Review of Pape Avenue TOC Noise and Vibration Considerations



Toronto, Ontario

December 2022

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1 Introduction

Stantec, as part of OLTA, has reviewed the massing drawings for the Pape transit-oriented community (TOC). The drawings and associated impacts have been considered with respect to compliance with provincial regulations from a land use planning perspective, as well as with respect to the recommendations made in the publicly released environmental impact assessment report (EIAR) for the Ontario Line (OL).

The purpose of this report is:

- A) to determine if noise and vibration impacts of the OL on the proposed future TOC comply with the provincial limits from a land use planning perspective and to identify specific mitigation measures to consider in the design at the planning approval stage; and
- B) to review potential OL noise and vibration impacts due to the addition of this TOC (as a new point of reception) and to review whether this assessment would meet the same project requirements included in the noise and vibration impact assessment appended to the EIAR (OLTA, Noise and Vibration Impact Assessment Report, April 2022).

Each of these perspectives on the potential impacts with regards to the TOC are discussed separately in Sections 3 and 4 of this report.

2 Documents Considered in the Assessment

The following documents and drawings were provided and reviewed for the purposes of this assessment:

- Pape Avenue TOC Massing Drawings prepared by SvN and dated October 24, 2022 (Appendix A) as listed below.
 - o OL RezoningPapeNorthArchSet 20221024 CP01.pdf
 - OL_RezoningPapeSouthArchSet_20221021_CP01.pdf
- Pape Station Design Drawing prepared by OLTA, and dated November 11, 2022 (Appendix B) as listed below.
 - 10206938-AR000-000-Container Sheet 413A101 STREET LEVEL PLAN -PART 1.dwg
- The final Ontario Line Environmental Impact Assessment Report (EIAR)¹, April 2022

¹ Publicly available at Full Report - Environmental Impact Assessment Report | Metrolinx Engage



- The final OLTA Noise and Vibration Impact Assessment Report (NVIAR)², April 2022, appended to the EIAR
- The Ministry of the Environment, Conservation and Parks (MECP) NPC-300 noise guideline: Environmental Noise Guideline Stationary and Transportation Sources – Approval and Planning Publication NPC-300, August 2013
- International Organization for Standardization (ISO), ISO 9613-2. Attenuation of sound during propagation outdoors – Part 2: General method of calculation. Geneva, Switzerland, 2017
- United States Federal Transit Administration (US FTA), U.S. Department of Transportation, Transit Noise and Vibration Impact Assessment Manual, September 2018

The assessment considers the drawings provided at the time of preparing this report and is reviewed with consideration of the analysis included in the final noise and vibration report as of April 2022 (OLTA, Noise and Vibration Impact Assessment Report, April 2022). The discussion within this report is limited to the information available at the time of preparing this report.

3 Impact of Ontario Line Project on the Pape Avenue TOC

The Pape Avenue TOC is a proposed new land development that would overlay the proposed OL Infrastructure. This section will discuss the potential impacts that the OL project may have on the proposed TOC development with respect to noise and vibration.

Note that OL tracks are underground at this location, and it is assumed that air-borne noise from the underground tracks would not be of significant impact on the Pape TOC compared to other stationary noise sources associated with Pape Station.

3.1 Noise Criteria for TOC

To assess noise impacts from adjacent stationary noise sources from the station on the Pape Avenue TOC (at the Plane of Window), the Ministry of the Environment, Conservation and Parks (MECP) NPC-300 noise guideline (Environmental Noise Guideline Stationary and Transportation Sources – Approval and Planning Publication NPC-300, August 2013) is the appropriate guideline for this discussion.

As per NPC-300, Pape Avenue TOC is required to meet Class 1 noise criteria as the site is located in an urban area with acoustical environment dominated by activities of people and/or road traffic (urban hum). Though the existing background noise level may be used to establish Class 1 noise criteria at the property, in the absence of any background noise measurements,

² Publicly available at Noise and Vibration Impact Assessment Report (metrolinxengage.com)



OLTA has adopted the more stringent nighttime MECP exclusionary limit of 45 dBA (11 pm - 7 am) for the purpose of this review.

The stationary noise impact assessment adopts the ISO 9613-2 standard for outdoor sound propagation for the noise impact to the Pape TOC and is assessed in term of 1-hour energy equivalent sound levels (Leq-1hr) in dBA.

3.2 Analysis of TOC Noise Levels

The Pape Avenue TOC Massing Drawings (Appendix A) were reviewed for potential noise sources that could impact the TOC. The noise sources identified at the station and included in this assessment are listed below and illustrated in Appendix B.

- Station Entrance building, north elevation:
 - Two sets of ventilation louvres for enclosed station condenser yard
 - Mechanical intake louvres and exhaust louvres
 - Station entrance air makeup louvres
- Station Entrance building, south elevation:
 - One set of ventilation louvres for enclosed station condenser yard; the recessed placement of the louvres is modelled as if an equivalent noise source exists on the south façade
 - Station entrance air makeup louvres
- Relocated TTC east tunnel ventilation shaft
- Ventilation and Emergency Egress building:
 - Condenser yard with eight (8) condensers on the lower roof
 - Tunnel Ventilation System (TVS) exhaust louvres on the east and north façades
 - Mechanical intake louvres on east façade
 - Makeup air louvres on east façade

Additionally, noise from onsite TTC busses was modelled within the bus loop for current service levels on TTC routes 25, 72, 81 and 925, including idling busses under the new bus loop canopy.

The presence of an emergency generator was not noted on the design drawings; therefore, the generator testing scenario was not assessed.

Noise impacts from these Pape Station noise sources were predicted using the CADNA/A noise model, with the following assumptions:

- Simplified massing of TOC buildings with smooth sound-reflective façades.
- Plane of Window (POW) receptors located on the façade or inner edge of balconies, as appropriate.



- Surrounding ground surfaces considered as sound reflecting, representing hard paving.
- All makeup air, intake and exhaust louvres modelled as vertical area sources (except for the relocated TTC east tunnel ventilation shaft, which is modelled as a horizontal area source).
- The area sources for exhaust and make up air used typical axial fan noise spectra and that for indoor condenser ventilations used typical air condenser noise spectra with an overall sound pressure level L_p of approximately 60 dBA at 1 m, in accordance with TTC noise limits for station ventilation.
- Outdoor condensers modelled as point sources with a typical air condenser noise spectra and overall sound power level of 80 dBA.
- Noise due to TTC busses bus loop and idling busses is included as they are within the station footprint. The new bus loop canopy is also included in the model.

POW receptors on the North TOC building (Levels 3 to 7) and South TOC buildings (Levels 4 to 11 above station; Levels 2 to 10 on tower; and Level 2 to 5 on the east building) were modelled for residential suites based on the massing drawings. Building evaluation was completed for both buildings in the noise model to identify the worst-impacted locations for each level and the POW receptors were placed accordingly for this assessment. Additionally, one Outdoor Living Area (OLA) receptor was modelled for the L6 outdoor amenity on the building above the station.

For the North TOC building, a total of six (6) sets³ of representative receptors (POW) on building facades were assessed. Table 3-1 provides results for the modelled receptors for the North TOC.

For the South TOC buildings, a total of twenty-three (23) sets of representative receptors (POW) on building facades and one (1) OLA receptor were assessed. Table 3-2 provides results for the modelled receptors for the South TOC.

The predicted noise levels from the station noise sources show that sound levels at most the POW receptors are expected exceed Class 1 nighttime noise limit of 45 dBA. Noise levels without TTC busses were also predicted at the receptors and presented for information purpose.

³ A set of receptors is indicated by R##.# for assessing noise levels at multiple levels at a given location on the façade.



Table 3-1. Noise Assessment Results - North TOC

Receptor ID	Assessed Receptor Position (Elevation, Level, Section Lines1)	Class 1 Nighttime Sound Level Limit2 (dBA)	Predicted Sound Level from OL Station Sources, Including TTC Busses (dBA)	Predicted Sound Level from OL Station Sources - Without TTC Busses (dBA)	Compliance with Class 1 Performance Limit? (Y/N)
North_R01.3_POW	West elevation, Level 3, Line 2 / Line B to C	45	58	56	N (both scenarios)
North_R01.4_POW	West elevation, Level 4, Line 2 / Line B to C	45	58	55	N (both scenarios)
North_R01.5_POW	West elevation, Level 5, Line 2 / Line B to C	45	59	55	N (both scenarios)
North_R01.6_POW	West elevation, Level 6, Line 2 / Line B to C	45	59	55	N (both scenarios)
North_R01.7_POW	West elevation, Level 7, Line 2 / Line B to C	45	58	54	N (both scenarios)
North_R02_POW	West elevation, Level 3, Line 2 / Line C to D	45	58	56	N (both scenarios)
North_R03_POW	West elevation, Level 3, Line 2 / Line D to E	45	58	56	N (both scenarios)
North_R04.3_POW	West elevation, Level 3, Line 2 / Line E to F	45	60	56	N (both scenarios)
North_R04.4_POW	West elevation, Level 4, Line 2 / Line E to F	45	60	56	N (both scenarios)
North_R04.5_POW	West elevation, Level 5, Line 2 / Line E to F	45	60	56	N (both scenarios)



Receptor ID	Assessed Receptor Position (Elevation, Level, Section Lines1)	Class 1 Nighttime Sound Level Limit2 (dBA)	Predicted Sound Level from OL Station Sources, Including TTC Busses (dBA)	Predicted Sound Level from OL Station Sources - Without TTC Busses (dBA)	Compliance with Class 1 Performance Limit? (Y/N)
North_R04.6_POW	West elevation, Level 6, Line 2 / Line E to F	45	59	55	N (both scenarios)
North_R04.7_POW	West elevation, Level 7, Line 2 / Line E to F	45	58	55	N (both scenarios)
North_R05_POW	South elevation, Level 3, Line 2 / Line J	45	59	48	N (both scenarios)
North_R06_POW	South elevation, Level 3, Line 2 to 4 / Line J	45	59	47	N (both scenarios)

Table Notes:

- 1. Section lines from drawings 413T201N and 413T202N.
- 2. Plane of Window nighttime noise limit for Class 1 Area, MECP NPC-300.



Table 3-2. Noise Assessment Results – South TOC

Receptor ID	Assessed Receptor Position (Elevation, Level, Section Lines¹)	Class 1 Nighttime Sound Level Limit ² (dBA)	Predicted Sound Level from OL Station Sources, Including TTC Busses (dBA)	Predicted Sound Level from OL Station Sources - Without TTC Busses (dBA)	Compliance with Class 1 Performance Limit? (Y/N)
South_R01.4_POW	North elevation, Level 4, Line 1a to 2 / Line F	45	58	49	N (both scenarios)
South_R01.6_POW	North elevation, Level 6, Line 1a to 2 / Line F	45	56	49	N (both scenarios)
South_R01.7_POW	North elevation, Level 7, Line 1a to 2 / Line F	45	56	49	N (both scenarios)
South_R01.8_POW	North elevation, Level 8, Line 1a to 2 / Line F	45	55	49	N (both scenarios)
South_R01.9_POW	North elevation, Level 9, Line 1a to 2 / Line F	45	55	49	N (both scenarios)
South_R02_POW	North elevation, Level 4, Line 2 to 3a / Line F	45	58	49	N (both scenarios)
South_R03_POW	North elevation, Level 4, Line 3a to 3c / Line F	45	57	49	N (both scenarios)
South_R04.4_POW	North elevation, Level 4, Line 4 to 4a / Line F	45	57	49	N (both scenarios)
South_R04.5_POW	North elevation, Level 5, Line 4 to 4a / Line F	45	56	50	N (both scenarios)
South_R04.6_POW	North elevation, Level 6, Line 4 to 4a / Line F	45	55	50	N (both scenarios)



Receptor ID	Assessed Receptor Position (Elevation, Level, Section Lines¹)	Class 1 Nighttime Sound Level Limit ² (dBA)	Predicted Sound Level from OL Station Sources, Including TTC Busses (dBA)	Predicted Sound Level from OL Station Sources - Without TTC Busses (dBA)	Compliance with Class 1 Performance Limit? (Y/N)
South_R04.7_POW	North elevation, Level 7, Line 4 to 4a / Line F	45	55	50	N (both scenarios)
South_R04.8_POW	North elevation, Level 8, Line 4 to 4a / Line F	45	54	50	N (both scenarios)
South_R04.9_POW	North elevation, Level 9, Line 4 to 4a / Line F	45	54	49	N (both scenarios)
South_R05_POW	North elevation, Level 4, Line 4a to 4c / Line F	45	57	49	N (both scenarios)
South_R06_POW	North elevation, Level 4, Line 4c to 6 / Line F	45	56	49	N (both scenarios)
South_R07_POW	South elevation, Level 4 Line 1a / Line A	45	55	55	N (both scenarios)
South_R08_POW	South elevation, Level 4 Line 1b / Line A	45	56	56	N (both scenarios)
South_R09.4_POW	South elevation, Level 4 Line 1b to 3 / Line A	45	57	57	N (both scenarios)
South_R09.5_POW	South elevation, Level 5 Line 1b to 3 / Line A	45	56	56	N (both scenarios)
South_R09.6_POW	South elevation, Level 6 Line 1b to 3 / Line A	45	54	54	N (both scenarios)
South_R09.7_POW	South elevation, Level 7 Line 1b to 3 / Line A	45	53	53	N (both scenarios)



Receptor ID	Assessed Receptor Position (Elevation, Level, Section Lines¹)	Class 1 Nighttime Sound Level Limit ² (dBA)	Predicted Sound Level from OL Station Sources, Including TTC Busses (dBA)	Predicted Sound Level from OL Station Sources - Without TTC Busses (dBA)	Compliance with Class 1 Performance Limit? (Y/N)
South_R10_POW	South elevation, Level 4 Line 3 to 3b / Line A to B	45	47	47	N (both scenarios)
South_R11_POW	South elevation, Level 4 Line 3b to 4 / Line A to B	45	48	48	N (both scenarios)
South_R12_POW	South elevation, Level 4 Line 4 to 4b / Line A to B	45	48	48	N (both scenarios)
South_R13_POW	South elevation, Level 4 Line 4b to 5 / Line A to B	45	47	47	N (both scenarios)
South_R14_POW	North elevation penthouse, Level 11, Line 2 to 3a / Line E1	45	50	44	N (station and busses)
South_R15_POW	North elevation penthouse, Level 11, Line 4 / Line E1	45	50	45	N (station and busses)
South_R16_POW	North elevation penthouse, Level 11, Line 4 to 6 / Line E1	45	50	45	N (station and busses)
South_R17_POW	South elevation penthouse, Level 11, Line 3a to 3c / Line D1 to D2	45	37	30	Y (both scenarios)
South_R18_POW	South elevation penthouse, Level 11, Line 4a to 4c / Line D1 to D2	45	36	30	Y (both scenarios)
South_R19.2_POW	Tower North elevation, Level 2, Line 7b to 8 / Line TJ	45	56	50	N (both scenarios)
South_R19.3_POW	Tower North elevation, Level 3, Line 7b to 8 / Line TJ	45	56	50	N (both scenarios)



Receptor ID	Assessed Receptor Position (Elevation, Level, Section Lines¹)	Class 1 Nighttime Sound Level Limit ² (dBA)	Predicted Sound Level from OL Station Sources, Including TTC Busses (dBA)	Predicted Sound Level from OL Station Sources - Without TTC Busses (dBA)	Compliance with Class 1 Performance Limit? (Y/N)
South_R19.4_POW	Tower North elevation, Level 4, Line 7b to 8 / Line TJ	45	56	50	N (both scenarios)
South_R19.5_POW	Tower North elevation, Level 5, Line 7b to 8 / Line TJ	45	56	50	N (both scenarios)
South_R19.6_POW	Tower North elevation, Level 6, Line 7b to 8 / Line TJ	45	55	50	N (both scenarios)
South_R19.7_POW	Tower North elevation, Level 7, Line 7b to 8 / Line TJ	45	54	49	N (both scenarios)
South_R19.8_POW	Tower North elevation, Level 8, Line 7b to 8 / Line TJ	45	54	49	N (both scenarios)
South_R19.9_POW	Tower North elevation, Level 9, Line 7b to 8 / Line TJ	45	53	49	N (both scenarios)
South_R19.10_POW	Tower North elevation, Level 10, Line 7b to 8 / Line TJ	45	53	49	N (both scenarios)
South_R20_POW	Tower North elevation, Level 2, Line 9 to 10 / Line TJ	45	55	48	N (both scenarios)
South_R21.2_POW	Tower South elevation, Level 2, Line 7a to 7b / Line TB	45	49	49	N (both scenarios)
South_R21.3_POW	Tower South elevation, Level 3, Line 7a to 7b / Line TB	45	49	49	N (both scenarios)
South_R21.4_POW	Tower South elevation, Level 4, Line 7a to 7b / Line TB	45	49	49	N (both scenarios)



Receptor ID	Assessed Receptor Position (Elevation, Level, Section Lines ¹)	Class 1 Nighttime Sound Level Limit ² (dBA)	Predicted Sound Level from OL Station Sources, Including TTC Busses (dBA)	Predicted Sound Level from OL Station Sources - Without TTC Busses (dBA)	Compliance with Class 1 Performance Limit? (Y/N)
South_R21.5_POW	Tower South elevation, Level 5, Line 7a to 7b / Line TB	45	48	48	N (both scenarios)
South_R22_POW	Tower South elevation, Level 2, Line 8 to 9 / Line TB	45	43	43	Y (both scenarios)
South_R23.2_POW	East Building, North elevation, Level 2, Line 12 / Line TJ	45	54	48	N (both scenarios)
South_R23.3_POW	East Building, North elevation, Level 3, Line 12 / Line TJ	45	54	48	N (both scenarios)
South_R23.4_POW	East Building, North elevation, Level 4, Line 12 / Line TJ	45	54	48	N (both scenarios)
South_R23.5_POW	East Building, North elevation, Level 5, Line 12 / Line TJ	45	54	48	N (both scenarios)
South_R19_OLA	Station Overbuild, Exterior Amenity Green Roof, Level 6, Line 4a / Line C2	45	38	31	Y (both scenarios)

Table Notes:

- 3. South Site: section lines from drawings 413T205S and 413T207S.
- 4. Plane of Window nighttime noise limit for Class 1 Area, MECP NPC-300.



3.3 Discussion of Noise Results Related to TOC

Based on the design and assumptions considered in this assessment, Pape Avenue TOC is not expected to meet MECP Class 1 noise limits, except at a few receptor locations. Predicted levels are expected to exceed the nighttime noise limit of 45 dBA as follows:

North Site:

- By 2-11 dB for OL Station noise alone (all modelled receptors are expected to exceed)
- By 13-15 dB for OL Station noise and TTC busses (all modelled receptors are expected to exceed)

South Site:

- By 2-12 dB for OL Station noise alone (43 of the modelled receptors are expected to exceed)
- By 2-13 dB for OL Station noise and TTC busses (46 of the modelled receptors are expected to exceed)

Potential design updates for the Pape TOC to meet a Class 1 limit will require major design changes, including the design considerations noted below. Design considerations that could lower the potential noise impacts from the station include:

- Adding enclosed balconies for the areas where exceedance is identified (i.e., North Site and South Site balconies facing the EEB condenser yard and ventilation openings).
- Moving residential units away from the impacted areas and/or positioning sleeping areas to the sides of the building not facing the station noise sources.
- Incorporating other massing design changes to provide additional shielding from noise sources⁴.
- Criteria adjustments by consideration of a Class 4 acoustical area designation by the land use planning authority, discussed below.

The noise assessment has been completed with the minimum exclusionary criteria for Class 1 Area, as published in NPC-300. However, if ambient monitoring can be shown to support higher background levels in the study area, these limits can be increased and, thus, less impact is expected. This could result in reduced mitigation from the design considerations posed above. Baseline noise measurements (minimum 48 hours) at the proposed TOC site can be conducted and if they support an increase of limits, this analysis could be updated. However, even if the ambient baseline monitoring can show a criterion increase in the range of 3-5 dB, the Pape TOC will not show compliance without the design considerations noted above.

⁴ Massing design details are generally too fine to incorporate into noise modelling predictions. Thus, these are noted as providing potential additional noise reduction without predictive qualification.



An alternative planning consideration can include classification the site as a Class 4 acoustical area by the Toronto Land Use Planning Authority. A Class 4 area is defined as an area that would otherwise be defined as Class 1 or 2, is an area intended for the development of a new noise-sensitive land use(s) that are not yet built, and is in proximity to existing, lawfully established stationary source(s). This classification will allow for higher sound level limits for the TOC and will relax the nighttime sound level limit from 45 dBA to 55 dBA. The higher limit may mean that the Pape Avenue TOC can meet this classification with fewer major design changes as listed above. With a Class 4 noise limit, the North Site building shows exceedances of 3-5 dB and the South Site shows exceedances of 1-3 dB based on current design. Class 4 area classification is obtained through the local land use planning authority (not the MECP) at the request of the TOC developer.

3.4 Vibration Criteria for TOC

The Pape TOC is a new land development that would overlay on the OL Project. The rail vibration impact assessment adopts the US FTA Manual (US FTA, Transit Noise and Vibration Impact Assessment Manual, September 2018) guideline for operations vibration assessment of transit systems.

Table 3-3. Applied Criteria for Operational Vibration and Assessment

Type of Receptor	Ground-borne Vibration (GBV) - Limit ¹	Ground-borne Noise (GBN) - Limit ¹
Residence	0.1 mm/s (72 VdB)	35 dBA
Institutional/Commercial (Office)	0.14 mm/s (75 VdB)	40 dBA

Table Note:

3.5 Vibration Analysis of OL on TOC

The assessment was conducted in accordance with the US FTA Manual (2018) with the adjustment factors and assumptions as summarized in Table 3-4. Additional assumptions and mitigation recommendations included in the Noise and Vibration Impact Assessment Report (OLTA, April 2022) for OL operations have been used for this assessment. This assessment assumes efficient soil propagation and that no coupling loss takes place due to structural connection between Pape Station and Pape TOC structure.

^{1.} VdB is reference to 1 micro-in/s; velocity is in RMS; dBA is reference to 20 micro-Pa.



Table 3-4. Vibration Model Inputs and Assumptions

	Source/Path Factor	Parameters and Assumptions
Train Definition	Train Type	LRT
	Train Speed ¹	80 km/h
	Stiff Suspension	No
	Resilient Wheels	No
	Worn Wheels	No
Rail Definition	Rail Type	Continuous Welded Rail
	Worn or Corrugated Track	No
	Special Trackwork	No
Path Definition	Efficient Propagation in Soil	Yes
	Propagation in Rock Layer	Yes
	Coupling Loss	No – TOC structure is attached to OL structure
GBN Conversion	Dominant Frequency	High (> 60 Hz) - Tunnel in bedrock

Table Note:

Rail operational activities are not expected to generate Ground-borne Vibration (GBV) above 0.1 mm/s and Ground-borne Noise (GBN) above 35 dBA at the residential spaces of the Pape Avenue TOC with the vibration mitigation measures (e.g., light-mass-spring system) as recommended in the Noise and Vibration Impact Assessment Report (OLTA, April 2022) applied to the track in this area.

The assessment of potential GBV and GBN at the residential floor for both Pape North and Pape South is completed based on the drawings provided. Table 3-5 presents the predicted results along with criteria for the Project GBV and GBN.

^{1.} The maximum OL train speed is considered assuming before and after revenue service operation. This is considered the worst-case (conservative) operation scenario based on the pre- and post-hour service deployment in which the train may not stop at the station



Table 3-5, GBV and GBN Assessment Results¹

Assessment Location	GBV Criteria (mm/sec)	GBN Criteria (dBA, ref. 20µ-Pa)	Predicted Indoor GBV (mm/sec)	Predicted Indoor GBN (dBA, ref. 20µ-Pa)
Pape, Level 2 – South Tower ²	0.1	35	0.045	15
Pape, Level 3 – North Tower	0.1	35	0.045	15

Table Notes:

- 1. Predicted results are with the vibration mitigation measures (e.g., light-mass-spring system) as recommended in the Noise and Vibration Impact Assessment Report (OLTA, April 2022)
- 2. There is a mezzanine level between L1 and L2; therefore, the distance between L1 and L2 is equivalent to a twostorey separation

The predicted indoor GBV and GBN are within limits for the Pape Avenue TOC sites.

The predictions above, based on the US FTA General Assessment Method, suggest that a light-mass-spring vibration mitigation system may be sufficient. However, a detailed vibration impact analysis should be conducted by the TOC acoustic engineer to better determine the vibration propagation from the rail to the TOC, and additional mitigation, if any, as part of the TOC development, based on the final design for the Ontario Line.

3.6 Noise and Vibration Recommendations for Pape Avenue TOC

OLTA has completed a review of the potential Pape Avenue TOC noise and vibration impacts from the OL project and they are summarized below.

- 1. The Pape Avenue TOC is not expected to meet the MECP Class 1 noise limits as per the currently presented design and assumptions considered in the assessment. Compliance may require significant noise mitigations and/or design changes as the nighttime limits are exceeded by 13-15 dB on the west façade of the North Site building and are exceeded by 2-13 dB on the north and south façades of the South Site buildings. This assessment is considered preliminary and is based on assumed sound levels and locations of equipment as per the level of detail available.
- 2. Possible Pape TOC design considerations that could lower the potential noise impacts from the station include:
 - a. Adding enclosed balconies for the areas where an exceedance is identified for the TOC building.
 - Moving residential units away from the impacted areas and/or positioning sleeping areas to the sides of the building not facing the station noise sources.



- c. Incorporating other massing design changes to provide additional shielding from noise sources.
- 3. Criteria adjustment considerations:
 - a. Baseline noise measurements (minimum 48 hours) at the proposed TOC site could be conducted to validate the criteria used for the assessment. If the criteria used for the assessment (45 dBA) can be relaxed with a baseline noise study, the Project may be able to meet the MECP Class 1 limits with fewer major modifications or adjustments.
 - b. The Pape TOC could meet the MECP Class 4 noise limits with some more minor modifications or adjustments to the currently presented design. With a Class 4 limit, current design indicates that the North Site building has exceedances of 3-5 dB and the South Site has exceedances of 1-3 dB. However, approval for Class 4 acoustic land designation must be sought through the local land use approval authority.
- 4. Predicted GBV and GBN levels are expected to meet criteria at the Pape TOC. However, as noted in the EIAR, a detailed analysis is required to confirm the recommendations provided in the EIAR meet the requirements.
- 5. This assessment does not consider road traffic noise impacts, rather it focussed on rail/station noise impacts. Road traffic noise impact should be assessed when a detailed acoustic assessment of the site is conducted in the future, as part of the site plan approval for the Project.

4 Impact of Pape Avenue TOC as an Additional Receptor on EIAR Requirements

The Pape Avenue TOC has the potential, as an additional receptor, to impact the requirements as outlined in the Noise and Vibration Impact Assessment Report (OLTA, April 2022). However, this assessment does not seek to modify these requirements. Instead, it reviews whether this assessment would meet the same requirements appended to the EIAR (OLTA, Noise and Vibration Impact Assessment Report, April 2022). For the station operational noise assessment (i.e., make-up air and exhaust louvres), a maximum sound pressure level limit (60 dBA at 1 m) as per the TTC Design manual for Stations was considered in the EIAR.

The construction of the Pape Avenue TOC is expected to occur after the upgrade of Pape Station and construction of the OL. Therefore, the potential noise and vibration impacts from the station upgrade and the OL construction are not assessed or reviewed.

A brief discussion on potential noise and vibration impacts due to the addition of the TOC is presented below.



4.1 Criteria

For the assessment of station noise impacts on the proposed TOC, the MECP NPC-300 noise guideline (Environmental Noise Guideline Stationary and Transportation Sources – Approval and Planning Publication NPC-300, August 2013) is applicable, as discussed in the Section 3.1.

As per NPC-300, station noise impact is assessed in term of 1-hour energy equivalent sound level (L_{eq-1hr}) in dBA. As per the guideline, the assessment criteria (L_{eq-1hr}) is defined as the higher of the applicable exclusion limit or the minimum existing background 1-hour energy equivalent sound levels (L_{eq-1hr}) measured. The site is located in an urban area with acoustical environment dominated by activities of people and/or road traffic (urban hum), and therefore, a Class 1 Area classification is appropriate for the site.

In the absence of any background noise measurements at this stage, MECP Class 1 exclusionary limits of 50 dBA for daytime (7 am - 11 pm) and 45 dBA for nighttime (11 pm - 7 am) are used for this assessment.

If Class 4 classification is sought for the Pape TOC, the exclusionary limits are higher than Class 1. A Class 4 area is an area or specific site that would otherwise be defined as Class 1 or 2 and which:

- is an area intended for development with new noise sensitive land use(s) that are not yet built;
- is in proximity to existing, lawfully established stationary source(s); and
- has formal confirmation from the land use planning authority with the Class 4 area classification which is determined during the land use planning process.

MECP Class 4 limits are 60 dBA for daytime (7 am - 11 pm) and 55 dBA for nighttime (11 pm - 7 am).

For the assessment of operational vibration, the guidelines described in the US FTA Manual for GBV and GBN are considered for this assessment.

4.2 Analysis of Impact

The Pape TOC would add residential receptors situated directly above the underground Pape Station and OL tunnel.

4.2.1 Rail Airborne Noise

No direct noise impacts from the train are expected (as it is underground and any system openings, such as fire ventilation, are expected to be provided with noise mitigation i.e., silencers). Thus, no noise compliance issues based on train operation is expected with the addition of this potential receptor.



4.2.2 Rail Ground Borne Noise and Vibration

The assessment of the potential GBN and GBV of the OL train on the track is not predicted to require any additional mitigation measures to meet criteria as discussed in Section 3. This is based on the analysis and recommendations in the Noise and Vibration Report (OLTA, April 2022). However, as noted in the EIAR, a detailed analysis is required to confirm these recommendations meet US FTA requirements. Further detail analysis is also supported since the TOC foundation is shown in contact with the subway structure, which the general vibration analysis may not account for.

4.2.3 Station Noise and Vibration Considerations

The design of Pape Station is under development and assumptions including assumed maximum sound levels were made to assess the TOC (Section 3.2). Considerations in station design which may help to meet Class 1 or Class 4 Area limits for airborne noise at the TOC receptors include:

- Noise barriers for idling busses and for EEB rooftop condenser yard.
- Noise reduction from all mechanical openings, such as the use of silencers and/or acoustic louvres.
- Quieter condensers for the EEB and Pape Station condenser yards.

OLTA notes that that Class 1 mitigations may not hold the Pape Station in compliance with NPC-300, even with standard mitigation (noise barriers, quieter equipment) and a Class 4 designation should be considered (see Section 3.3).

GBV and GBN assessment is limited to the structural assumptions for the connection between Pape Station and Pape TOC as stated in Section 3. Assumptions should be reviewed and confirmed as design progresses.

4.3 Summary of Changes to EIAR Noise and Vibration Requirements for Pape Avenue TOC Considerations

Although the airborne noise impact from Pape Station is expected at the proposed TOC, no changes to the conclusions in the EIAR are expected. Since the construction of the Pape Avenue TOC is expected to occur after the upgrade of Pape Station and construction of the OL, the potential construction noise and vibration impacts are not required to assess or review.

Emergency Egress Buildings (EEBs) and Emergency Service Buildings (ESBs) were not included in the EIAR as information about locations was not available at the time. Now that EEBs and ESBs have been confirmed for Pape Station and OL, noise impacts on the proposed TOC have been assessed with the applicable MECP limits.



Operational noise from the upgraded Pape Station could impact on the Pape Avenue TOC development, and may need the following operational project considerations:

- The maximum sound power level for the condensers and the maximum sound pressure level for all louvres could be reduced for the EEB and Pape Station buildings.
- The structural connection of Pape Station and Pape TOC requires a structural/vibration review to make sure of compliance with the vibration criteria.
- Additional noise mitigation should be considered, including the use of noise barriers, silencers and/or acoustic louvres.

OLTA expects that by incorporating additional mitigation at the source will mitigate the impact on the Pape Avenue TOC and make the project more feasible. Once the station noise mitigation measures are confirmed. Section 3 of this report (compliance from a land use planning perspective) should be re-evaluated.

Closing 5

The discussion in this report is representative of the documents and drawings reviewed in Section 2 and limited to the information available at the time of this assessment. The final station mitigation and TOC designs should be reviewed for compliance with applicable criteria. Additionally, potential noise impacts from the station should be reassessed as part of ProjectCo's design (North Civil/RSSOM) and appropriate mitigation should be included in the design.

This assessment does not consider road traffic noise, rather it focussed on rail/station noise impacts. Road traffic noise impact should be assessed when a detailed acoustic assessment of the site is conducted in the future, as part of the site plan approval for the Project.

The discussion and recommendations included in this report are considered preliminary and should be reassessed with any changes or finalization of designs.



Appendix A. Pape TOC Design Documents

ONTARIO LINE

TRANSIT ORIENTED COMMUNITY

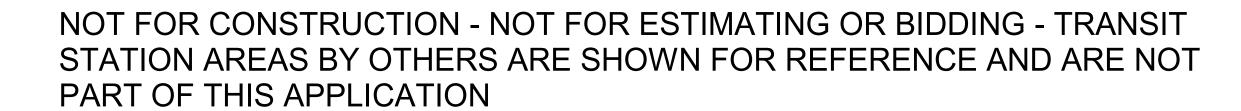
11,13,15 Gertrude Pl.

