contractor doing the work to operate with extreme caution.
- 5) This PUCB is being conditionally approved by Bell Canada. The City or the contractors' working on their behalf will need to contact Bell Canada for any supporting of Bell cables and infrastructure required during the time of work. Any cost associated with the cable and structure will be paid in full to the Bell approved contractor directly and borne by City or their contractors.



CONSTRUCTION NOTES:

1. INSPECTION SUPERVISOR AT AUC TO BE NOTIFIED PRIOR TO INSTALLATION OF THE ELECTRICAL PLANT (416)706-0798
2. STAKE-OUT REQUIRED PRIOR TO ANY CONSTRUCTION.
3. ALL PRIMARY DUCT 90 DEGREE BENDS ARE TO HAVE A 60 INCH RADIUS.
4. COORDINATE WITH COMMUNICATIONS UTILITIES FOR PARTICIPATION IN JOINT USE TRENCH. THE DESIGN MUST BE PROVIDED TO CONTRACTOR PRIOR TO PRE-CONSTRUCTION MEETING.

ELECTRICAL

SCALE: 1 : 500

TRENCHING

SCALE: 1 : 500

CONTRACTOR'S U/G SCOPE OF WORK: RELOCATION COSTS - TRENCHING

1. CONTRACTOR TO SUPPLY & INSTALL ALL 4" (100mm) DB2/ES2 PVC TYPE DUCTS AND 50mm & 75mm DUCTS AS PER DUCTBANK STD. 10-106.2 & -106.4. ALL OPEN TRENCH CONCRETE ENCASED DUCTBANKS TO BE DB2/ES2 PVC TYPE, CONSTRUCTED IN ACCORDANCE WITH AUC STD. AND DETAILS SHOWN ON DESIGN DRAWINGS. DUCTBANKS SHALL BE SUBJECT TO AUC INSPECTION PRIOR TO BACKFILLING. FURTHER INSPECTIONS SHALL BE COMPLETED AFTER CONSTRUCTION, PRIOR TO CABLE INSTALLATION.
2. SUPPLY AND INSTALL ALL CONCRETE ENCASED DUCTBANK AT ROAD, DB2/ES2 PVC TYPE AT CROSSINGS, BENDS AND AT OTHER LOCATIONS AS INDICATED ON THE DRAWING AS PER 10-106.1 TO 10-106.7, 10-107B & PER INDIVIDUAL CROSS-SECTION SKETCHES. ALL HIGH VOLTAGE DUCTS (100mm) SHALL HAVE 60" RADIUS BENDS.
3. EXCAVATE EXISTING SPARE DUCTS FOR PRIMARY CABLES AT EXISTING HYDRO POLES P01938 FOR EXTENSION TO NEW TERM. POLES
4. PERFORM ALL NECESSARY GROUND SURFACE RESTORATIONS.
5. ALL SPARE DUCTS IN ALL ROAD CROSSINGS (QUANTITIES INDICATED ON DRAWING) SHALL BE SUPPLIED, INSTALLED, CAPPED AND SEALED ON BOTH ENDS 1.0m PAST CURB BY EHM CIVIL CONTRACTOR WITH ELECTRONIC MARKERS (EHM ITEM # 99130) C/W 1/2" NYLON POLYPROPYLENE ROPES.
6. CO-ORDINATE ALL WORKS WITH AUC FIELD SUPERVISOR OR AUC INSPECTOR ON SITE.
7. EXISTING DUCTBANK WITH CABLES THAT ARE TO BE ABANDONED, SHALL BE CAPPED BY CIVIL CONTRACTOR MADE SAFE AND ABANDONED.
8. ALL NEW DUCTS TO BE INSTALLED BY CIVIL CONTRACTOR SHALL BE MANDRELLED, ROPED, CAPPED AND SEALED.

ALL CHARGES ARISING FROM REQUIRED EXTRA WORKS TO BE REVIEWED AND APPROVED BY AUC INSPECTIONS SUPERVISOR PRIOR TO COMMENCING WORK

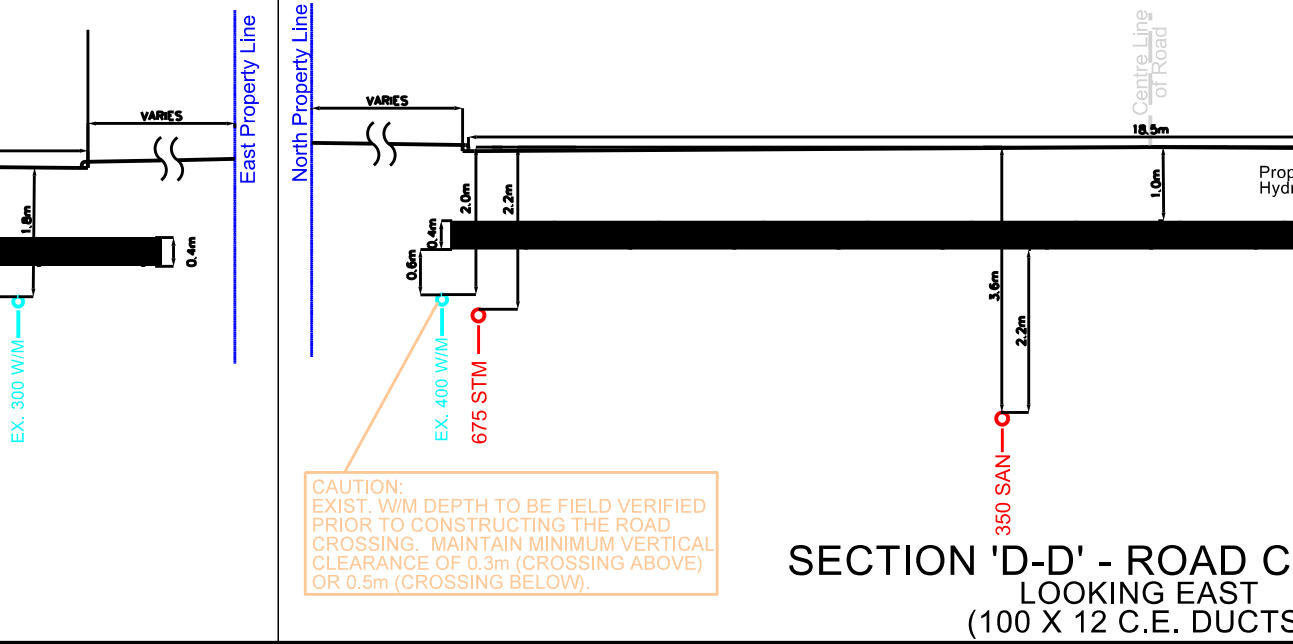
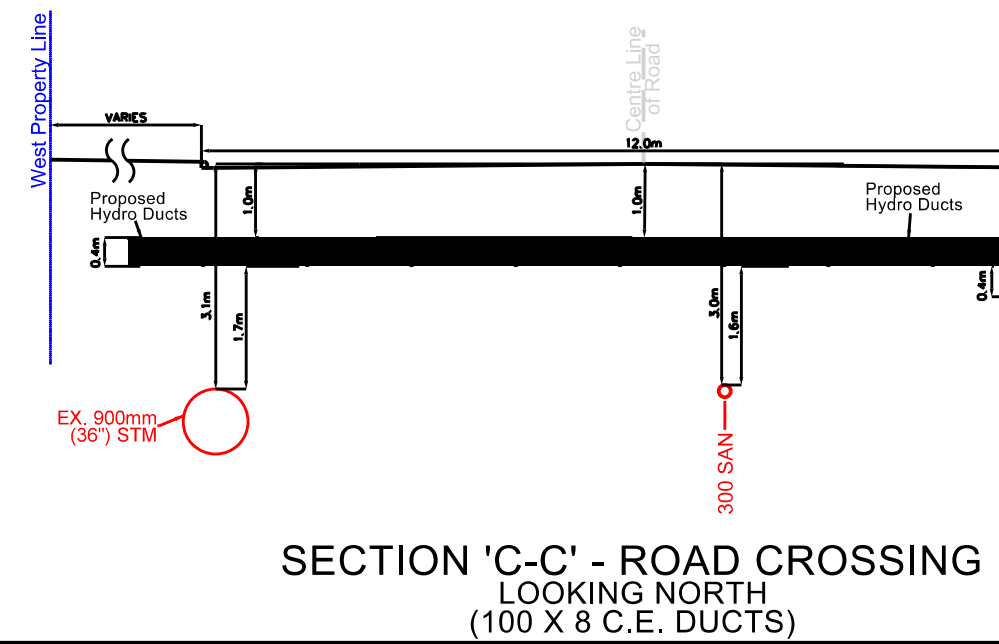
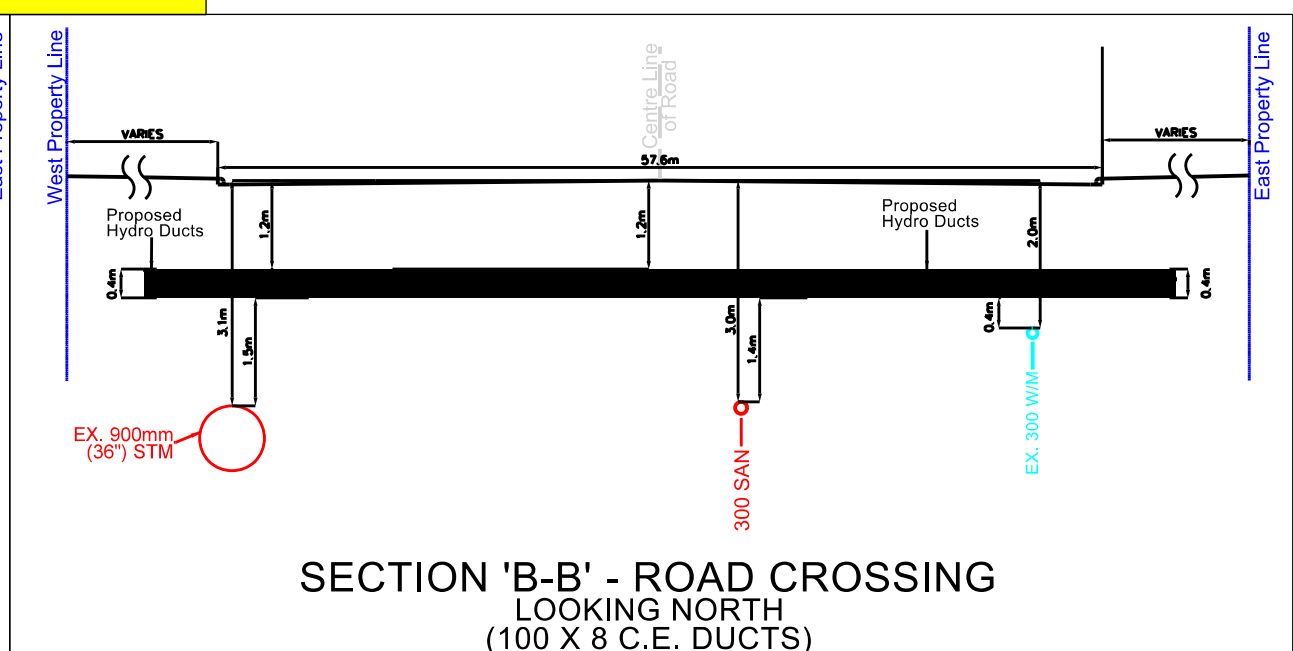
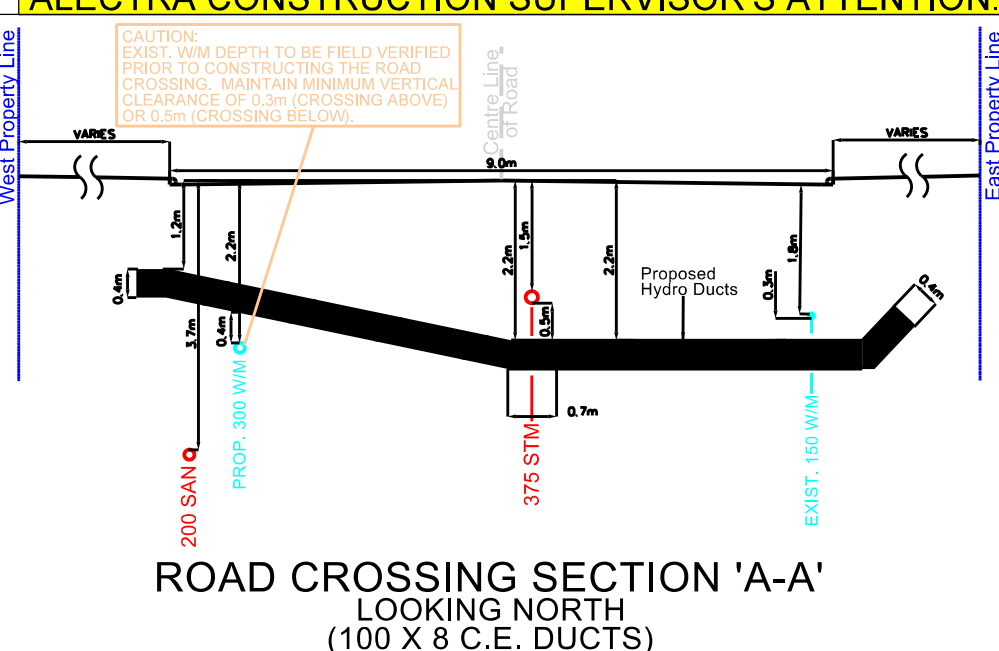
A.U.C. CREWS/CONTRACTOR/SUB-CONTRACTOR ALL SAFETY MEASURES MUST BE TAKEN DURING THE REMOVAL OF EXISTING EQUIPMENT DUE TO POSSIBILITY OF ASBESTOS AND PCBS. ALL MATERIALS MUST BE DISPOSED ACCORDING TO ENVIRONMENTAL GUIDELINES.

**ANY SAFETY CONCERNS MUST BE IMMEDIATELY BROUGHT TO
AL FECTRA CONSTRUCTION SUPERVISOR'S ATTENTION**

CONTRACTOR'S U/G SCOPE OF WORK: RELOCATION COSTS - ELECTRICAL

1. SUPPLY AND INSTALL APPROX. 660m OF 1000kcmil AL, TR-XLPEJ, CN, LLDPEJ, 28KV PRIMARY CABLES (ITEM# 16896) FROM S120043 TO S142880.
2. SUPPLY AND INSTALL APPROX. 240m OF 1000kcmil AL, TR-XLPEJ, CN, LLDPEJ, 28KV PRIMARY CABLES (ITEM# 16896) FROM CABLE CHAMBER CC1032 S130913.
3. SUPPLY AND INSTALL APPROX. 690m OF 1000kcmil AL, TR-XLPEJ, CN, LLDPEJ, 28KV PRIMARY CABLES (ITEM# 16896) FROM YS152217 TO YS115149.
4. SUPPLY AND INSTALL ALL 60m of 3-3/0AL, COMPACT, 600V XLPEJ, PVCJ UGRD. SECONDARY (ITEM# 16858) FROM POLE (P21) TO #181 MISSISSAUGA ROAD S., SPLICE SECONDARY CABLES AT NEW PROPERTY LINE.
5. SUPPLY AND INSTALL ALL 150m of PROPOSED STREETLIGHT CABLES, TRIPLEX, COPPER 3C-#6AWG, COMPACT RWU90, 1000V XLPEJ UNDERGROUND (ITEM# 16823) FROM TX131554-R TO TRAFFIC SIGNAL PEDESTAL.
6. ISOLATE & REMOVE 45m OF EXISTING 3-350kcmil Cu. 15kV MAIN FEEDER CABLES FROM CABLE CHAMBER CC1032 TO EX. S2719 AND RE-USE EXISTING DUCTS FOR INSTALLATION OF NEW PRIMARY MAIN FEEDER CABLES.
7. TRANSFER EXISTING UG SECONDARY SERVICES AT #31 & #43 MISSISSAUGA RD. S. TO NEW POLES AS SHOWN ON DRAWING D07-633540-002 AND TERMINATE AT NEW SECONDARY BUS.
8. PREPARE POLES (P10 (x2), P12, P20, P21) AS 3-PH. 600AMP UNDERGROUND TERMINATION POLE WITH MAIN DISCONNECT SWITCH (ITEM# 14242) AS PER STD. 37-98, 37-190, 41-99 AND 41-103. LABEL POLES AS PER ELECTRICAL LAYOUT.
9. TERMINATE 3-1000kcmil AL. 28kV MAIN FEEDER CABLES AT S130913, S142880, S120043, YS152217 AND YS115149 AS PER STD. 11U-200 AND 37-98 USING KIT (ITEM# 1520).
10. SPLICE 3-1000kcmil AL. 28KV TO EX. 3-350kcmil Cu. 15kV MAIN FEEDER CABLES INSIDE CABLE CHAMBER CC1032 USING ALUMINUM CONNECTOR (ITEM# 33658) AS PER STD. 11U-207.
11. COORDINATE ALL STREET LIGHT AND TRAFFIC SIGNAL WORKS WITH CITY'S T&W DEPARTMENT/OFFICIALS.

ALL CHARGES ARISING FROM REQUIRED EXTRA WORKS TO BE REVIEWED & APPROVED BY AUC INSPECTION SUPERVISOR PRIOR TO COMMENCING WORK.



A.U.C. - 018 - 20

Pucc


FOR FURTHER DETAILS
CONTACT: TIRATH GARCHA
Tel. No. (905) 283-4022
e-mail: tirath.garcha@alectrautilities.com

R3				
R2				
R1				
REV.	REVISION	REV.	APPD.	DATE

  3240 Mavis Road
Mississauga, Ontario
L5C 3K1
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www.alectrautilities.com

**MISSISSAUGA RD. SOUTH -
POLE LINE RELOCATION
MISSISSAUGA RD. S. & LAKESHORE RD. W
TRENCHING - 1 & U/G ELECTRICAL -1**

SCALE 1 : 500



DES. TECH. T. GARCHA DRAWN T. GARCHA SERVICE ORDER 633540 DATE JAN. 11, 2020

REVIEWED J. LACOMBE AREA 8 SHEET 3 of 4

D07-633540-003



Arborist Report

Tree Inventory and Assessment

Prepared For:

Alectra Utilities c/o Tirath Garcha
3240 Mavis Rd
Mississauga, ON
L5C 3K1

Site Address:

17 Mississauga Rd N to 53 Lake St
Mississauga, ON

July 15, 2020

Prepared By:

Jordan Barker

ISA Certified Arborist (ON-2488A)

ISA Tree Risk Assessment Qualified (TRAQ), Butternut Health Assessor (663)

Phone: (289) 684-0957 || Email: Jordan.Barker@Davey.com

©2020 Davey Resource Group. All rights reserved. This document must be used in conjunction with the tree inventory lists, and Tree Preservation Plans with arborist comments (these plans are to be printed on correct size to ensure scalability). This document must be used in whole and with all pages.

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Summary

The following Arborist Report is with respect to the planned construction of utility lines between 17 Mississauga Rd N and 53 Lake St in Mississauga, ON. The construction includes the relocation of existing utility wires from the southwest side of Mississauga Rd to the northeast side of the street in front of residential properties, and the removal of existing utility wood poles (WP) and installation of new 65-foot utility concrete poles (CP).

Trees in proximity to the planned utility line installations/removals were inventoried and assessed for preservation, removal, or pruning needs. A Permit is required to injure or remove trees >15 cm in diameter at breast height (DBH). A Permit is not required for the purpose of Pruning a Tree.

37 trees were assessed on site:

- Private Trees: **26**
- City of Mississauga Trees: **2**
- Boundary Trees: **9**

4 trees are recommended to be removed, and all 4 removals require Permits.

- 3 Trees are located in the proposed easement to be trenched on Mississauga Rd. As these 3 trees are in good condition, 3 replacement trees are required by the City of Mississauga.
 - Tree #30, a 40 cm Colorado Blue Spruce (Private tree at 181 Lakeshore Rd W)
 - Tree #34, a 32 cm Japanese Tree Lilac (Private tree at 181 Lakeshore Rd W)
 - Tree #35, a 32 cm Japanese Tree Lilac (Private tree at 181 Lakeshore Rd W)
- Tree #31, a 41 cm Manitoba Maple in Poor condition (Boundary tree between 181 Lakeshore Rd W and the City right-of-way. As the tree is in poor condition, the City of Mississauga should not request replacement trees.

11 trees are likely to be injured by construction within the drip line and require permits.

- Trees to be injured by pole construction: #2, #4, #5, #6, #9, #14, #15, #19, and #20
- Trees to be injured by trenching within proposed easement: #32 and #33

10 trees are recommended to be protected with Tree Protection Fencing (TPF) to prevent damage from nearby construction.

- Trees #1, #3, #8, #13, #16, #17, #23, #24, #36, and #37.

12 trees can be retained without the use of TPF as they are not near planned construction.

- Trees #7, #10-12, #18, #21, #22, and #25-30.

16 trees are recommended to have branches pruned for utility wire clearance. Branches higher than 5 m above ground should be pruned following good arboricultural practices.

- Trees #2, #3, #5-10, #12-15, #17, and #19-21.

Introduction

Davey Resource Group (DRG) was retained by the client, Alectra Utilities c/o Tirath Garcha, to develop an Arborist Report and Tree Protection Plan for the planned construction of utility lines between 17 Mississauga Rd N and 53 Lake St in Mississauga, ON

An inventory and assessment of all the trees within the scope of the assignment was conducted. The Arborist was to document the current condition, size, and location of the trees as they relate to the assignment. All trees within the scope of the survey were included in an inventory and assessed for protection or removal needs. Small shrubs were not surveyed for this report.

Recommendations for tree preservation, removal, or pruning are to be provided.

This report must be accompanied by the following additional documents:

1. A full printing of the tree inventory performed by Davey Resource Group (DRG), otherwise known as the Tree Protection Action Key (TPAK). (Appendix 1)
2. The site map with the Arborist Comments, otherwise known as the Tree Protection Plan. (Appendix 2)

Limitations of the Assignment

It must be understood that DRG is the assessor of the trees in relation to tree preservation practices.

This Arborist Report is based on the project scope and details for tree preservation as discussed. Estimates, measurements and comments regarding tree preservation were based on field observations.

This Arborist Report was compiled from field data collected from the ground. A basic visual assessment of the tree was performed. No level of ISA Tree Risk Assessment was performed. More data on risk may be obtained through a basic or advanced ISA Tree Risk Assessment.

Methods

- Tools used included a DBH measuring tape, metric measuring tape, and camera.
- Trees within 6 m of planned construction were included in the inventory.
- Trees were studied for their proximity to existing and planned structures to determine recommendations or precautions for trees requiring removal, injury, or pruning.
- Tree Protection Zones were calculated as the dripline of the tree. Tree Protection Zones were plotted on the Tree Protection Plan (Appendix 2) to show the approximate drip line area, however actual drip lines of trees can be viewed in the Photographs section (Appendix 7).
- Where there were multiple stems on a tree, the DBH was recorded as the total sum of all trunk diameters at 1.4 m above the ground.
- Trees were not tagged with a numbered tree tag.
- Municipal addresses have been included in the inventory for use in locating trees on site.

Observations

- The site was inspected on July 2, 2020 by ISA Certified Arborist Jordan Barker (ON-2488A).
- During the assessment, no evidence of construction was present, and work had not yet started. No construction materials were stored within Tree Protection Zones.
- **31** trees were assessed for this report and labeled #1-37 in the Tree Protection Action Key (TPAK) included within Appendix 1.
- **30** trees were in good condition, **4** were in fair condition, and **3** were in poor condition.

Trees #1, #3, #8, #13, #16, #17, #23, #24, #36, and #37 can be protected with Tree Protection Fencing (TPF) to prevent damage from nearby construction.

Trees #2, #4, and #14 have an existing utility pole within their drip lines. These utility poles will be excavated by hydro vac and pulled out of the ground, and the impact of injury to these trees is expected to be Low.

Trees #5, #6, #9, and #15 are planned to have a utility pole installed within their drip lines. Excavation for utility pole installation should be done by low pressure hydro vac within tree drip lines to minimize damage to roots. Once roots are exposed, roots should be pruned by a Certified Arborist. The expected impact of injury ranges from Low to High. Trees #19, #20 have both a utility pole removal and installation within their drip lines.

Trees #7, #10-12, #15, #18, #21, #22, and #25-29 can be retained without the use of TPF as they are not near planned construction.

Tree #31 is a 41 cm Manitoba Maple located on the boundary between 181 Lakeshore Rd W and the City right-of-way. The tree is in poor condition and is negatively affected by a grape vine growing on it. The existing utility pole has guy wires that are fastened to the tree. A new utility pole is planned to be installed in the location of the existing tree. For this reason, the tree must be removed to accommodate construction.

Trees #32 and #33 are located on private property at 181 Lakeshore Rd W near the proposed easement to be trenched. Prior to trenching, roots should be exposed by low pressure hydro vac within tree drip lines and pruned by a Certified Arborist. The expected impact of injury for both trees is medium.

Trees #30, #34, and #35 are located on private property at 181 Lakeshore Rd W within the proposed easement to be trenched. The trench will be approximately 1 m wide and 1.7 m deep located in the center of the easement. These trees must be removed in order to accommodate the easement and trench.

For further details and observations, refer to the Tree Protection Action Key (Appendix 1).

Discussion

To preserve and protect trees, proper recommendations must be followed and abided by the client for the duration of the project.

Regulatory context

The City of Mississauga Private Tree Protection By-law 254-12 states that:

1. No Person shall Injure or Destroy 3 or more Trees each with a Diameter greater than 15 centimeters on a Lot within one Calendar Year without first obtaining a Permit pursuant to this By-law.
2. A Permit is not required to Injure or Destroy a Tree:
 - a. if the number of Trees with a Diameter greater than 15 centimeters being Injured or Destroyed on the Lot in a Calendar Year is 2 or less;
 - b. where the Tree has a Tree Diameter of 15 centimeters or less.

Tree Protection Zones

Tree Protection Zones surrounding each tree are defined by the dripline as per City of Mississauga standards. Tree Protection Zones and must be kept free of all construction activity above and below ground. If work is proposed within 6 meters of a tree but not within its TPZ, it is in the best interest of the client to protect it using a Tree Protection Fence built to city standards. This serves to prevent any incidental contact or harm to a protected tree that would constitute a contravention of a by-law and may result in fines or a stop-work order.

Tree Hoarding

Protecting trees throughout construction is an integral component of tree preservation. Prior to construction, all trees to be preserved must be protected with hoarding. The hoarding shall consist of 1.2 m orange plastic fencing framed with solid top and bottom rail, or 1.2 m plywood. This hoarding is to be installed at a minimum distance to drip line or along the edge and parallel to a tree protection zone.

Replacement Trees

If you're removing three or more healthy trees on your property, replacement trees are required for each tree removed. You can plant a replacement tree yourself on your property based on the criteria below or you are required to pay a predetermined fee for a tree to be planted on City property by City staff. If you choose to replace the tree(s) yourself, replacement trees must be at least 1.8 m tall if it's a coniferous (evergreen) tree or at least 6 cm in diameter if it's a deciduous (leafy) tree. A healthy tree that is 49 cm or less must be replaced by one tree. If a healthy tree is 50 cm or greater in diameter, it must be replaced by two trees.

Branch Pruning

A Permit is not required for the purpose of Pruning the Tree. "Pruning" means the appropriate removal of not more than one-third of the live branches or limbs of a Tree or more than one-third of the live branches or limbs on a Tree as part of a consistent annual pruning program.

Conclusion

4 trees are recommended to be removed, and all 4 removals require Permits.

- 3 Trees are located in the proposed easement to be trenched on Mississauga Rd. As these 3 trees are in good condition, 3 replacement trees are required by the City of Mississauga.
 - Tree #30, a 40 cm Colorado Blue Spruce (Private tree at 181 Lakeshore Rd W)
 - Tree #34, a 32 cm Japanese Tree Lilac (Private tree at 181 Lakeshore Rd W)
 - Tree #35, a 32 cm Japanese Tree Lilac (Private tree at 181 Lakeshore Rd W)
- Tree #31, a 41 cm Manitoba Maple in Poor condition (Boundary tree between 181 Lakeshore Rd W and the City right-of-way. As the tree is in poor condition, the City of Mississauga should not request replacement trees.