DRAWING NUMBER	DRAWING NAME
413T000N	COVER
413T001N	CONTEXT MASSING
413T002N	NOTES AND LEGENDS
413T003N	PROJECT STATISTICS
413T004N	CONTEXT PLAN
413T005N	SITE PLAN
413T006N	LANDSCAPE PLAN
413T102N	LEVEL B1
413T201N	LEVEL 01, 02 & 03
413T202N	LEVEL 04-07, MECH PH, ROOF
413T400N	ELEVATIONS
413T401N	ELEVATIONS
413T500N	SECTIONS
413T600N	SHADOW STUDY - MARCH
413T601N	SHADOW STUDY - JUNE
413T602N	SHADOW STUDY - SEPTEMBER
413T603N	SHADOW STUDY - DECEMBER

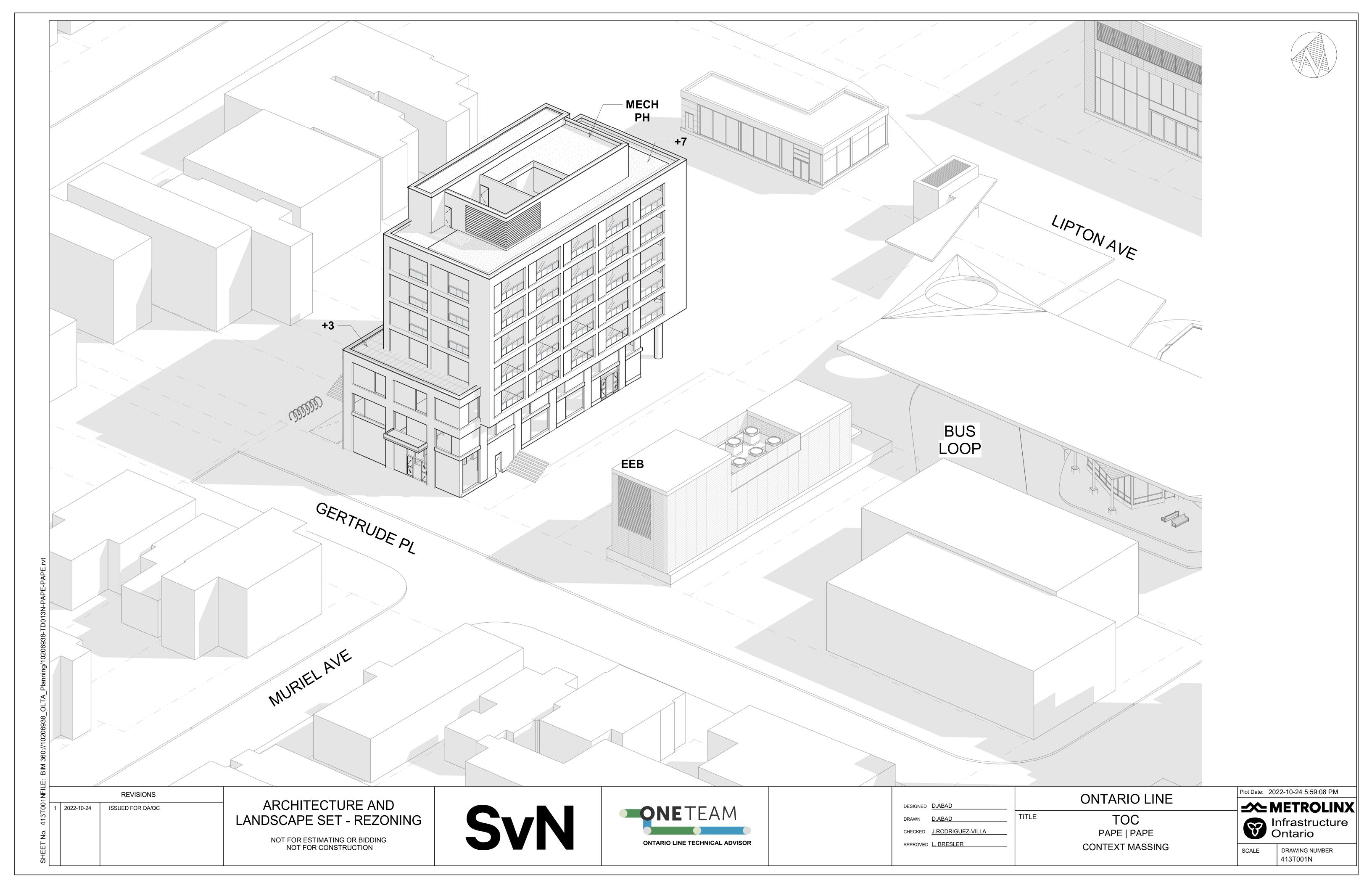




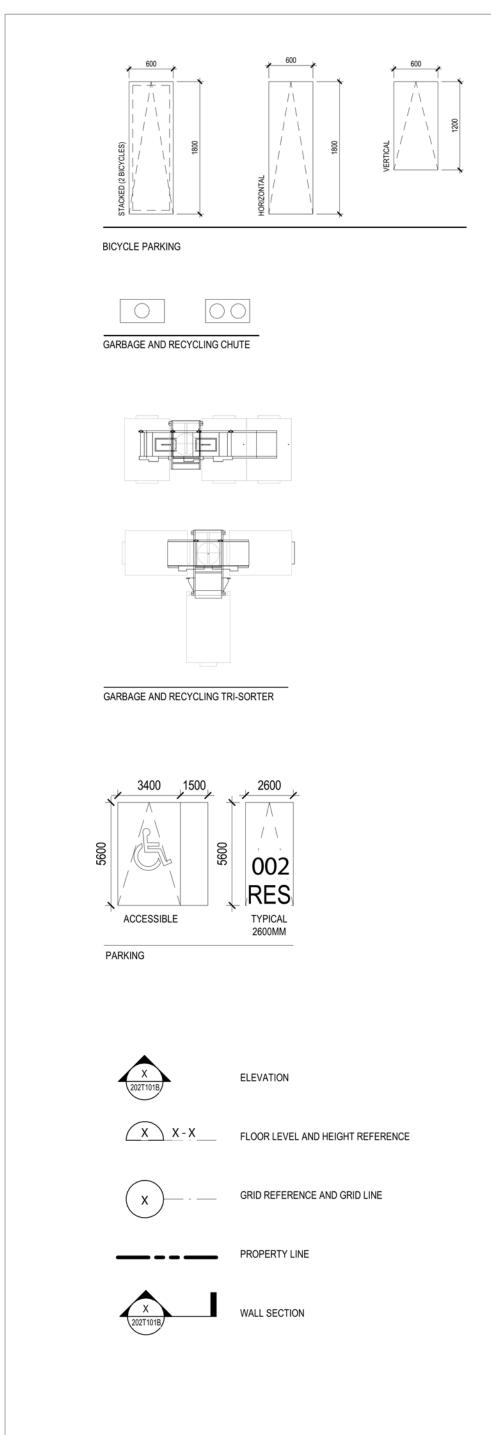


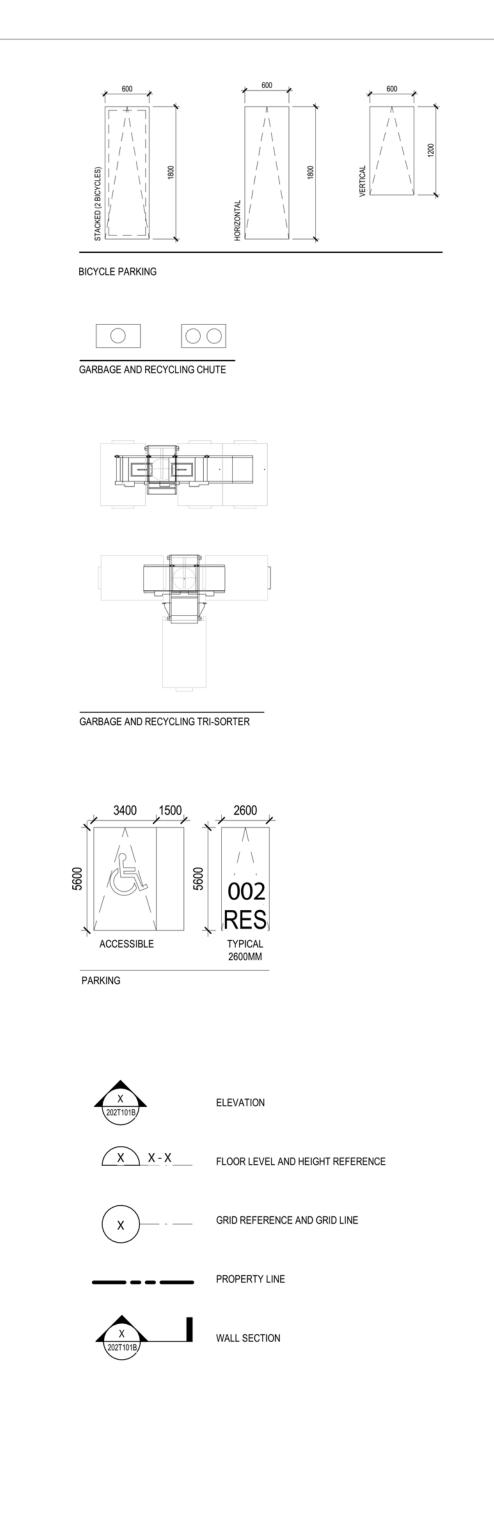


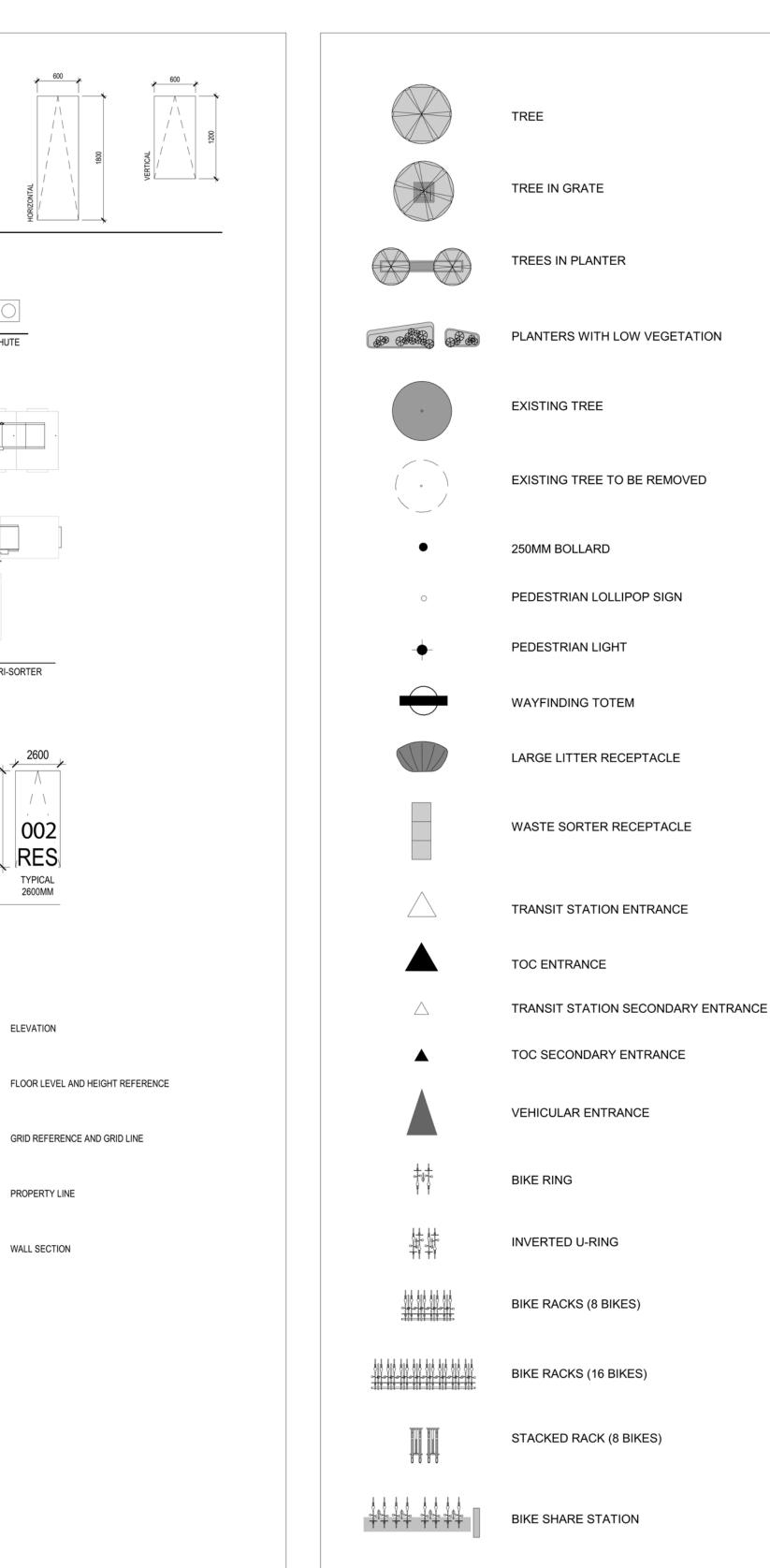


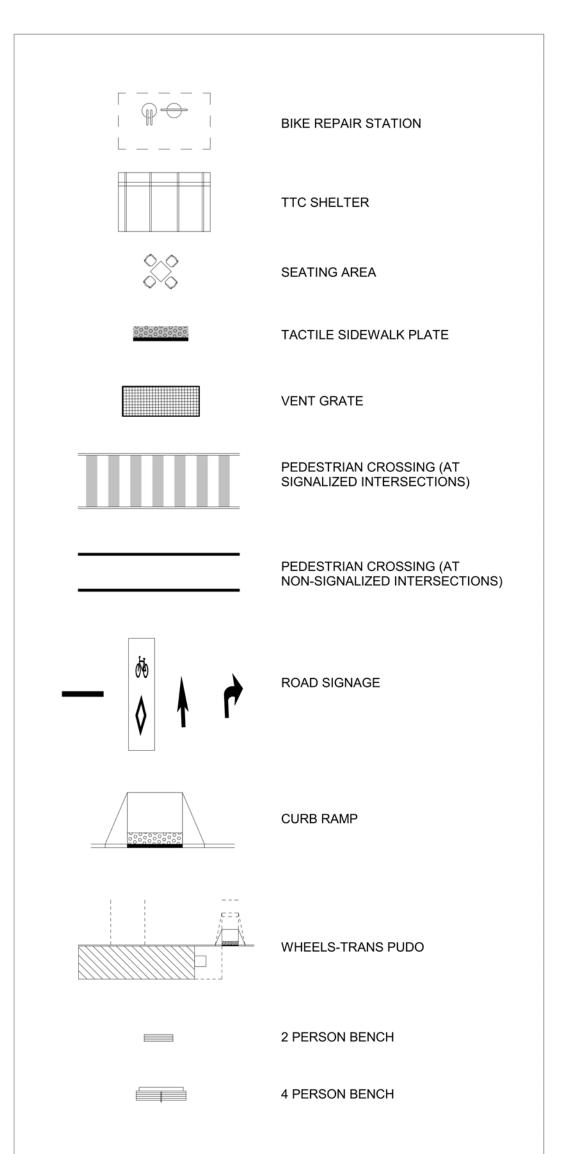


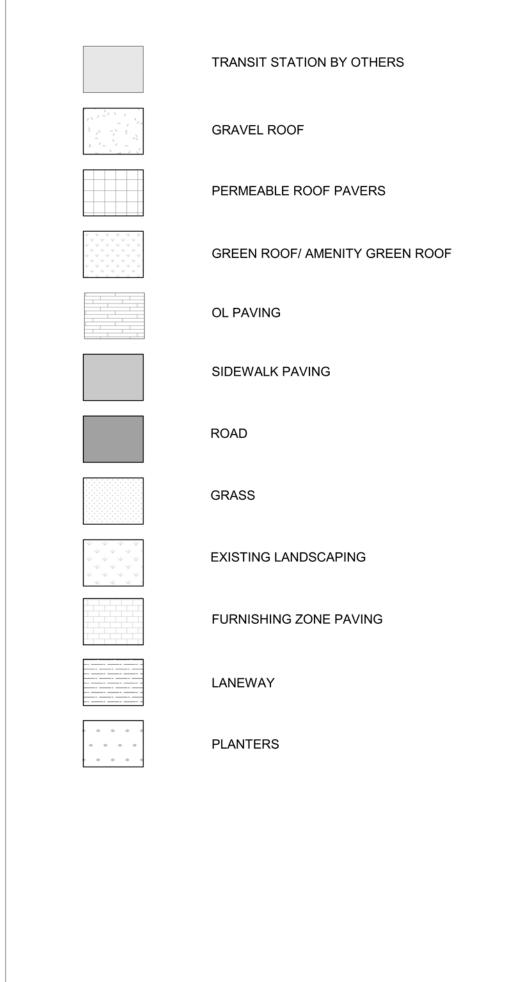
TYPICAL











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APPROVED L. BRESLER

ONTARIO LINE

TOC PAPE | PAPE



SCALE

DRAWING NUMBER 413T002N

ARCHITECTURE AND LANDSCAPE SET - REZONING

TITLE DRAWN D.ABAD CHECKED J.RODRIGUEZ-VILLA

NOTES AND LEGENDS

PROJECT STATISTICS

FSI (TOC)

MUNICIPAL ADDRESS: 11, 13, 15 GERTRUDE PL BUILDING HEIGHT: 23.2 m (7 STOREYS)

AREAS	%	m ²
SITE AREA		856
SITE AREA (CONVEYANCE)		(
SITE AREA		856
GCA ABOVE GRADE (TOC)		2848
GCA BELOW GRADE (TOC)		474
GFA TOTAL (TOC)		2172
GFA RESIDENTIAL (TOC)	81%	1752
GFA NON-RESIDENTIAL (TOC)	19%	420

VEHICLE PARKING	RATIO	REQUIRED	PROPOSED
RESIDENTIAL STUDIO	0.30	0	
RESIDENTIAL 1B	0.50	0	
RESIDENTIAL 2B	0.80	0	
RESIDENTIAL 3B	1.00	0	
RESIDENTIAL VISITOR	0.10	3	
RESIDENTIAL TOTAL	0.25	6	0
RETAIL	1.00	5	
NON-RESIDENTIAL TOTAL		5	0
SHARED TOTAL		NO REQ	0
VEHICLE PARKING TOTAL		11	0

LEVEL	GCA	GFA DED	NRES GFA	RES GFA	RSA	0B	1B	2B	3B	UNITS
LEVEL B2	0	0	0	0	0	0	0	0	0	0
LEVEL B1	474	445	0	28	0	0	0	0	0	0
LEVEL 01	409	84	134	190	0	0	0	0	0	0
LEVEL 02	389	97	286	6	0	0	0	0	0	0
LEVEL 03	429	144	0	286	249	0	3	2	1	6
LEVEL 04	376	118	0	257	222	0	3	0	1	4
LEVEL 05	376	48	0	328	293	0	3	1	1	5
LEVEL 06	376	48	0	328	293	0	3	1	1	5
LEVEL 07	376	48	0	328	293	0	3	1	1	5
LEVEL 08	119	119	0	0	0	0	0	0	0	0
LEVEL 09	0	0	0	0	0	0	0	0	0	0
TOTALS	3322	1150	420	1752	1349	0	15	5	5	25

UNIT DISTRIBUTION AND AMENITY AREAS

UNIT TYPE	AREA m ²	REQUIRED	PROPOSED
STUDIO	27-34	NO REQ	0%
1B	36-64	NO REQ	60%
2B	59-81	15%	20%
3B	85-111	10%	20%
AMENITY AREAS		REQUIRED m ²	PROPOSED m ²
INTERIOR AMENITY (RES)		50	71
EXTERIOR AMENITY (RES)		40	42
EXTERIOR AMENITY (RES) TOTAL AMENITY (RES)		40 100	42 116

*Excess in Total Amenity is interpreted first as	s Interior Amenity down to the required	minimum and then as Exterior Amenity.

GREEN ROOF AND STORMWATER MANAGEMENT

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ROOF AREAS	m^2
TOTAL ROOF AREA	7
RESIDENTIAL PRIVATE TERRACES	
ROOFTOP EXTERIOR AMENITY	2
RENEWABLE ENERGY DEVICES	
TOWER AREA LESS THAN 750 m2	
TOTAL TGS EXCLUSIONS	2
TGS AVAILABLE ROOF	4
GREEN ROOF	1

TGS TIER 3 V4	REQUIRED %	PROPOSED %
GREEN ROOF	30%	30%

	DITIO		
BICYCLE PARKING TGS TIER 3 V4	RATIO	REQUIRED	PROPOSED
RESIDENTIAL LONG TERM	0.9 / UNIT	23	26
RESIDENTIAL SHORT TERM	0.1 / UNIT	3	6
NON-RESIDENTIAL LONG TERM	0.2 / 100m ²	1	2
NON-RESIDENTIAL SHORT TERM	3 + 0.3 / 100m ²	5	8
TRANSIT LONG TERM		0	0
TRANSIT SHORT TERM		0	0

LOADING AND WASTE COLLECTION

BICYCLE PARKING TOTAL

PARKING

BICYCLE PARKING

2.5

LOADING AREAS	REQUIRED	PROPOSED
TYPE C RESIDENTIAL	0	1
TYPE G RESIDENTIAL	0	0
TYPE A NON-RESIDENTIAL	0	0
TYPE B NON-RESIDENTIAL	0	0
TYPE C NON-RESIDENTIAL	0	0

LOADING AND WASTE COLLECTION

REQUIRED m ²	PROPOSED m ²
31	31
0	12
1	0
0	0
32	43
	31 0 1 0

***Mass Transportation Loading Requirements not included

ARCHITECTURE AND LANDSCAPE SET - REZONING NOT FOR ESTIMATING OR BIDDING NOT FOR CONSTRUCTION





ONTARIO LINE

TITLE

DESIGNED D.ABAD

APPROVED <u>L. BRESLER</u>

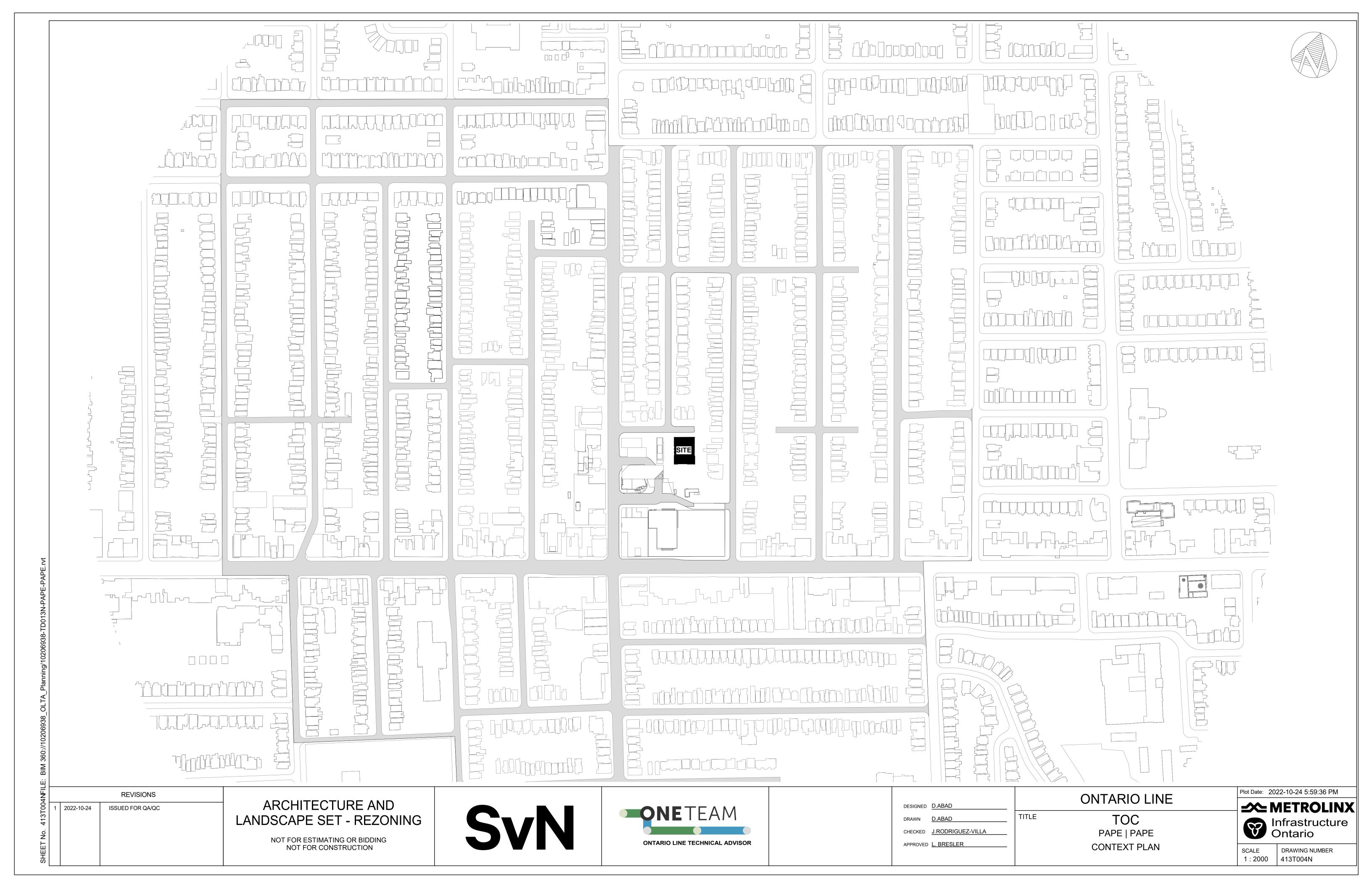
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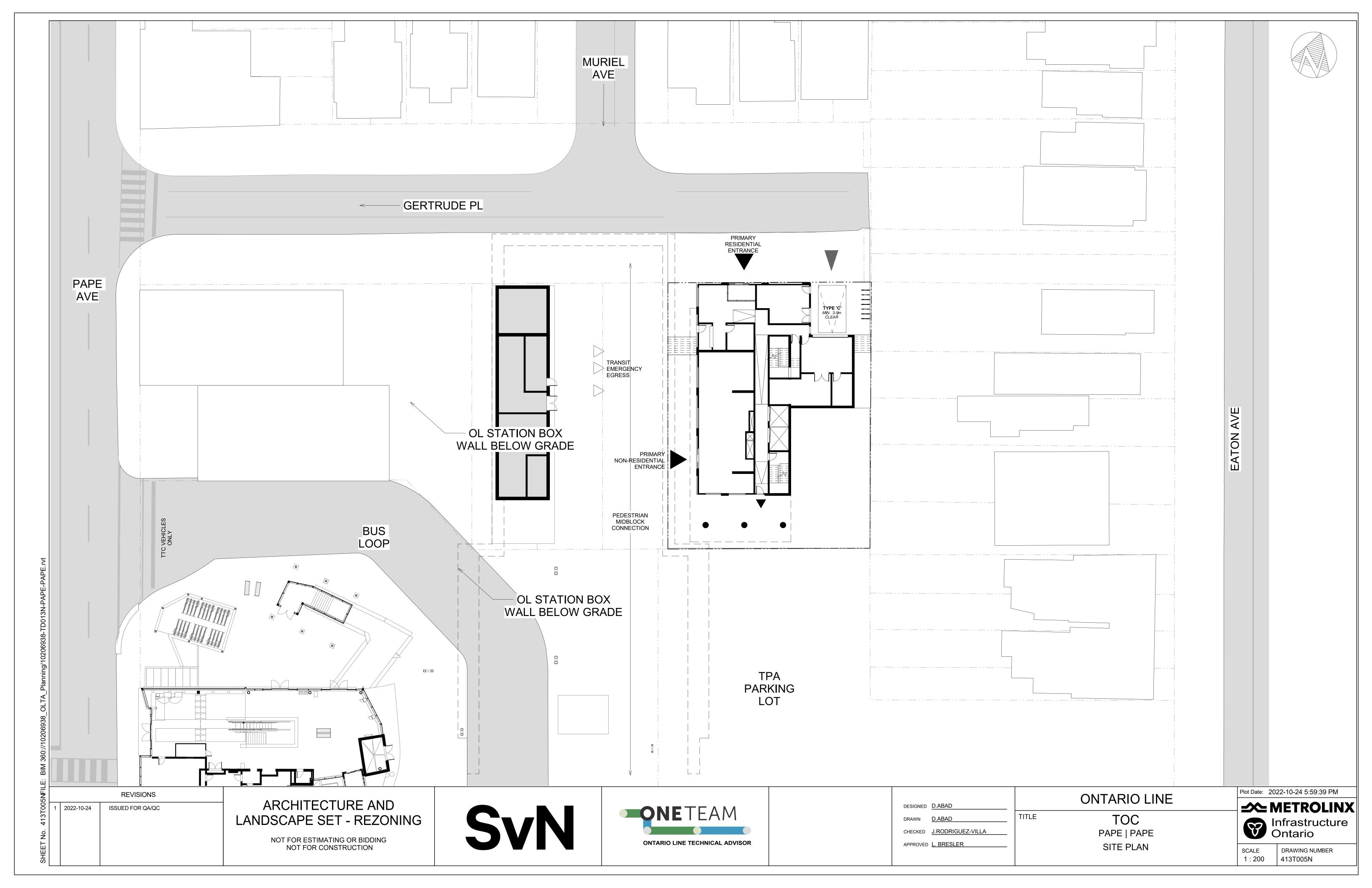
PAPE | PAPE PROJECT STATISTICS

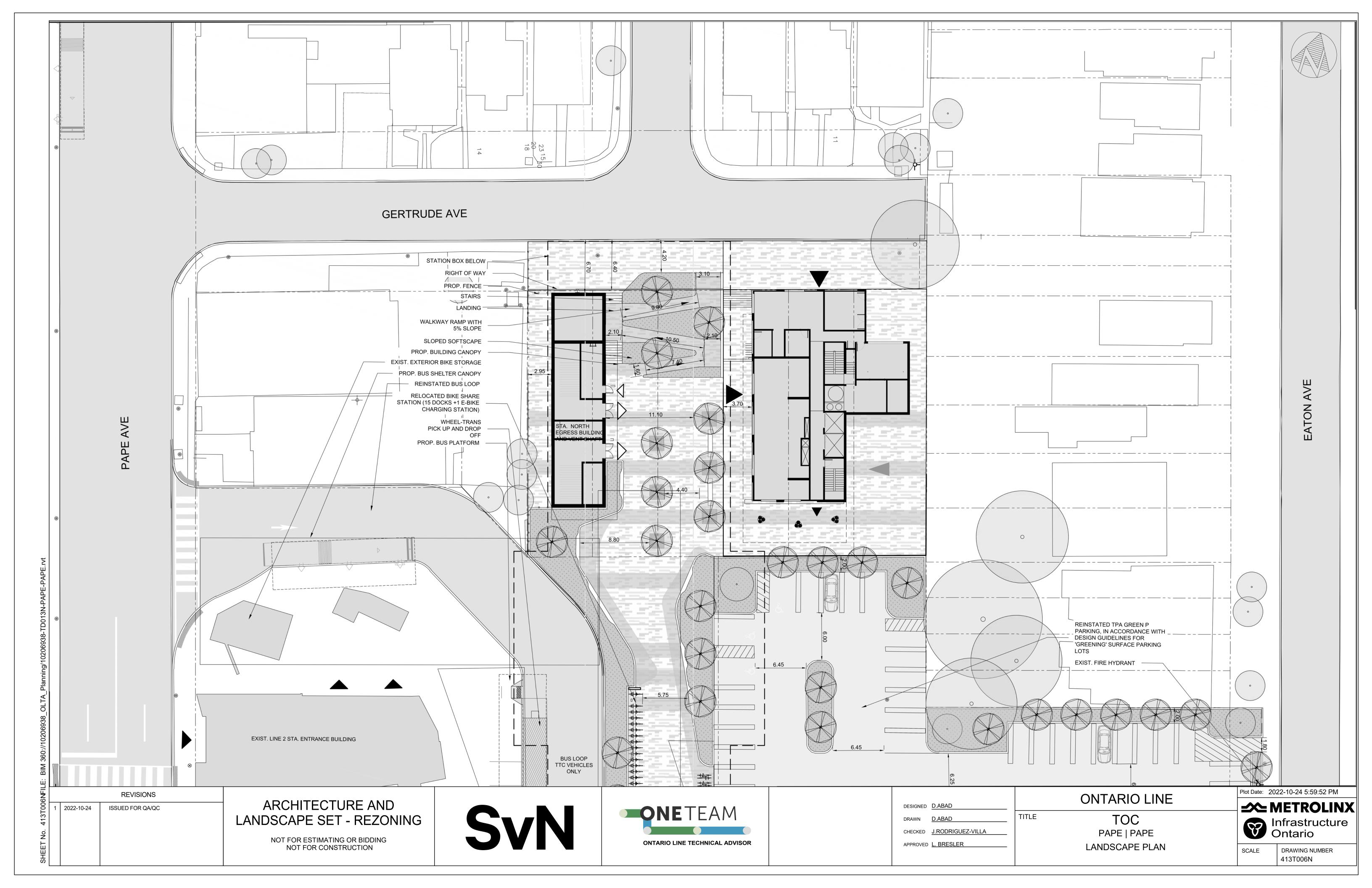
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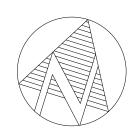
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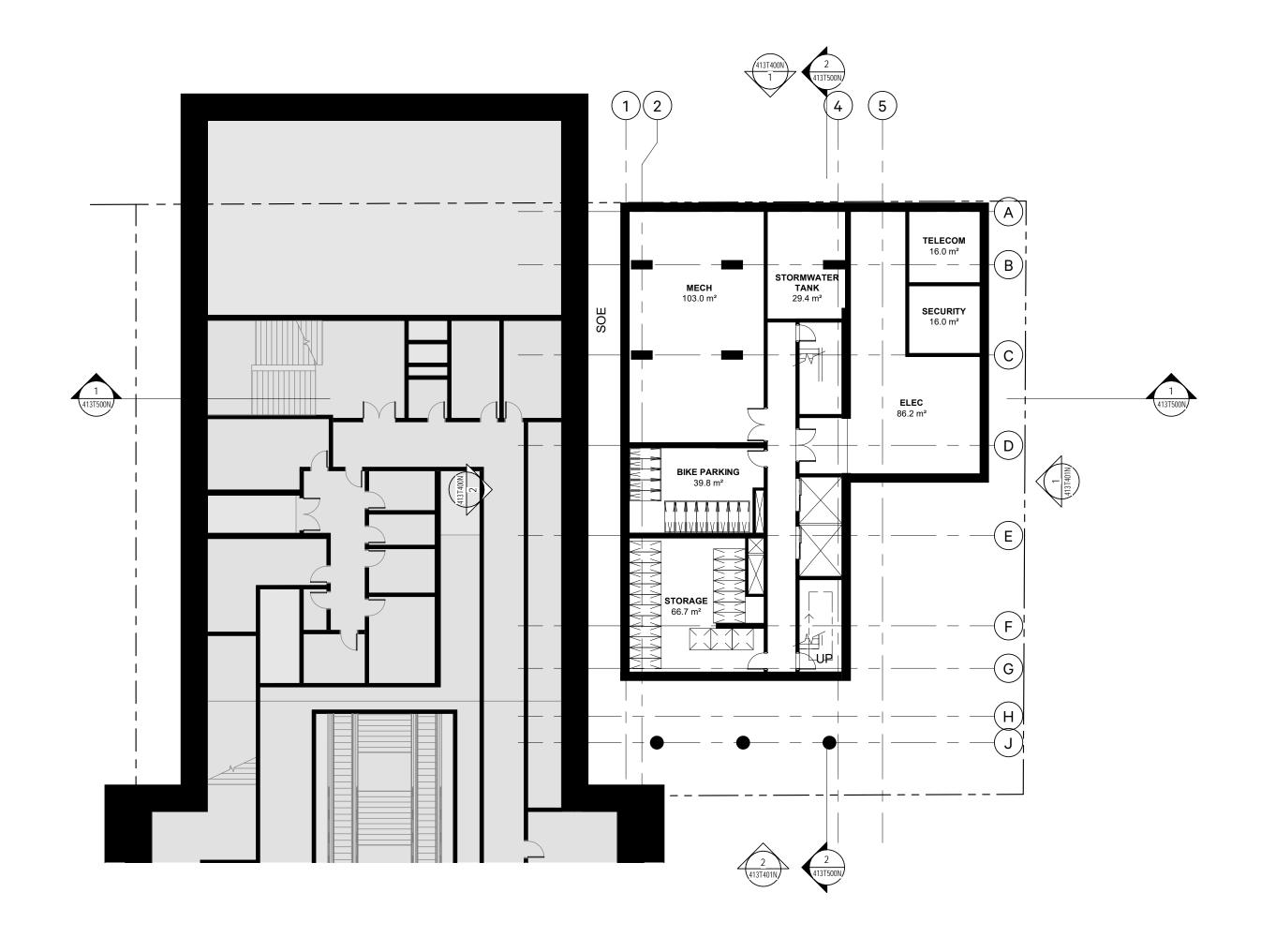
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LEVEL B1 1:200

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SVN



DESIGNED	D.ABAD
DRAWN	D.ABAD

APPROVED <u>L. BRESLER</u>

CHECKED J.RODRIGUEZ-VILLA

TITLE

ONTARIO LINE

TOC PAPE | PAPE LEVEL B1

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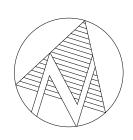


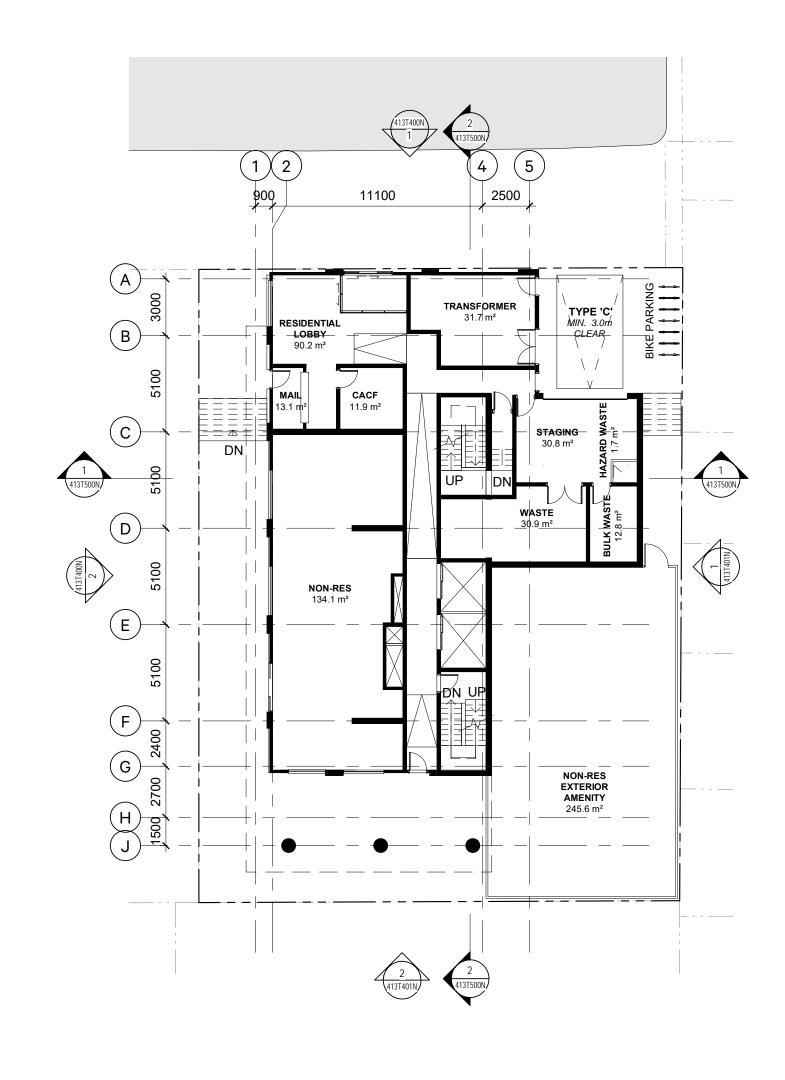
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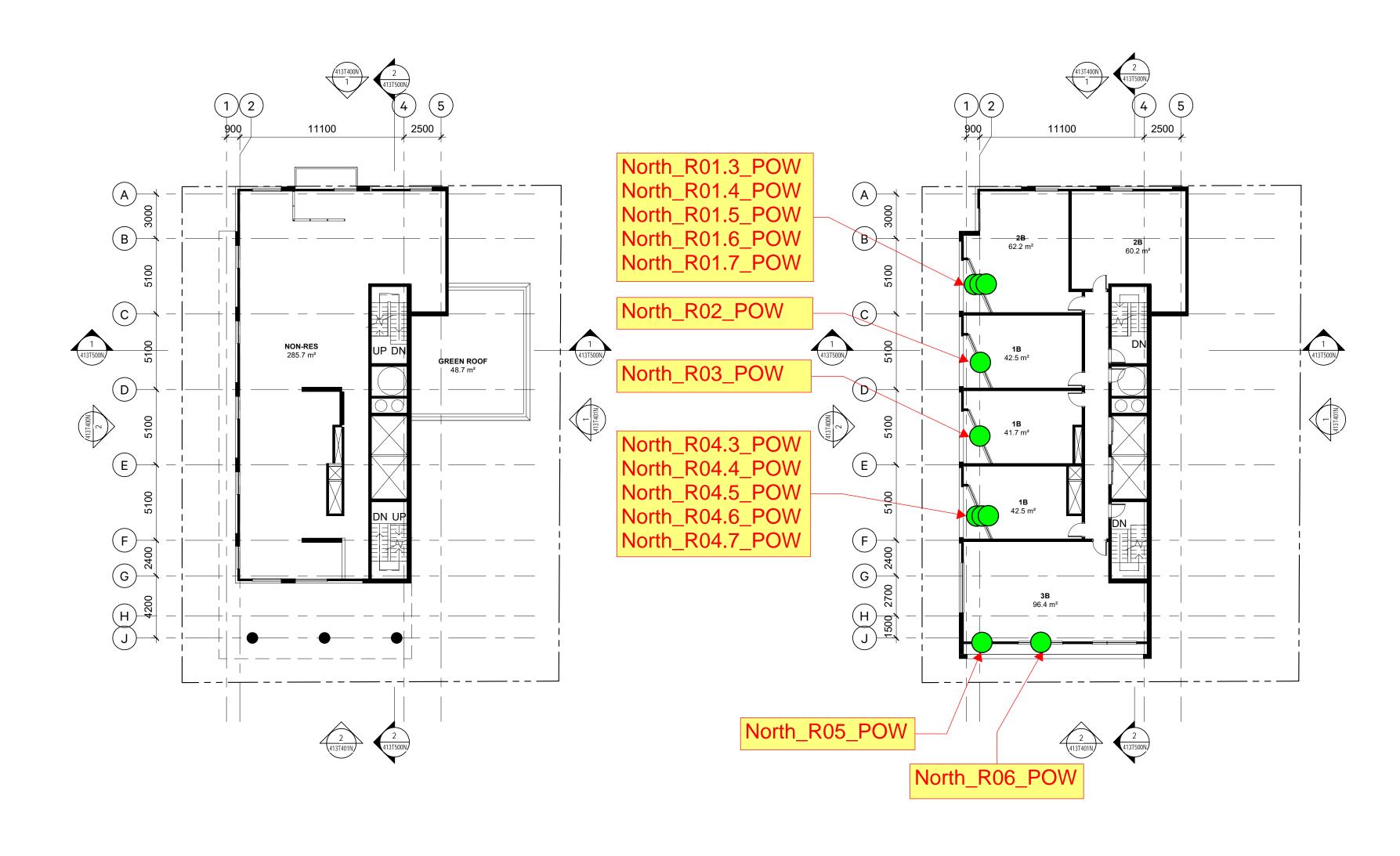