11 trees are likely to be injured by construction within the drip line and require permits. Should recommendations for Arborist supervision and root pruning be followed, then all trees would be expected to fully recover following construction.

- Trees to be injured by pole construction: #2, #4, #5, #6, #9, #14, #15, #19, and #20
- Trees to be injured by trenching within proposed easement: #32 and #33

10 trees are recommended to be protected with Tree Protection Fencing (TPF) to prevent damage from nearby construction.

- Trees #1, #3, #8, #13, #16, #17, #23, #24, #36, and #37.

12 trees can be retained without the use of TPF as they are not near planned construction.

- Trees #7, #10-12, #18, #21, #22, and #25-30.

16 trees are recommended to have branches pruned for utility wire clearance. Branches higher than 5 m above ground should be pruned following good arboricultural practices. It is estimated that necessary pruning will not exceed 30% of the canopy for any tree recommended to be pruned.

- Trees #2, #3, #5-10, #12-15, #17, and #19-21.

Recommendations

In accordance with the numbering of trees in the inventory listed on the Tree Protection Action Key (TPAK, Appendix 1), we have provided the following recommendations:

Trees recommended to be removed are specified with “Remove” in the TPAK “Action” column.

- We recommend the client remove trees #30, #31, #34, and #35 prior to construction.
- We recommend the client plant 3 replacement trees within the property at 181 Lakeshore Rd W to account for the removals of 3 healthy trees (#30, #34, and #35). Replacement trees must be at least 1.8 m tall if coniferous and 6 cm in diameter if deciduous.

Trees likely to be injured are specified with “Injure” in the TPAK “Action” column.

- For trees #2, #4, #5, #6, #9, #14, #15, #19, and #20, we recommend a Certified Arborist supervise utility pole removals and installation within drip lines. We recommend using low pressure hydro vac as the excavation method and having exposed roots pruned by a Certified Arborist.
- For trees #32 and #33, we recommend that roots within drip lines be excavated by low pressure hydro vac or air spade under the supervision of a Certified Arborist. Once roots are exposed, we recommend root pruning by a Certified Arborist.

Trees recommended for protection were specified with “Protect” in the TPAK “Action” column.

- For trees #1, #3, #8, #13, #16, #17, #23, #24, #36, and #37 we recommend the client install tree protection hoarding following the Tree Protection Plan (Appendix 2) prior to and during construction work.
- Hoarding shall consist of 1.2 m orange plastic fencing framed with solid top and bottom rail, or 1.2 m plywood following City specifications (Appendix 3), and should be installed around the drip line of each tree to protect roots from tearing and soil compaction during construction.
- We recommend all materials storage be kept outside of TPZs at all times during construction.

Trees #2, #3, #5-10, #12-15, #17, and #19-21 are recommended for utility clearance pruning and should be pruned in accordance with good arboricultural practices.

Prior to the pruning, injury, or removal of trees, we recommend the client obtain the informed consent of the property/tree owner.

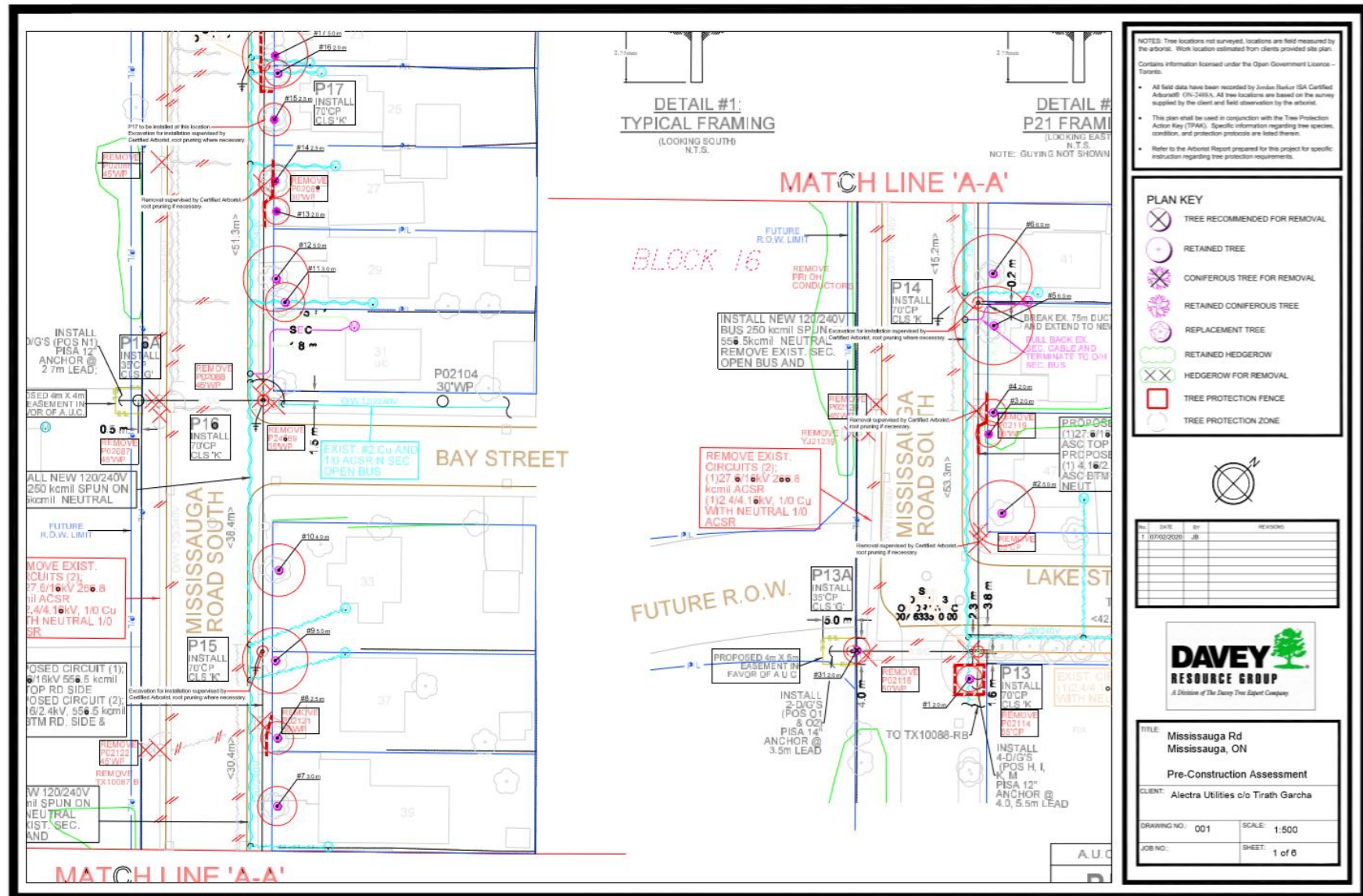
Appendix 1 – Tree Protection Action Key (TPAK)

Tree Map Number	Species	Botanical	DBH (cm) @ 1.4 m	Tree Ownership	Protection Distance / Dripline (m)	Health	Structure	Overall Condition	Tree Height (m)	Crown Width (m)	Live Crown Ratio (%)	Deadwood (%)	Nearby Construction	Construction Impact (None, Low, Medium, High)	Action	Recommendation	Permit Required?	Pruning Recommendation	Notes and Observations	Address
1	Crab Apple	Malus profusion	25	City	2.0	Good	Good	Good	5	4	60	5	Remove 55' CP, install 70' CP outside drip line	None	Protect	Protect with tree protection fencing	N	None		53 Lake St
2	Sugar Maple	Acer saccharum	66	Private	5.0	Good	Good	Good	15	10	90	5	Remove 55' CP within drip line	Low	Injure	CP removal supervised by Certified Arborist, root pruning if necessary	Y	Prune branches >5 m above ground for wire clearance		47 Mississauga Rd S
3	Colorado Blue Spruce	Picea pungens 'glauca'	21	Boundary	2.0	Good	Good	Good	9	4	90	0	Remove 55' CP outside drip line	None	Protect	Protect with tree protection fencing	N	Prune branches >5 m above ground for wire clearance		47 Mississauga Rd S
4	Japanese Tree Lilac	Syringa reticulata	46	Private	2.0	Good	Good	Good	5	4	70	0	Remove 55' WP within drip line	Low	Injure	WP removal supervised by Certified Arborist, root pruning if necessary	Y	None	Multistem: 12, 8, 8, 7, 6, 5	43 Mississauga Rd S
5	Norway Maple	Acer platanoides	92	Private	6.0	Good	Good	Good	15	12	70	0	Install 70' CP within drip line	Medium	Injure	Excavation supervised by Certified Arborist, root pruning where necessary	Y	Prune branches >5 m above ground for wire clearance		43 Mississauga Rd S
6	Norway Maple	Acer platanoides	62	Private	6.0	Good	Good	Good	15	12	70	0	Install 70' CP within drip line	Medium	Injure	Excavation supervised by Certified Arborist, root pruning where necessary	Y	Prune branches >5 m above ground for wire clearance	76 cm at 0.6 m above ground	41 Mississauga Rd S
7	Flowering Cherry	Prunus serrulata	49	Private	3.0	Good	Good	Good	6	6	70	10		None	Retain		N	Prune branches >5 m above ground for wire clearance		39 Mississauga Rd S
8	Norway Maple	Acer platanoides	53	Private	2.5	Fair	Poor	Poor	10	5	80	30	Remove 55' WP outside drip line	None	Protect	Protect with tree protection fencing	N	Prune branches >5 m above ground for wire clearance	Crown dieback; topped	37 Mississauga Rd S
9	Norway Maple	Acer platanoides	71	Boundary	5.0	Good	Good	Good	16	10	80	0	Install 70' CP within drip line	Medium	Injure	Excavation supervised by Certified Arborist, root pruning where necessary	Y	Prune branches >5 m above ground for wire clearance		37 Mississauga Rd S
10	Norway Maple	Acer platanoides	58	Private	4.0	Fair	Fair	Fair	16	8	80	15		None	Retain		N	Prune branches >5 m above ground for wire clearance	Crown dieback	33 Mississauga Rd S
11	Red Maple	Acer rubrum	41	Private	3.0	Good	Good	Good	12	6	80	0		None	Retain		N	None		29 Mississauga Rd S
12	Silver Maple	Acer saccharinum	107	Boundary	5.0	Good	Good	Good	16	10	90	10		None	Retain		N	Prune branches >5 m above ground for wire clearance		29 Mississauga Rd S
13	Colorado Blue Spruce	Picea pungens 'glauca'	34	Private	2.0	Good	Good	Good	13	4	90	0	Remove 30' WP outside drip line	None	Protect	Protect with tree protection fencing	N	Prune branches >5 m above ground for wire clearance	Virginia creeper on tree	27 Mississauga Rd S

Tree Map Number	Species	Botanical	DBH (cm) @ 1.4 m	Tree Ownership	Protection Distance / Dripline (m)	Health	Structure	Overall Condition	Tree Height (m)	Crown Width (m)	Live Crown Ratio (%)	Deadwood (%)	Nearby Construction	Construction Impact (None, Low, Medium, High)	Action	Recommendation	Permit Required?	Pruning Recommendation	Notes and Observations	Address
14	Colorado Blue Spruce	<i>Picea pungens 'glauca'</i>	43	Boundary	2.5	Good	Good	Good	13	5	90	5	Remove 30' WP within drip line	Low	Injure	WP removal supervised by Certified Arborist, root pruning where necessary	Y	Prune branches >5 m above ground for wire clearance	Virginia creeper on tree	27 Mississauga Rd S
15	Colorado Blue Spruce	<i>Picea pungens 'glauca'</i>	42	Boundary	2.5	Fair	Fair	Fair	12	5	80	10	Install 70' CP within drip line	Medium	Injure	Excavation supervised by Certified Arborist, root pruning where necessary	Y	Prune branches >5 m above ground for wire clearance		25 Mississauga Rd S
16	Magnolia	<i>Magnolia sp.</i>	12	Private	2.0	Good	Good	Good	5	4	70	0		None	Protect	Protect with tree protection fencing	N	None		25 Mississauga Rd S
17	Norway Spruce	<i>Picea abies</i>	75	Boundary	5.0	Good	Good	Good	15	10	80	5		None	Protect	Protect with tree protection fencing	N	Prune branches >5 m above ground for wire clearance		23 Mississauga Rd S
18	Colorado Blue Spruce	<i>Picea pungens 'glauca'</i>	18	Private	2.5	Good	Good	Good	6	5	100	0		None	Retain		N	None	Estimated DBH	21 Mississauga Rd S
19	Manitoba Maple	<i>Acer negundo</i>	49	Private	3.0	Fair	Fair	Fair	12	6	80	10	Remove 30' WP, install 70' CP within drip line	Low	Injure	WP removal and excavation supervised by Certified Arborist, root pruning where necessary	Y	Prune branches >5 m above ground for wire clearance	Lean	63 Port St W
20	Norway Maple	<i>Acer platanoides</i>	68	Private	5.0	Good	Good	Good	16	10	80	0	Remove 30' WP, install 70' CP within drip line	Low	Injure	WP removal and excavation supervised by Certified Arborist, root pruning where necessary	Y	Prune branches >5 m above ground for wire clearance		63 Port St W
21	Norway Maple	<i>Acer platanoides</i>	65	Private	4.0	Good	Good	Good	12	8	70	5		None	Retain		N	Prune branches >5 m above ground for wire clearance		63 Port St W
22	Norway Spruce	<i>Picea abies</i>	40	Private	2.5	Good	Good	Good	11	5	80	5		None	Retain		N	None		15 Mississauga Rd S
23	European Beech	<i>Fagus sylvatica</i>	8	Private	1.5	Good	Good	Good	3	3	90	0	Remove 65' WP, install 65' CP outside drip line	None	Protect	Protect with tree protection fencing	N	None		9 Mississauga Rd N
24	Norway Maple	<i>Acer platanoides</i>	58	Private	2.0	Poor	Poor	Poor	12	4	80	50	Install 65' CP outside drip line	None	Protect	Protect with tree protection fencing	N	None	Crown dieback; major deadwood	13 Mississauga Rd N
25	Japanese Tree Lilac	<i>Syringa reticulata</i>	7	Boundary	1.0	Good	Good	Good	4	2	60	0		None	Retain		N	None		15 Mississauga Rd N
26	Silver Maple	<i>Acer saccharinum</i>	84	Boundary	4.0	Good	Good	Good	16	8	80	5		None	Retain		N	None	Cavities	17 Mississauga Rd N