1 LEVEL 01
1:200



2 LEVEL 02
1:200

3 LEVEL 03

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DRAWN D.ABAD

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APPROVED L. BRESLER

TOC
PAPE | PAPE
LEVEL 01, 02 & 03

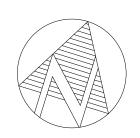
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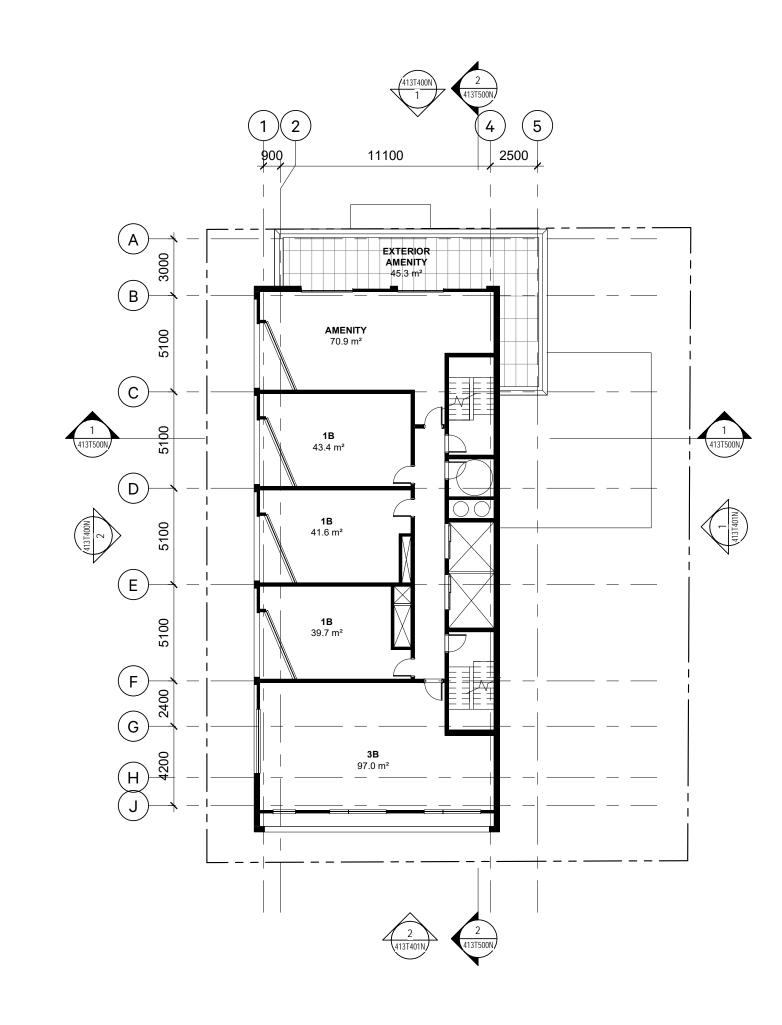
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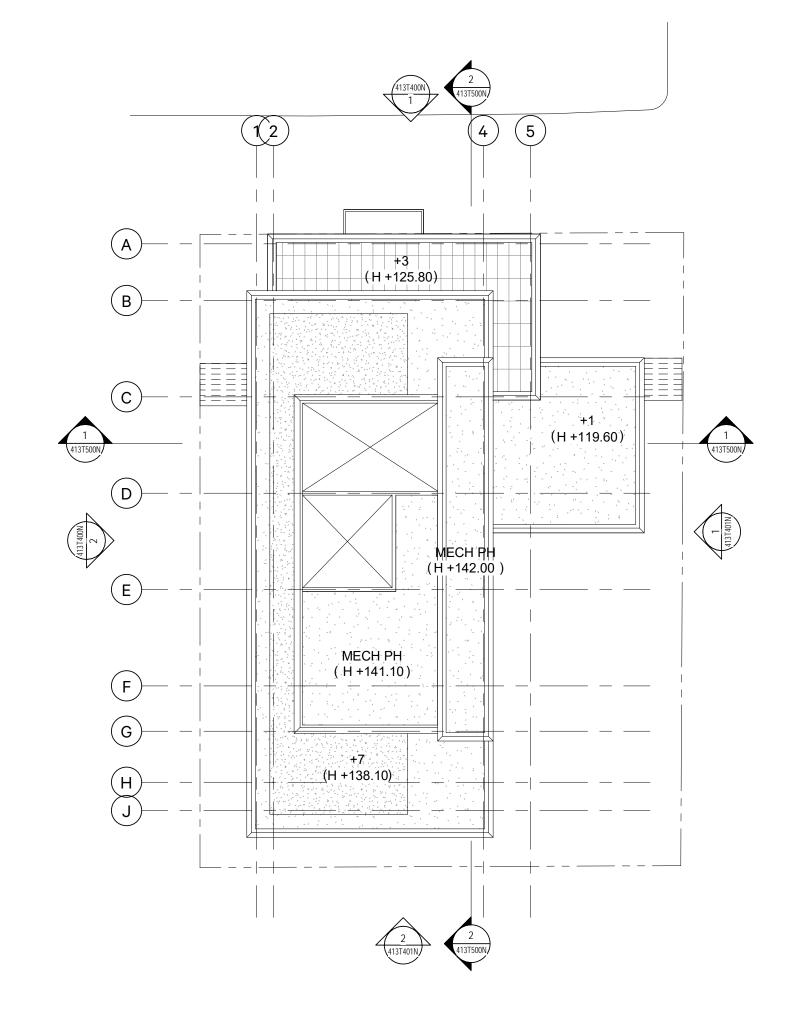




LEVEL 04 - LEVEL 07

GREEN ROOF 86.0 m² MECH ROOF 40.6 m²

MECH PH 1:200



ROOF
1:200

REVISIONS ARCHITECTURE AND 1 2022-10-24 1 2022-10-24 ISSUED FOR QA/QC LANDSCAPE SET - REZONING NOT FOR ESTIMATING OR BIDDING NOT FOR CONSTRUCTION

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ONETEAM ONTARIO LINE TECHNICAL ADVISOR DESIGNED D.ABAD CHECKED J.RODRIGUEZ-VILLA

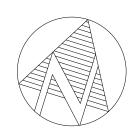
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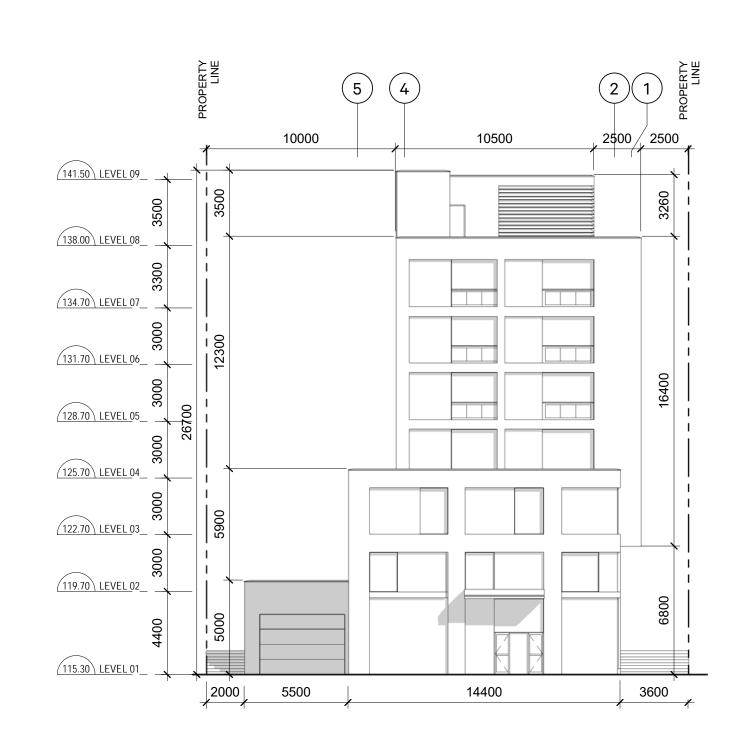
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ONTARIO LINE

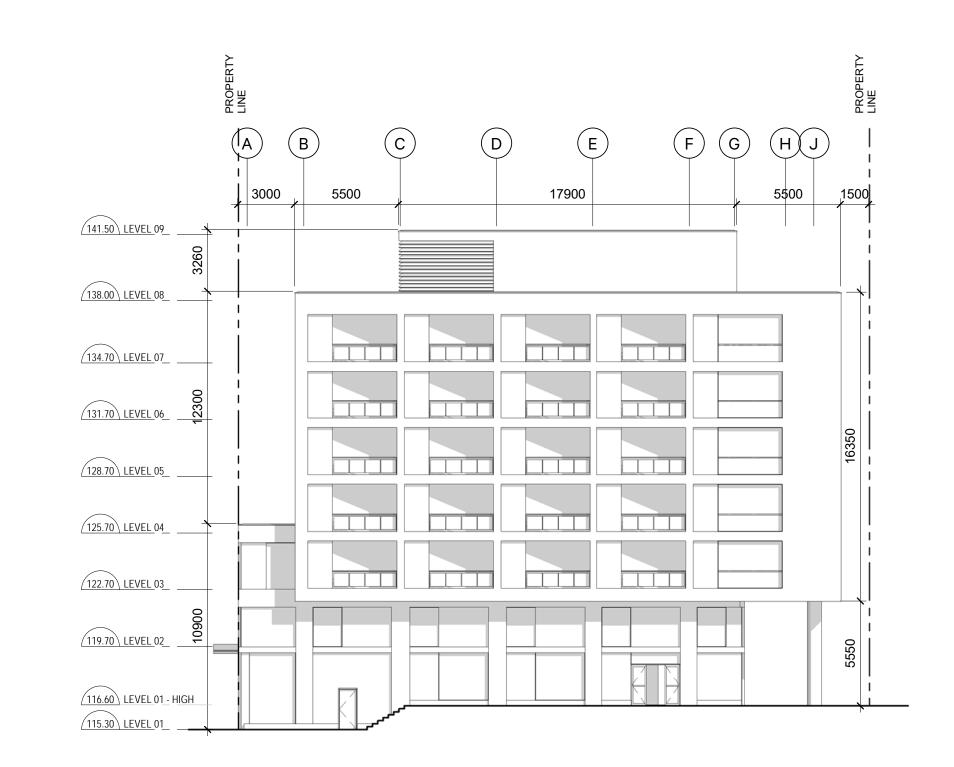
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NORTH ELEVATION



WEST ELEVATION

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TITLE TOC PAPE | PAPE Plot Date: 2022-10-24 5:59:57 PM **★** METROLINX Infrastructure Ontario

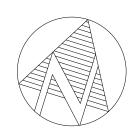
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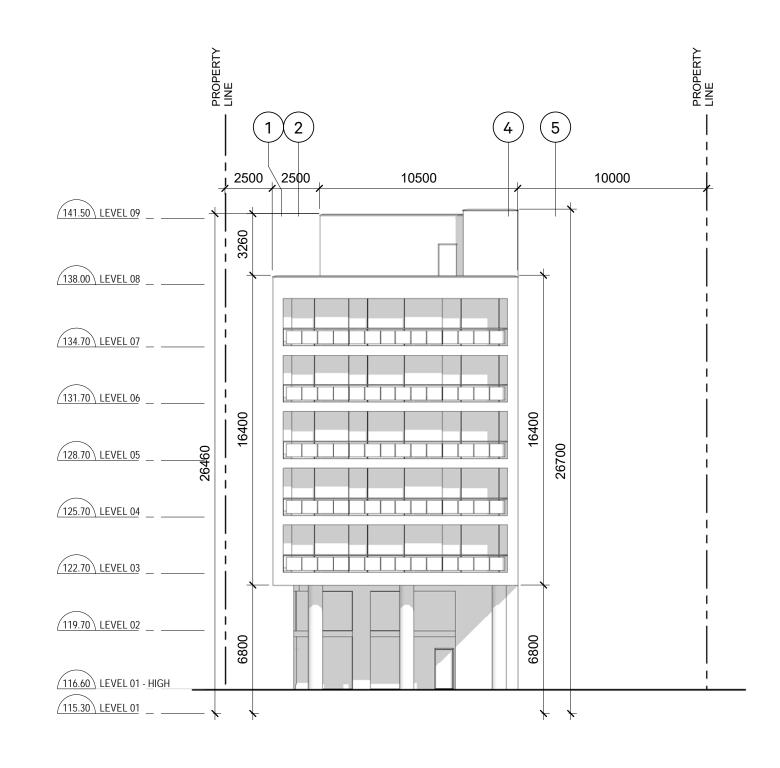
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APPROVED <u>L. BRESLER</u>

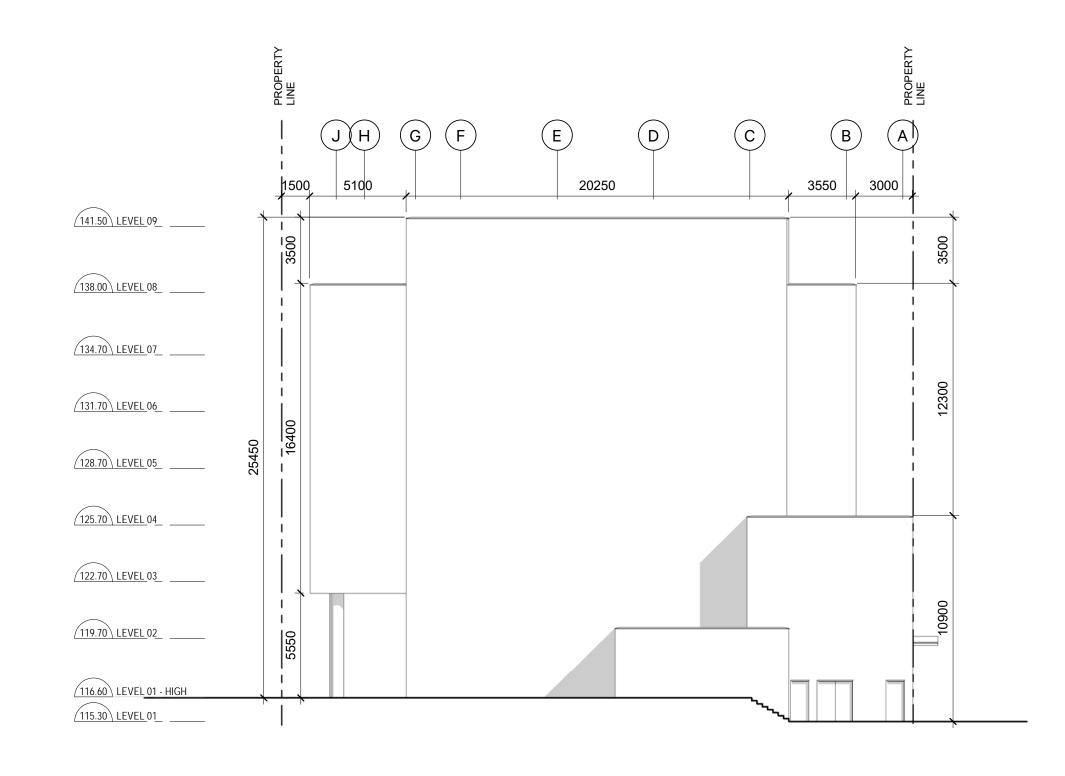
ELEVATIONS

ONTARIO LINE





SOUTH ELEVATION
1:200



EAST ELEVATION
1:200

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DESIGNED D.ABAD

TITLE CHECKED J.RODRIGUEZ-VILLA APPROVED <u>L. BRESLER</u>

ONTARIO LINE TOC

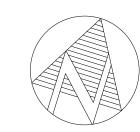
PAPE | PAPE

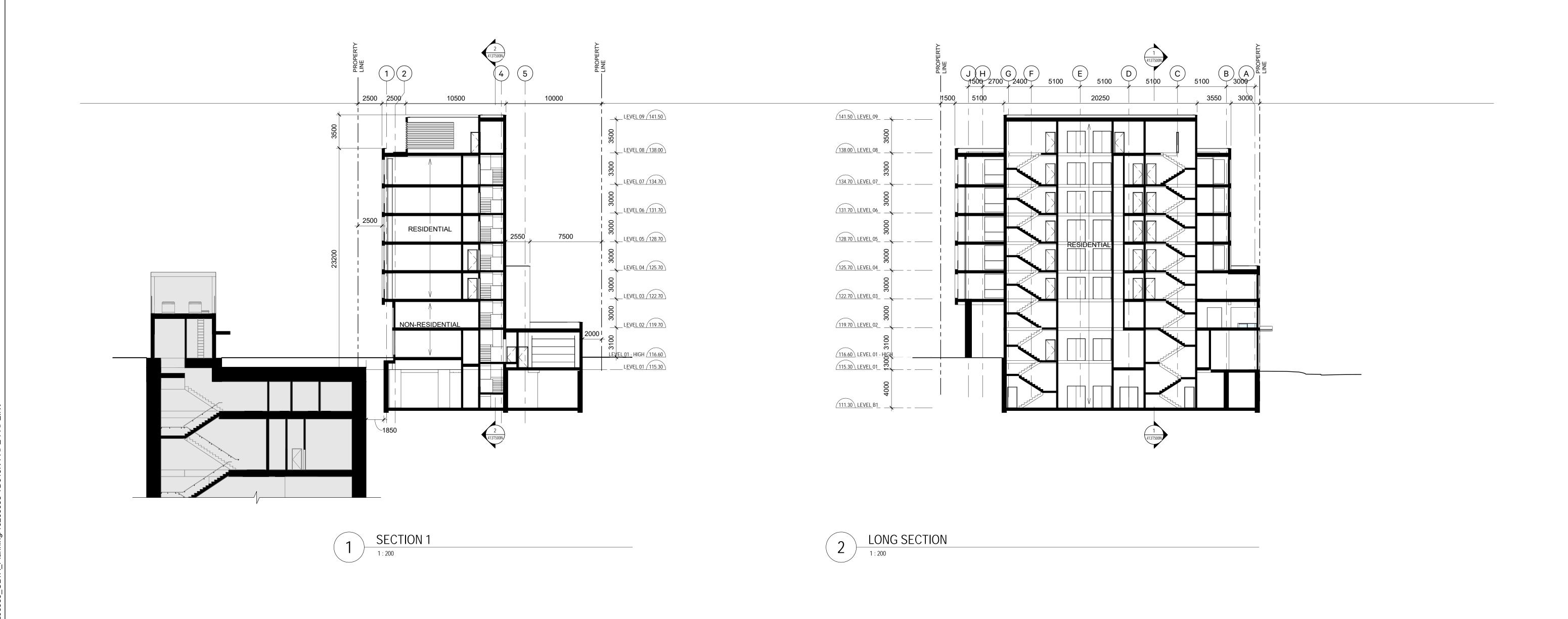
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SCALE 1:200

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DRAWN D.ABAD

CHECKED J.RODRIGUEZ-VILLA

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- TITLE -

TOC PAPE | PAPE SECTIONS

ONTARIO LINE

Plot Date: 2022-10-24 6:00:02 PM

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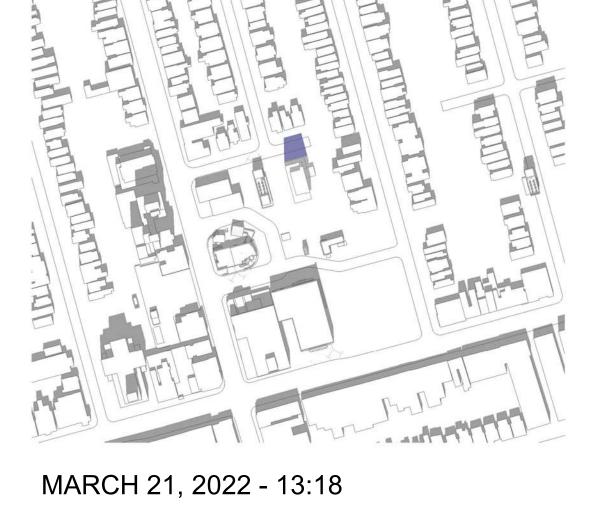
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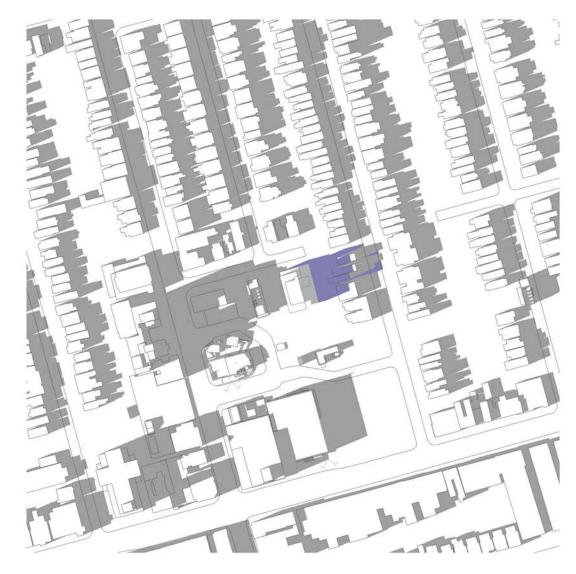
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MARCH 21, 2022 - 15:18



MARCH 21, 2022 - 16:18



MARCH 21, 2022 - 17:18



MARCH 21, 2022 - 18:18

LEGEND

NEW SHADOWS EXISTING SHADOWS

REVISIONS

ISSUED FOR QA/QC 2022-10-24

ARCHITECTURE AND LANDSCAPE SET - REZONING

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TITLE

TOC PAPE | PAPE

ONTARIO LINE

SHADOW STUDY - MARCH

Plot Date: 2022-10-24 6:00:07 PM **★** METROLINX Infrastructure Ontario

SCALE 1:1

DRAWING NUMBER 413T600N









JUNE 21, 2022 - 14:18

JUNE 21, 2022 - 15:18

JUNE 21, 2022 - 16:18

JUNE 21, 2022 - 17:18

JUNE 21, 2022 - 18:18

LEGEND

NEW SHADOWS EXISTING SHADOWS

REVISIONS

2022-10-24 ISSUED FOR QA/QC

ARCHITECTURE AND LANDSCAPE SET - REZONING

NOT FOR ESTIMATING OR BIDDING NOT FOR CONSTRUCTION

SVN



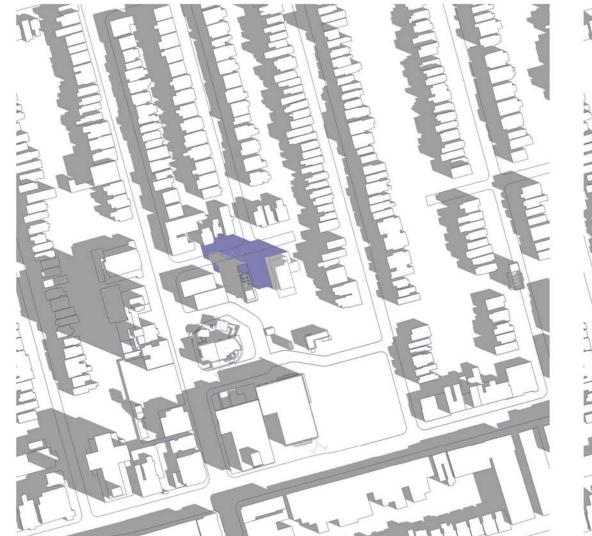
DESIGNED D.ABAD DRAWN D.ABAD

TITLE CHECKED J.RODRIGUEZ-VILLA APPROVED L. BRESLER

ONTARIO LINE

TOC PAPE | PAPE SHADOW STUDY - JUNE Plot Date: 2022-10-24 6:00:12 PM **★** METROLINX Infrastructure Ontario

DRAWING NUMBER 413T601N



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SEPTEMBER 21, 2022 - 11:18



SEPTEMBER 21, 2022 - 12:18



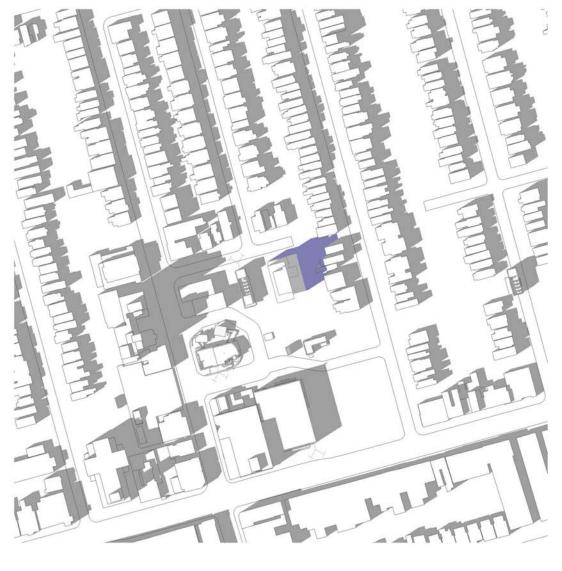
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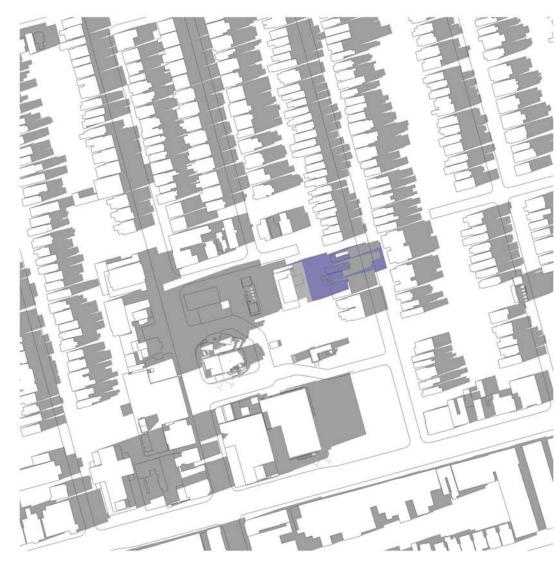
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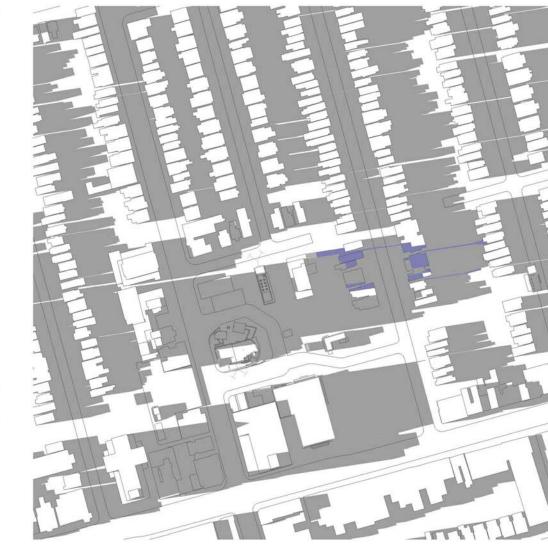
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SEPTEMBER 21, 2022 - 18:18

LEGEND

NEW SHADOWS EXISTING SHADOWS

REVISIONS

2022-10-24 ISSUED FOR QA/QC

ARCHITECTURE AND LANDSCAPE SET - REZONING

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SVN



DESIGNED D.ABAD D.ABAD

CHECKED J.RODRIGUEZ-VILLA APPROVED L. BRESLER

TITLE PAPE | PAPE SHADOW STUDY - SEPTEMBER

ONTARIO LINE

TOC

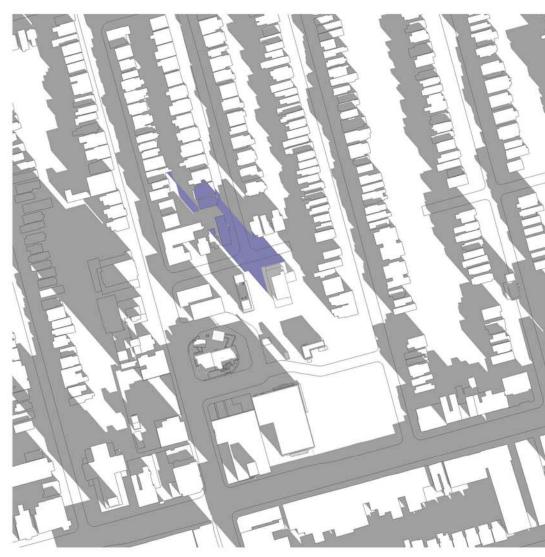
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SCALE 1:1 413T602N

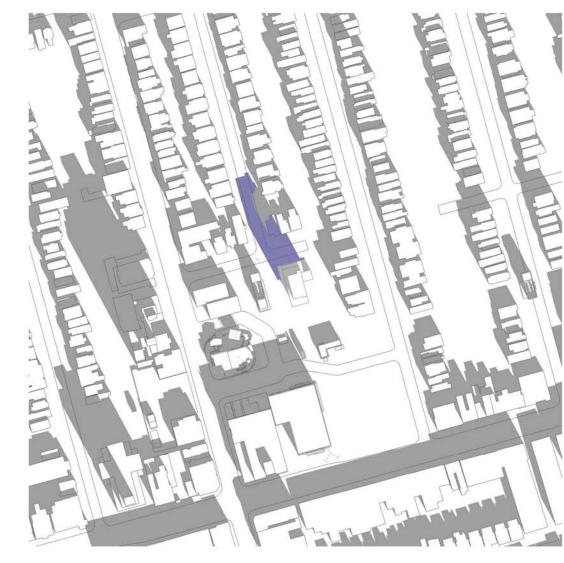
DRAWING NUMBER



DECEMBER 21, 2022 - 9:18



DECEMBER 21, 2022 - 10:18



DECEMBER 21, 2022 - 11:18



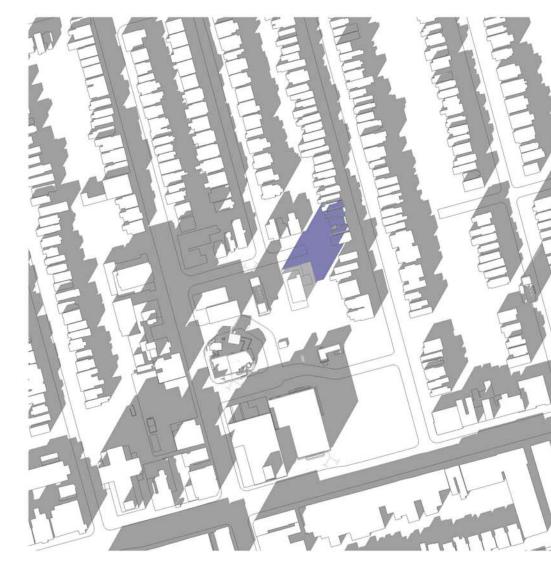
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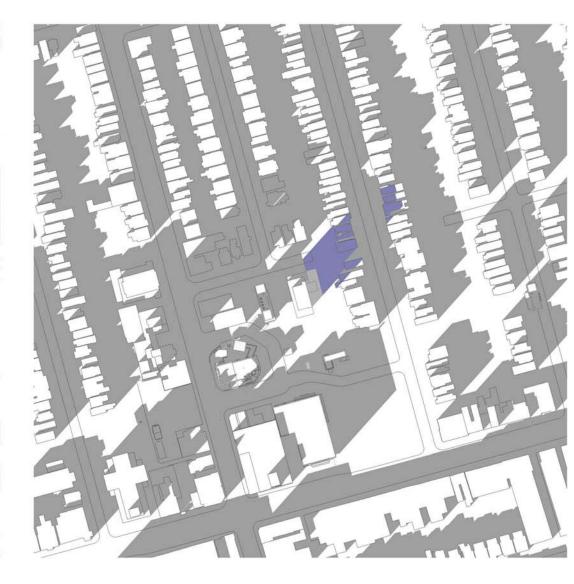
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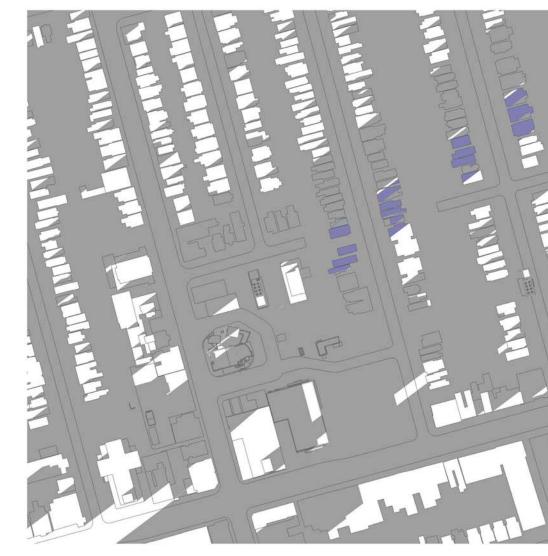
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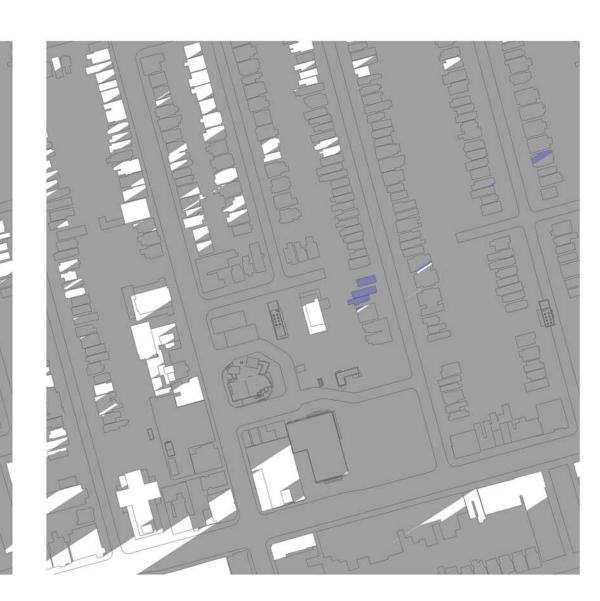
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DECEMBER 21, 2022 - 16:18



DECEMBER 21, 2022 - 17:18



DECEMBER 21, 2022 - 18:18

LEGEND

NEW SHADOWS

EXISTING SHADOWS

REVISIONS

2022-10-24 ISSUED FOR QA/QC

ARCHITECTURE AND LANDSCAPE SET - REZONING

NOT FOR ESTIMATING OR BIDDING NOT FOR CONSTRUCTION

SVN



designed D.ABAD

DRAWN D.ABAD

CHECKED J.RODRIGUEZ-VILLA

APPROVED L. BRESLER

TITLE

TOC
PAPE | PAPE
SHADOW STUDY - DECEMBER

ONTARIO LINE

Plot Date: 2022-10-24 6:00:23 PM

METROLINX
Infrastructure
Ontario

SCALE 1:1

DRAWING NUMBER 413T603N

ONTARIO LINE

TRANSIT ORIENTED COMMUNITY

670-710 DANFORTH AVE, 2-16 EATON AVE, 1-21 LIPTON AVE TORONTO, ONTARIO, M4J 1N9

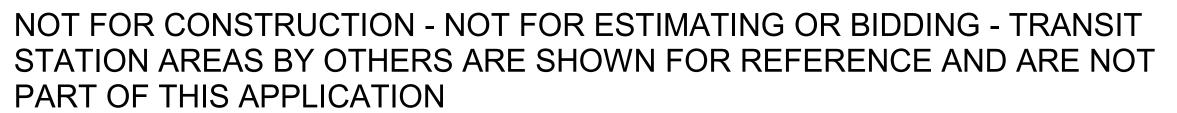
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413T000S	COVER
413T001S	CONTEXT MASSING
413T002S	NOTES AND LEGENDS
413T003S	PROJECT STATISTICS
413T004S	CONTEXT PLAN
413T005S	ROOF SITE PLAN
413T006S	GROUND FLOOR SITE PLAN
413T007S	LANDSCAPE PLAN
413T101S	LEVEL B3
413T102S	LEVEL B2
413T103S	LEVEL B1
413T201S	LEVEL 1
413T202S	LEVEL 1 MEZZANINE
413T203S	LEVEL 2
413T204S	LEVEL 3
413T205S	LEVEL 4
413T206S	LEVEL 5
413T207S	LEVEL 6
413T208S	LEVEL 7
413T209S	LEVEL 8
413T210S	LEVEL 9
413T211S	LEVEL 10
413T212S	LEVEL 11
413T213S	LEVEL 12
413T214S	LEVEL 13
413T215S	LEVEL 14 - LEVEL 29
413T216S	MECHANICAL PENTHOUSE
413T217S	ROOF
413T400S	ELEVATIONS
413T401S	ELEVATIONS
413T402S	ELEVATIONS
413T500S	SECTIONS
413T501S	SECTIONS
413T600S	SHADOW STUDY - MARCH
413T601S	SHADOW STUDY - JUNE
413T602S	SHADOW STUDY - SEPTEMBER
413T603S	SHADOW STUDY - DECEMBER