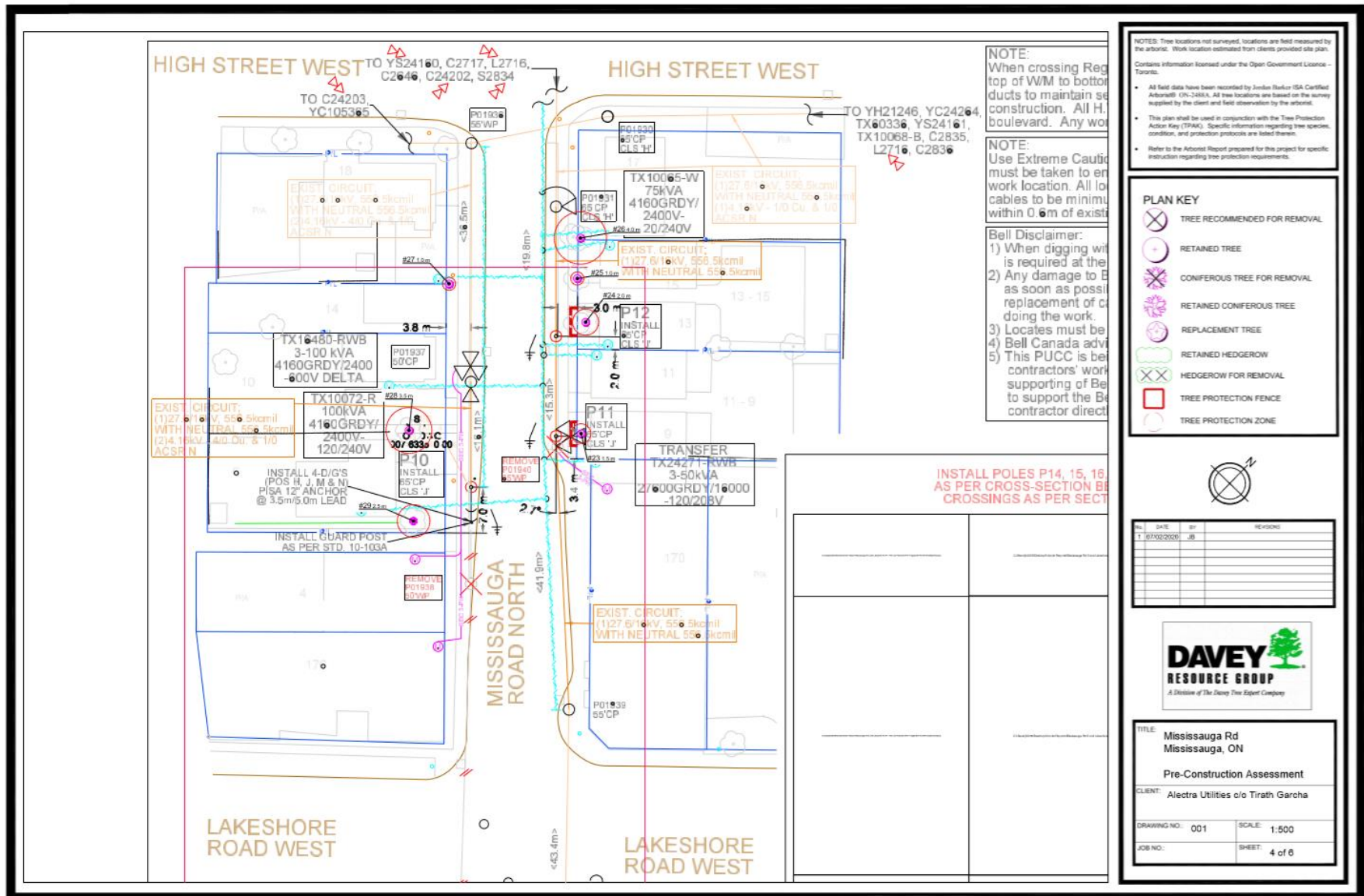
Tree Map Number	Species	Botanical	DBH (cm) @ 1.4 m	Tree Ownership	Protection Distance / Dripline (m)	Health	Structure	Overall Condition	Tree Height (m)	Crown Width (m)	Live Crown Ratio (%)	Deadwood (%)	Nearby Construction	Construction Impact (None, Low, Medium, High)	Action	Recommendation	Permit Required?	Pruning Recommendation	Notes and Observations	Address
27	Norway Maple	Acer saccharum	6	City	1.0	Good	Good	Good	5	2	80	0		None	Retain		N	None	10 cm East of existing utility pole	14 Mississauga Rd N
28	Crab Apple	Malus profusion	54	Private	3.5	Good	Good	Good	8	7	70	0		None	Retain		N	None		10 Mississauga Rd N
29	Colorado Blue Spruce	Picea pungens 'glauca'	48	Private	2.5	Good	Good	Good	14	5	80	5		None	Retain		N	None		6 Mississauga Rd N
30	Colorado Blue Spruce	Picea pungens 'glauca'	40	Private	2.5	Good	Good	Good	10	5	90	10	Trenching within drip line; Remove 50' WP outside drip line	High	Remove	Remove tree prior to construction	Y	None	Estimated DBH	181 Lakeshore Rd W
31	Manitoba Maple	Acer negundo	41	Boundary	2.0	Poor	Poor	Poor	6	4	60	10	Remove 50' WP, install 35' CP within drip line	High	Remove	Remove tree prior to construction	Y	None	Utility pole guy wires fastened to tree; Grape vine on it	181 Lakeshore Rd W
32	Japanese Tree Lilac	Syringa reticulata	25	Private	2.0	Good	Fair	Good	5	4	70	5	Trenching within drip line	Medium	Injure	Root excavation by hydro vac or air spade supervised by Certified Arborist, root pruning where necessary	Y	None	Estimated DBH; Behind fence	181 Lakeshore Rd W
33	Japanese Tree Lilac	Syringa reticulata	33	Private	2.0	Good	Fair	Good	5	4	70	5	Trenching within drip line	Medium	Injure	Root excavation by hydro vac or air spade supervised by Certified Arborist, root pruning where necessary	Y	None	Estimated DBH; Behind fence	181 Lakeshore Rd W
34	Japanese Tree Lilac	Syringa reticulata	32	Private	2.0	Good	Good	Good	5	4	70	0	Trenching within drip line	High	Remove	Remove tree prior to construction	Y	None	Estimated DBH; Behind fence; Multistem 12, 10, 10	181 Lakeshore Rd W
35	Japanese Tree Lilac	Syringa reticulata	32	Private	2.0	Good	Good	Good	4	4	70	0	Trenching within drip line	High	Remove	Remove tree prior to construction	Y	None	Estimated DBH; Multistem 12, 11, 9	181 Lakeshore Rd W
36	Japanese Tree Lilac	Syringa reticulata	22	Private	2.0	Good	Good	Good	4	4	70	0	Trenching outside drip line	None	Protect	Protect with tree protection fencing	N	None	Estimated DBH	181 Lakeshore Rd W
37	Japanese Tree Lilac	Syringa reticulata	27	Private	2.0	Fair	Fair	Fair	5	4	80	15		None	Protect	Protect with tree protection fencing	N	None	Estimated DBH	181 Lakeshore Rd W

Appendix 2 – Tree Protection Plan

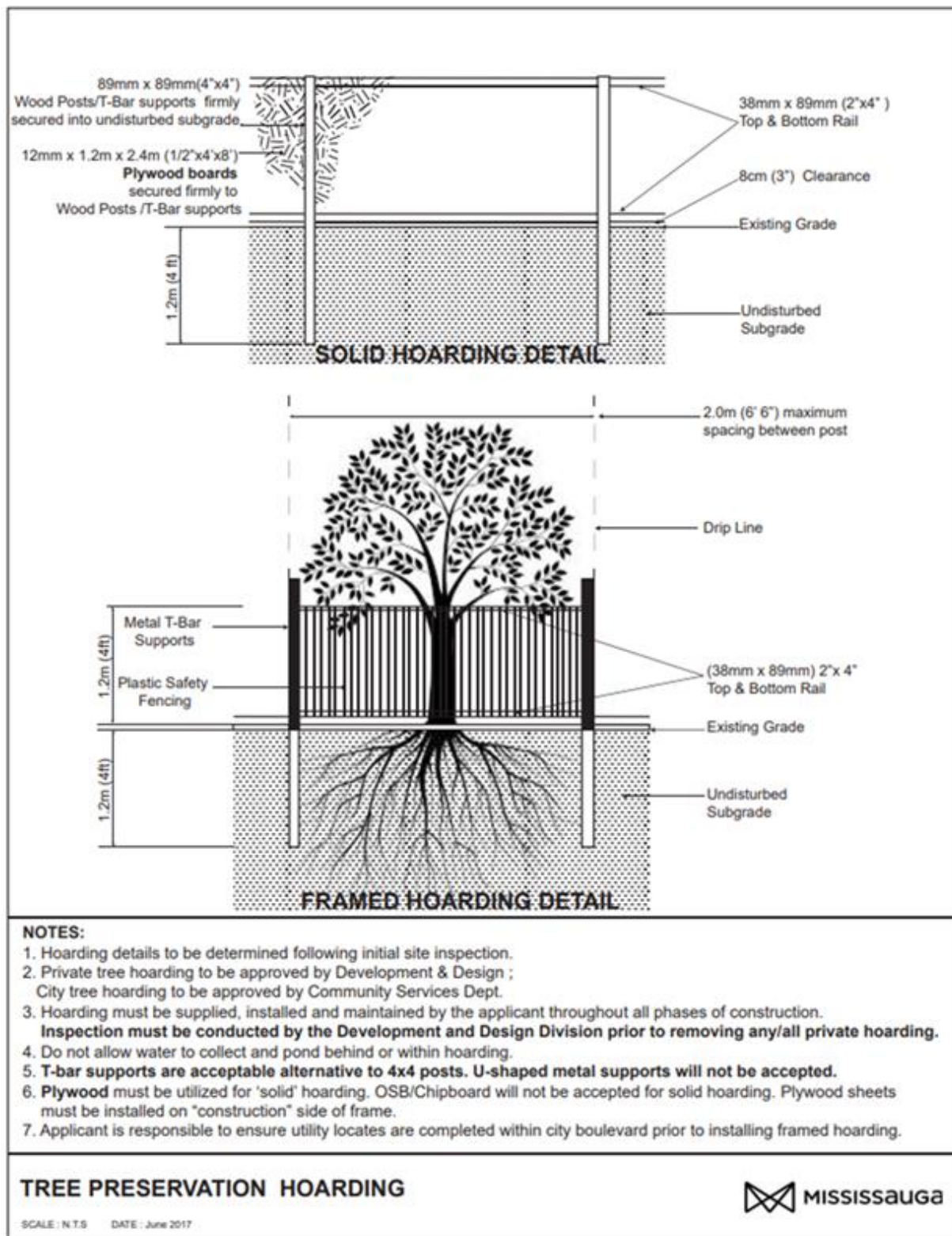








Appendix 3 – Hoarding Specifications



Appendix 4 – References

1. ISA, 2001-2011. Best Management Practices, Books 1-9, Companion publications to ANSI A300 Standards for Tree Care
2. Dujesiefken, Dr. Dirk, 2012. Director of the Institute for Tree Care in Germany, The CODIT Principle, research presented on cambial regrowth on trees after injury at the Annual ISA Conference in Kingston Ontario
3. Sinclair and Lyon, 2005. Diseases of Trees and Shrubs, Second Edition
4. ISA, 2010. Glossary of Arboricultural Terms
5. Neely and Watson, ISA, 1994 and 1998. The Landscape Below Ground 1 and 2
6. Matheny and Clark, ISA, 1994. A Photographic Guide to the Evaluation of Hazard Trees in Urban Areas, 2nd Edition
7. Matheny and Clark, ISA 1998. Trees and Development, A Technical Guide to Preservation of Tree During Land Development
8. PNW-ISA, 2011. Tree Risk Assessment in Rural Areas and Urban/Rural Interface, Version 1-5
9. Todd Hurt & Bob Westerfield, 2005. Tree Protection During Construction and Landscaping Activities

Appendix 5 – Glossary of Common Arboricultural Terms

Arborist	A professional who possesses the technical competence gained through experience and related training to provide for or supervise the management of trees and other woody plants in residential, commercial, and public landscapes.
ANSI A300	Acronym for American National Standards Institute. In the United States, industry-developed, national consensus standards of practice for tree care.
Bark Tracing	Cutting away torn or injured bark to leave a smooth edge.
Branch Bark Ridge	Raised strip of bark at the top of a branch union, where the growth and expansion of the trunk or parent stem and adjoining branch push the bark into a ridge.
Callus wood	Undifferentiated tissue formed by the cambium, usually as the result of wounding.
Clinometer	A device used to calculate the height of trees.
Consulting Arborist	An Arboricultural consultant is one of the following: <ul style="list-style-type: none"> American Society of Consulting Arborists, Registered Consulting Arborist (ASCA RCA#___) International Society of Arboriculture, Board Certified Master Arborist (ISA BCMA #___B) ISA Certified Arborist/Municipal Specialist in good standing for a minimum of 6 years with 6 years of proven experience in a management role related to arboriculture, and has attested and signed to a code of ethics related to arboriculture (ISA#_____)
Compartmentalization	Natural defense process in trees by which chemical and physical boundaries are created that act to limit the spread of disease and decay organisms
Critical Root Zone – (CRZ)	Area of soil around a tree where the minimum amounts of roots considered critical to the structural stability or health of the tree are located. CRZ determination is sometimes based on the drip line or a multiple of dbh (12:1, 12cm of ground distance from the trunk for every cm of dbh) but because root growth is often asymmetric due to site conditions, on-site investigation is preferred.
Daylighting	Also known as Hydro-vac, this is the process by which soil is vacuumed up. In the context of tree care this allows workers to access the soil below the roots without mortal damage to significant roots.
DBH	Acronym for tree diameter at breast height. Measured at 1.4m above ground.
Decurrent	Rounded or spreading growth habit of the tree crown.
Directional Pruning	Providing clearance by pruning branches that could significantly affect the integrity of utility facilities or other structures, and leaving in place branches that could have little or no effect.
Dripline	Imaginary line defined by the branch spread of a single parent or group of plants