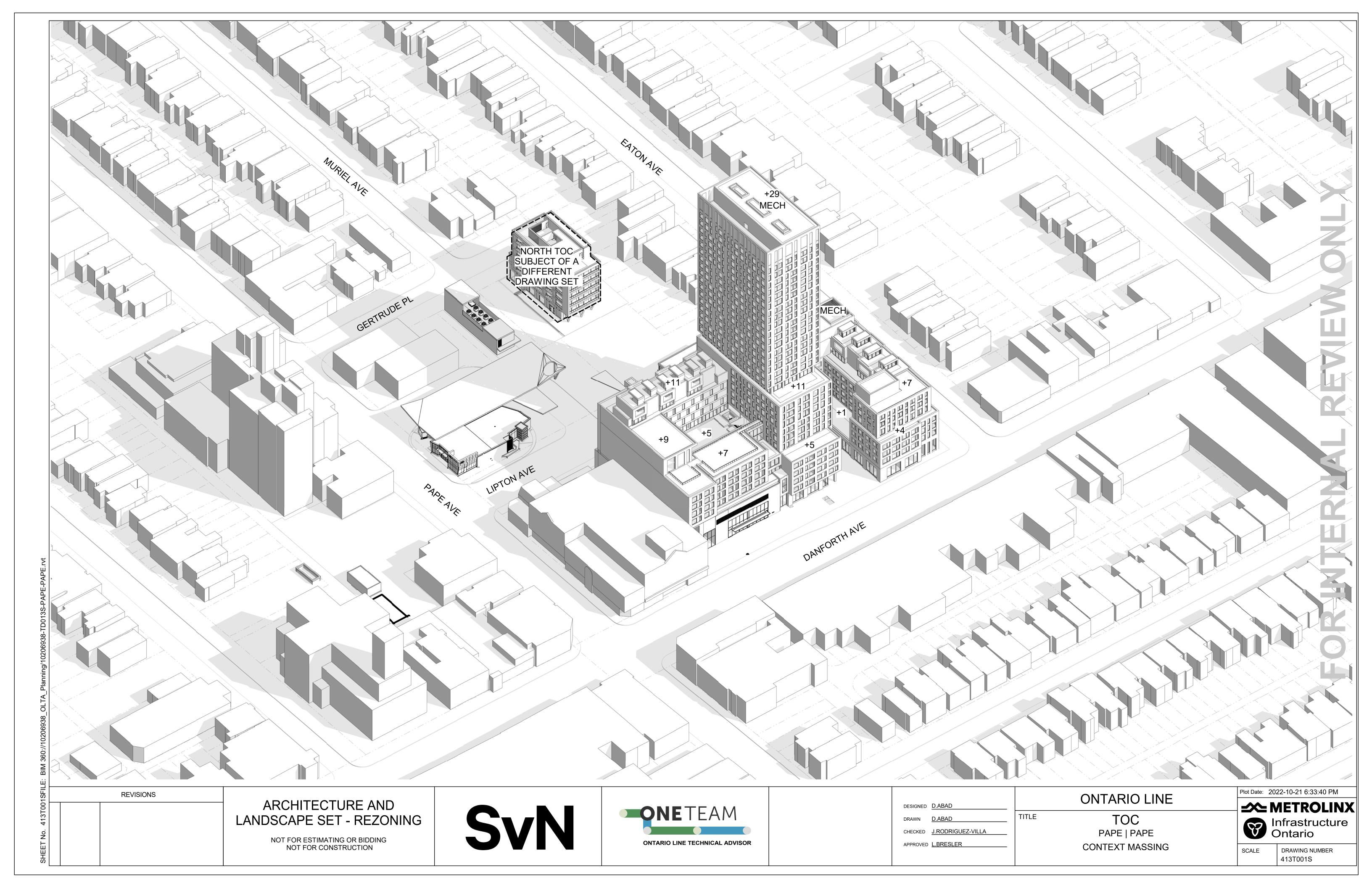














DRAWING EXHAUST AIR ELEVATOR CONTROL ROOM

ELEV ELEVATOR

ELEVATOR MACHINE ROOM

FLUE VENT SHAFT GCA GROSS CONSTRUCTION AREA LONG TERM METRE

RESIDENTIAL MAIL ROOM MECH MECHANICAL

MECH PH MECHANICAL PENTHOUSE NON-RES WASTE NON-RESIDENTIAL WASTE ROOM

NOT TO SCALE OUTSIDE AIR INTAKE ONTARIO BUILDING CODE ONTARIO LINE

REFERENCE CONCEPT DESIGN **ROOF MECH** ROOF AREA FOR MECHANICAL EQUIPMENT

ROW RIGHT OF WAY

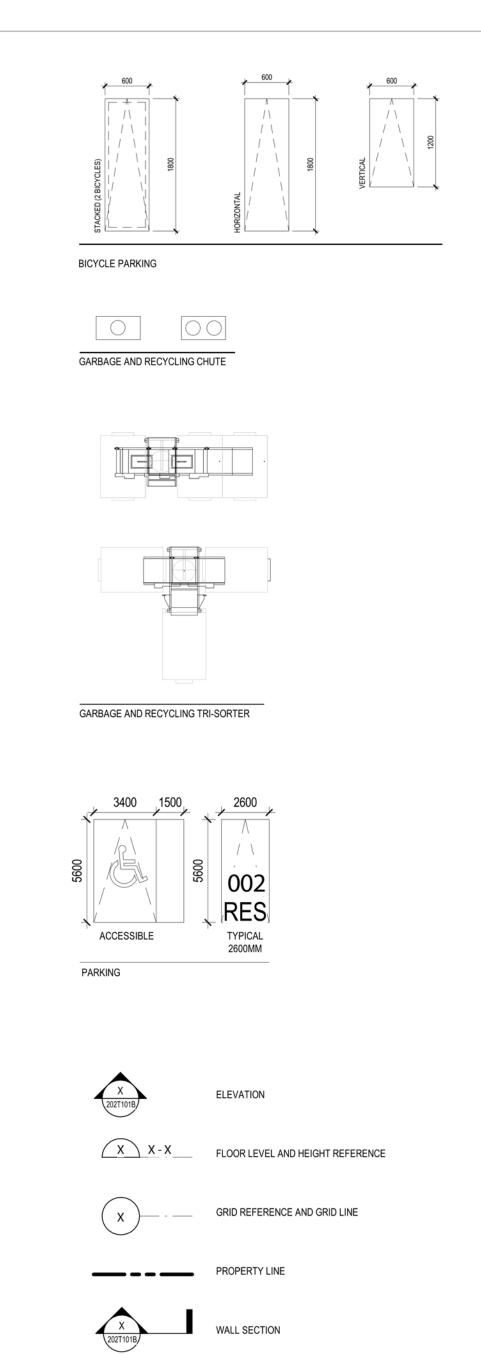
RESIDENTIAL SALEABLE AREA STAIR PRESSURIZATION SHAFT

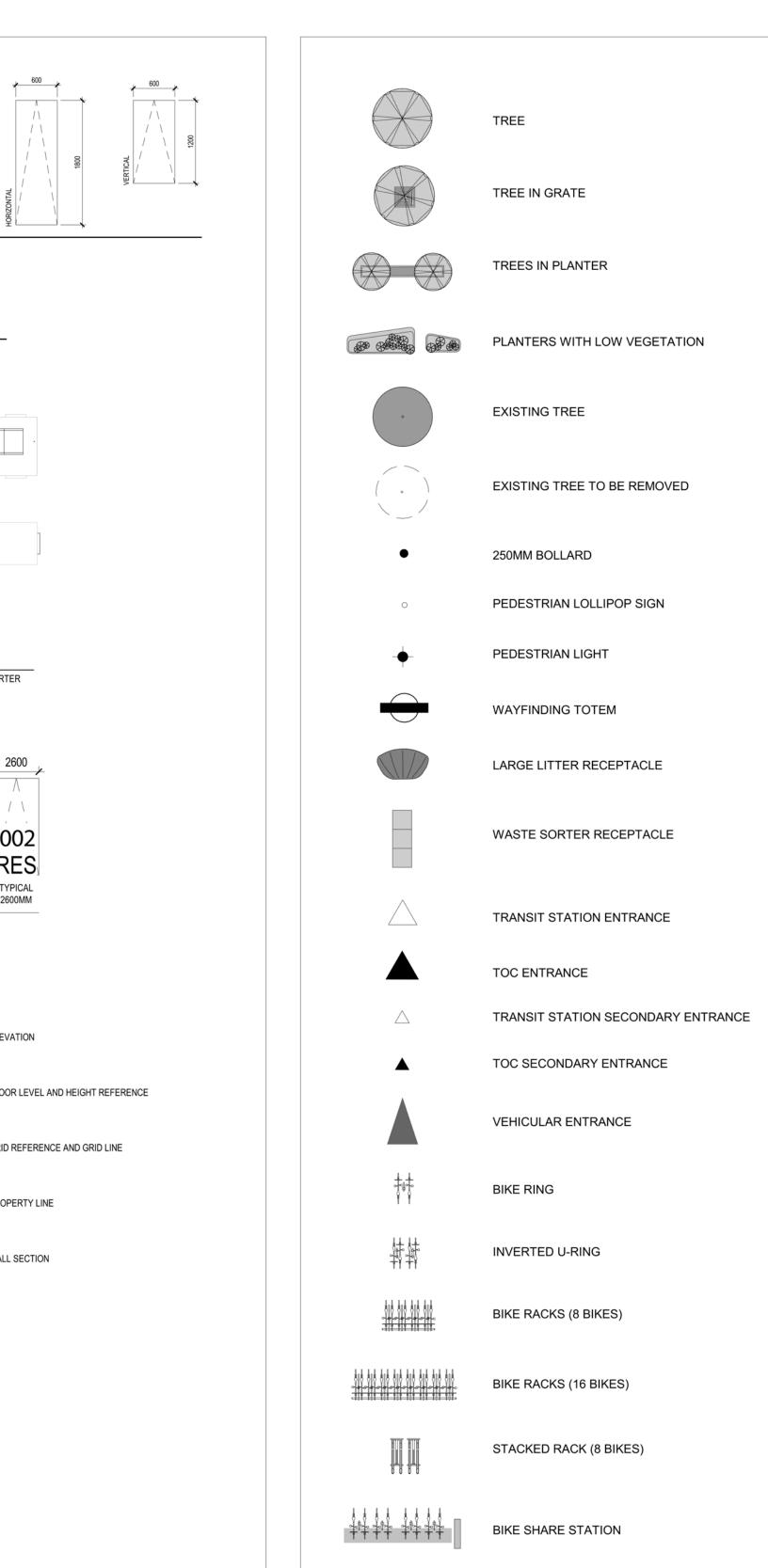
SHORT TERM

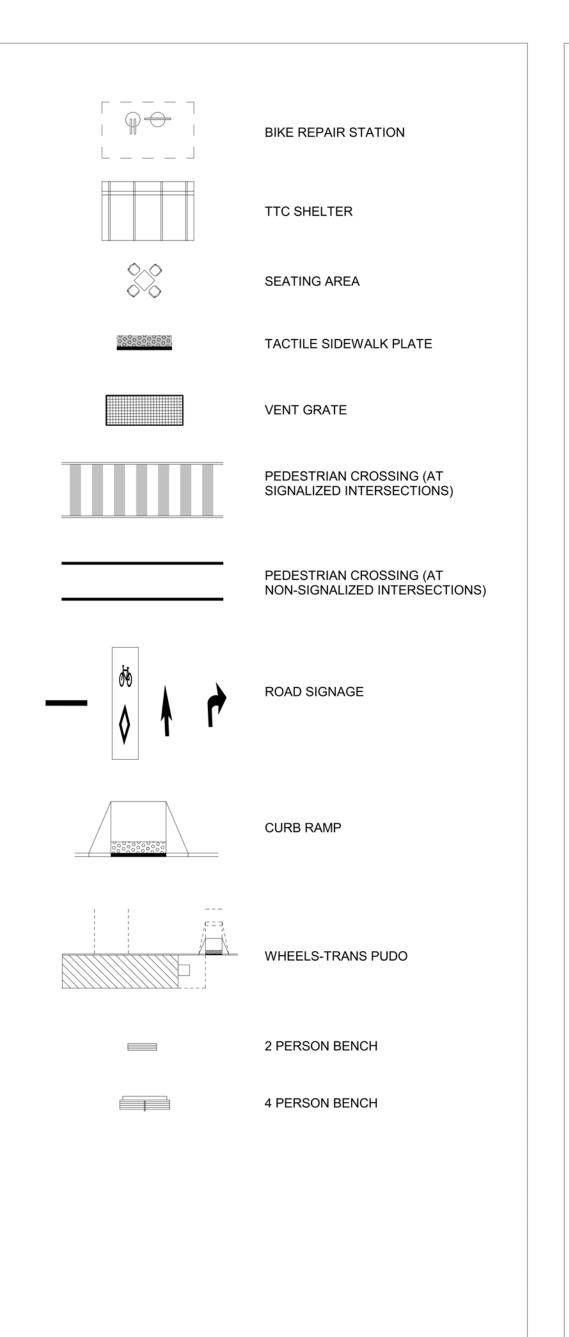
STUDIO STUDIO SUITE

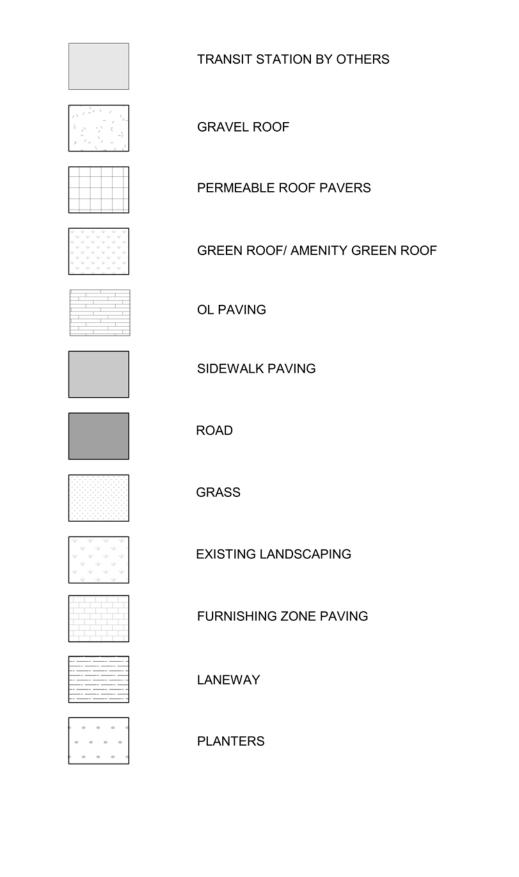
SWM ROOF PERMEABLE ROOF FOR STORM WATER MANAGEMENT TELECOM TELECOMMUNICATIONS ROOM TORONTO GREEN STANDARD TRANSIT ORIENTED COMMUNITY

TOFR TOP OF FINISHED ROOF TOP OF SLAB **TYPICAL**







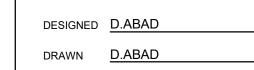


ARCHITECTURE AND LANDSCAPE SET - REZONING

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CHECKED J.RODRIGUEZ-VILLA

ONTARIO LINE

TOC PAPE | PAPE NOTES AND LEGENDS Plot Date: 2022-10-21 6:33:56 PM **★** METROLINX Infrastructure Ontario

DRAWING NUMBER 413T002S

REVISIONS

APPROVED L.BRESLER

TITLE

MUNICIPAL ADDRESS: 670-710 DANFORTH AVE, 2-16 EATON AVE, 1-21 LIPTON AVE BUILDING HEIGHT: 93.2 m (29 STOREYS)

BUILDING STATISTICS

AREAS	%	m^2
SITE AREA (EXISTING)		6214
SITE AREA (CONVEYANCE)		0
SITE AREA		6214
GCA ABOVE GRADE (TOC)		41220
GCA BELOW GRADE (TOC)		9731
GFA TOTAL (TOC)		36953
GFA RESIDENTIAL (TOC)	95%	35109
GFA NON-RESIDENTIAL (TOC)	5%	1845
GFA RETAIL (TOC)	5%	1845

FSI (TOC)	5.9
GFA TRANSIT ABOVE GRADE (SUBJECT OF A DIFFERENT APPLICATION)	1423
FSI (TOC + TRANSIT)	6.2

UNIT DISTRIBUTION AND AMENITY AREAS

	2		
UNIT TYPE	AREA m ² REQUI		PROPOSED
STUDIO	27-34	NO REQ	0%
1B	36-64	NO REQ	64%
2B	59-81	15%	21%
3B	85-111	10%	15%
AMENITY AREAS		REQUIRED m ²	PROPOSED m ²
INTERIOR AMENITY (RES)		824	1500
(0	
EXTERIOR AMENITY (RES)		824	810
` ,			
EXTERIOR AMENITY (RES)		824	810

GREEN ROOF AND STORMWATER MANAGEMENT

ROOF AREAS	m ²
TOTAL ROOF AREA	4816
RESIDENTIAL PRIVATE TERRACES	565
ROOFTOP EXTERIOR AMENITY	810
RENEWABLE ENERGY DEVICES	0
TOWER AREA LESS THAN 750 m2	0
TOTAL TGS EXCLUSIONS	1376
TGS AVAILABLE ROOF	3441
GREEN ROOF	2186

*Excess in Total Amenity is interpreted first as Interior Amenity down to the required minimum and then as Exterior Amenity.

CITY OF TORONTO GREEN ROOF BY-LAW	REQUIRED %	PROPOSED %
GREEN ROOF	60%	64%

PARKING

VEHICLE PARKING	RATIO	REQUIRED	PROPOSED
RESIDENTIAL STUDIO	0.30	0	
RESIDENTIAL 1B	0.50	131	
RESIDENTIAL 2B	0.80	68	
RESIDENTIAL 3B	1.00	63	
RESIDENTIAL VISITOR	0.10	42	
RESIDENTIAL TOTAL		304	110
RETAIL	1.00	19	
NON-RESIDENTIAL TOTAL		19	0
SHARED TOTAL		NO REQ	0
VEHICLE PARKING TOTAL		323	110

BICYCLE PARKING

BICYCLE PARKING TGS TIER 4 V3	RATIO	REQUIRED	PROPOSED
RESIDENTIAL LONG TERM	0.9 / UNIT	371	406
RESIDENTIAL SHORT TERM	0.1 / UNIT	42	42
RETAIL LONG TERM	0.2 / 100m ²	4	4
RETAIL SHORT TERM	3 + 0.3 / 100m ²	9	10
TRANSIT LONG TERM		0	0
TRANSIT SHORT TERM		0	0
BICYCLE PARKING TOTAL		426	462

LOADING

1	0
1	1
	1
0	0
1	0
0	0
	0 1 0

WASTE COLLECTION

WASTE COLLECTION AREAS	REQUIRED m ²	PROPOSED m ²
RESIDENTIAL WASTE ROOM	119	184
RESIDENTIAL HAZARDOUS WASTE STORAGE	4	4
RESIDENTIAL BULK WASTE ROOM	10	21
NON-RESIDENTIAL WASTE ROOM		35
TOTAL WASTE COLLECTION AREA		244

***Mass Transportation Loading Requirements not included

FLOOR AREAS (TOC)

LEVEL	GCA	GFA DED	NRES GFA	RES GFA	RSA	0B	1B	2B	3B	TH	UNI
LEVEL B3	3243	3163	0	81	0	0	0	0	0	0	
LEVEL B2	3243	3163	0	81	0	0	0	0	0	0	
LEVEL B1	3245	3178	0	66	0	0	0	0	0	0	
LEVEL 01	2631	483	1367	781	140	0	0	0	0	3	
MEZZ	618	0	478	140	140	0	0	0	0	0	
LEVEL 02	2363	98	0	2265	1649	0	15	5	4	0	
LEVEL 03	2388	100	0	2288	1566	0	18	6	1	0	
LEVEL 04	3945	388	0	3558	2541	0	17	16	5	0	
LEVEL 05	3429	270	0	3159	2486	0	18	5	2	0	
LEVEL 06	2981	367	0	2614	2063	0	17	7	9	0	
LEVEL 07	2965	184	0	2781	2360	0	23	3	0	0	
LEVEL 08	1918	406	0	1512	1208	0	16	3	0	0	
LEVEL 09	1666	190	0	1476	1221	0	17	3	0	0	
LEVEL 10	1218	62	0	1157	873	0	10	2	6	0	
LEVEL 11	1190	36	0	1154	970	0	10	1	1	0	
LEVEL 12	609	537	0	71	0	0	0	0	0	0	
LEVEL 13	751	60	0	690	612	0	5	1	3	0	
LEVEL 14	751	49	0	702	624	0	6	2	2	0	
LEVEL 15	751	49	0	702	624	0	6	2	2	0	
EVEL 16	751	49	0	702	624	0	6	2	2	0	
_EVEL 17	751	49	0	702	624	0	6	2	2	0	
LEVEL 18	751	49	0	702	624	0	6	2	2	0	
LEVEL 19	751	49	0	702	624	0	6	2	2	0	
LEVEL 20	751	49	0	702	624	0	6	2	2	0	
LEVEL 21	751	49	0	702	624	0	6	2	2	0	
LEVEL 22	751	49	0	702	624	0	6	2	2	0	
LEVEL 23	751	49	0	702	624	0	6	2	2	0	
LEVEL 24	751	49	0	702	624	0	6	2	2	0	
LEVEL 25	751	49	0	702	624	0	6	2	2	0	
LEVEL 26	751	49	0	702	624	0	6	2	2	0	
LEVEL 27	751	49	0	702	624	0	6	2	2	0	
LEVEL 28	751	49	0	702	624	0	6	2	2	0	
LEVEL 29	751	49	0	702	624	0	6	2	2	0	
LEVEL 30	533	533	0	0	0	0	0	0	0	0	
TOTALS	50951	13998	1845	35109	27815	0	262	84	63	3	

UNIT COUNT SPLIT BY BUILDING	0B	1B	2B	3B	TH	TOTAL
WEST OF MIDBLOCK CONNECTION	0	211	72	49	0	33
EAST OF MIDBLOCK CONNECTION	0	51	12	14	3	8

REVISIONS

ARCHITECTURE AND LANDSCAPE SET - REZONING

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DESIGNED D.ABAD

APPROVED L.BRESLER

CHECKED J.RODRIGUEZ-VILLA

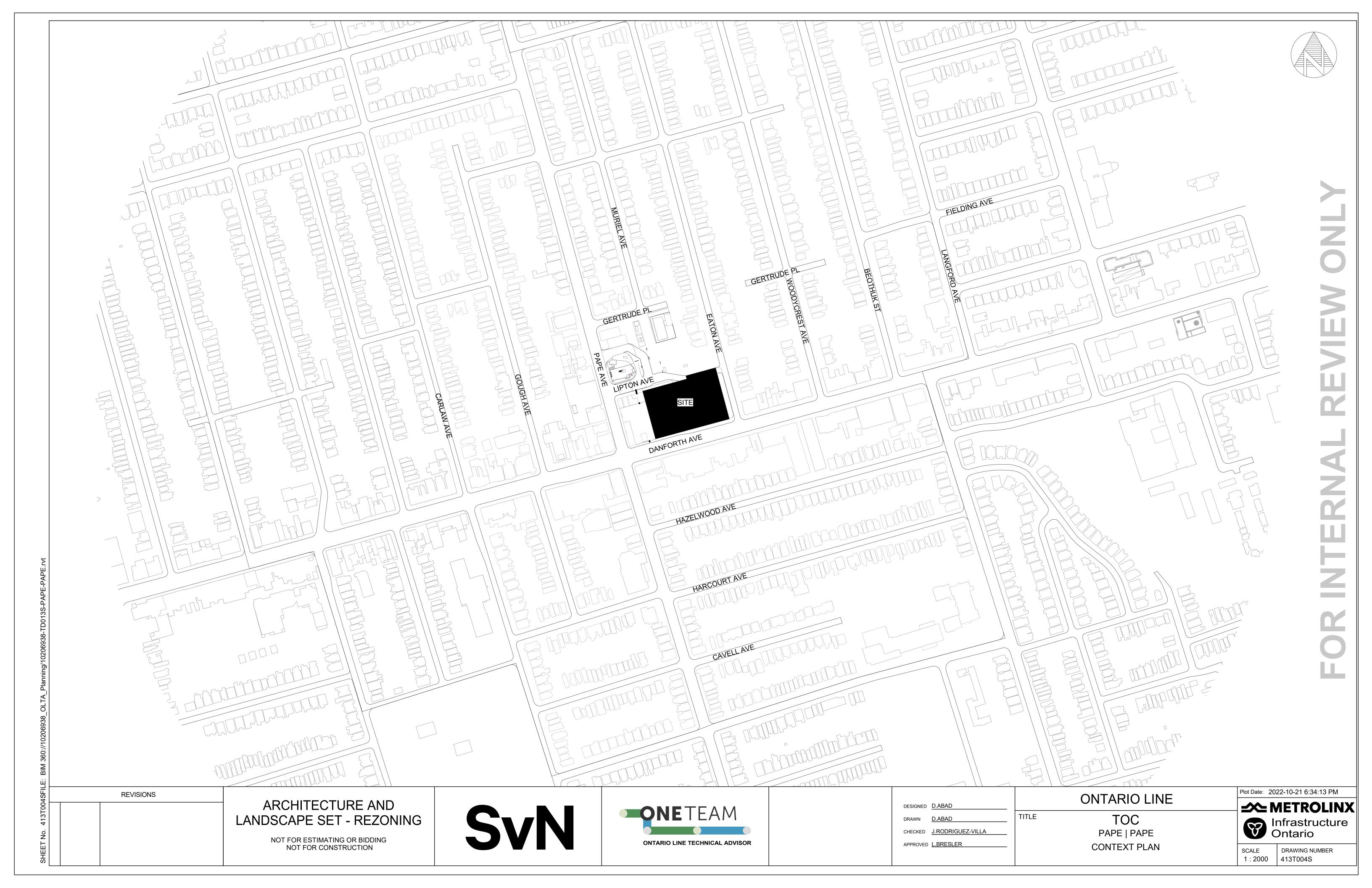
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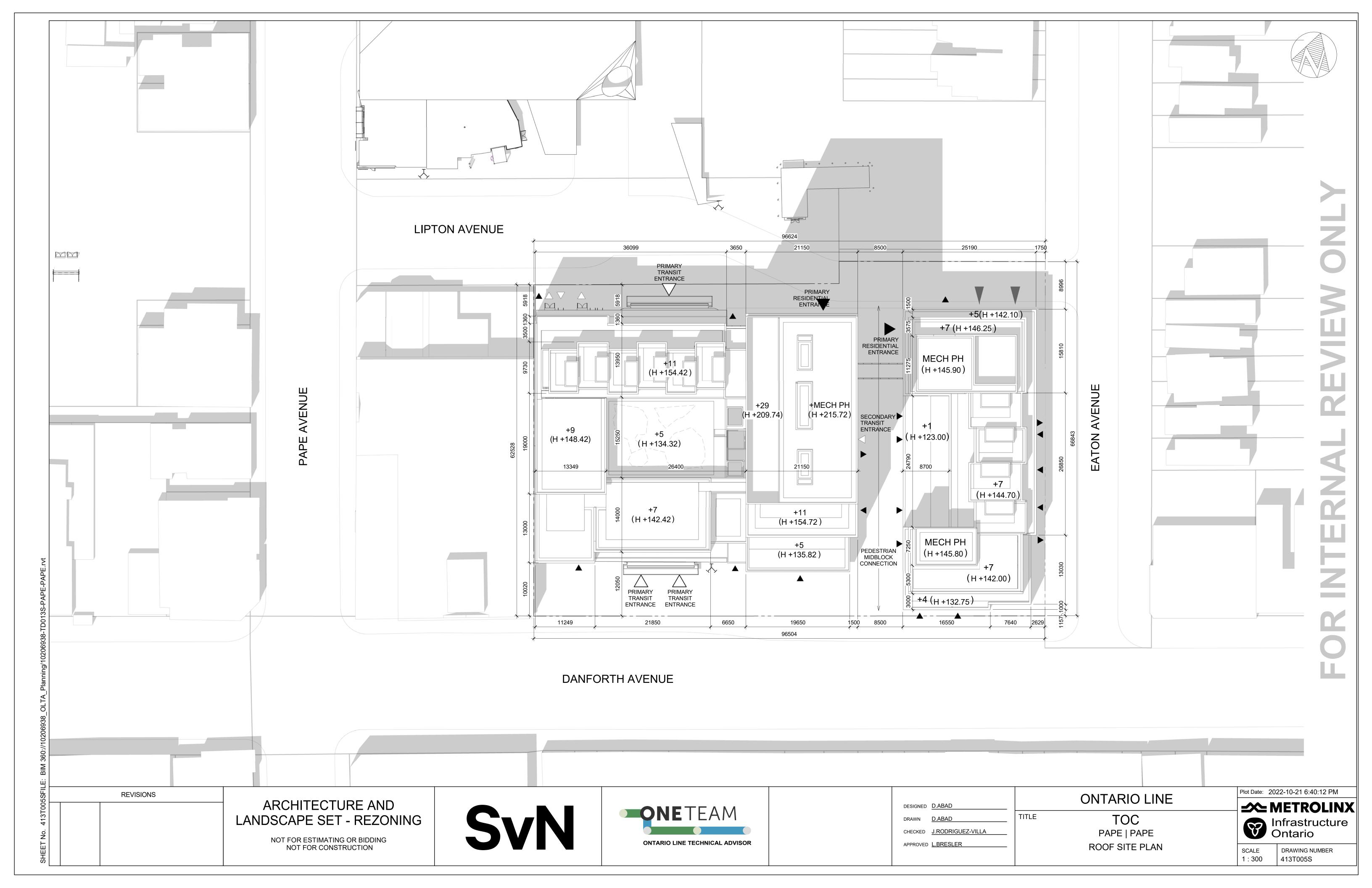
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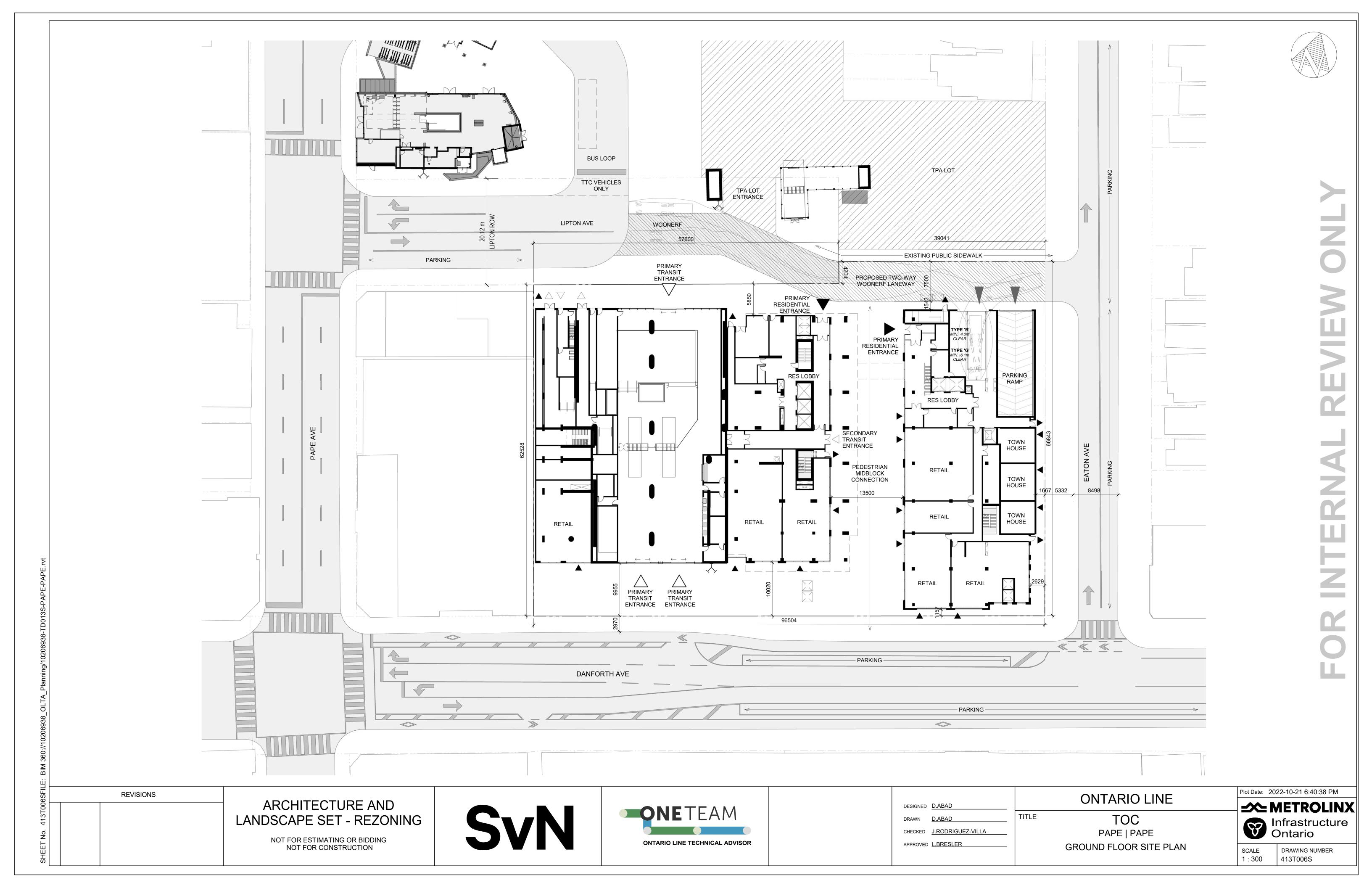
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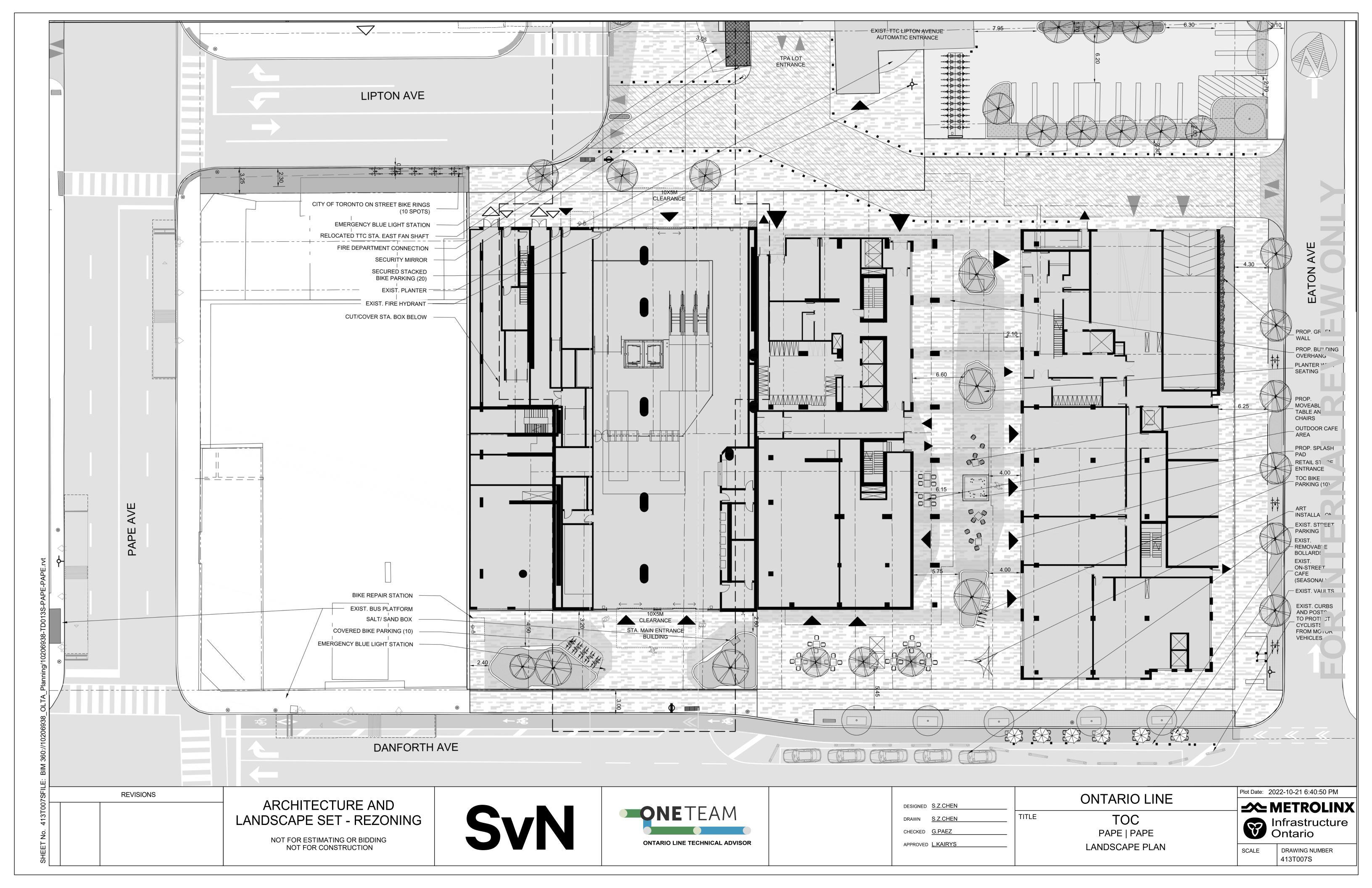


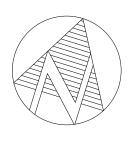
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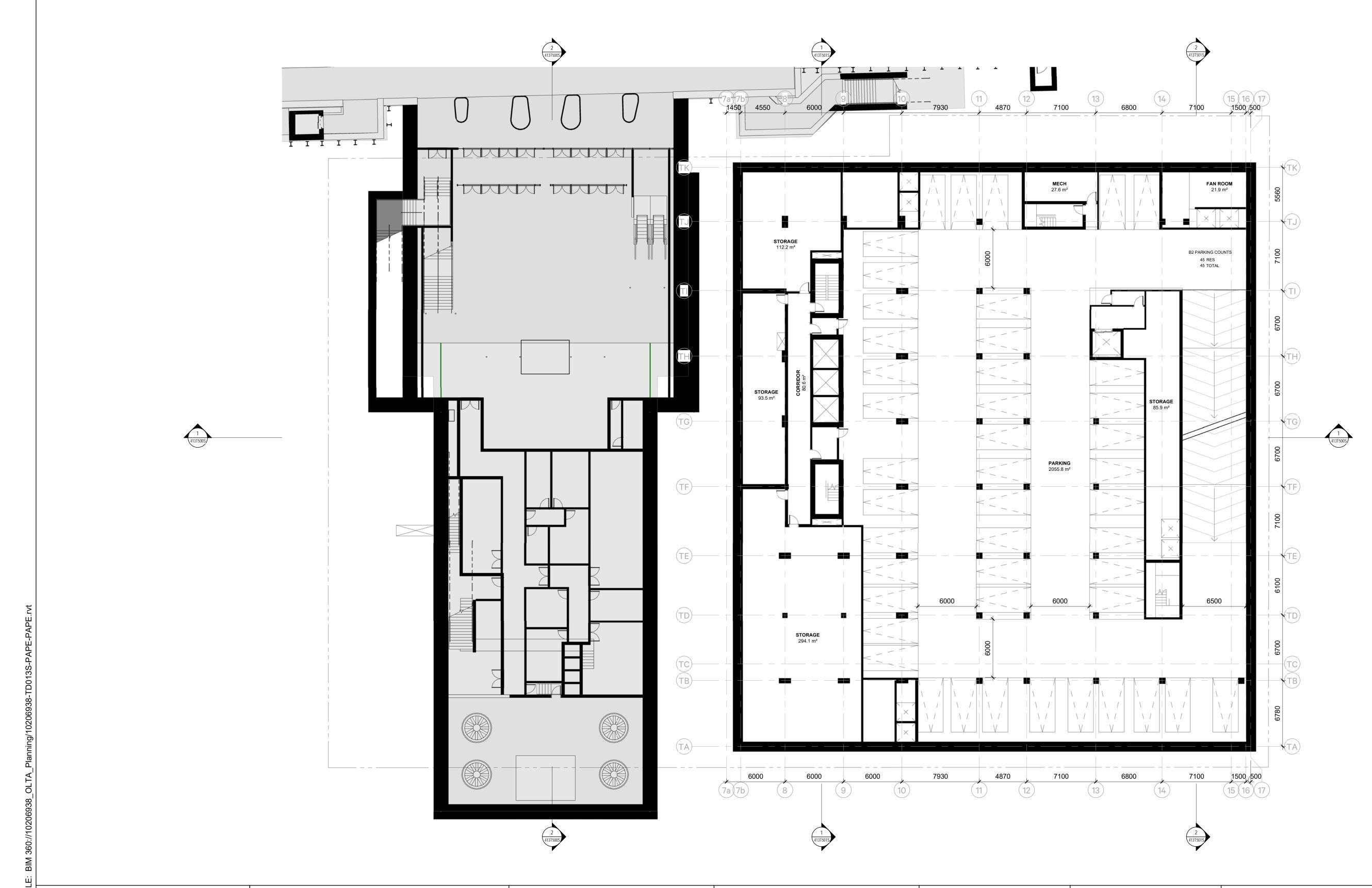