Excurrent	Tree growth habit characterized by a central leader and a pyramidal crown.
Included bark	Bark that becomes embedded in a crotch (union) between branch and trunk or between codominant stems. Causes a weak structure.
Lion's Tailing	Poor pruning practice in which an excessive number of branches are thinned from the inside and lower part of specific limbs or a tree crown, leaving mostly terminal foliage. Results in poor branch taper, poor wind load distribution, and higher risk of branch failure.
MTPZ	Acronym for Minimum Tree Protection Zone, also known as the Structural Root Zone (SRZ), which is the distance from the tree equal to 6 times the dbh, within which the likelihood of encountering roots that are structural supports for the tree.
Moment	Rotational force that is created by any line force on a body. The magnitude of a moment is defined as the product of the force magnitude and perpendicular distance from the line of action of the force to the axis of which the moment is being calculated.
Mortality Spiral	A sequence of stressful events or conditions causing the decline and eventual death of a tree.
Mulch	Material that is spread or sometimes sprayed on the soil surface to reduce weed growth, to retain soil moisture and moderate temperature extremes, to reduce compaction from pedestrian traffic or to prevent damage from lawn-maintenance equipment, to reduce erosion or soil spattering onto adjacent surfaces, to improve soil quality through its eventual decomposition, and/or to improve aesthetic appearance of the landscape. Mulch can be composed of chipped, ground, or shredded organic material such as bark, wood, or recycled paper; unmodified organic material such as seed hulls; organic fiber blankets or mats; or inorganic material such as plastic sheeting.
Organic Matter	Material derived from the growth (and death) of living organisms. The organic components of the soil.
CRZ	Acronym for Critical Root Zone, also known as the Critical Root Zone (see definition above), within which there is a high likelihood of encountering roots that are necessary for the survival for the tree.
Project Arborist	The consulting arborist retained to provide all tree preservation recommendations to the project manager or contractors on a given construction project.
Qualified Arborist	An arborist who has documented related training (i.e. ISA, MTCU, or equivalent) and on-the-job experience (minimum of 5 years)
Radial trenching	Technique for aerating the soil or alleviating compaction around a tree by removing and replacing soil (which may be amended) in trenches (typically 300mm deep and 150mm wide) made in a spoke like pattern (radially from the trunk) in the root zone to

	improve conditions for root growth.
Reaction Wood	Wood formed in leaning or crooked stems or on lower or upper sides of branches as a means of counteracting the effects of gravity.
Removal Cut	A cut that removes a branch at its point of origin. Collar cut.
Reduction Cut	A pruning cut that reduces the length of a branch or stem back to a lateral branch large enough to assume apical dominance.
Resistograph®	A brand name of a device consisting of a specialized micro-drill bit that drills into trees and graphs density differences that are used to detect decay.
Soft-Scaped	Landscaping practices that do not involved solid or deeply-dug foundations. Patios consisting of slab rocks laid on-top of the soil with minimal excavation and base (less than 10cm) and causing minimal damage to existing tree roots.
Static Support System	Cabling system that utilizes rigid materials such as rods and steel cables to limit movement and provide constant support of limbs.
Structural cells	Modular system consisting of units of soil and integrated support structures that serve both as a foundation for paved surfaces and a hospitable environment for tree root growth,
Structural pruning	Pruning to establish a strong arrangement or system of scaffold branches.
Structural Soil™	Pavement substrate that can be compacted to meet engineering specifications yet remains penetrable by tree roots in the urban environment. Composed of angular crushed stone, clay loam, and hydrogel mixed in a weight ratio of 100:20:0.03. Developed at the Urban Horticulture Institute, Cornell University, Ithaca, NY.
Supersonic Air Excavation Techniques (SSAT)	A methodology using a device that directs a jet of highly compressed air to excavate soil. Used within the root zone of trees to avoid or minimizing damage to the roots, or near underground structures such as pipes and wires to avoid or minimize damage to them.
Tree Protection Zone (TPZ)	Defined area within which certain activities are prohibited or restricted to prevent or minimize potential injury to designated trees, especially during construction. TPZ is sometimes based on a minimum multiple of dbh (e.g. 6:1, 6cm of ground distance from the trunk for 1cm of dbh)
Walls	Trees have 4 walls in a process known as compartmentalization. <ul style="list-style-type: none"> • Wall 1 prevents decay moving up and down in a tree • Wall 2 prevents decay moving inward in a tree • Wall 3 prevents decay moving laterally in a tree • Wall 4 is the new growth formed on the outside of the tree, callus growth.
Woundwood	Lignified, differentiated tissues produced on woody plants after wounding.



Appendix 6 – Arborist Qualifications



Jordan Barker is a Consulting Arborist with Davey Resource Group. His formal education includes a Bachelor of Science in Biology from Western University and a Master of Science in Biology with a focus in Forest Ecology from McMaster University. Mr. Barker has five years of varied work experience in the forestry, arboriculture, and ecological assessment fields. Mr. Barker has worked with DRG as an Inventory Arborist and Consulting Arborist.

Certifications

ISA Certified Arborist (ON-2488A)

ISA Tree Risk Assessment Qualification

Butternut Health Assessor (#663)

Wetland Evaluator

Appendix 7 – Photographs

Branches within the yellow boxes are recommended to be pruned.



Figure 1. Tree #1.



Figure 2. Tree #2.



Figure 3. Left: Trees #3 and #4 from right to left. Right: Tree #3.



Figure 4. Left: Trees #5 and #6 from right to left. Right: Trees #5 and #6 from foreground to background.



Figure 5. Left: Trees #7 and #8 from right to left. Right: Tree #7.



Figure 6. Tree #9.



Figure 7. Tree #10.

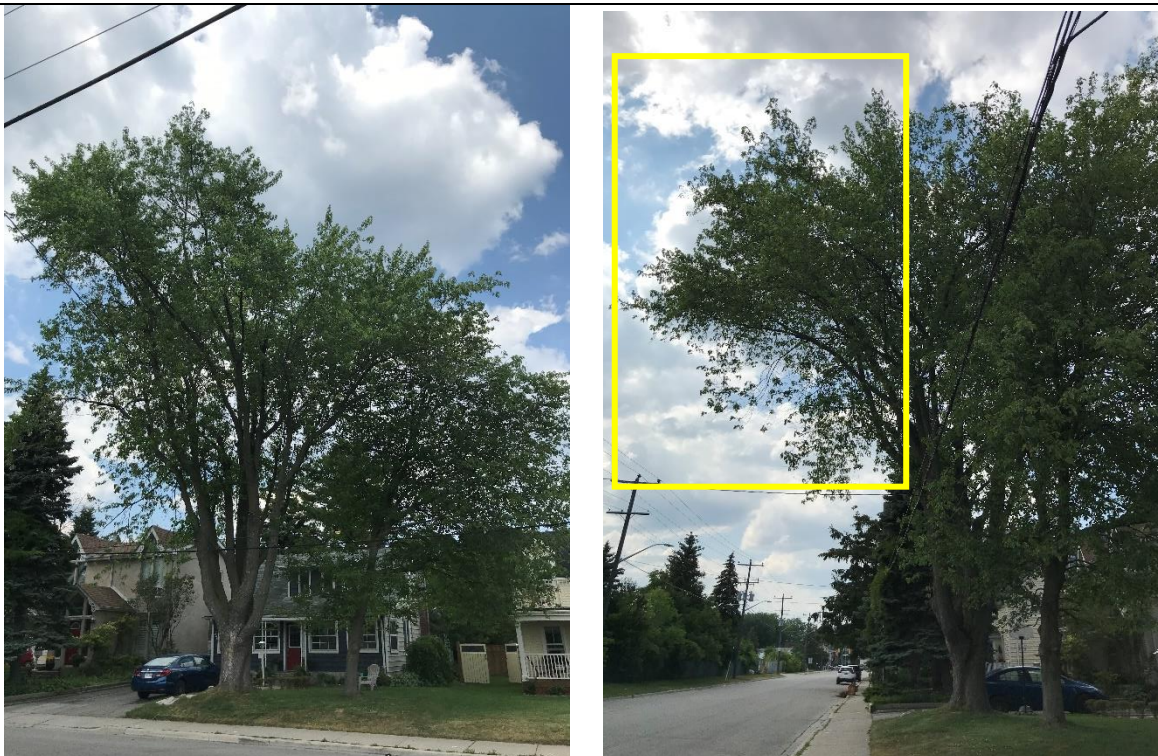


Figure 8. Left: Tree #11 and #12 from right to left. Right: Trees #11 and #12 from foreground to background.

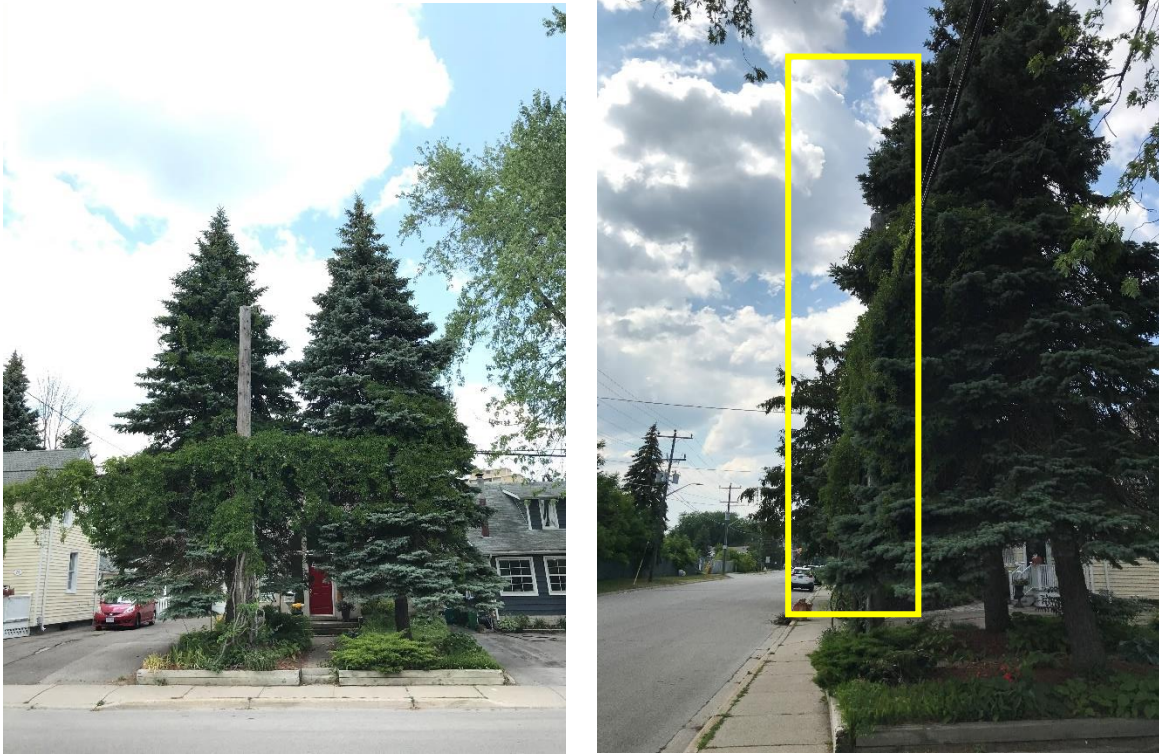


Figure 9. Left: Trees #13 and #14 from right to left. Right: Tree #13.



Figure 10. Left: Tree #15. Right: Tree #15 (foreground).



Figure 11. Left: Trees #16 and #17 from right to left. Right: Tree #17.



Figure 12. Left: Tree #18. Right: Tree #18 (foreground).



Figure 13. Left: Trees #19 and #20 from right to left. Right: Trees #19 and #20 (background).

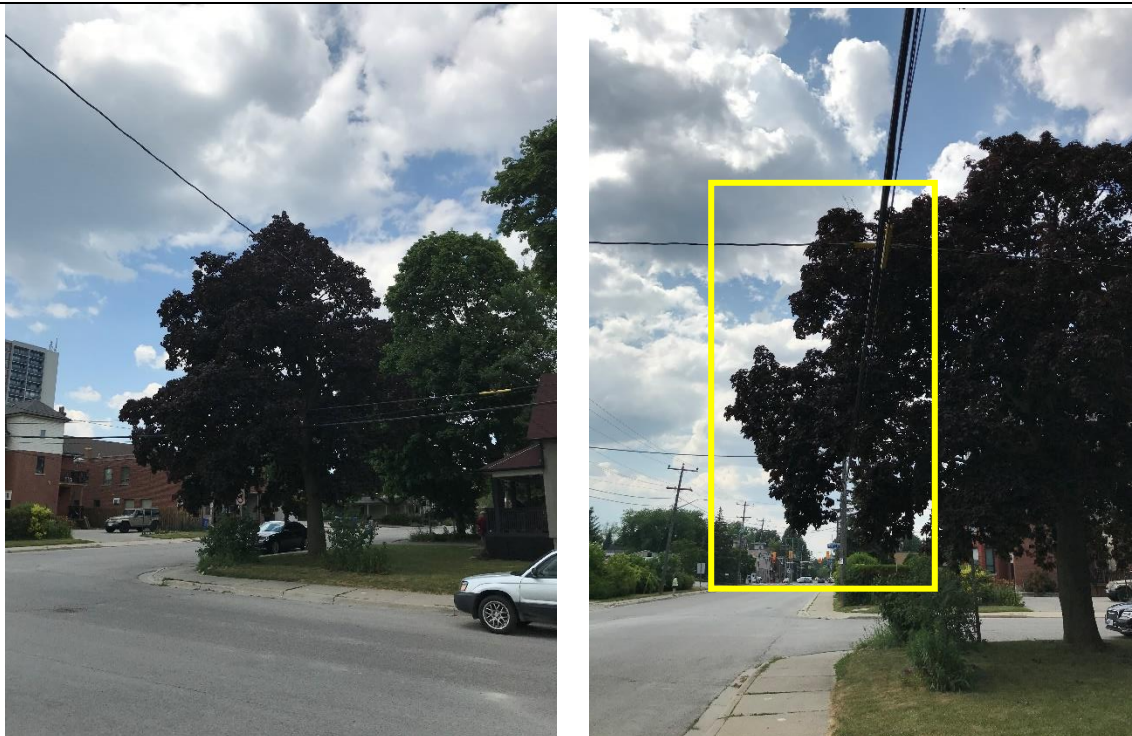


Figure 14. Tree #21.