REVISIONS ARCHITECTURE AND LANDSCAPE SET - REZONING NOT FOR ESTIMATING OR BIDDING NOT FOR CONSTRUCTION

SVN

ONETEAM ONTARIO LINE TECHNICAL ADVISOR DESIGNED D.ABAD CHECKED J.RODRIGUEZ-VILLA

TITLE APPROVED <u>L.BRESLER</u>

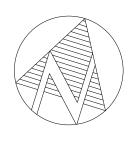
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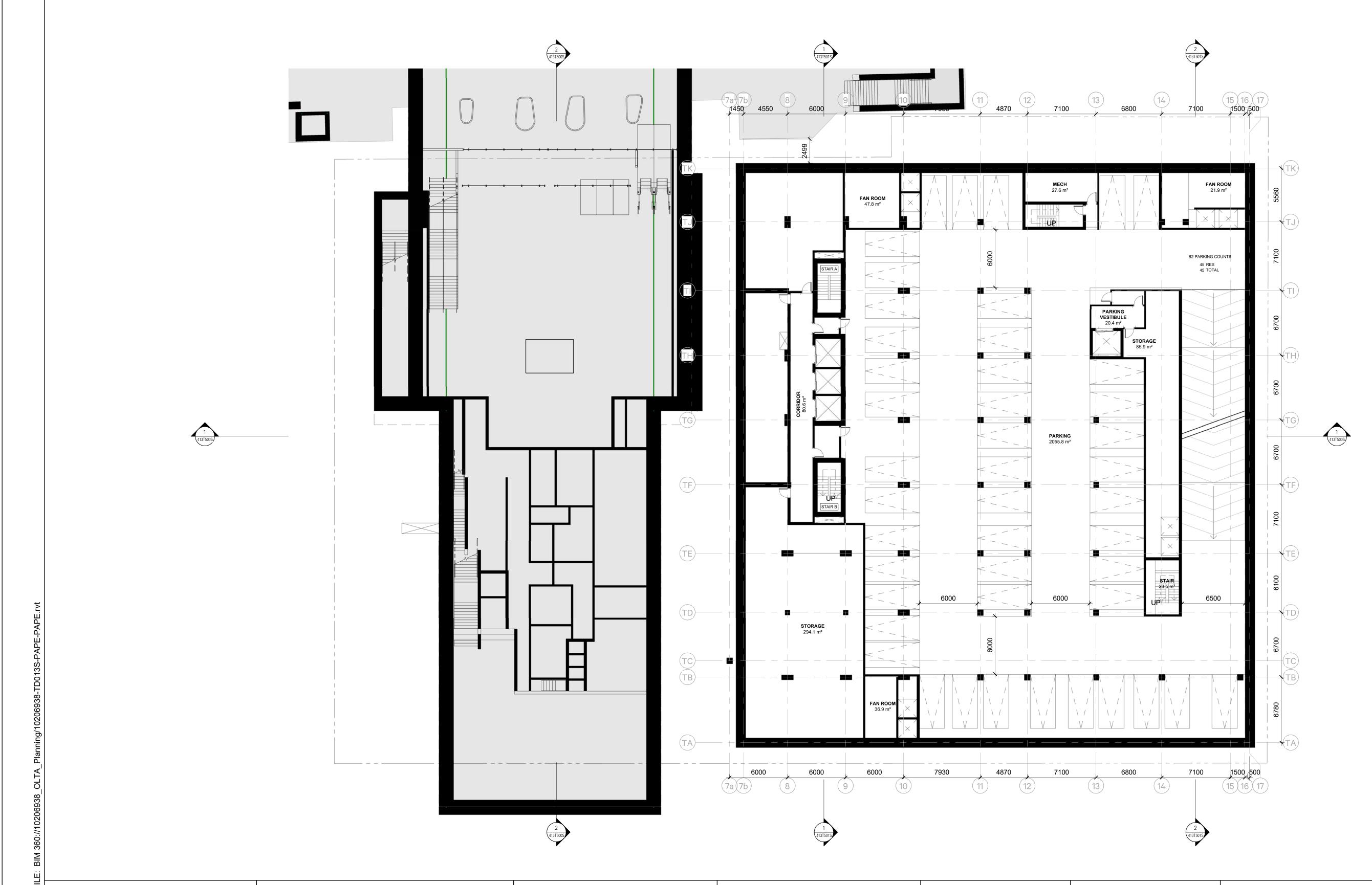
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SCALE 1:200

DRAWING NUMBER 413T101S





ARCHITECTURE AND LANDSCAPE SET - REZONING

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SVN

ONTARIO LINE TECHNICAL ADVISOR

DESIGNED D.ABAD

DRAWN D.ABAD

CHECKED J.RODRIGUEZ-VILLA

APPROVED L.BRESLER

TOC
PAPE | PAPE
LEVEL B2

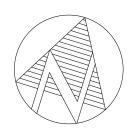
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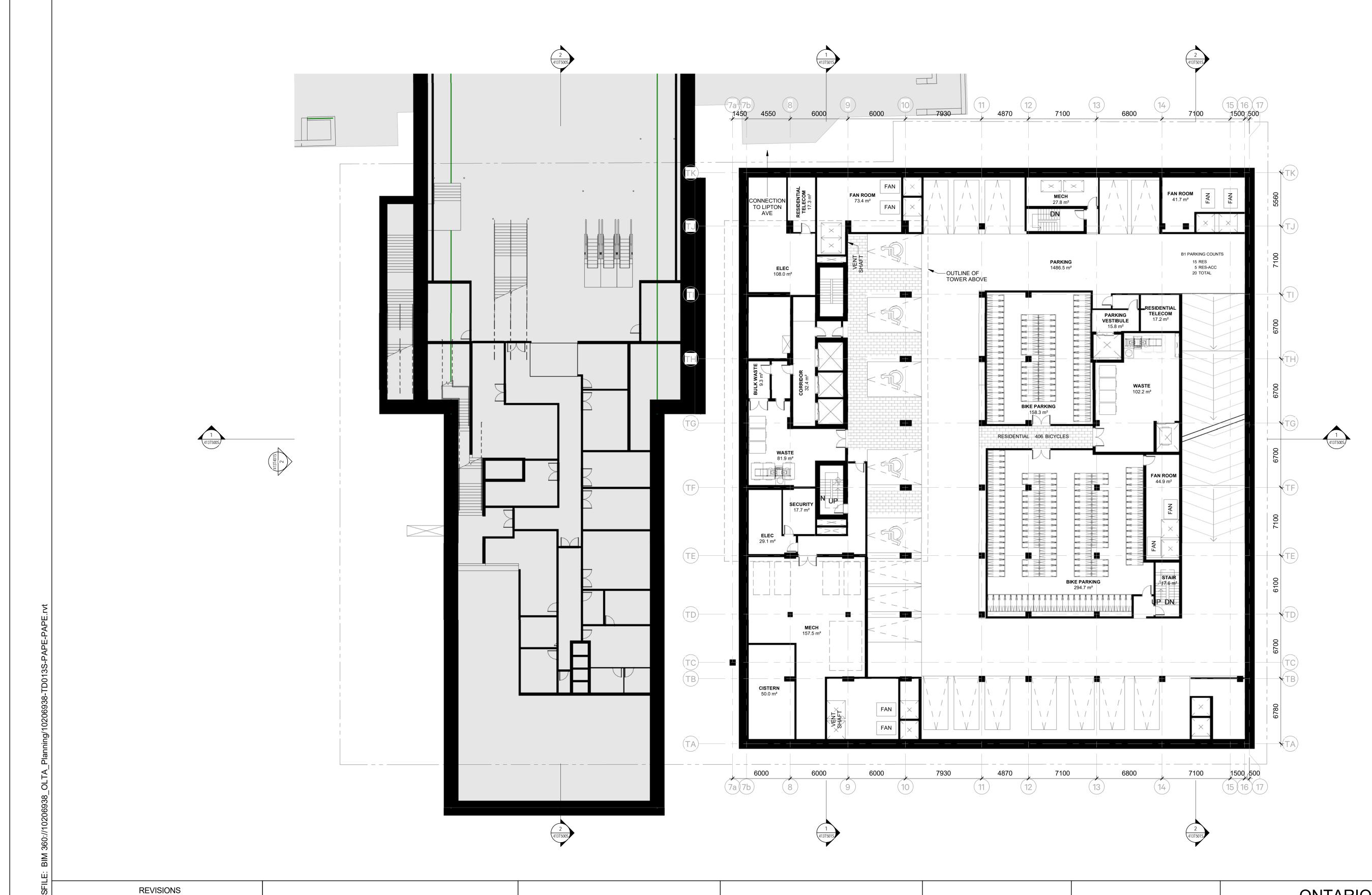
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Ontario

SCALE D 4

DRAWING NUMBER
413T102S





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ONETEAM ONTARIO LINE TECHNICAL ADVISOR DESIGNED D.ABAD TITLE

CHECKED J.RODRIGUEZ-VILLA APPROVED L.BRESLER

ONTARIO LINE TOC

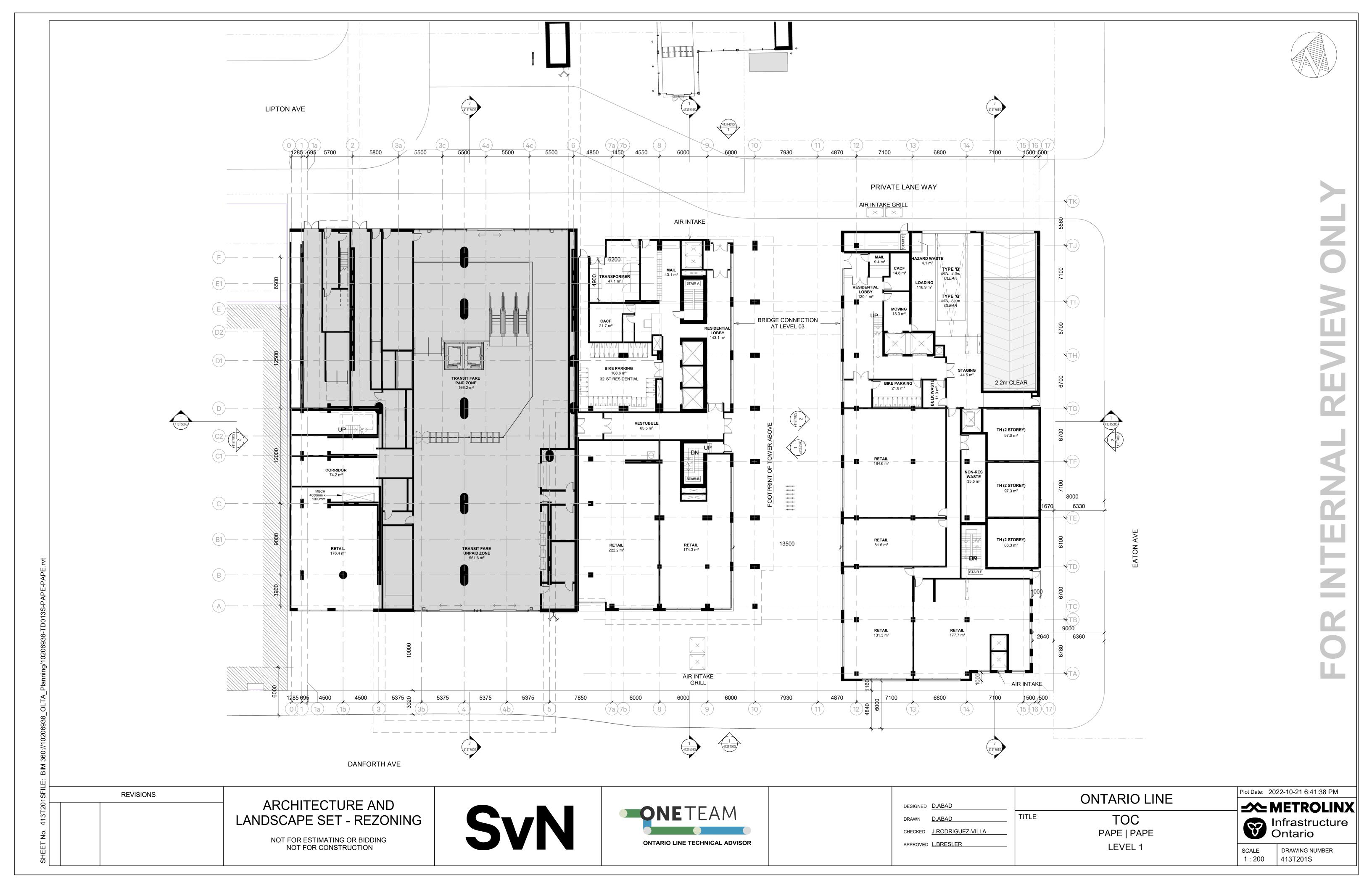
PAPE | PAPE

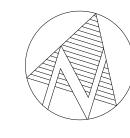
LEVEL B1

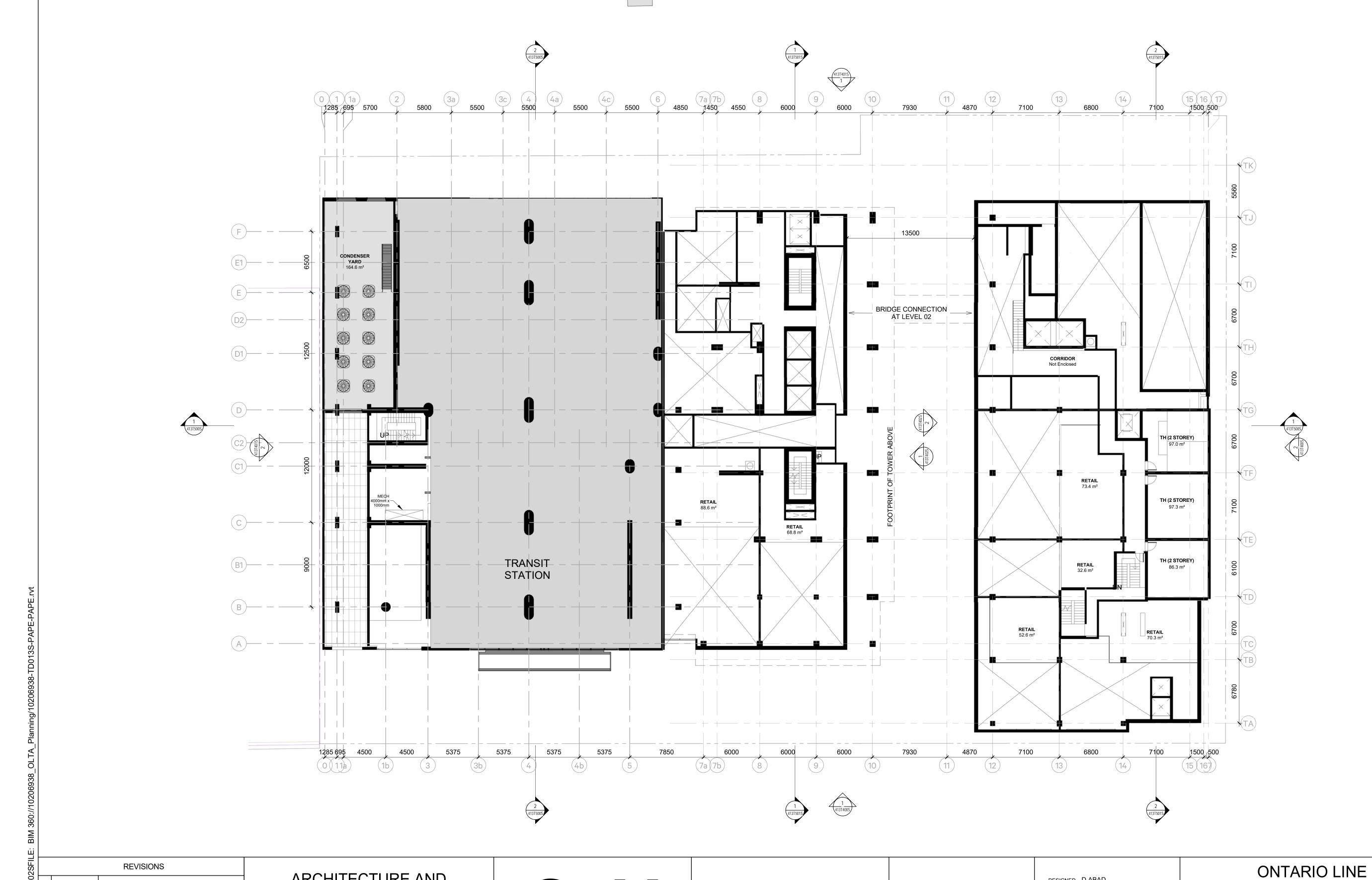
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SCALE 1:200

DRAWING NUMBER 413T103S







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ARCHITECTURE AND LANDSCAPE SET - REZONING

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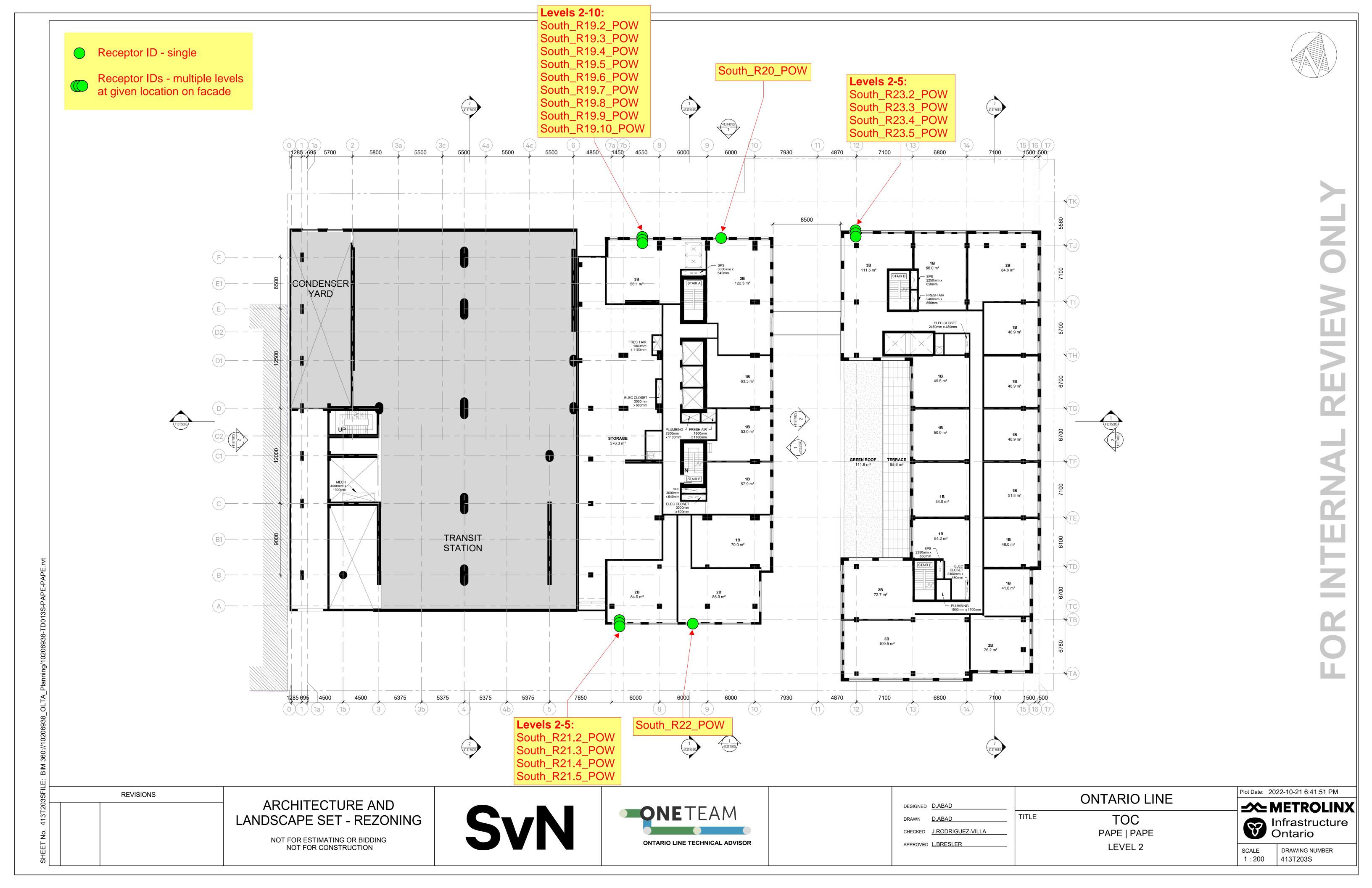
DESIGNED D.ABAD CHECKED J.RODRIGUEZ-VILLA

APPROVED L.BRESLER

TITLE TOC PAPE | PAPE LEVEL 1 MEZZANINE **★** METROLINX Infrastructure Ontario

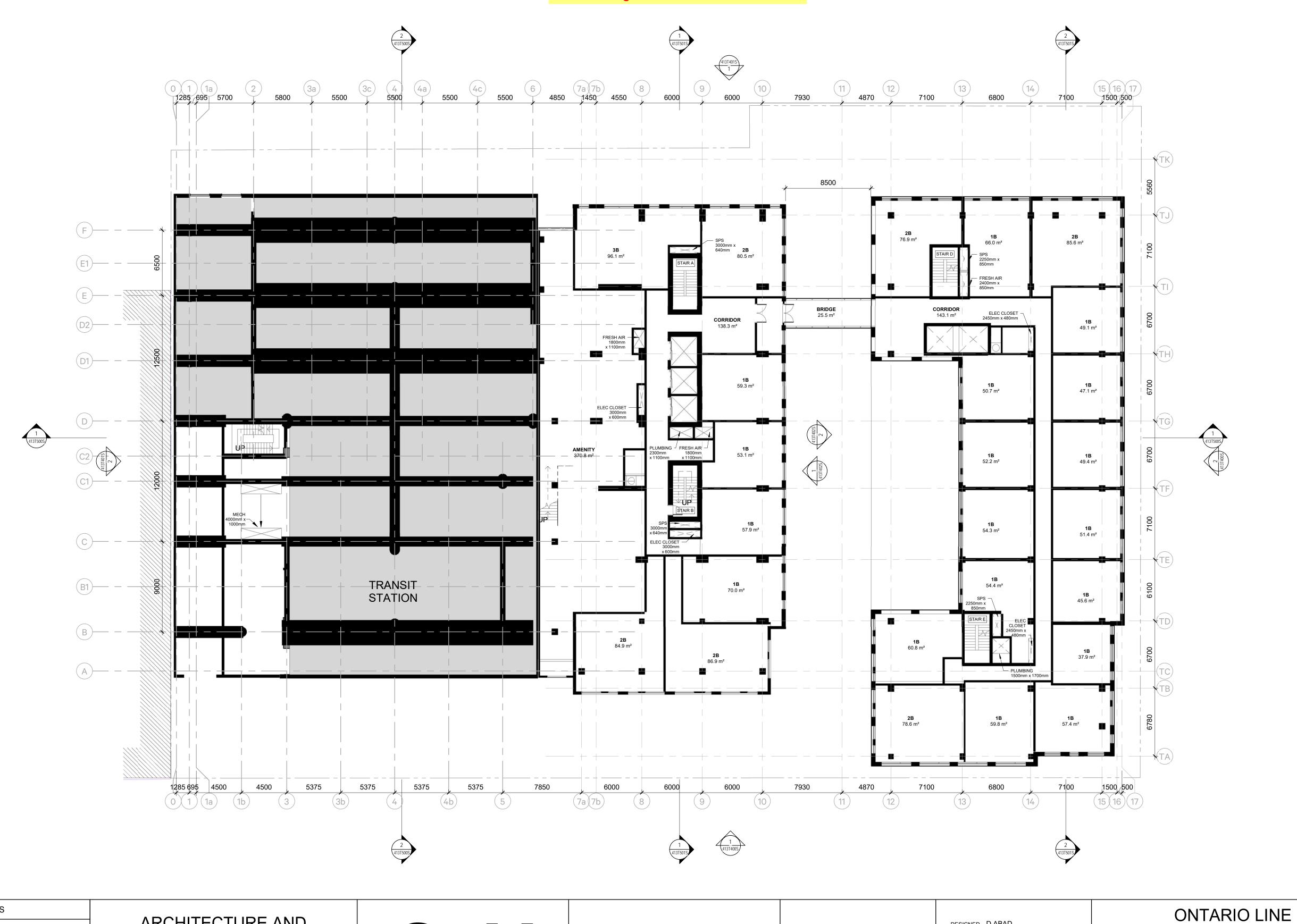
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DRAWING NUMBER 413T202S



For POW receptors tested on this level, see Drawing 413T203S





ARCHITECTURE AND LANDSCAPE SET - REZONING

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ONTARIO LINE TECHNICAL ADVISOR

DESIGNED D.ABAD

DRAWN D.ABAD

TITLE

CHECKED J.RODRIGUEZ-VILLA

APPROVED L.BRESLER

TOC PAPE | PAPE LEVEL 3 Plot Date: 2022-10-21 6:41:57 PM

METROLINX

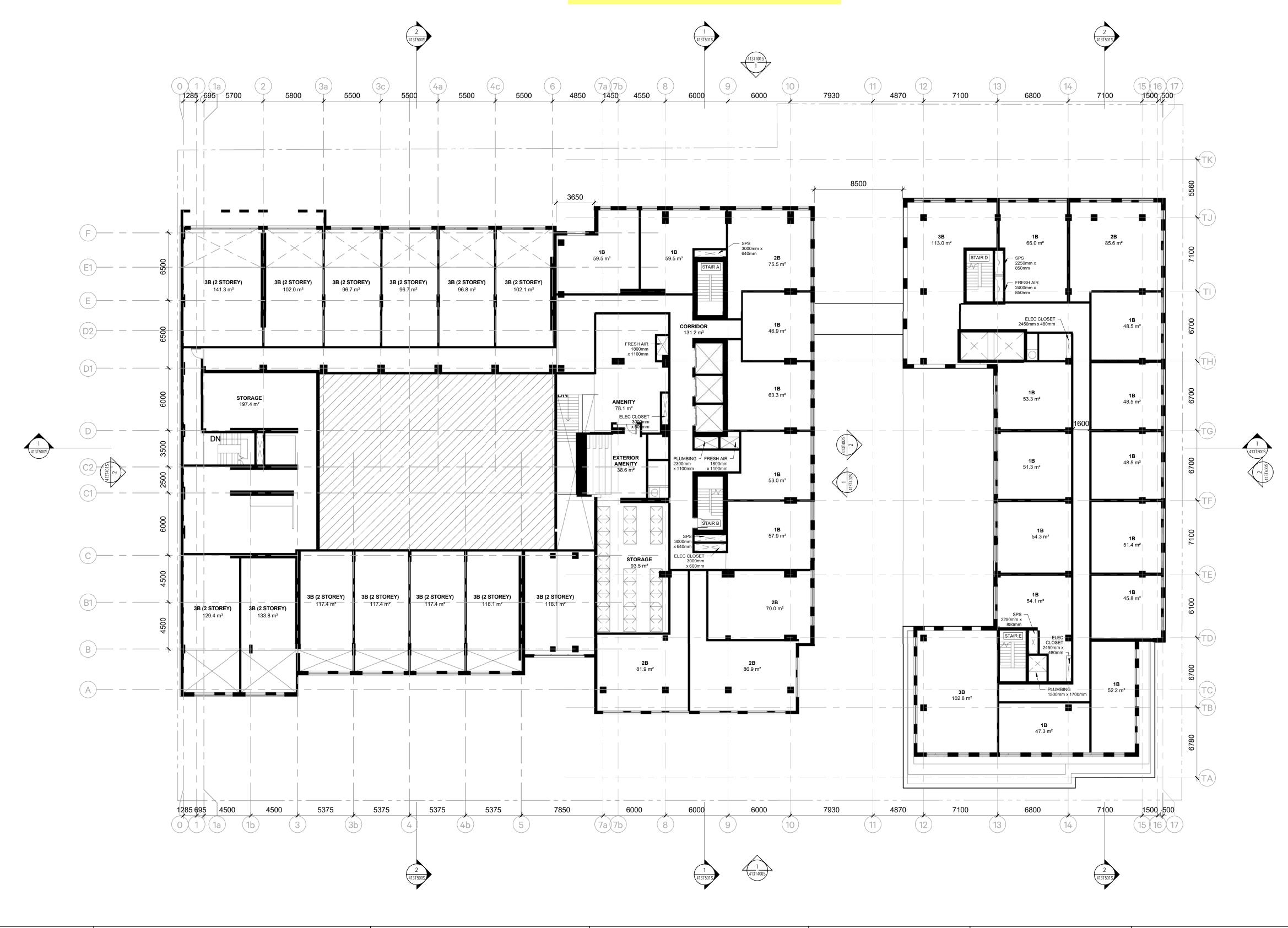
Infrastructure
Ontario

SCALE 1:200

DRAWING NUMBER 413T204S

For POW receptors tested on this level, see Drawings 413T203S and 413T205S





REVISIONS ARCHITECTURE AND LANDSCAPE SET - REZONING NOT FOR ESTIMATING OR BIDDING NOT FOR CONSTRUCTION

ONETEAM ONTARIO LINE TECHNICAL ADVISOR DESIGNED D.ABAD TITLE

CHECKED J.RODRIGUEZ-VILLA APPROVED L.BRESLER

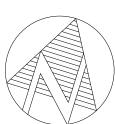
ONTARIO LINE TOC PAPE | PAPE

LEVEL 5

Plot Date: 2022-10-21 6:42:17 PM **★** METROLINX Infrastructure Ontario

SCALE 1:200

DRAWING NUMBER 413T206S



For POW receptors tested on this level, see Drawings 413T203S and 413T205S





REVISIONS ARCHITECTURE AND LANDSCAPE SET - REZONING NOT FOR ESTIMATING OR BIDDING NOT FOR CONSTRUCTION



DESIGNED D.ABAD CHECKED J.RODRIGUEZ-VILLA

APPROVED L.BRESLER

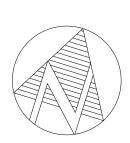
TITLE TOC PAPE | PAPE LEVEL 7

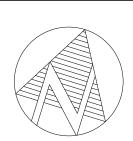
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SCALE 1:200

DRAWING NUMBER 413T208S





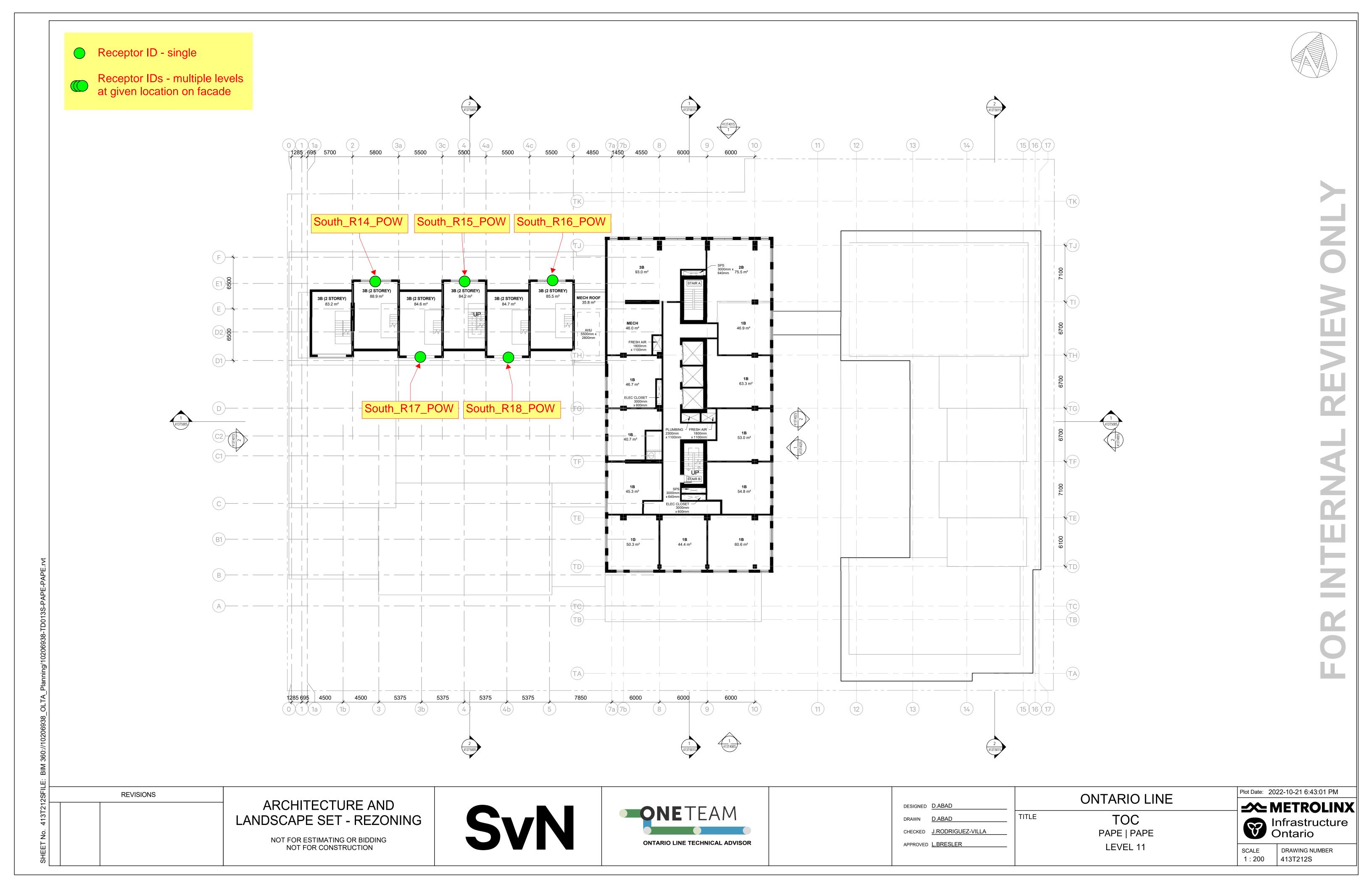
LEVEL 10

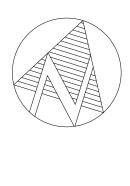
★ METROLINX Infrastructure Ontario

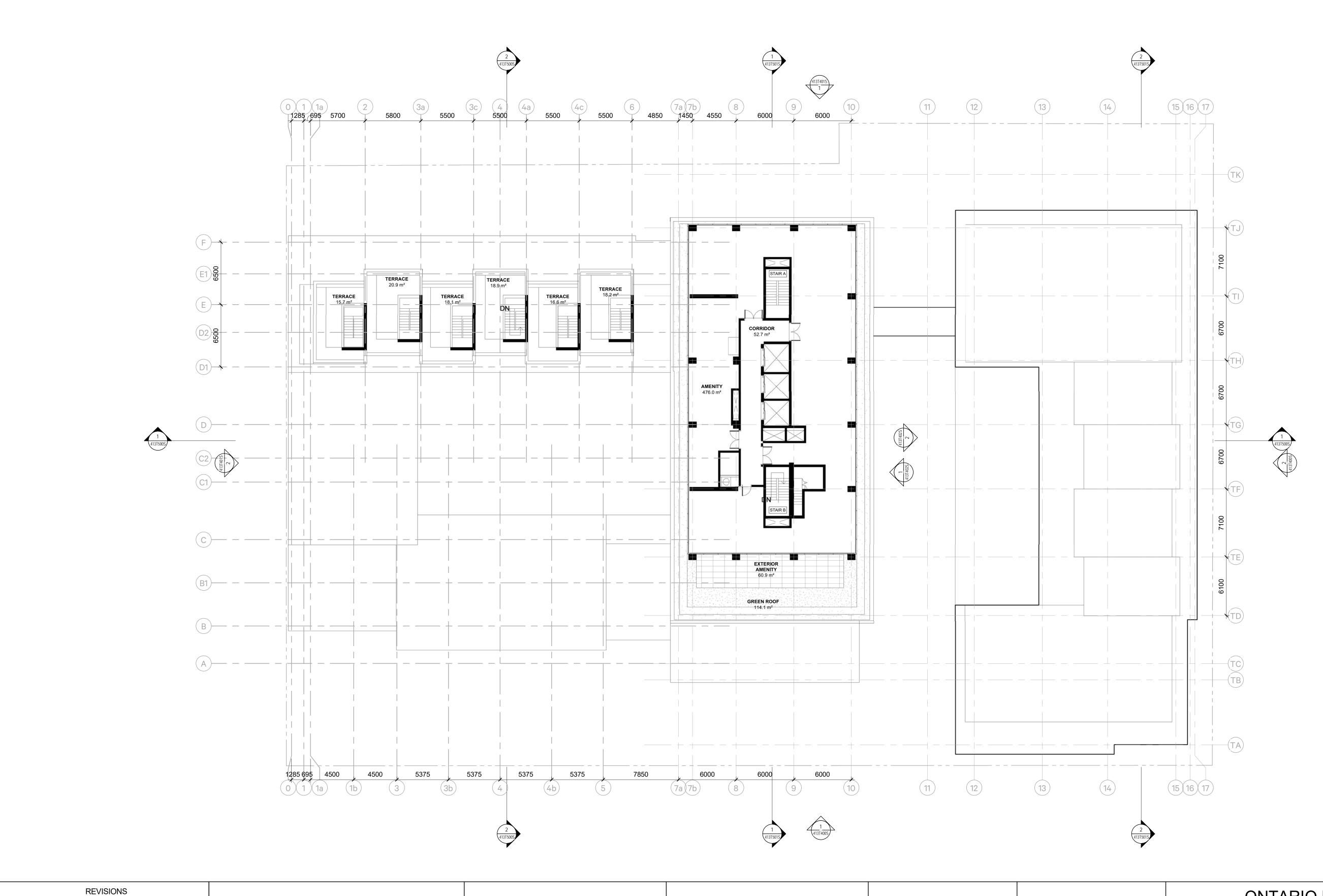
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SCALE 1:200

DRAWING NUMBER 413T211S







ARCHITECTURE AND LANDSCAPE SET - REZONING

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DESIGNED D.ABAD TITLE

CHECKED J.RODRIGUEZ-VILLA APPROVED <u>L.BRESLER</u>

ONTARIO LINE

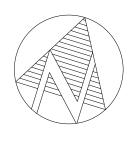
TOC PAPE | PAPE LEVEL 12

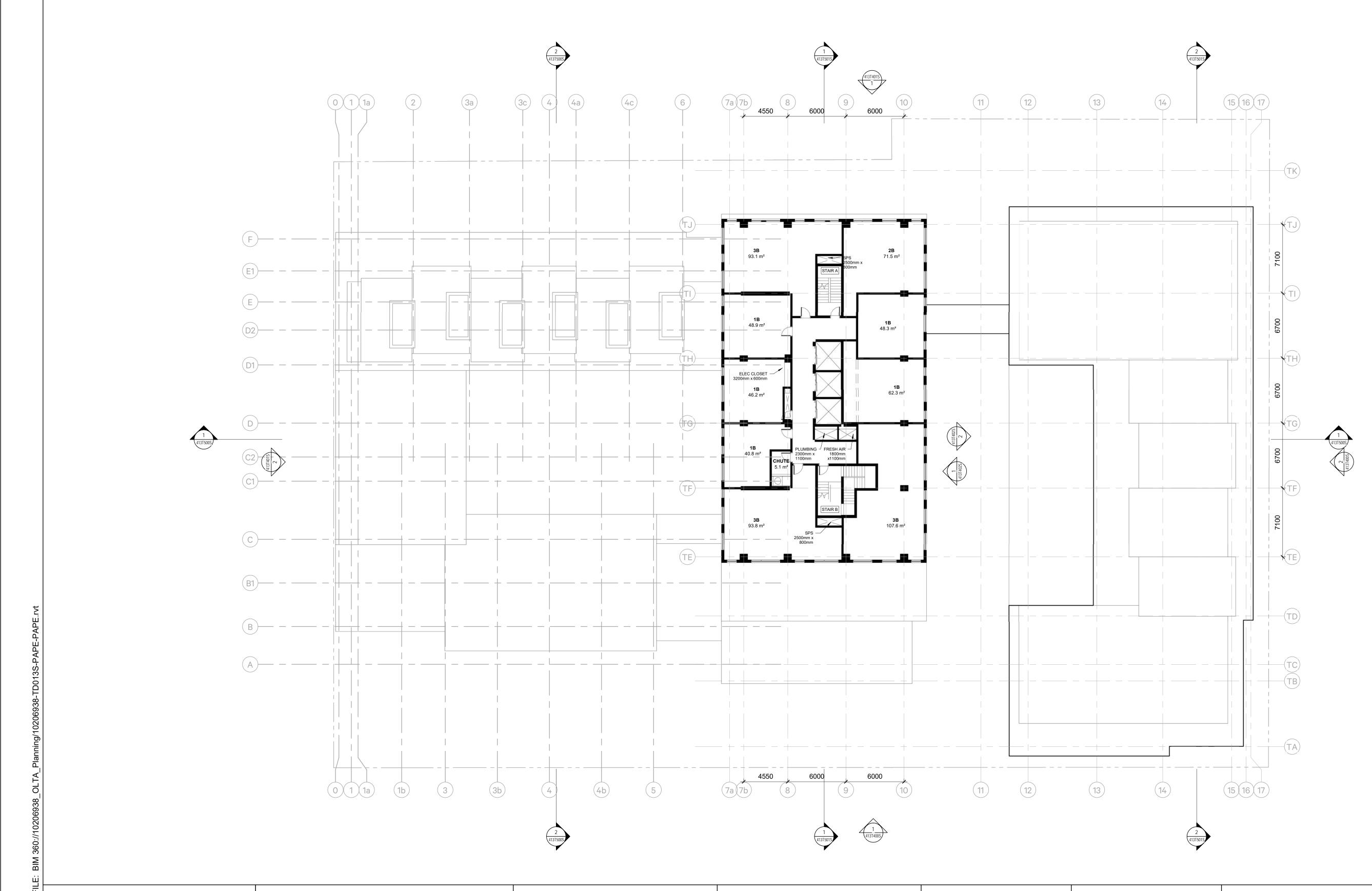
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SCALE 1:200 413T213S

DRAWING NUMBER





ARCHITECTURE AND LANDSCAPE SET - REZONING

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SVN

ONTARIO LINE TECHNICAL ADVISOR

DESIGNED D.ABAD

DRAWN D.ABAD

TITLE

CHECKED J.RODRIGUEZ-VILLA

APPROVED L.BRESLER

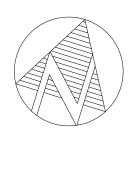
TOC
PAPE | PAPE
LEVEL 13

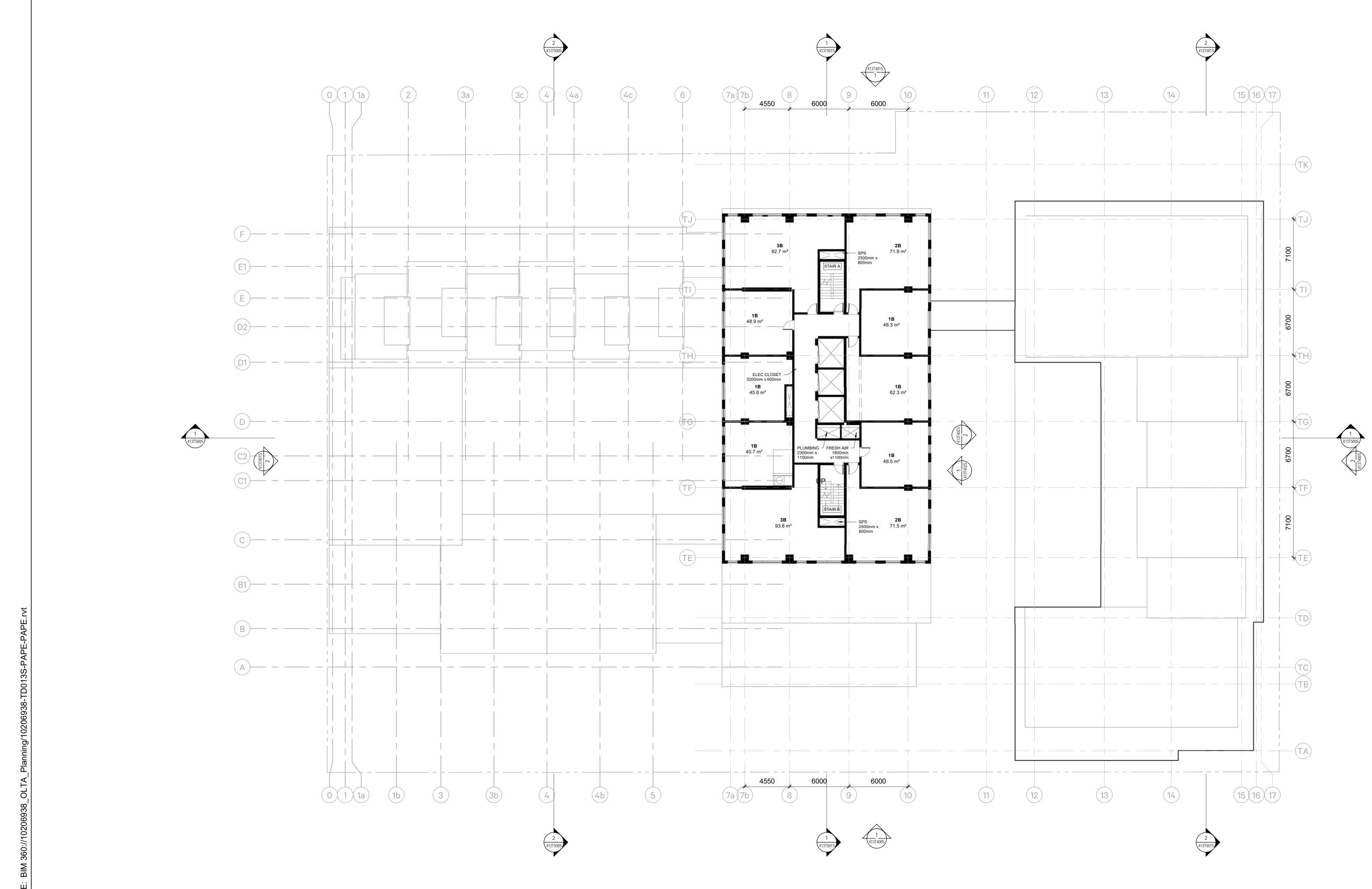
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Infrastructure
Ontario

SCALE 1 1 : 200 4

DRAWING NUMBER 413T214S





REVISIONS

ARCHITECTURE AND LANDSCAPE SET - REZONING

NOT FOR ESTIMATING OR BIDDING NOT FOR CONSTRUCTION

SVN



DESIGNED D.ABAD

DRAWN D.ABAD

TITLE

CHECKED J.RODRIGUEZ-VILLA

APPROVED L.BRESLER

ONTARIO LINE TOC

PAPE | PAPE

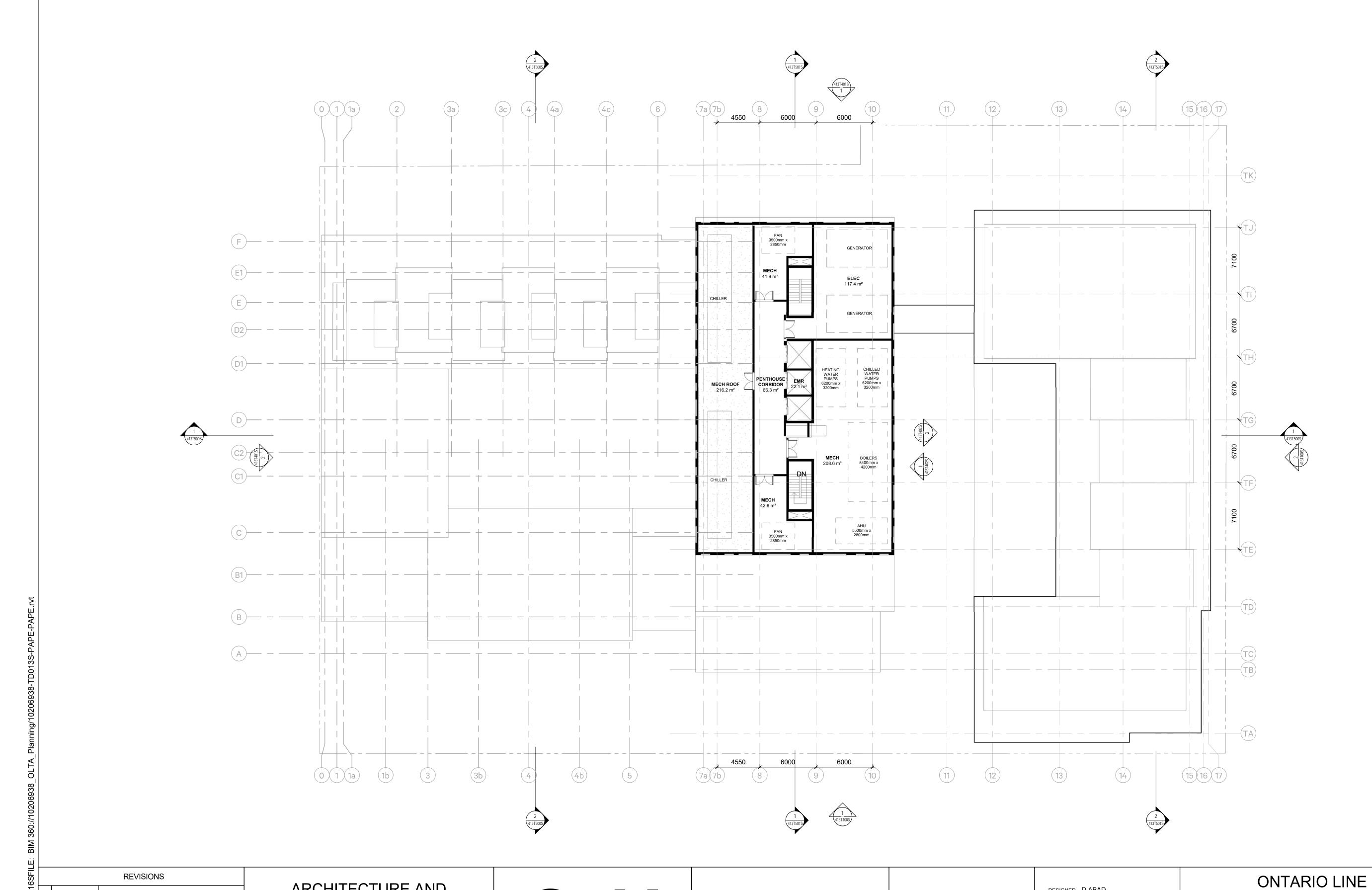
LEVEL 14 - LEVEL 29

Plot Date: 2022-10-21 6:43:19 PM

METROLINX
Infrastructure
Ontario

SCALE 1:200

DRAWING NUMBER 413T215S



ARCHITECTURE AND LANDSCAPE SET - REZONING

SVN NOT FOR ESTIMATING OR BIDDING NOT FOR CONSTRUCTION



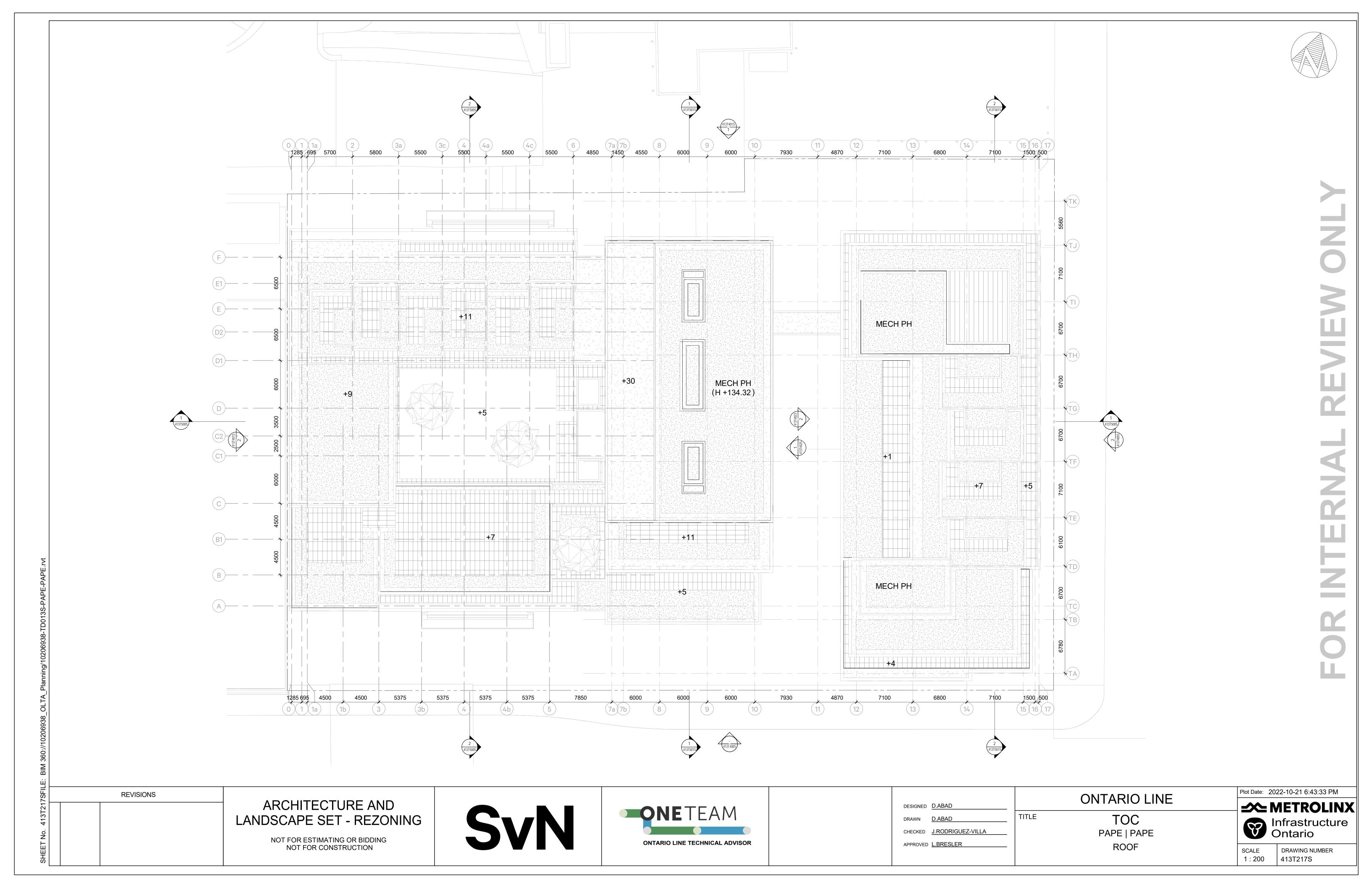
DESIGNED D.ABAD CHECKED J.RODRIGUEZ-VILLA

APPROVED L.BRESLER

TITLE TOC PAPE | PAPE MECHANICAL PENTHOUSE Plot Date: 2022-10-21 6:43:26 PM **★** METROLINX



SCALE 1:200 DRAWING NUMBER 413T216S



215.72 WEST - LEVEL 31 ROOF 209.72 WEST - LEVEL 30 MECH PH 206.22\ WEST - LEVEL 29 203.22 WEST - LEVEL 28 200.22 WEST - LEVEL 27 197.22 WEST - LEVEL 26 194.22 WEST - LEVEL 25 191.22 WEST - LEVEL 24 188.22 WEST - LEVEL 23 185.22 WEST - LEVEL 22 182.22 WEST - LEVEL 21 TOWER BEYOND 179.22 WEST - LEVEL 20 176.22 WEST - LEVEL 19 173.22 WEST - LEVEL 18 170.22 WEST - LEVEL 17 167.22 WEST - LEVEL 16 164.22 WEST - LEVEL 15 161.22 WEST - LEVEL 14 158.22 WEST - LEVEL 13 154.72 WEST - LEVEL 12 151.42 WEST - LEVEL 11 25430 11035 148.42 WEST - LEVEL 10 145.90 EAST - LEVEL 09 ROOF __EAST - LEVEL 09 ROOF (145.90) 145.12 WEST - LEVEL 09 142.12 WEST - LEVEL 08 EAST - LEVEL 08 MECH PH 141.90 141.90 EAST - LEVEL 08 MECH PH 138.82 WEST - LEVEL 07 138.60 EAST - LEVEL 07 EAST - LEVEL 07 (138.60) (7) 135.82 WEST - LEVEL 06 EAST - LEVEL 06 (135.60) 135.60 EAST - LEVEL 06 132.52 WEST - LEVEL 05 132.30 EAST - LEVEL 05 EAST - LEVEL 05 (132.30) 129.52 WEST - LEVEL 04 129.00 EAST - LEVEL 04 _____EAST - LEVEL 04 (129.00) 126.02 WEST - LEVEL 03 EAST - LEVEL 03 /126.00 126.00 EAST - LEVEL 03 123.00 EAST - LEVEL 02 EAST - LEVEL 02 / 123.00 P 122.52 WEST - LEVEL 02 120.00 LEVEL 01 MEZZ ____LEVEL 01 MEZZ (120.00) 8 PEDESTRIAN MIDBLOCK CONNECTION EAST - LEVEL 01 116.50 116.50 EAST - LEVEL 01 116.50 WEST - LEVEL 01 EATON AVE DANFORTH AVE SOUTH ELEVATION EAST ELEVATION

REVISIONS

ARCHITECTURE AND LANDSCAPE SET - REZONING

NOT FOR ESTIMATING OR BIDDING NOT FOR CONSTRUCTION



DESIGNED D.ABAD TITLE

CHECKED J.RODRIGUEZ-VILLA APPROVED L.BRESLER

TOC PAPE | PAPE **ELEVATIONS**

ONTARIO LINE

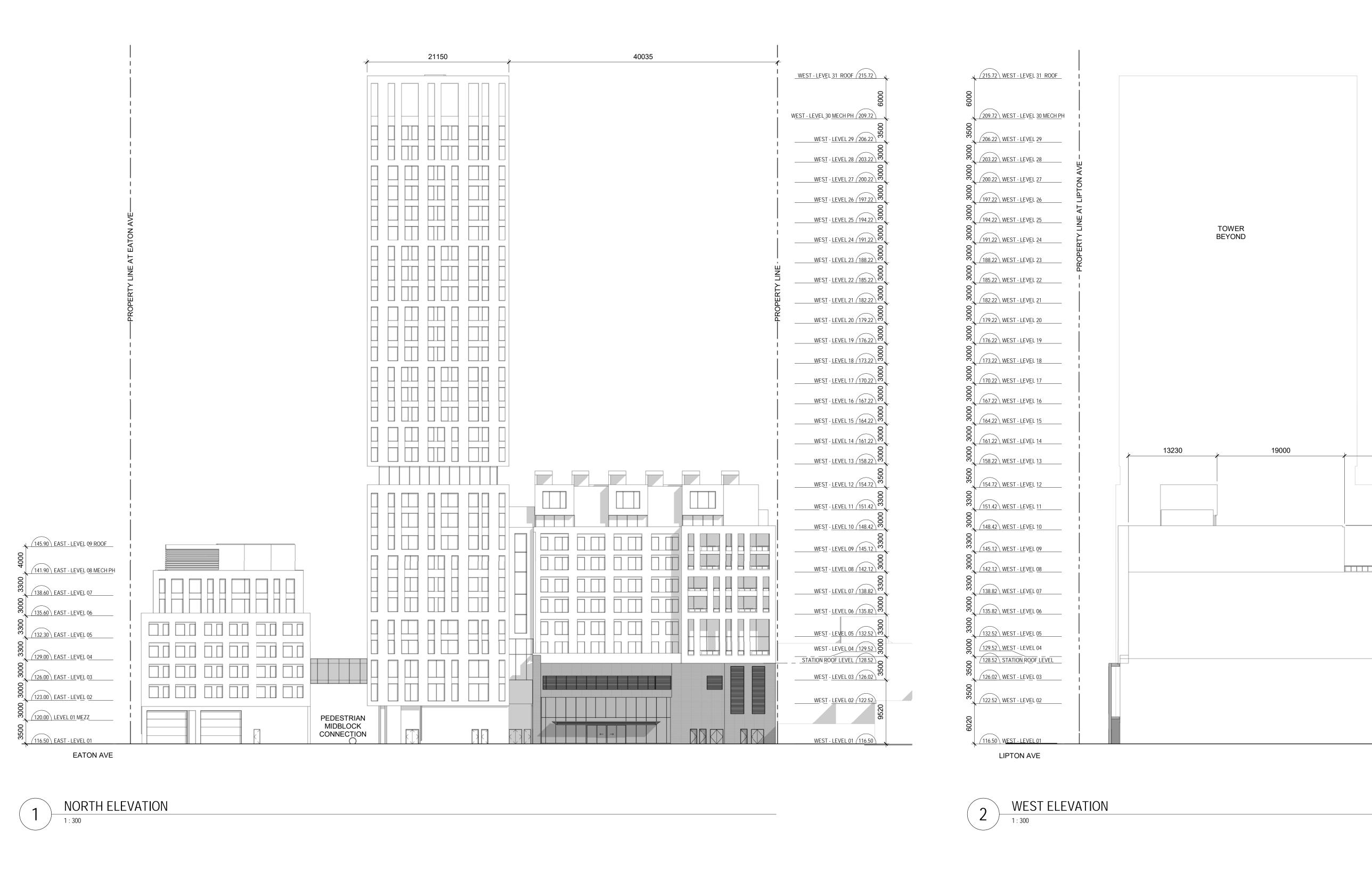
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SCALE 1:300 DRAWING NUMBER 413T400S

3275 1500 9000

LANEWAY



REVISIONS

ARCHITECTURE AND LANDSCAPE SET - REZONING

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SVN



DESIGNED D.ABAD

CHECKED J.RODRIGUEZ-VILLA APPROVED <u>L.BRESLER</u>

TITLE TOC PAPE | PAPE **ELEVATIONS**

ONTARIO LINE

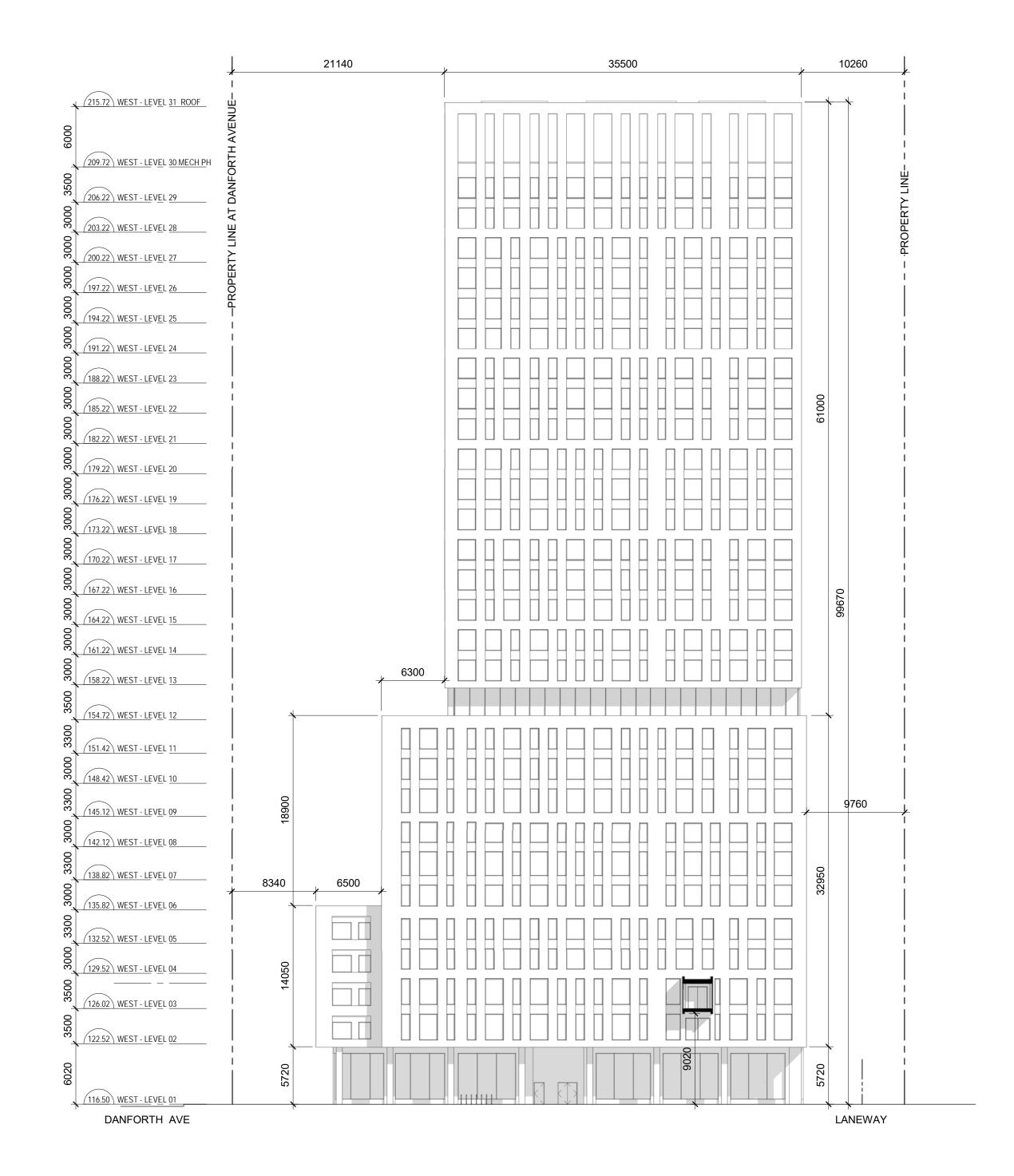
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Plot Date: 2022-10-21 6:44:45 PM **★** METROLINX Infrastructure Ontario

SCALE 1:300

DANFORTH

DRAWING NUMBER 413T401S



EAST ELEVATION - TOWER THROUGH MIDBLOCK

1:300



WEST ELEVATION - MIDRISE THROUGH MIDBLOCK

ARCHITECTURE AND LANDSCAPE SET - REZONING

NOT FOR ESTIMATING OR BIDDING NOT FOR CONSTRUCTION

SVN



DESIGNED D.ABAD

DRAWN D.ABAD

CHECKED J.RODRIGUEZ-VILLA

APPROVED L.BRESLER

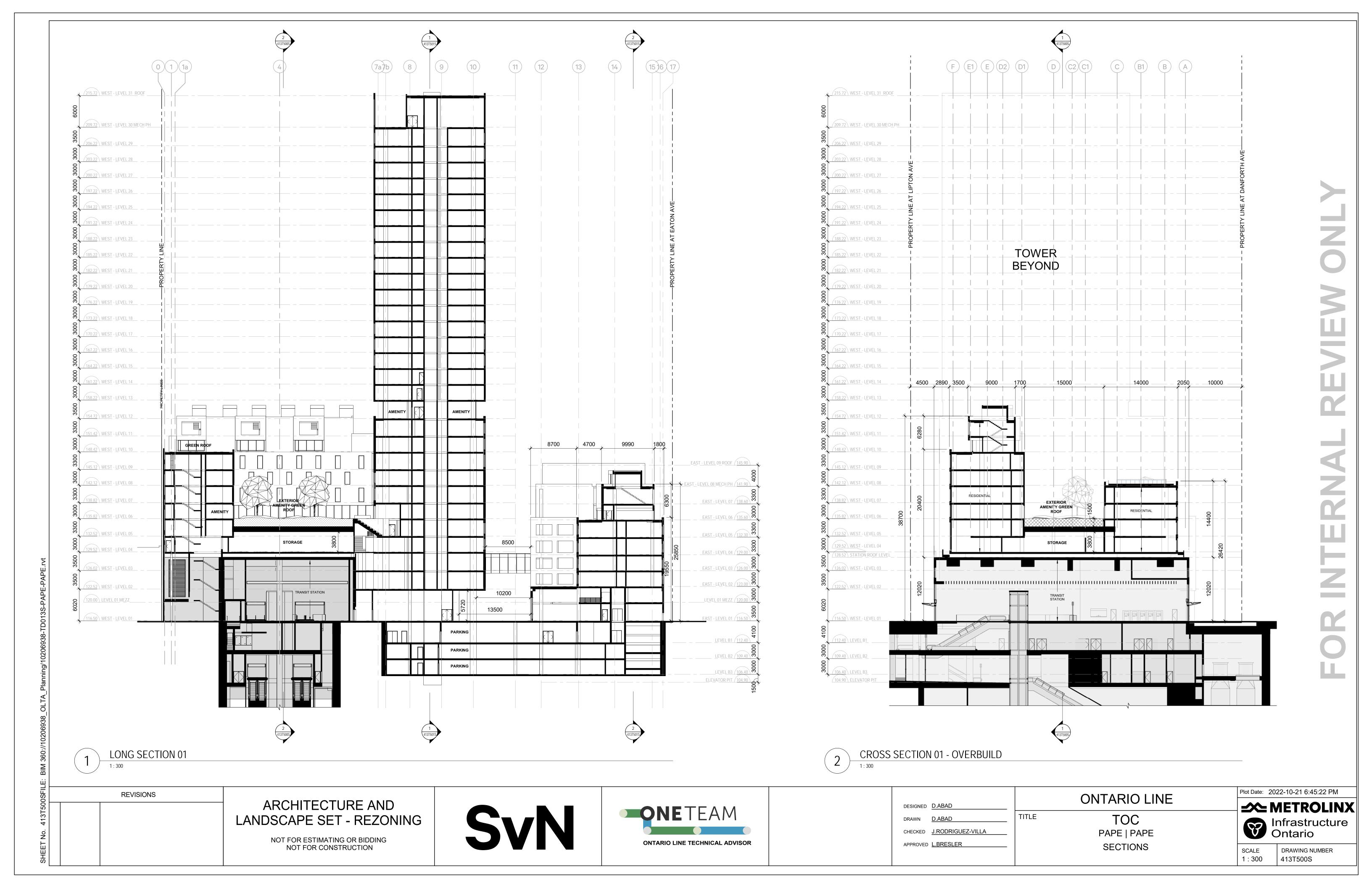
ONTARIO LINE
TOC
PAPE | PAPE
ELEVATIONS

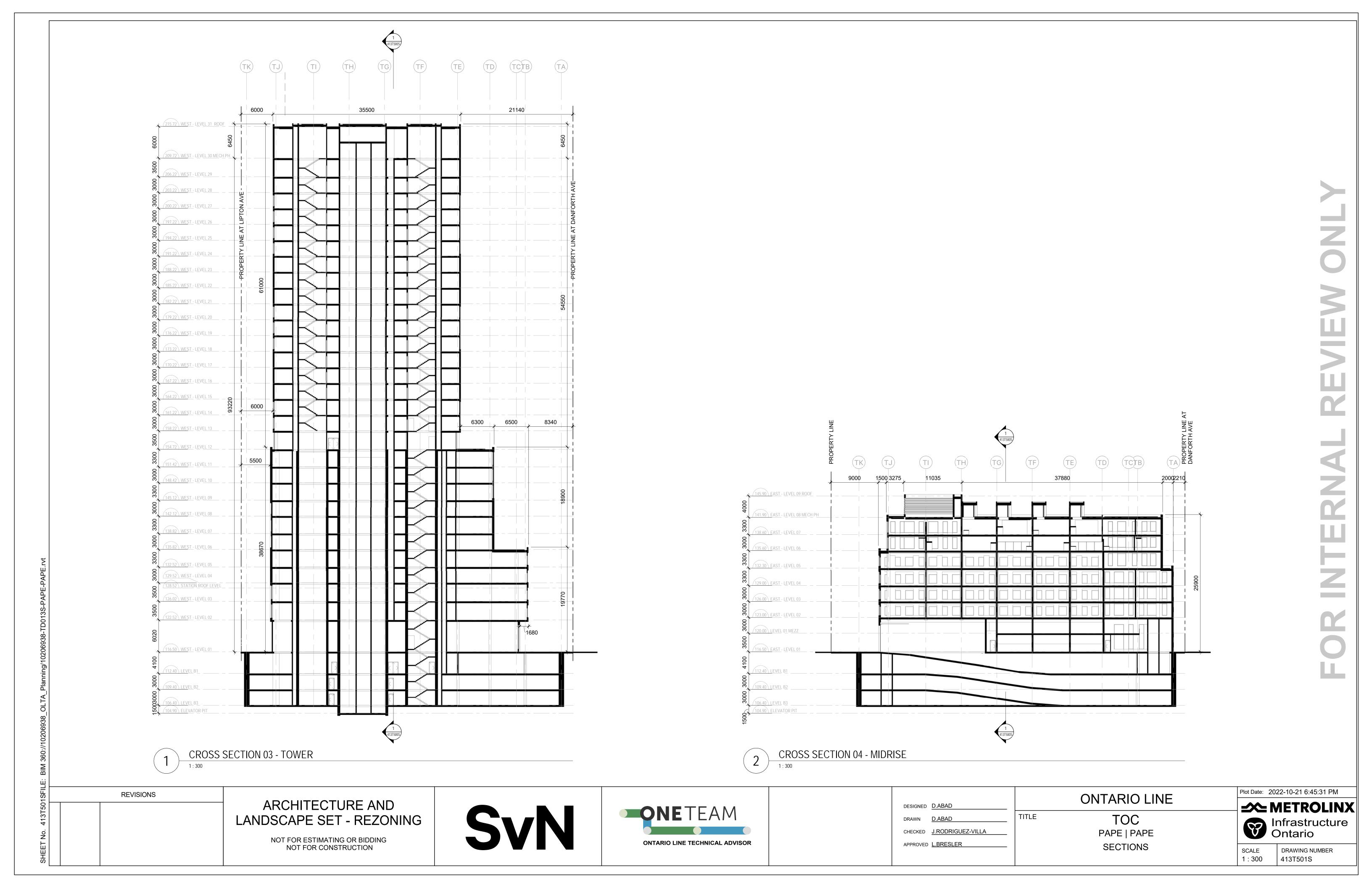
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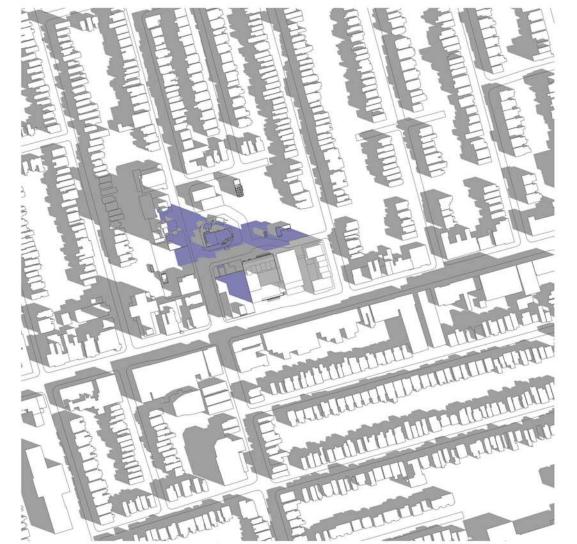
METROLINX
Infrastructure
Ontario

SCALE 1:300

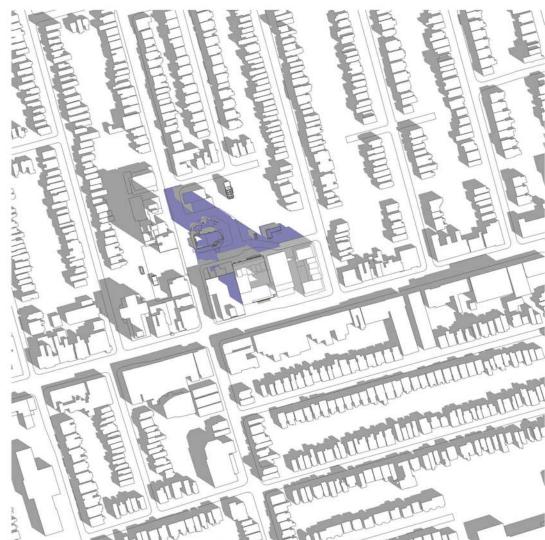
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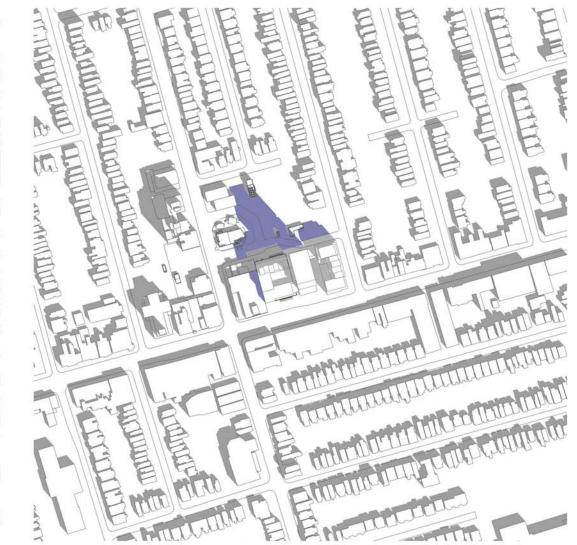




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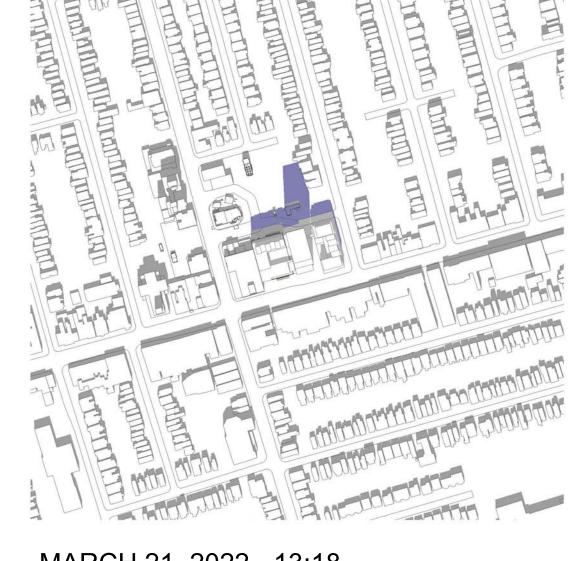
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MARCH 21, 2022 - 11:18