Figure 15. Tree #22.



Figure 16. Tree #23



Figure 17. Left: Trees #24-#26 from right to left. Right: Trees #24-#26 from foreground to background.



Figure 18. Tree #27



Figure 19. Tree #28



Figure 20. Tree #29



Figure 21. Tree #30 (foreground) and #35 (behind/under tree #30).



Figure 22. Tree #31



Figure 23. Trees #32-34 from right to left



Figure 24. Tree #37

Conditions of Assessment Agreement

This Conditions of Assessment Agreement is made pursuant to and as a provision of Davey Resource Group, a division of The Davey Tree Expert Co. of Canada, Limited ("Davey"), providing tree assessment services as agreed to between the parties, the terms and substance of which are incorporated in and made a part of this Agreement (collectively the "Services").

Trees are living organisms that are subject to stress and conditions and which inherently impose some degree or level of risk. Unless a tree is removed, the risk cannot be eliminated entirely. Tree conditions may also change over time even if there is no external evidence or manifestation. In that Davey provides the Services at a point in time utilizing applicable standard industry practices, any conclusions and recommendations provided are relevant only to the facts and conditions at the time the Services are performed. Given that Davey cannot predict or otherwise determine subsequent developments, Davey will not be liable for any such developments, acts, or conditions that occur including, but not limited to, decay, deterioration, or damage from any cause, insect infestation, acts of god or nature or otherwise.

Unless otherwise stated in writing, assessments are performed visually from the ground on the above-ground portions of the tree(s). However, the outward appearance of trees may conceal defects. **Therefore, to the extent permitted by law, Davey does not make and expressly disclaims any warranties or representations of any kind, express or implied, with respect to completeness or accuracy of the information contained in the reports or findings resulting from the Services beyond that expressly contracted for by Davey in writing, including, but not limited to, performing diagnosis or identifying hazards or conditions not within the scope of the Services or not readily discoverable using the methods applied pursuant to applicable standard industry practices.** Further, Davey's liability for any claim, damage or loss caused by or related to the Services shall be limited to the work expressly contracted for.

In performing the Services, Davey may have reviewed publicly available or other third- party records or conducted interviews, and has assumed the genuineness of such documents and statements. Davey disclaims any liability for errors, omissions, or inaccuracies resulting from or contained in any information obtained from any third- party or publicly available source.

Except as agreed to between the parties prior to the Services being performed, the reports and recommendations resulting from the Services may not be used by any other party or for any other purpose. The undersigned also agrees, to the extent permitted by law, to protect, indemnify, defend and hold Davey harmless from and against any and all claims, demands, actions, rights and causes of action of every kind and nature, including actions for contribution or indemnity, that may hereafter at any time be asserted against Davey or another party, including, but not limited to, bodily injury or death or property damage arising in any manner from or in any way related to any disclaimers or limitations in this Agreement.

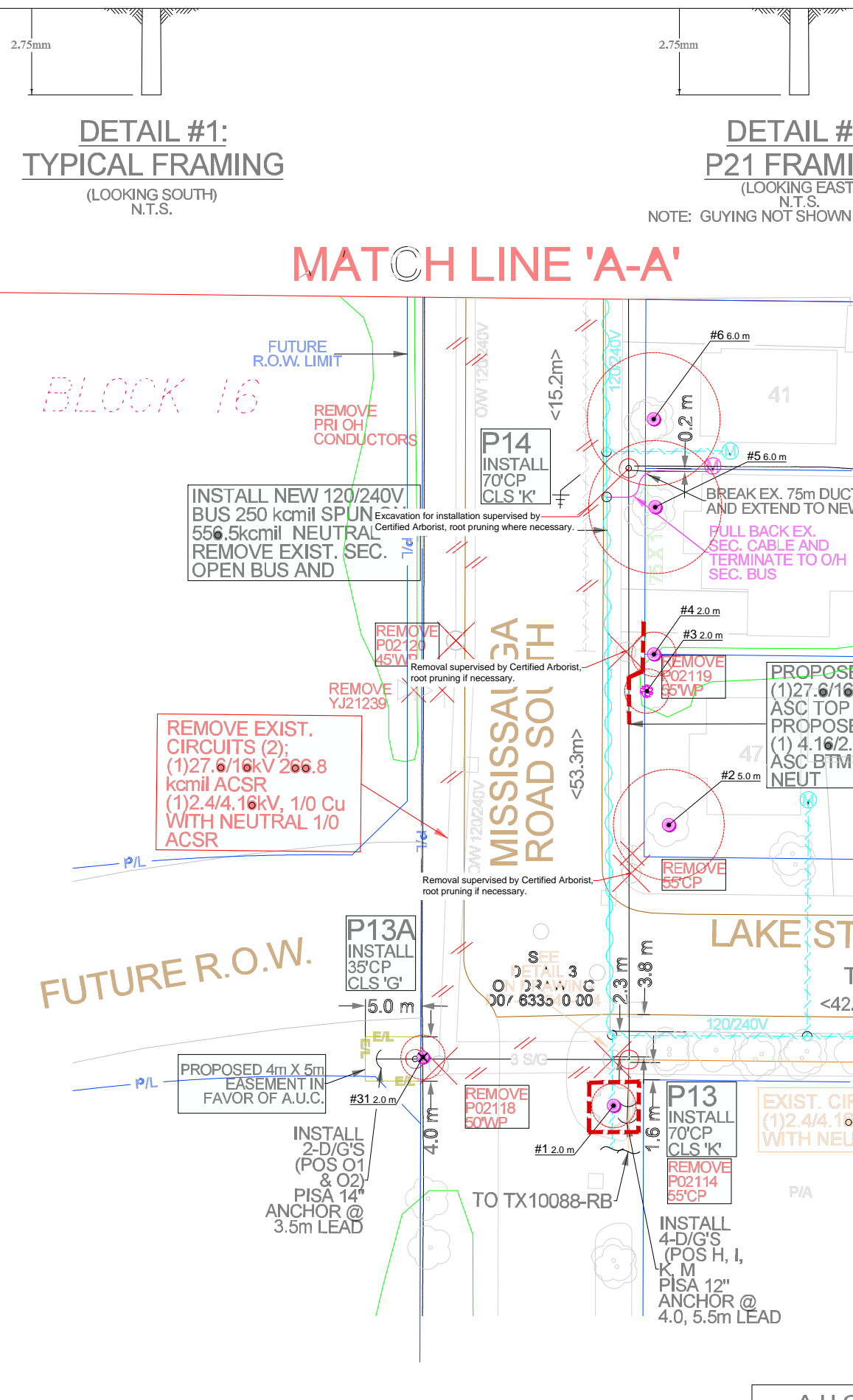
By accepting or using the Services, the customer will be deemed to have agreed to the terms of this Agreement, even if it is not signed.

Acknowledged by:

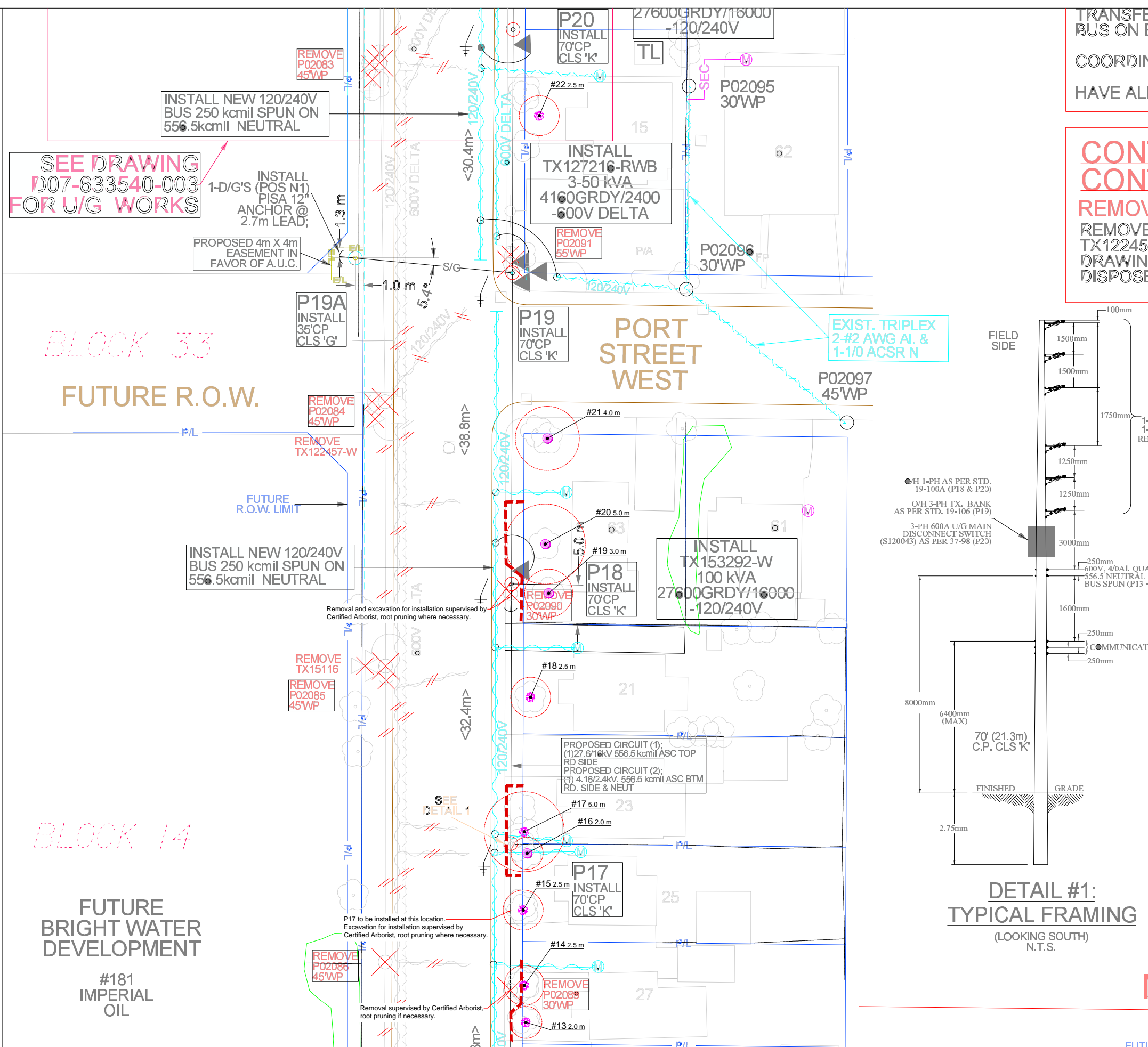
Name of Customer: Joel Lacombe

Authorized Signature: Joel Lacombe

Date: 07-15-2020



TITLE: Mississauga Rd Mississauga, ON	
Pre-Construction Assessment	
CLIENT: Alectra Utilities c/o Tirath Garcha	
DRAWING NO.: 001	SCALE: 1:500
JOB NO.:	SHEET: 1 of 6



TRANSFER BUS ON E
COORDIN
HAVE ALL

CONT
CONT
REMOVE
TX122457
DRAWING
DISPOSE

SEE DRAWING
D07-633540-003
FOR U/G WORKS

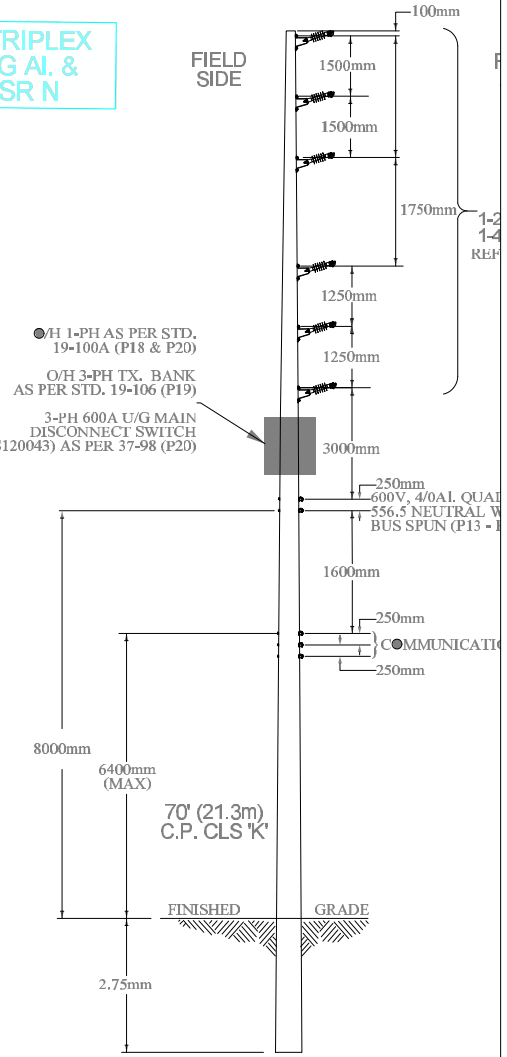
BLOCK 33
FUTURE R.O.W.

BLOCK 14
FUTURE
BRIGHT WATER
DEVELOPMENT
#181
IMPERIAL
OIL

PORT
STREET
WEST

EXIST. TRIPLEX
2-#2 AWG AL &
1-1/0 ACSR N

● H 1-PH AS PER STD.
19-100A (P18 & P20)
○/H 3-PH TX. BANK
AS PER STD. 19-106 (P19)
3-PH 600A U/G MAIN
DISCONNECT SWITCH
(S120043) AS PER 37-98 (P20)



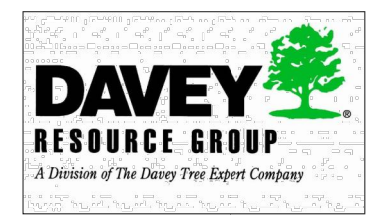
DETAIL #1:
TYPICAL FRAMING
(LOOKING SOUTH)
N.T.S.