MARCH 21, 2022 - 12:18



MARCH 21, 2022 - 13:18



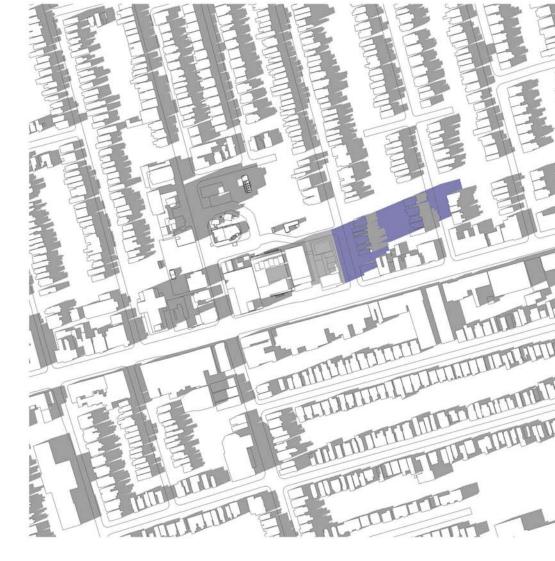
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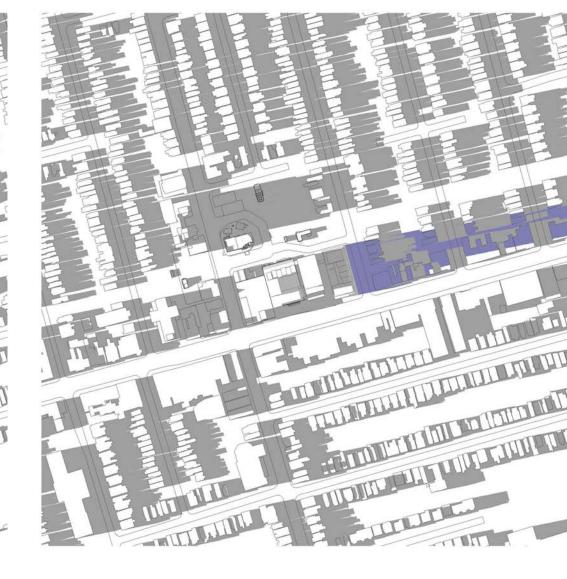
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MARCH 21, 2022 - 16:18



MARCH 21, 2022 - 17:18



MARCH 21, 2022 - 18:18

NEW SHADOWS

EXISTING SHADOWS

REVISIONS

ARCHITECTURE AND LANDSCAPE SET - REZONING

NOT FOR ESTIMATING OR BIDDING NOT FOR CONSTRUCTION

SVN



DESIGNED D.ABAD

CHECKED J.RODRIGUEZ-VILLA APPROVED L.BRESLER

TITLE

ONTARIO LINE

TOC PAPE | PAPE SHADOW STUDY - MARCH Plot Date: 2022-10-21 6:45:37 PM **≠** METROLINX Infrastructure Ontario

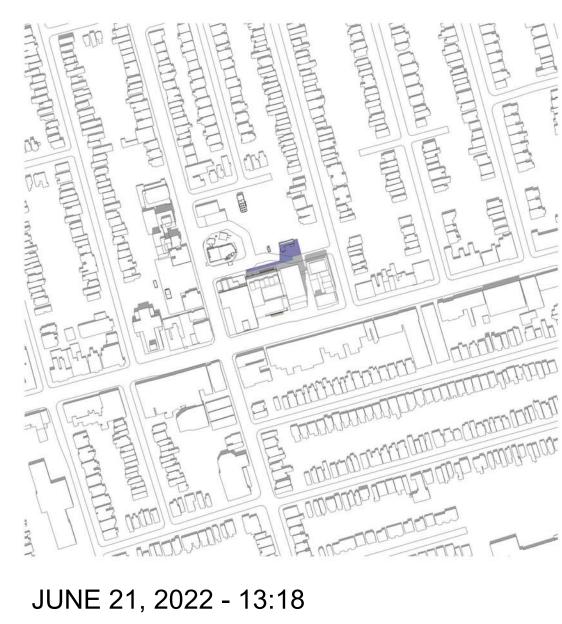
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DRAWING NUMBER 413T600S









JUNE 21, 2022 - 9:18

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JUNE 21, 2022 - 11:18

JUNE 21, 2022 - 12:18











JUNE 21, 2022 - 14:18

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JUNE 21, 2022 - 16:18

JUNE 21, 2022 - 17:18

JUNE 21, 2022 - 18:18

NEW SHADOWS

EXISTING SHADOWS

REVISIONS

ARCHITECTURE AND LANDSCAPE SET - REZONING

NOT FOR ESTIMATING OR BIDDING NOT FOR CONSTRUCTION

SVN



DESIGNED	D.ABAD
DRAWN	D.ABAD
CHECKED	J.RODRIGUEZ-VILLA

APPROVED L.BRESLER

ONTARIO LINE TOC

SHADOW STUDY - JUNE

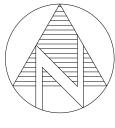
Infrastructure Ontario

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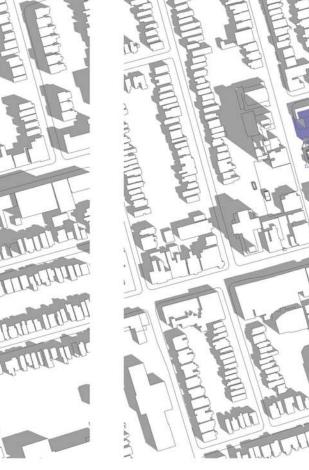
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TITLE PAPE | PAPE

SCALE 1:1

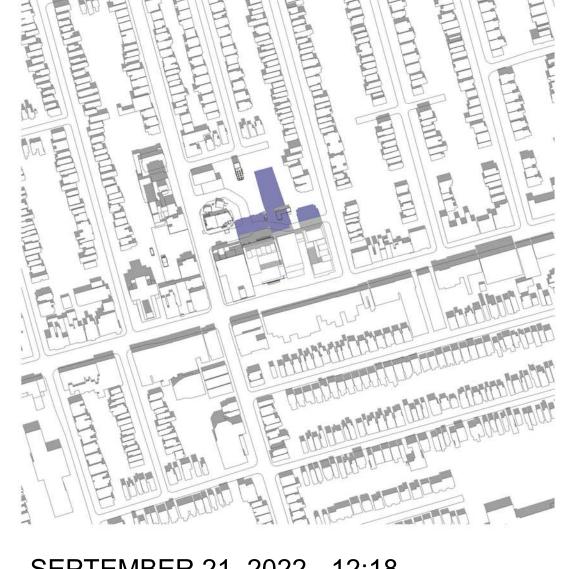


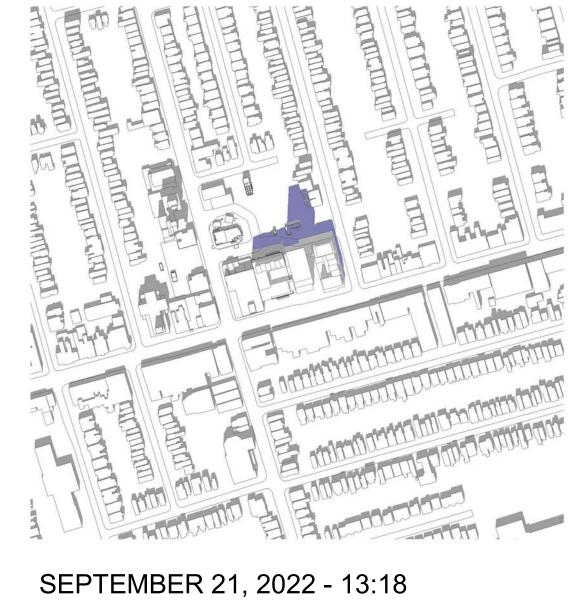












SEPTEMBER 21, 2022 - 9:18

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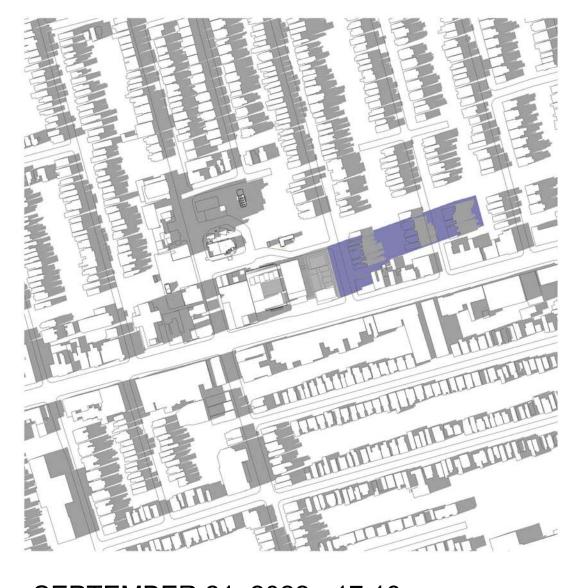
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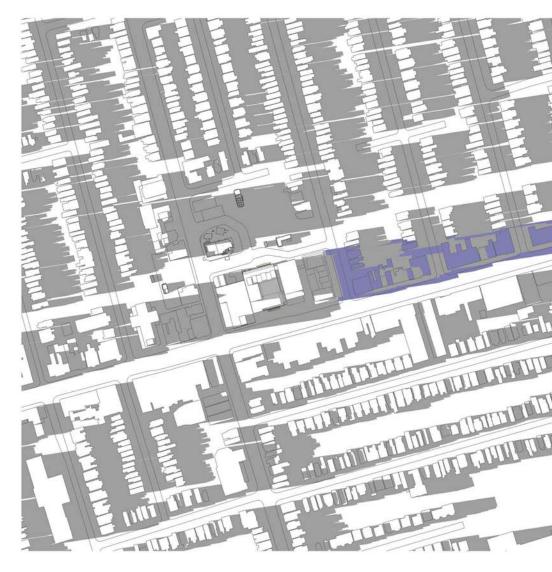
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SEPTEMBER 21, 2022 - 17:18

SEPTEMBER 21, 2022 - 18:18

NEW SHADOWS

EXISTING SHADOWS

REVISIONS

ARCHITECTURE AND LANDSCAPE SET - REZONING

NOT FOR ESTIMATING OR BIDDING NOT FOR CONSTRUCTION

SVN



DESIGNED D.ABAD CHECKED J.RODRIGUEZ-VILLA

APPROVED L.BRESLER

TITLE

TOC PAPE | PAPE SHADOW STUDY - SEPTEMBER

ONTARIO LINE

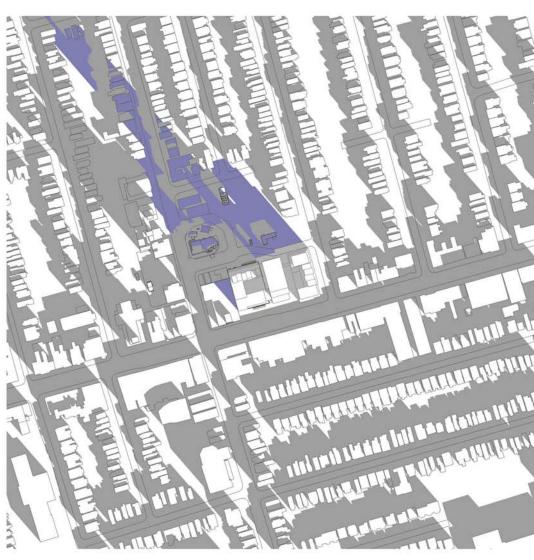
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SCALE 1:1

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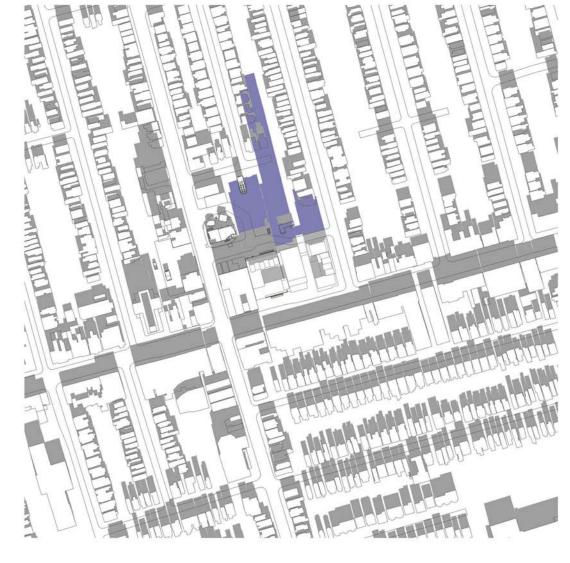
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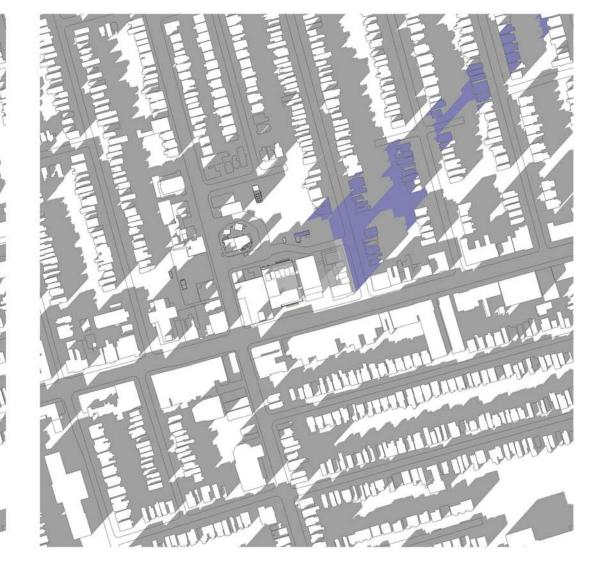
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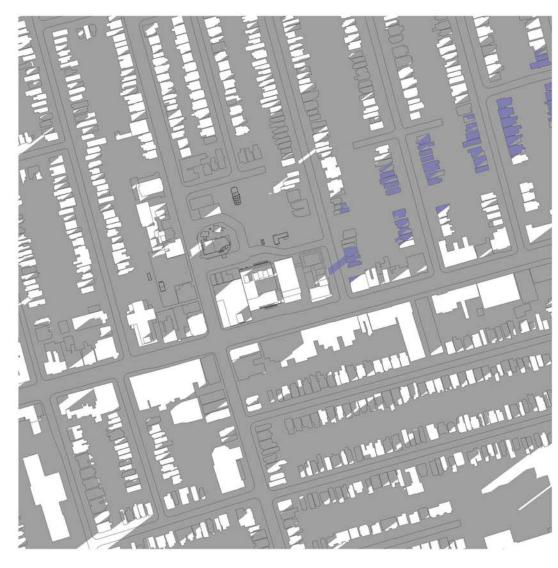
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DECEMBER 21, 2022 - 18:18

NEW SHADOWS

EXISTING SHADOWS

REVISIONS

ARCHITECTURE AND LANDSCAPE SET - REZONING

NOT FOR ESTIMATING OR BIDDING NOT FOR CONSTRUCTION

SVN



DESIGNED D.ABAD

CHECKED J.RODRIGUEZ-VILLA APPROVED L.BRESLER

ONTARIO LINE

TITLE

TOC PAPE | PAPE SHADOW STUDY - DECEMBER Plot Date: 2022-10-21 6:45:52 PM **★** METROLINX Infrastructure Ontario

SCALE 1:1

DRAWING NUMBER 413T603S



Appendix B. Pape Station Design Drawings



ONTARIO LINE

PAPE SEGMENT - PAPE STATION TORONTO, ONTARIO

Plot Date: 11 NOVEMBER 2022

13-PAPE DRAWING LIST			
SHEET COUNT	DRAWING NUMBER	DRAWING NAME	
01	413A001	COVER PAGE	
02	413A002	SCHEDULES, SYMBOLS AND ABBREVIATIONS	
03	413A003	NEIGHBOURHOOD PLAN	
04	413A004	PREPARATORY WORKS - DEMOLITION PLANS	
05	413A005	PREPARATORY WORKS - TEMPORARY FLOOR DURING CONSTRUCTION	
06	413A010	SITE PLAN	
07	413A100	ROOF LEVEL PLAN	
08	413A101	STREET LEVEL PLAN - EAST	
09	413A102	STREET LEVEL PLAN - WEST	
10	413A103	EXISTING LINE 2 LOWER CONCOURSE LEVEL PLAN - EAST	
11	413A104	EXISTING LINE 2 LOWER CONCOURSE LEVEL PLAN - WEST	
12	413A105	EXISTING LINE 2 PLATFORM LEVEL PLAN - EAST	

13-PAPE DRAWING LIST				
SHEET	DRAWING NUMBER	DRAWING NAME		
13	413A106	EXISTING LINE 2 PLATFORM LEVEL PLAN - WEST		
14	413A107	OL SERVICE LEVEL		
15	413A108	OL LOWER CONCOURSE LEVEL		
16	413A109	OL PLATFORM LEVEL PLAN		
17	413A201	LONGITUDINAL SECTION		
18	413A210	CROSS SECTIONS		
19	413A211	CROSS SECTIONS		
20	413A212	CROSS SECTIONS		
21	413A301	ELEVATIONS		
22	413A302	ELEVATIONS		
23	413A502	3D / VISUALIZATION		

| REVISIONS | Revi







ABBREVIATIONS

STL. TOC

T.O.FL

TPSS

TTC

TVS

TYP

UP

UPS

VCE

WB

W.P.

AVM ADD VALUE MACHINE BOH BACK OF HOUSE C.B. CATCH BASIN CL CENTRE LINE DEMO DEMOLITION DN DOWN (STAIR DIRECTION) DWA DESIGNATED WAITING AREA EB EASTBOUND EMERGENCY EXIT BUILDING EEB ESB EMERGENCY SERVICES BUILDING ERZ EMERGENCY RESCUE ZONE ELEV. ELEVATOR EOP END OF PLATFORM EXIST. EXISTING F.D. FLOOR DRAIN FDC FIRE DEPARTMENT CONNECTION FFA FIRE FIGHTERS ACCESS FINISH FLOOR ELEVATION FFE FVM FARE VENDING MACHINE GFRC GLASS FIBRE REINFORCED CONCRETE GL. GLASS H.P. HIGH POINT HEATING, VENTILATION, & AIR CONDITIONING HVAC NORTH NB NORTHBOUND NTS NOT TO SCALE OCR OVERHEAD CONDUCTOR RAIL O.C. ON CENTER OL ONTARIO LINE TORONTO'S DOWNTOWN PEDESTRIAN WALKWAY PATH PLATFORM SCREEN DOOR PSD RM ROOM ROW RIGHT OF WAY SOUTH SB SOUTHBOUND SOE SUPPORT OF EXCAVATION SSRM SELF-SERVE RELOADING MACHINE

TRANSIT ORIENTED COMMUNITY

TRACTION POWER SUBSTATION

TUNNEL VENTILATION SYSTEM

UP (STAIR DIRECTION)

TORONTO TRANSIT COMMISSION

UNINTERRUPTABLE POWER SUPPLY

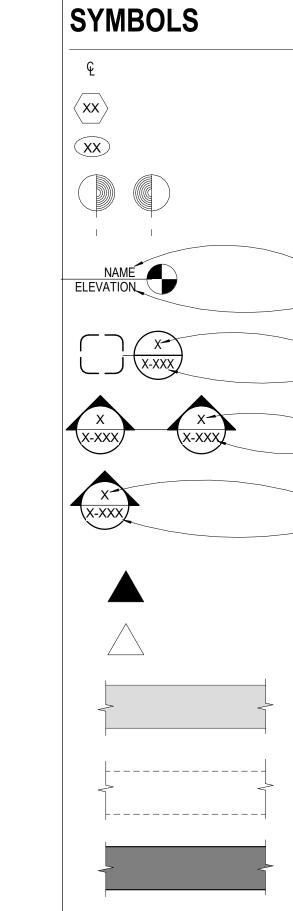
VERTICAL CIRCULATION ELEMENT

TOP OF FLOOR

WESTBOUND

WORKING POINT

TYPICAL



ROOM SCHEDULE CENTRE LINE ROOM ID MATERIAL FINISH CODE 01 MAIN ENTRANCE SECURED BIKE STORAGE EMERGENCY (2ND) EXIT ROOM ID NUMBER 06 ELEVATOR OL CONCOURSE **END OF PLATFORM** OL PLATFORM FARE CONTROL AREA LEVEL DATUM PUBLIC UNIVERSAL WASHROOM LEVEL NAME STATION AMBASSADOR OFFICE LEVEL ELEVATION PAID AREA REFERENCE VIEW STAFF UNIVERSAL WASHROOM NUMBER ON SHEET SHEET NUMBER SECURITY - OFFICE (COMPACT) SECURITY - HOLDING CELL SECTION SECURITY - INTERVIEW ROOM NUMBER ON SHEET SHEET NUMBER SOO COMMUNICATIONS ROOM **ELEVATION** MECHANICAL ROOM FOR SOO NUMBER ON SHEET RETAIL / CONCESSION SHEET NUMBER COMMUNICATION CLOSET MECHANICAL ROOM FOR ENTRANCE SUMP PUMP ROOM SCRUBBER MACHINE ROOM **EMERGENCY EXIT** VALVE ROOM ONLY **EXISTING WALL** CONTROL ROOM TELEPHONE ROOM JANITOR CLOSET JANITOR STORAGE ROOM **EXISTING WALL TO ELEVATOR CONTROL ROOM** BE DEMOLISHED ESCALATOR CONTROL ROOM REFUSE STORAGE ROOM HUB FIRST AID ROOM FARE EQUIPMENT (SMART CARD) **NEW WALLS/** ROOM **PARTITIONS** 49 PLATFORM SCREEN DOOR ROOM FIRE FIGHTER'S ACCESS (FFA) PROPERTY LINE MECHANICAL ROOM (MAIN) 71 TPS MV CABLE ROOM 72 STATION POWER SUBSTATION STATION ELECTRICAL ROOM STATION UPS ROOM CONDENSER YARD HUB MANAGER OFFICE HUB SHIFT BRIEFING ROOM HUB HANDHELD ELECTRONIC STORAGE HUB EQUIPMENT AND SUPPLY STORAGE HUB UNISEX LOCKER ROOM HUB LUNCHROOM HUB ACCESSIBLE STAFF WASHROOM/ CHANGE ROOM 90 ELECT. CLOSET PLUMBING CHASE **BOH VESTIBULE** 110 BOH CORRIDOR 120 BOH STAIR

EMERGENCY MANAGEMENT ROOM STATION AMBASSADOR ANTEROOM SUBWAY FIRE VENTILATION ROOM SECURITY - UNIVERSAL WASHROOM SECURITY OPERATIONS OFFICE(SOO) COMMUNICATION EQUIPMENT ROOM COMMUNICATION EQUIPMENT ROOM SUBWAY FIRE VENTILATION ROOM SUBWAY VENTILATION EQUIPMENT LOCAL SIGNALLING CONTROL ROOM SUBWAY FIRE VENTILATION ROOM

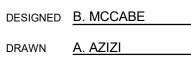
LARGE FORMAT PORCELAIN TILE DENSIFIED POLISHED CONCRETE PORCELAIN TILE HARDENED AND SEALED CONCRETE HARDENED AND SEALED CONCRETE w/ COVE BASE CONDUCTIVE ELECTROSTATIC DISCHARGE EPOXY NON-CONDUCTIVE STATIC DISSIPATIVE EPOXY F6 **EPOXY** TRANSLUCENT FLOORING RAISED ACCESS FLOOR TACTILE FLOORING F10 FOOT GRILLE F11 TROWEL FINISHED CEMENT TOPPING W/ COVED BASE WALL FINISH SYSTEMS METAL STICK-FRAME GLAZING SYSTEM GLAZING SYSTEM PORCELAIN ENAMEL PANEL SYSTEM GFRC PANEL SYSTEM PORCELAIN PANEL SYSTEM - CONCRETE FINISH EXTERIOR GFRC PANEL SYSTEM PORCELAIN ENAMEL PANEL SYSTEM - FEATURE WALL PLATFORM CURTAIN WALL SYSTEM GLAZED TERRACOTTA PANEL SYSTEM W8 STAINLESS STEEL PANEL GLAZED TERRACOTTA BAGUETTE SYSTEM W10 METAL FACADE LOUVRES BACK LITED PANEL SYSTEM W13 GLAZED CURTAIN WALL SYSTEM W24 GRANITE BASE VINE/PRECAST CONCRETE PANEL SYSTEM W25 METAL SCREENING W26 CEILING FINISH SYSTEMS ACOUSTICAL METAL CEILING GYPSUM BOARD ACOUSTIC TILES GFRC CEILING PANEL ILLUMINATED CEILING COLOURED ALUMINUM BAFFLE CEILING WOOD PANEL SOFFIT COLOURED ALUMINUM SOFFIT ROOF FINISH SYSTEMS MEMBRANE ROOF **GREEN ROOF** COOL ROOF METAL ENCLOSURES STANDING SEAM METAL ROOF CP1 METAL ENCLOSURES CP2 METAL ROOF **ELEVATORS** METAL CLADDING GLAZED CLADDING STAINLESS STEEL CLADDING ES2 PERFORATED STAINLESS STEEL ACOUSTIC CLADDING SS1 PRECAST CONCRETE STAIRS RL1 STEEL AND GLASS RL2 STEEL AND PERFORATED METAL AUTOMATIC SLIDING GLASS DOOR GLAZED BIKE ROOM DOOR METAL DOORS METAL LOUVER DOOR PLATFORM SCREEN DOOR OVERHEAD DOOR COLUMN ENCLOSURE CLADDING-METAL CL2 STAINLESS STEEL CHASE PANEL ARCHITECTURALLY EXPOSED STRUCTURAL STEEL HC1 HIGH PERFORMANCE COATING

FINISHES AND SYSTEMS

REVISIONS REVISIONS 1 RSSOM RCD 2020-11-25 RCD Ver 02 2 RSSOM ADDENDUM 2021-06-25 80 3 RCD Ver 02 2022-10-03 NOT FOR CONSTRUCTION 03 October 2022 SCALE (S) STATUS N.T.S







UA UNASSIGNED

CHECKED R. CARLAN APPROVED <u>C. JOHNSTONE</u>



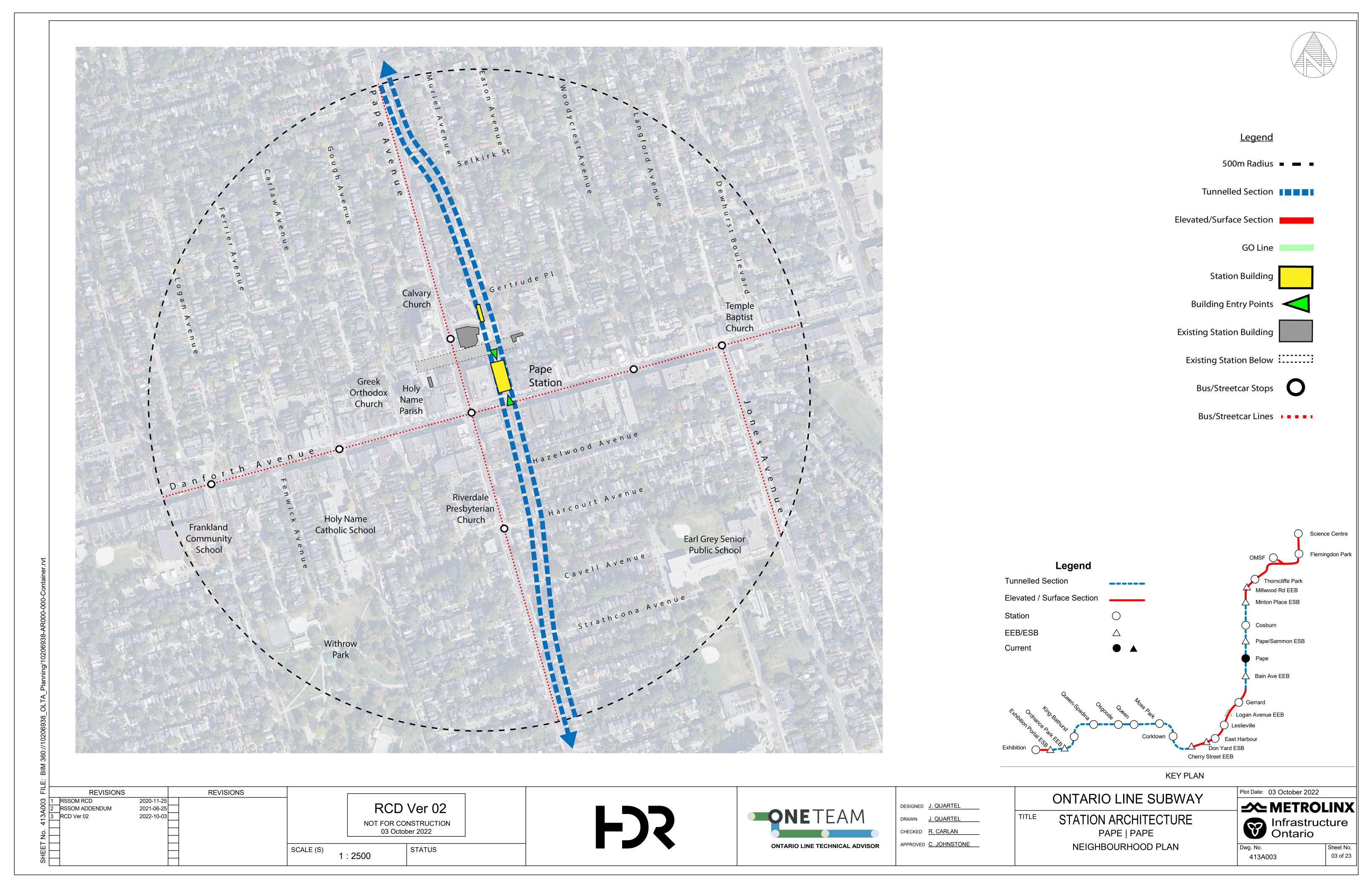
SCHEDULES, SYMBOLS AND ABBREVIATIONS

TITLE STATION ARCHITECTURE PAPE | PAPE

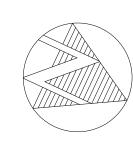
Plot Date: 03 October 2022 **≠** METROLINX Infrastructure Ontario

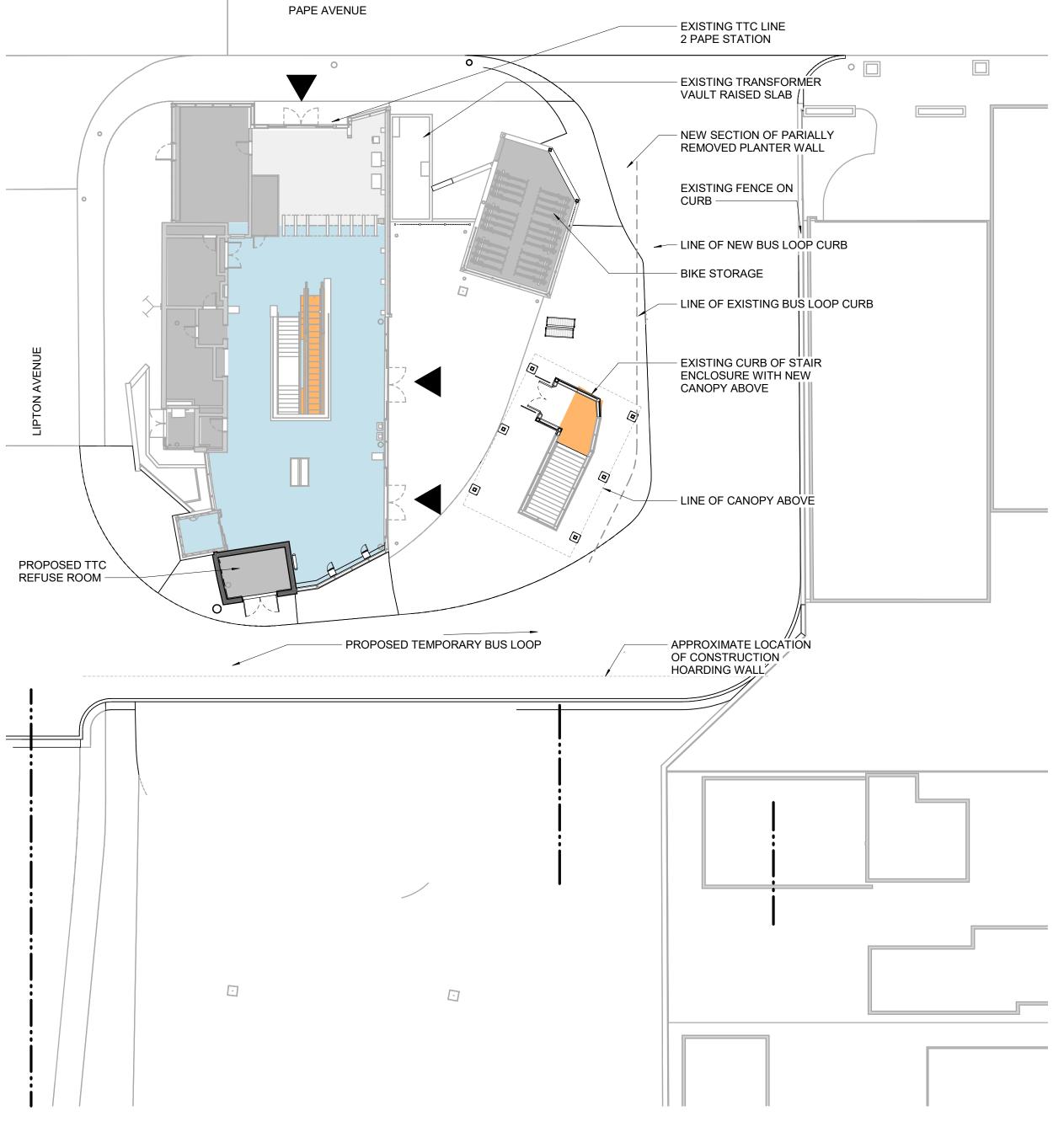
413A002

02 of 23











DESIGNED J. QUARTEL DRAWN J. QUARTEL CHECKED R. CARLAN APPROVED <u>C. JOHNSTONE</u>

ONTARIO LINE SUBWAY

STATION ARCHITECTURE PAPE | PAPE

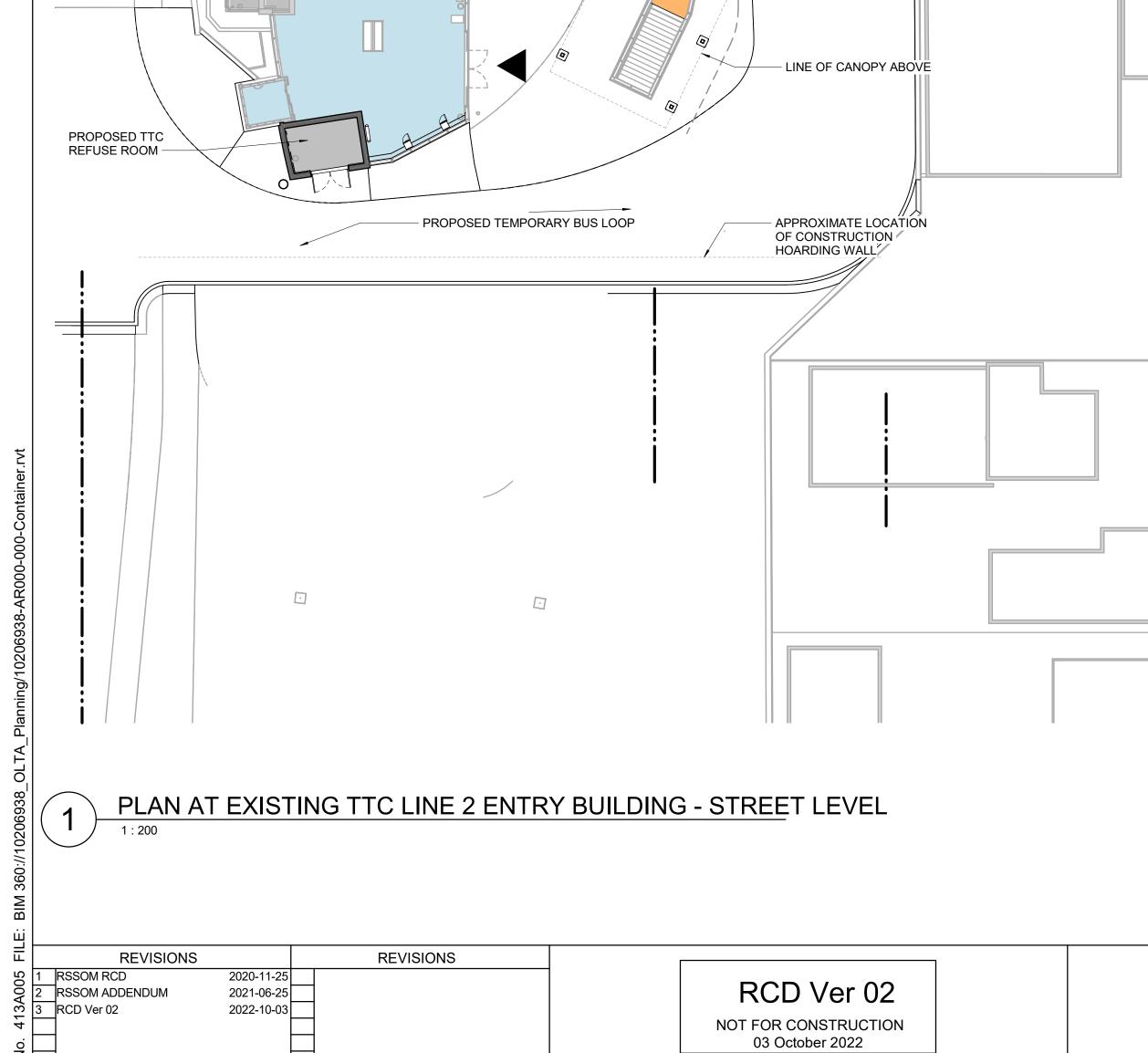
PREPARATORY WORKS - TEMPORARY FLOOR DURING CONSTRUCTION

Plot Date: 03 October 2022 **≠** METROLINX

Infrastructure Ontario

413A005

Sheet No. 05 of 23

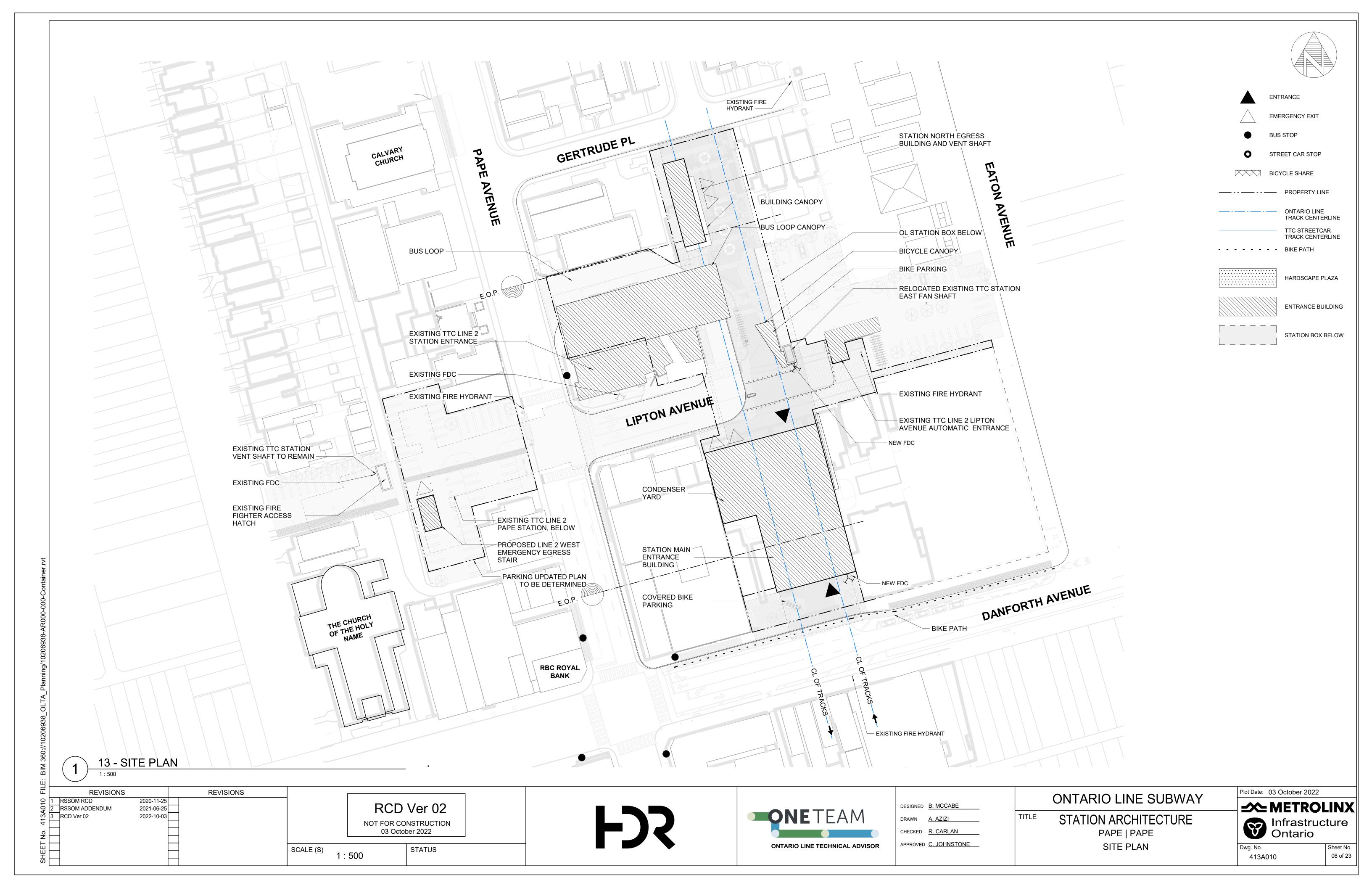


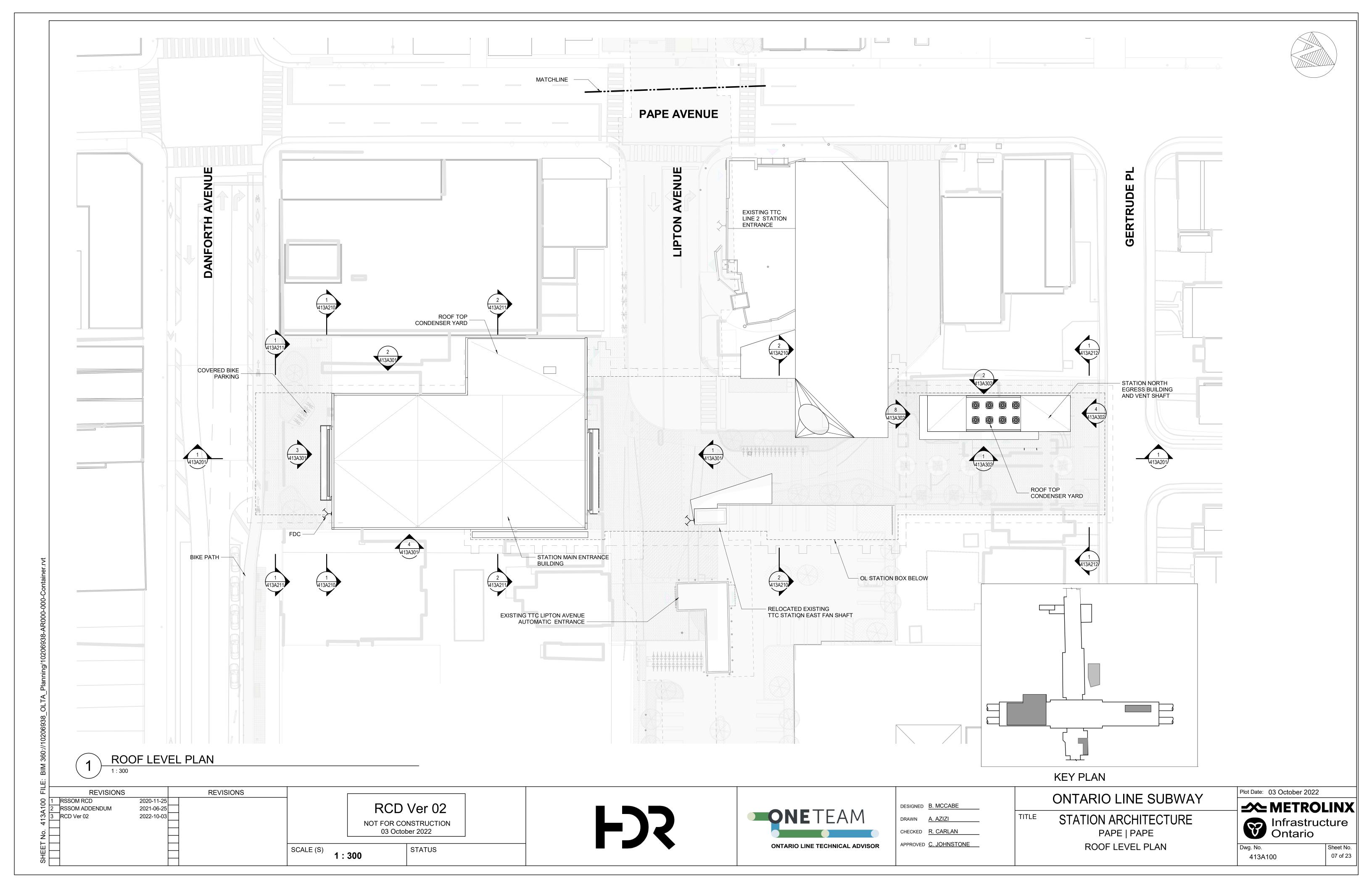
SCALE (S)