NOTES: Tree locations not surveyed, locations are field measured by the arborist. Work location estimated from clients provided site plan.
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PLAN KEY

- TREE RECOMMENDED FOR REMOVAL
- RETAINED TREE
- CONIFEROUS TREE FOR REMOVAL
- RETAINED CONIFEROUS TREE
- REPLACEMENT TREE
- RETAINED HEDGEROW
- HEDGEROW FOR REMOVAL
- TREE PROTECTION FENCE
- TREE PROTECTION ZONE

No.	DATE	BY	REVISIONS
1	07/02/2020	JB	

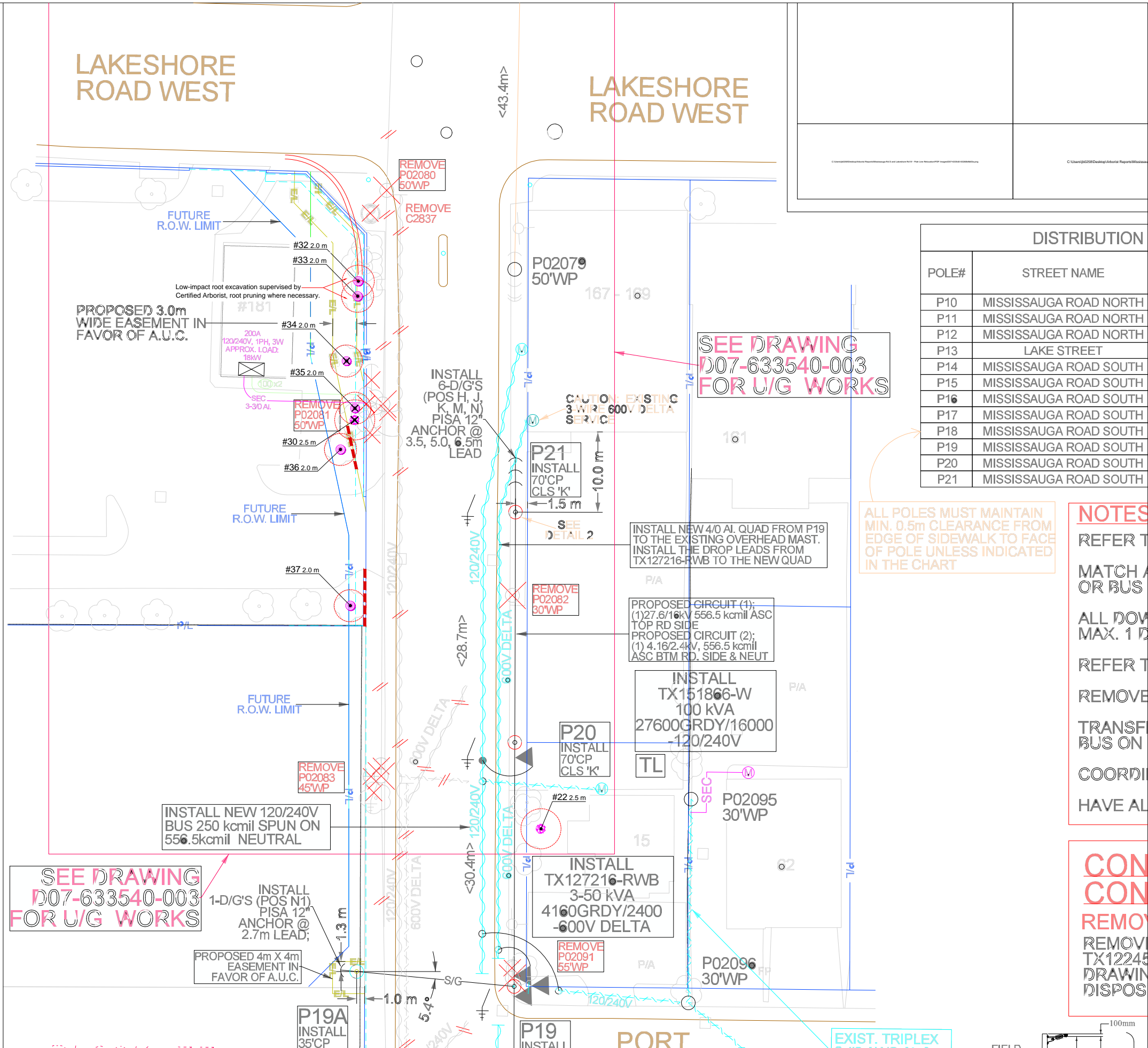


TITLE: Mississauga Rd
Mississauga, ON

Pre-Construction Assessment

CLIENT: Alectra Utilities c/o Tirath Garcha

DRAWING NO.: 001	SCALE: 1:500
JOB NO.:	SHEET: 2 of 6



NOTES: Tree locations not surveyed, locations are field measured by the arborist. Work location estimated from clients provided site plan.

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- RETAINED TREE
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- RETAINED CONIFEROUS TREE
- REPLACEMENT TREE
- RETAINED HEDGEROW
- HEDGEROW FOR REMOVAL
- TREE PROTECTION FENCE
- TREE PROTECTION ZONE

DISTRIBUTION	
POLE#	STREET NAME
P10	MISSISSAUGA ROAD NORTH
P11	MISSISSAUGA ROAD NORTH
P12	MISSISSAUGA ROAD NORTH
P13	LAKE STREET
P14	MISSISSAUGA ROAD SOUTH
P15	MISSISSAUGA ROAD SOUTH
P16	MISSISSAUGA ROAD SOUTH
P17	MISSISSAUGA ROAD SOUTH
P18	MISSISSAUGA ROAD SOUTH
P19	MISSISSAUGA ROAD SOUTH
P20	MISSISSAUGA ROAD SOUTH
P21	MISSISSAUGA ROAD SOUTH

NOTES

REFER TO DRAWING 002 FOR MATCH LINE OR BUS

ALL DOWNSPUTS MAX. 1 m

REFER TO DRAWING 002 FOR REMOVE TRANSFORMER BUS ON COORDINATE

HAVE ALL

No.	DATE	BY	REVISIONS
1	07/02/2020	JB	

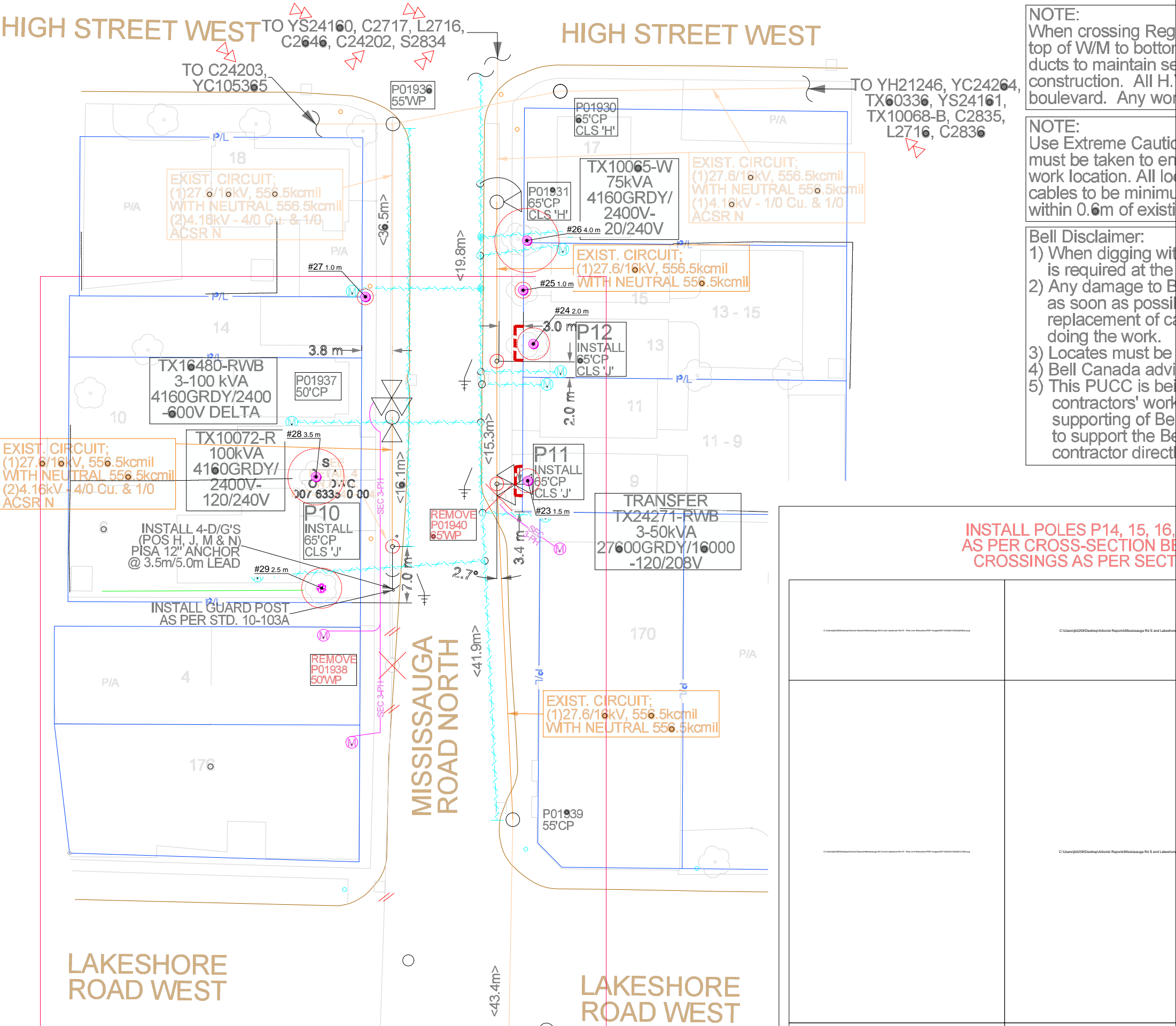


TITLE: Mississauga Rd
Mississauga, ON

Pre-Construction Assessment

CLIENT: Alectra Utilities c/o Tirath Garcha

DRAWING NO.: 001	SCALE: 1:500
JOB NO.:	SHEET: 3 of 6



NOTE:
When crossing Reg top of W/M to bottom ducts to maintain se construction. All H. boulevard. Any wor

NOTE:
Use Extreme Caution must be taken to en work location. All lo cables to be minimum within 0.6m of existi

Bell Disclaimer:
1) When digging with is required at the as soon as possi replacement of ca doing the work.
2) Any damage to B as soon as possi replacement of ca doing the work.
3) Locates must be
4) Bell Canada advi
5) This PUCC is bei contractors' work supporting of Be to support the Be contractor direct

INSTALL POLES P14, 15, 16, AS PER CROSS-SECTION BE CROSSINGS AS PER SECT

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PLAN KEY

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- RETAINED TREE
- CONIFEROUS TREE FOR REMOVAL
- RETAINED CONIFEROUS TREE
- REPLACEMENT TREE
- RETAINED HEDGEROW
- HEDGEROW FOR REMOVAL
- TREE PROTECTION FENCE
- TREE PROTECTION ZONE

No.	DATE	BY	REVISIONS
1	07/02/2020	JB	



TITLE: Mississauga Rd
Mississauga, ON

Pre-Construction Assessment

CLIENT: Alectra Utilities c/o Tirath Garcha

DRAWING NO.: 001	SCALE: 1:500
JOB NO.:	SHEET: 4 of 6

Tree Map Number	Species	Botanical	DBH (cm) @ 1.4 m	Tree Ownership	Protection Distance / Dripline (m)	Health	Structure	Overall Condition	Tree Height (m)	Crown Width (m)	Live Crown Ratio (%)	Deadwood (%)	Nearby Construction	Construction Impact (None, Low, Medium, High)	Action	Recommendation	Permit Required? (Y/N)	Pruning Recommendation	Notes and Observations	Address
1	Crab Apple	Malus profusion	25	City	2.0	Good	Good	Good	5	4	60	5	Remove 55' CP, install 70' CP outside drip line	None	Protect	Protect with tree protection fencing	N	None		53 Lake St
2	Sugar Maple	Acer saccharum	66	Private	5.0	Good	Good	Good	15	10	90	5	Remove 55' CP within drip line	Low	Injure	CP removal supervised by Certified Arborist, root pruning if necessary	Y	Prune branches >5 m above ground for wire clearance		47 Mississauga Rd S
3	Colorado Blue Spruce	Picea pungens 'glauca'	21	Boundary	2.0	Good	Good	Good	9	4	90	0	Remove 55' CP outside drip line	None	Protect	Protect with tree protection fencing	N	Prune branches >5 m above ground for wire clearance		47 Mississauga Rd S
4	Japanese Tree Lilac	Syringa reticulata	46	Private	2.0	Good	Good	Good	5	4	70	0	Remove 55' WP within drip line	Low	Injure	WP removal supervised by Certified Arborist, root pruning if necessary	Y	None	Multistem: 12, 8, 8, 7, 6, 5	43 Mississauga Rd S
5	Norway Maple	Acer platanoides	92	Private	6.0	Good	Good	Good	15	12	70	0	Install 70' CP within drip line	Medium	Injure	Excavation supervised by Certified Arborist, root pruning where necessary	Y	Prune branches >5 m above ground for wire clearance		43 Mississauga Rd S
6	Norway Maple	Acer platanoides	62	Private	6.0	Good	Good	Good	15	12	70	0	Install 70' CP within drip line	Medium	Injure	Excavation supervised by Certified Arborist, root pruning where necessary	Y	Prune branches >5 m above ground for wire clearance	76 cm at 0.6 m above ground	41 Mississauga Rd S
7	Flowering Cherry	Prunus serrulata	49	Private	3.0	Good	Good	Good	6	6	70	10		None	Retain		N	Prune branches >5 m above ground for wire clearance		39 Mississauga Rd S
8	Norway Maple	Acer platanoides	53	Private	2.5	Fair	Poor	Poor	10	5	80	30	Remove 55' WP outside drip line	None	Protect	Protect with tree protection fencing	N	Prune branches >5 m above ground for wire clearance	Crown dieback; topped	37 Mississauga Rd S
9	Norway Maple	Acer platanoides	71	Boundary	5.0	Good	Good	Good	16	10	80	0	Install 70' CP within drip line	Medium	Injure	Excavation supervised by Certified Arborist, root pruning where necessary	Y	Prune branches >5 m above ground for wire clearance		37 Mississauga Rd S
10	Norway Maple	Acer platanoides	58	Private	4.0	Fair	Fair	Fair	16	8	80	15		None	Retain		N	Prune branches >5 m above ground for wire clearance	Crown dieback	33 Mississauga Rd S
11	Red Maple	Acer rubrum	41	Private	3.0	Good	Good	Good	12	6	80	0		None	Retain		N	None		29 Mississauga Rd S
12	Silver Maple	Acer saccharinum	107	Boundary	5.0	Good	Good	Good	16	10	90	10		None	Retain		N	Prune branches >5 m above ground for wire clearance		29 Mississauga Rd S
13	Colorado Blue Spruce	Picea pungens 'glauca'	34	Private	2.0	Good	Good	Good	13	4	90	0	Remove 30' WP outside drip line	None	Protect	Protect with tree protection fencing	N	Prune branches >5 m above ground for wire clearance	Virginia creeper on tree	27 Mississauga Rd S
14	Colorado Blue Spruce	Picea pungens 'glauca'	43	Boundary	2.5	Good	Good	Good	13	5	90	5	Remove 30' WP within drip line	Low	Injure	WP removal supervised by Certified Arborist, root pruning where necessary	Y	Prune branches >5 m above ground for wire clearance	Virginia creeper on tree	27 Mississauga Rd S
15	Colorado Blue Spruce	Picea pungens 'glauca'	42	Boundary	2.5	Fair	Fair	Fair	12	5	80	10	Install 70' CP within drip line	Medium	Injure	Excavation supervised by Certified Arborist, root pruning where necessary	Y	Prune branches >5 m above ground for wire clearance		25 Mississauga Rd S
16	Magnolia	Magnolia sp.	12	Private	2.0	Good	Good	Good	5	4	70	0		None	Protect	Protect with tree protection fencing	N	None		25 Mississauga Rd S
17	Norway Spruce	Picea abies	75	Boundary	5.0	Good	Good	Good	15	10	80	5		None	Protect	Protect with tree protection fencing	N	Prune branches >5 m above ground for wire clearance		23 Mississauga Rd S
18	Colorado Blue Spruce	Picea pungens 'glauca'	18	Private	2.5	Good	Good	Good	6	5	100	0		None	Retain		N	None	Estimated DBH	21 Mississauga Rd S
19	Manitoba Maple	Acer negundo	49	Private	3.0	Fair	Fair	Fair	12	6	80	10	Remove 30' WP, install 70' CP within drip line	Low	Injure	WP removal and excavation supervised by Certified Arborist, root pruning where necessary	Y	Prune branches >5 m above ground for wire clearance	Lean	63 Port St W
20	Norway Maple	Acer platanoides	68	Private	5.0	Good	Good	Good	16	10	80	0	Remove 30' WP, install 70' CP within drip line	Low	Injure	WP removal and excavation supervised by Certified Arborist, root pruning where necessary	Y	Prune branches >5 m above ground for wire clearance		63 Port St W
21	Norway Maple	Acer platanoides	65	Private	4.0	Good	Good	Good	12	8	70	5		None	Retain		N	Prune branches >5 m above ground for wire clearance		63 Port St W
22	Norway Spruce	Picea abies	40	Private	2.5	Good	Good	Good	11	5	80	5		None	Retain		N	None		15 Mississauga Rd S
23	European Beech	Fagus sylvatica	8	Private	1.5	Good	Good	Good	3	3	90	0	Remove 65' WP, install 65' CP outside drip line	None	Protect	Protect with tree protection fencing	N	None		9 Mississauga Rd N
24	Norway Maple	Acer platanoides	58	Private	2.0	Poor	Poor	Poor	12	4	80	50	Install 65' CP outside drip line	None	Protect	Protect with tree protection fencing	N	None	Crown dieback; major deadwood	13 Mississauga Rd N
25	Japanese Tree Lilac	Syringa reticulata	7	Boundary	1.0	Good	Good	Good	4	2	60	0		None	Retain		N	None		15 Mississauga Rd N
26	Silver Maple	Acer saccharinum	84	Boundary	4.0	Good	Good	Good	16	8	80	5		None	Retain		N	None	Cavities	17 Mississauga Rd N
27	Norway Maple	Acer saccharum	6	City	1.0	Good	Good	Good	5	2	80	0		None	Retain		N	None	10 cm East of existing utility pole	14 Mississauga Rd N
28	Crab Apple	Malus profusion	54	Private	3.5	Good	Good	Good	8	7	70	0		None	Retain		N	None		10 Mississauga Rd N
29	Colorado Blue Spruce	Picea pungens 'glauca'	48	Private	2.5	Good	Good	Good	14	5	80	5		None	Retain		N	None		6 Mississauga Rd N
30	Colorado Blue Spruce	Picea pungens 'glauca'	40	Private	2.5	Good	Good	Good	10	5	90	10	Trenching within drip line; Remove 50' WP outside drip line	High	Remove	Remove tree prior to construction	Y	None	Estimated DBH	181 Lakeshore Rd W
31	Manitoba Maple	Acer negundo	41	Boundary	2.0	Poor	Poor	Poor	6	4	60	10	Remove 50' WP, install 35' CP within drip line	High	Remove	Remove tree prior to construction	Y	None	Utility pole guy wires fastened to tree; Grape vine on it	181 Lakeshore Rd W
32	Japanese Tree Lilac	Syringa reticulata	25	Private	2.0	Good	Fair	Good	5	4	70	5	Trenching within drip line	Medium	Injure	Root excavation by hydro vac or air spade supervised by Certified Arborist, root pruning where necessary	Y	None	Estimated DBH; Behind fence	181 Lakeshore Rd W
33	Japanese Tree Lilac	Syringa reticulata	33	Private	2.0	Good	Fair	Good	5	4	70	5	Trenching within drip line	Medium	Injure	Root excavation by hydro vac or air spade supervised by Certified Arborist, root pruning where necessary	Y	None	Estimated DBH; Behind fence	181 Lakeshore Rd W
34	Japanese Tree Lilac	Syringa reticulata	32	Private	2.0	Good	Good	Good	5	4	70	0	Trenching within drip line	High	Remove	Remove tree prior to construction	Y	None	Estimated DBH; Behind fence; Multistem 12, 10, 10	181 Lakeshore Rd W
35	Japanese Tree Lilac	Syringa reticulata	32	Private	2.0	Good	Good	Good	4	4	70	0	Trenching within drip line	High	Remove	Remove tree prior to construction	Y	None	Estimated DBH; Behind fence; Multistem 12, 11, 9	181 Lakeshore Rd W
36	Japanese Tree Lilac	Syringa reticulata	22	Private	2.0	Good	Good	Good	4	4	70	0	Trenching outside drip line	None	Protect	Protect with tree protection fencing	N	None	Estimated DBH; Behind fence	181 Lakeshore Rd W
37	Japanese Tree Lilac	Syringa reticulata	27	Private	2.0	Fair	Fair	Fair	5	4	80	15		None	Protect	Protect with tree protection fencing	N	None	Estimated DBH; Behind fence	181 Lakeshore Rd W

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PLAN KEY



TREE RECOMMENDED FOR REMOVAL



RETAINED TREE



CONIFEROUS TREE FOR REMOVAL



RETAINED CONIFEROUS TREE



REPLACEMENT TREE



RETAINED HEDGEROW



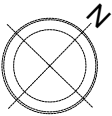
HEDGEROW FOR REMOVAL



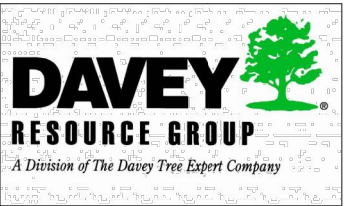
TREE PROTECTION FENCE



TREE PROTECTION ZONE



No.	DATE	BY	REVISIONS
1	07/02/2020	JB	

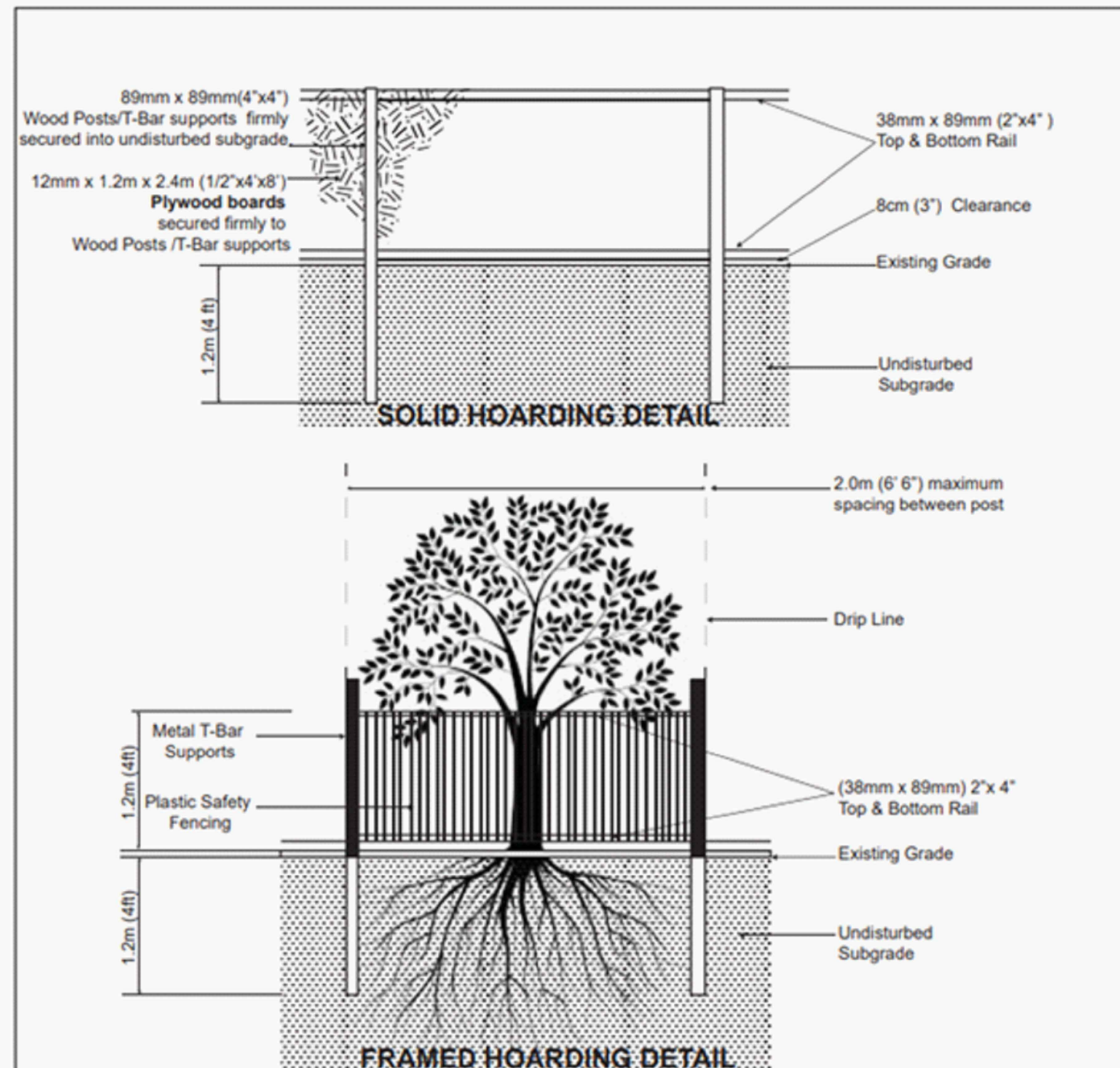


TITLE: Mississauga Rd
Mississauga, ON

Pre-Construction Assessment

CLIENT: Alectra Utilities c/o Tirath Garcha

DRAWING NO.: 001	SCALE: 1:500
JOB NO.:	SHEET: 5 of 6












- NOTES:**
1. Hoarding details to be determined following initial site inspection.
 2. Private tree hoarding to be approved by Development & Design ;
City tree hoarding to be approved by Community Services Dept.
 3. Hoarding must be supplied, installed and maintained by the applicant throughout all phases of construction.
Inspection must be conducted by the Development and Design Division prior to removing any/all private hoarding.
 4. Do not allow water to collect and pond behind or within hoarding.
 5. **T-bar supports are acceptable alternative to 4x4 posts. U-shaped metal supports will not be accepted.**
 6. **Plywood** must be utilized for 'solid' hoarding. OSB/Chipboard will not be accepted for solid hoarding. Plywood sheets must be installed on "construction" side of frame.
 7. Applicant is responsible to ensure utility locates are completed within city boulevard prior to installing framed hoarding.

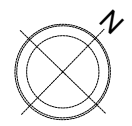
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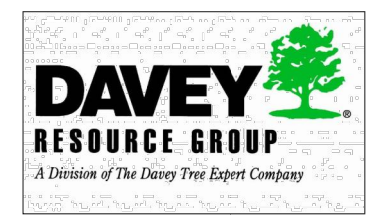
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PLAN KEY

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-  RETAINED TREE
-  CONIFEROUS TREE FOR REMOVAL
-  RETAINED CONIFEROUS TREE
-  REPLACEMENT TREE
-  RETAINED HEDGEROW
-  HEDGEROW FOR REMOVAL
-  TREE PROTECTION FENCE
-  TREE PROTECTION ZONE



No.	DATE	BY	REVISIONS
1	07/02/2020	JB	



TITLE: Mississauga Rd
Mississauga, ON

Pre-Construction Assessment

CLIENT: Alectra Utilities c/o Tirath Garcha

DRAWING NO.: 001	SCALE: 1:500
JOB NO.:	SHEET: 6 of 6