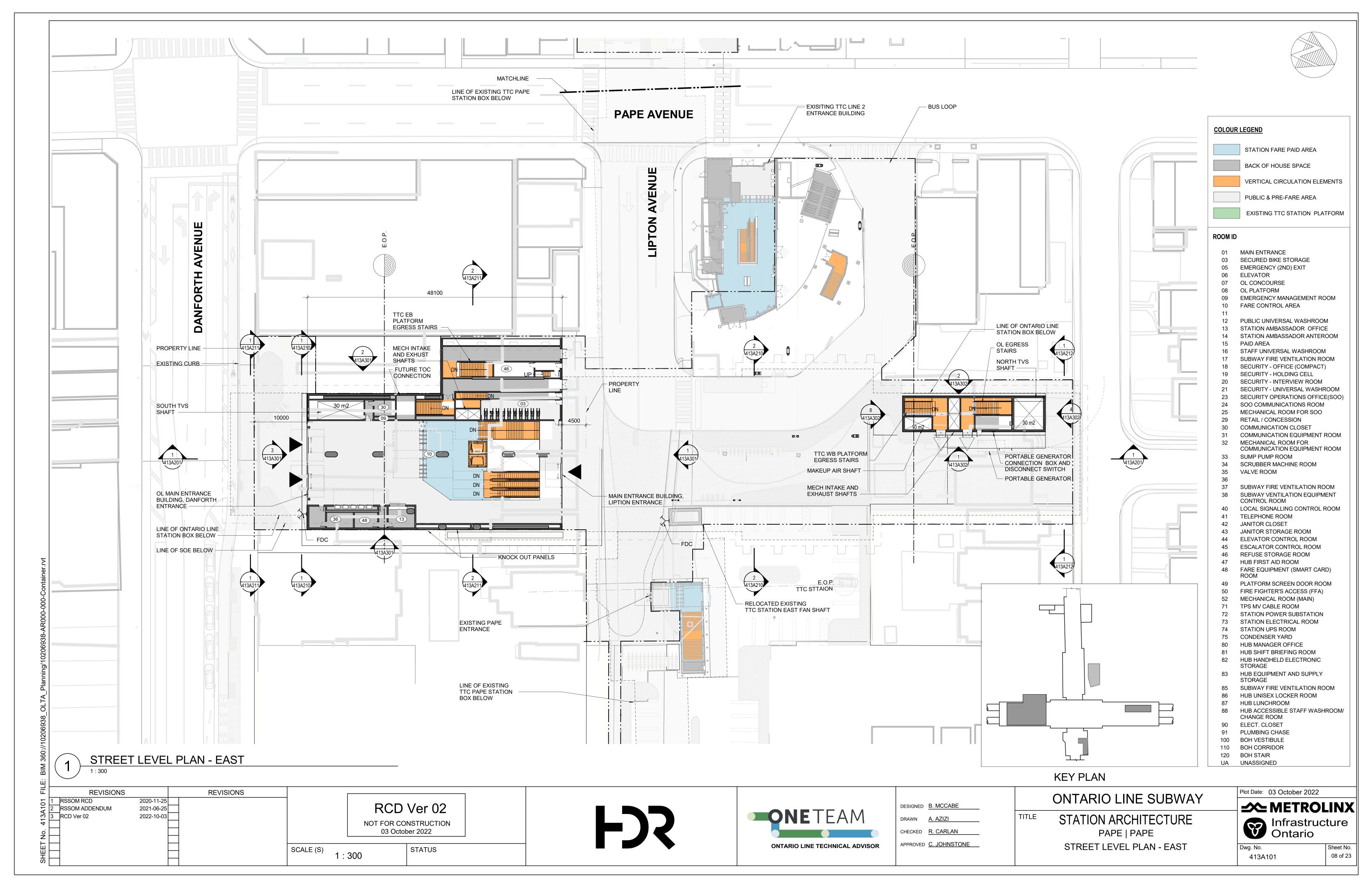
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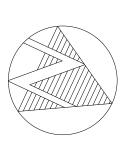
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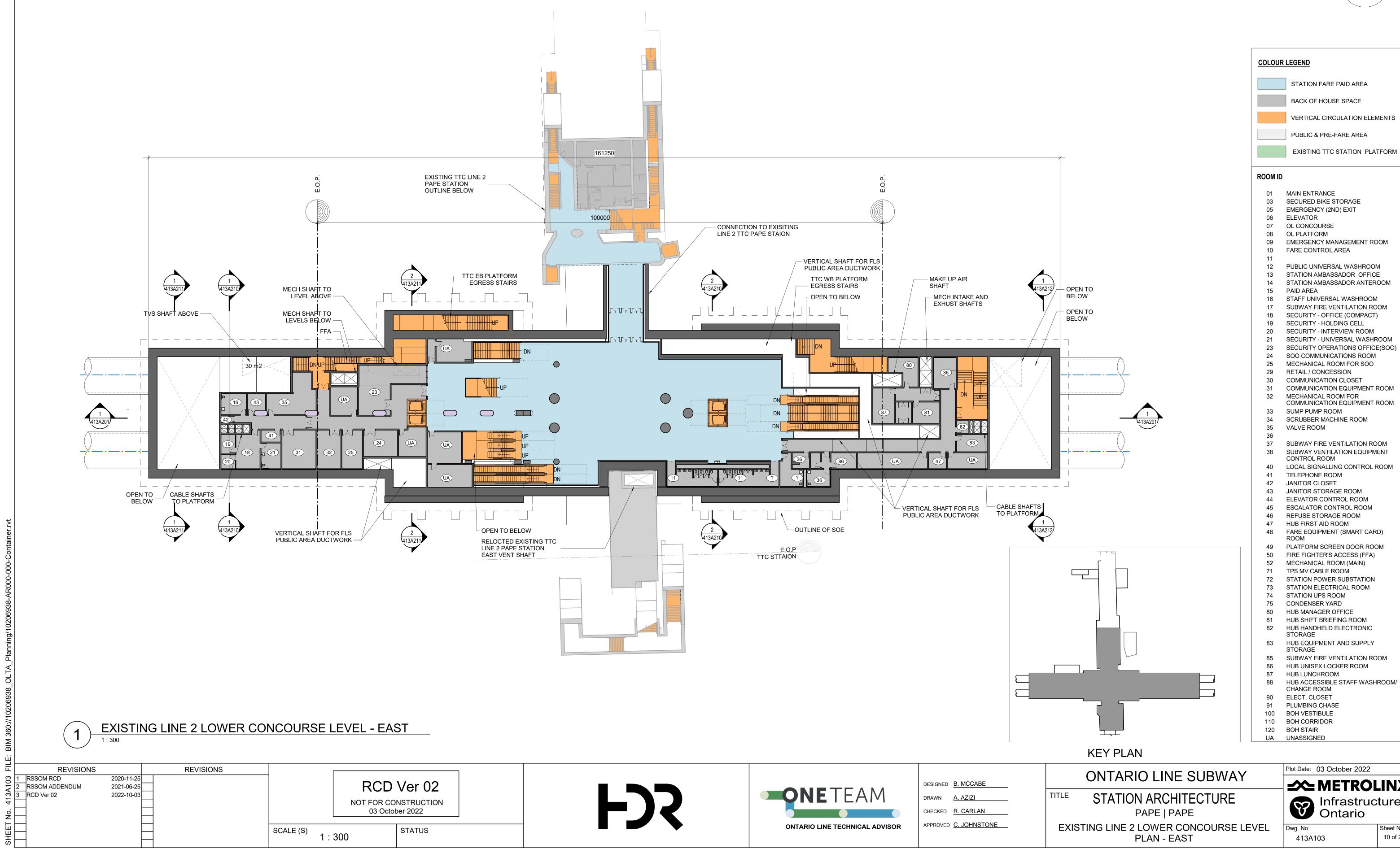












2022-10-03

NOT FOR CONSTRUCTION 03 October 2022

STATUS

SCALE (S)

1:300

TITLE

DRAWN

ONTARIO LINE TECHNICAL ADVISOR

CHECKED R. CARLAN

APPROVED C. JOHNSTONE

STATION ARCHITECTURE PAPE | PAPE

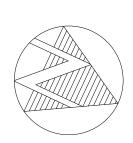
EXISTING LINE 2 LOWER CONCOURSE LEVEL PLAN - EAST

≠ METROLINX

Infrastructure Ontario

413A103

10 of 23



COLOUR LEGEND

ROOM ID

11

01 MAIN ENTRANCE

06 ELEVATOR 07 OL CONCOURSE 08 OL PLATFORM

15 PAID AREA

03 SECURED BIKE STORAGE 05 EMERGENCY (2ND) EXIT

10 FARE CONTROL AREA

09 EMERGENCY MANAGEMENT ROOM

12 PUBLIC UNIVERSAL WASHROOM 13 STATION AMBASSADOR OFFICE 14 STATION AMBASSADOR ANTEROOM

16 STAFF UNIVERSAL WASHROOM 17 SUBWAY FIRE VENTILATION ROOM

18 SECURITY - OFFICE (COMPACT) 19 SECURITY - HOLDING CELL 20 SECURITY - INTERVIEW ROOM 21 SECURITY - UNIVERSAL WASHROOM 23 SECURITY OPERATIONS OFFICE(SOO)

24 SOO COMMUNICATIONS ROOM 25 MECHANICAL ROOM FOR SOO

31 COMMUNICATION EQUIPMENT ROOM

37 SUBWAY FIRE VENTILATION ROOM 38 SUBWAY VENTILATION EQUIPMENT

40 LOCAL SIGNALLING CONTROL ROOM

FARE EQUIPMENT (SMART CARD)

49 PLATFORM SCREEN DOOR ROOM FIRE FIGHTER'S ACCESS (FFA) MECHANICAL ROOM (MAIN)

72 STATION POWER SUBSTATION STATION ELECTRICAL ROOM

STATION UPS ROOM

HUB MANAGER OFFICE HUB SHIFT BRIEFING ROOM HUB HANDHELD ELECTRONIC

HUB EQUIPMENT AND SUPPLY

SUBWAY FIRE VENTILATION ROOM HUB UNISEX LOCKER ROOM

HUB ACCESSIBLE STAFF WASHROOM/

71 TPS MV CABLE ROOM

75 CONDENSER YARD

STORAGE

STORAGE

HUB LUNCHROOM

CHANGE ROOM

ELECT. CLOSET 91 PLUMBING CHASE 100 BOH VESTIBULE 110 BOH CORRIDOR 120 BOH STAIR UA UNASSIGNED

JANITOR STORAGE ROOM ELEVATOR CONTROL ROOM 45 ESCALATOR CONTROL ROOM REFUSE STORAGE ROOM HUB FIRST AID ROOM

COMMUNICATION EQUIPMENT ROOM

29 RETAIL / CONCESSION 30 COMMUNICATION CLOSET

32 MECHANICAL ROOM FOR

34 SCRUBBER MACHINE ROOM

CONTROL ROOM

41 TELEPHONE ROOM 42 JANITOR CLOSET

33 SUMP PUMP ROOM

35 VALVE ROOM

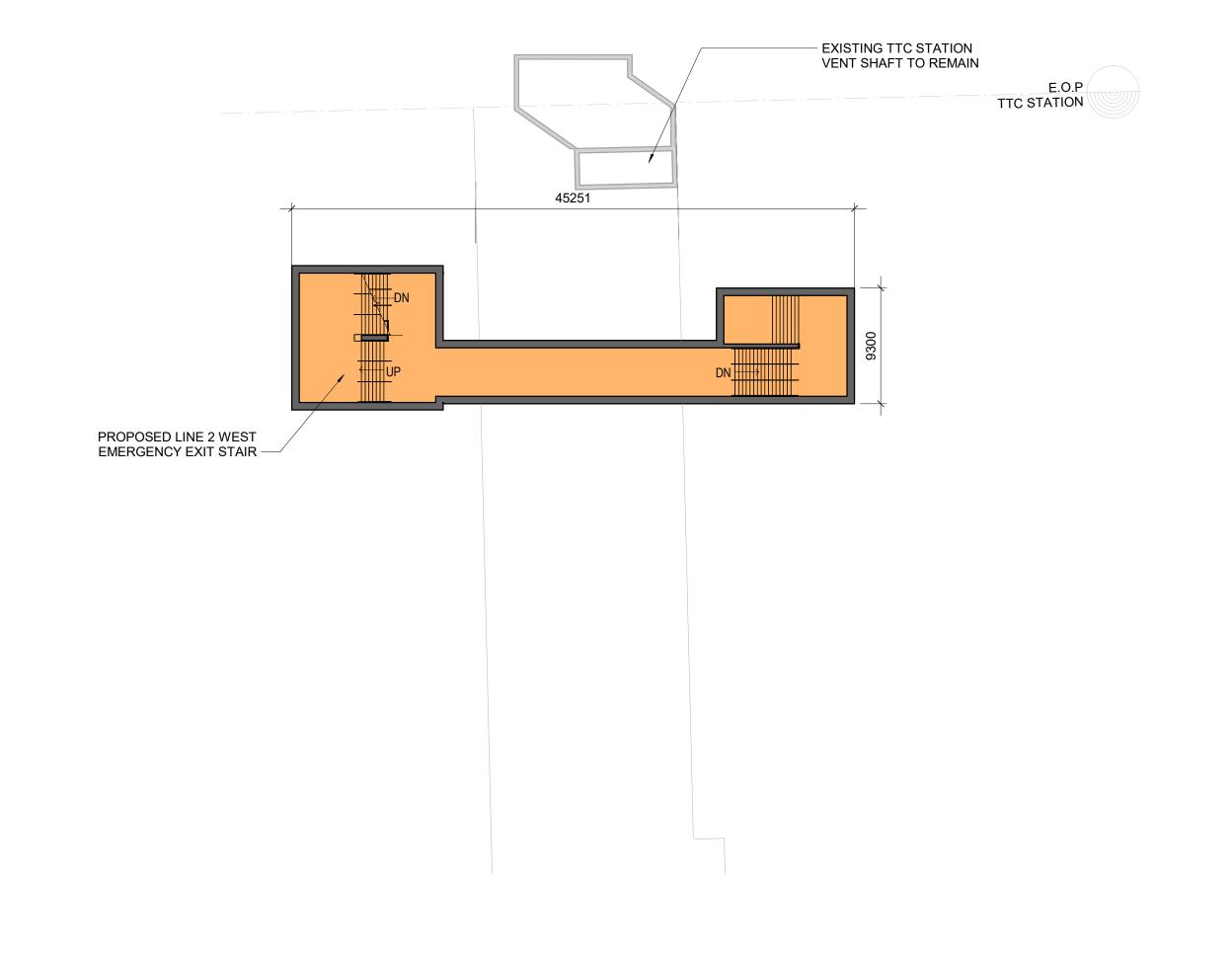
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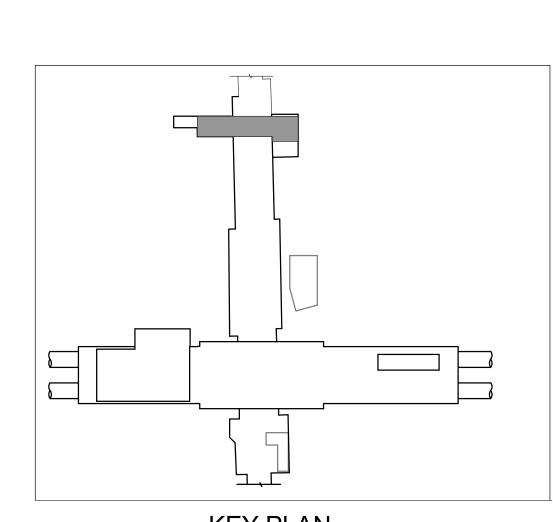
BACK OF HOUSE SPACE

PUBLIC & PRE-FARE AREA

VERTICAL CIRCULATION ELEMENTS

EXISTING TTC STATION PLATFORM







ONTARIO LINE SUBWAY

TITLE STATION ARCHITECTURE PAPE | PAPE

EXISTING LINE 2 LOWER CONCOURSE LEVEL PLAN - WEST

Plot Date: 03 October 2022



413A104

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EXISTING LINE 2 LOWER CONCOURSE LEVEL - WEST

RCD Ver 02

1:300

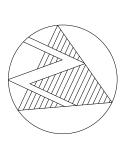
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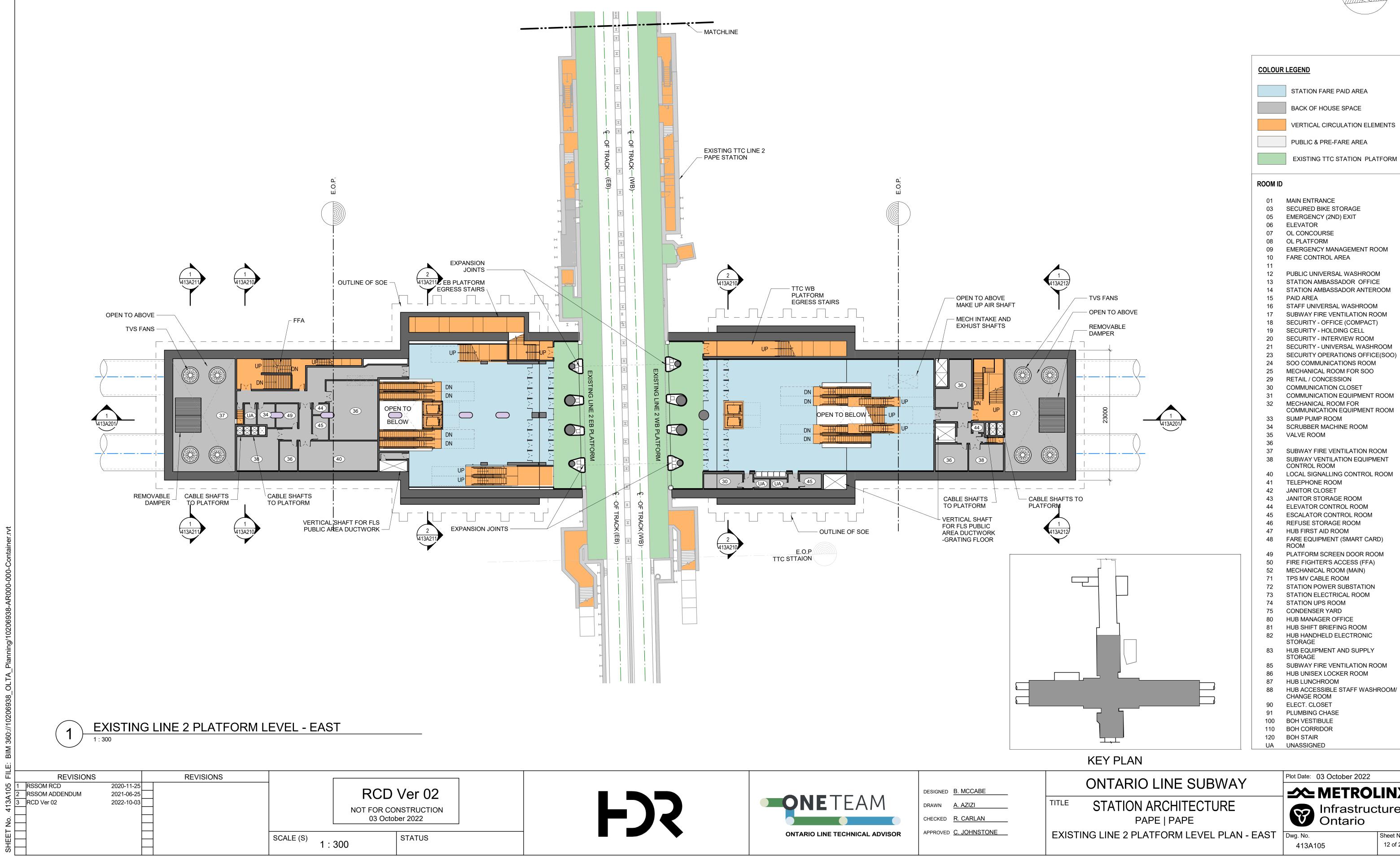
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2 RSSOM ADDENDUM
3 RCD Ver 02 2021-06-25 2022-10-03 NOT FOR CONSTRUCTION 03 October 2022 SCALE (S)

ONTARIO LINE TECHNICAL ADVISOR

DRAWN CHECKED R. CARLAN APPROVED <u>C. JOHNSTONE</u>

DESIGNED B. MCCABE





1 RSSOM RCD

2022-10-03

NOT FOR CONSTRUCTION 03 October 2022

STATUS

SCALE (S)

1:300

STATION ARCHITECTURE

TITLE

DRAWN

ONTARIO LINE TECHNICAL ADVISOR

CHECKED R. CARLAN

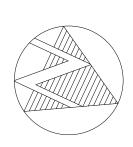
APPROVED <u>C. JOHNSTONE</u>

PAPE | PAPE **EXISTING LINE 2 PLATFORM LEVEL PLAN - EAST**

≠ METROLINX Infrastructure Ontario

413A105

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COLOUR LEGEND

ROOM ID

11

35

01 MAIN ENTRANCE

06 ELEVATOR 07 OL CONCOURSE 08 OL PLATFORM

15 PAID AREA

03 SECURED BIKE STORAGE 05 EMERGENCY (2ND) EXIT

10 FARE CONTROL AREA

09 EMERGENCY MANAGEMENT ROOM

12 PUBLIC UNIVERSAL WASHROOM 13 STATION AMBASSADOR OFFICE 14 STATION AMBASSADOR ANTEROOM

16 STAFF UNIVERSAL WASHROOM 17 SUBWAY FIRE VENTILATION ROOM 18 SECURITY - OFFICE (COMPACT) 19 SECURITY - HOLDING CELL

20 SECURITY - INTERVIEW ROOM

24 SOO COMMUNICATIONS ROOM

25 MECHANICAL ROOM FOR SOO

29 RETAIL / CONCESSION 30 COMMUNICATION CLOSET

32 MECHANICAL ROOM FOR

33 SUMP PUMP ROOM

VALVE ROOM

CONTROL ROOM

21 SECURITY - UNIVERSAL WASHROOM

23 SECURITY OPERATIONS OFFICE(SOO)

31 COMMUNICATION EQUIPMENT ROOM

SCRUBBER MACHINE ROOM

37 SUBWAY FIRE VENTILATION ROOM 38 SUBWAY VENTILATION EQUIPMENT

40 LOCAL SIGNALLING CONTROL ROOM

COMMUNICATION EQUIPMENT ROOM

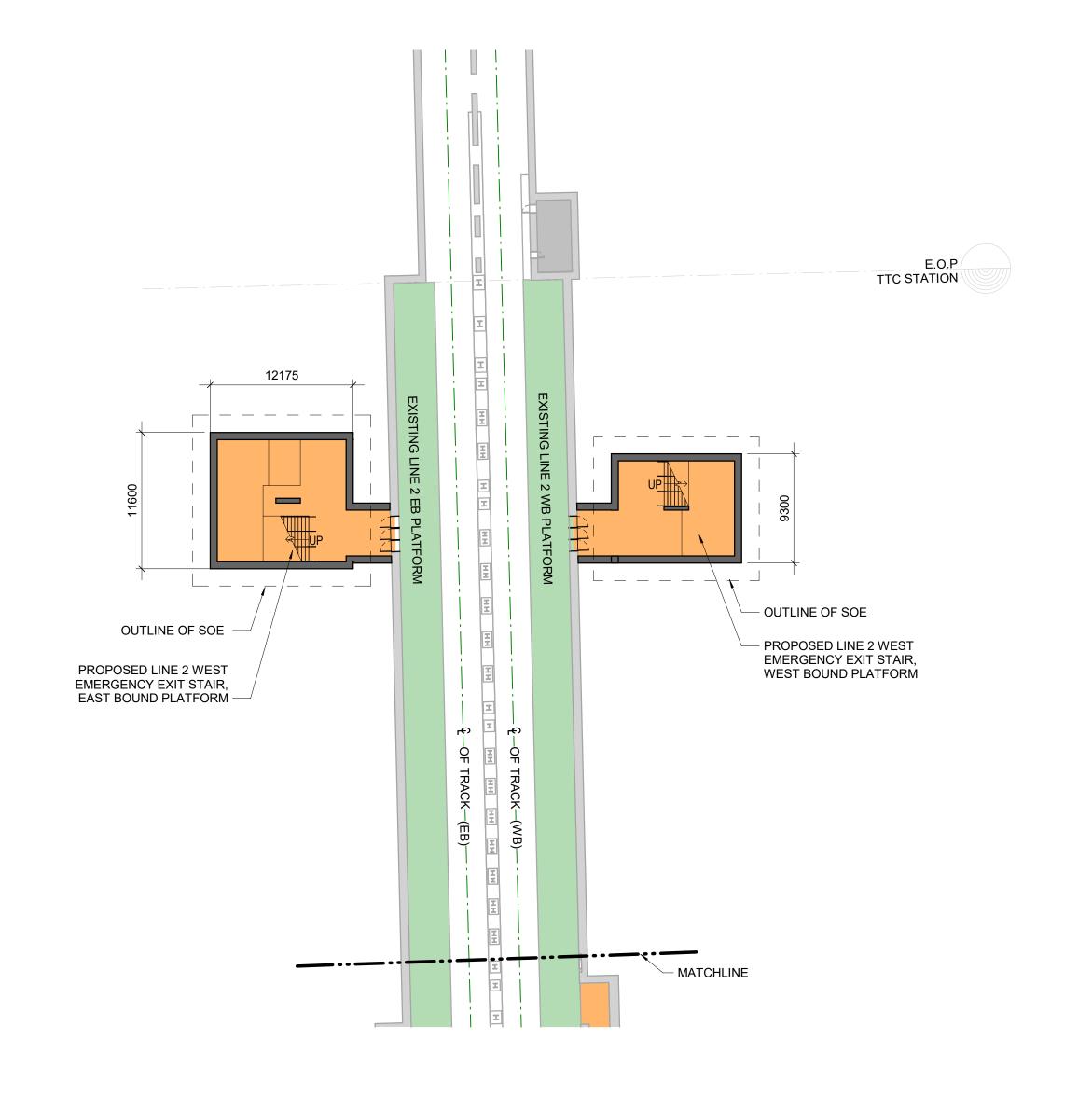
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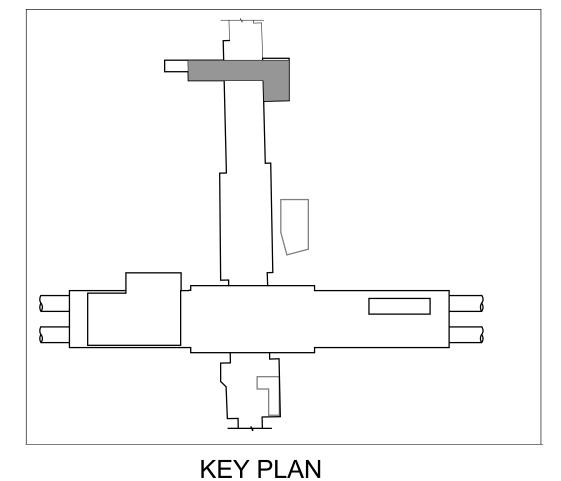
BACK OF HOUSE SPACE

PUBLIC & PRE-FARE AREA

VERTICAL CIRCULATION ELEMENTS

EXISTING TTC STATION PLATFORM







ONTARIO LINE SUBWAY

TITLE

⇒ METROLINX

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RCD Ver 02 STATUS

ONTARIO LINE TECHNICAL ADVISOR

DESIGNED B. MCCABE DRAWN A. AZIZI

CHECKED R. CARLAN

APPROVED <u>C. JOHNSTONE</u>

EXISTING LINE 2 PLATFORM LEVEL PLAN - WEST

REVISIONS **REVISIONS** 9 1 RSSOM RCD 2020-11-25 7 RSSOM RCD
2 RSSOM ADDENDUM
3 RCD Ver 02 2021-06-25 2022-10-03 NOT FOR CONSTRUCTION 03 October 2022

EXISTING LINE 2 PLATFORM LEVEL - WEST

SCALE (S)

1:300

PAPE | PAPE

41 TELEPHONE ROOM 42 JANITOR CLOSET JANITOR STORAGE ROOM ELEVATOR CONTROL ROOM 45 ESCALATOR CONTROL ROOM REFUSE STORAGE ROOM HUB FIRST AID ROOM FARE EQUIPMENT (SMART CARD) 49 PLATFORM SCREEN DOOR ROOM

FIRE FIGHTER'S ACCESS (FFA) MECHANICAL ROOM (MAIN) 71 TPS MV CABLE ROOM 72 STATION POWER SUBSTATION STATION ELECTRICAL ROOM

74 STATION UPS ROOM 75 CONDENSER YARD HUB MANAGER OFFICE HUB SHIFT BRIEFING ROOM

HUB HANDHELD ELECTRONIC STORAGE HUB EQUIPMENT AND SUPPLY STORAGE

SUBWAY FIRE VENTILATION ROOM HUB UNISEX LOCKER ROOM

HUB LUNCHROOM HUB ACCESSIBLE STAFF WASHROOM/ CHANGE ROOM

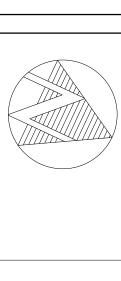
90 ELECT. CLOSET 91 PLUMBING CHASE

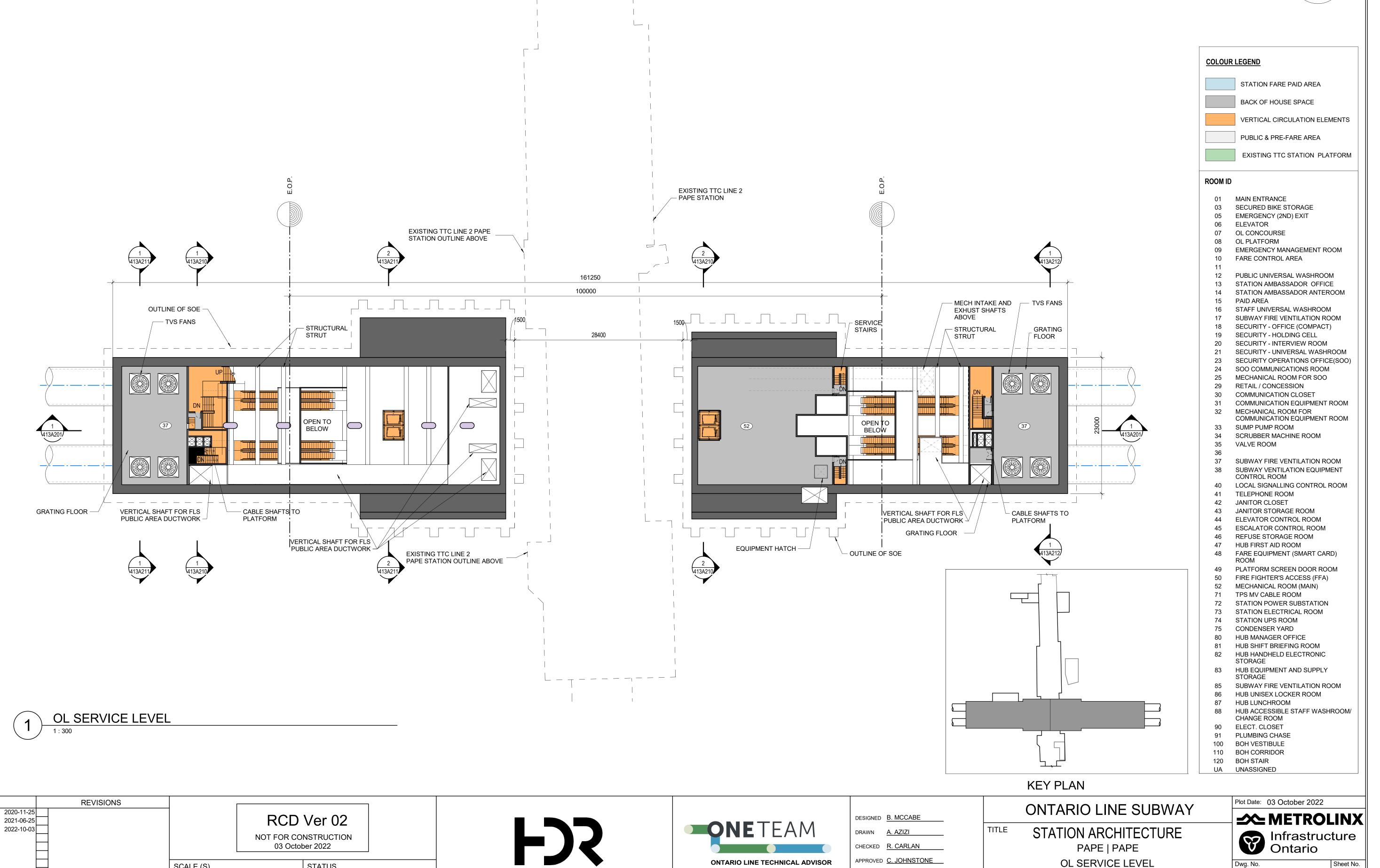
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120 BOH STAIR UA UNASSIGNED

Infrastructure Ontario

Plot Date: 03 October 2022





REVISIONS

SCALE (S)

1:300

STATUS

RSSOM RCD

RSSOM RCD

RSSOM RCD

RSSOM ADDENDUM

RCD Ver 02

Infrastructure Ontario

413A107

PAPE | PAPE

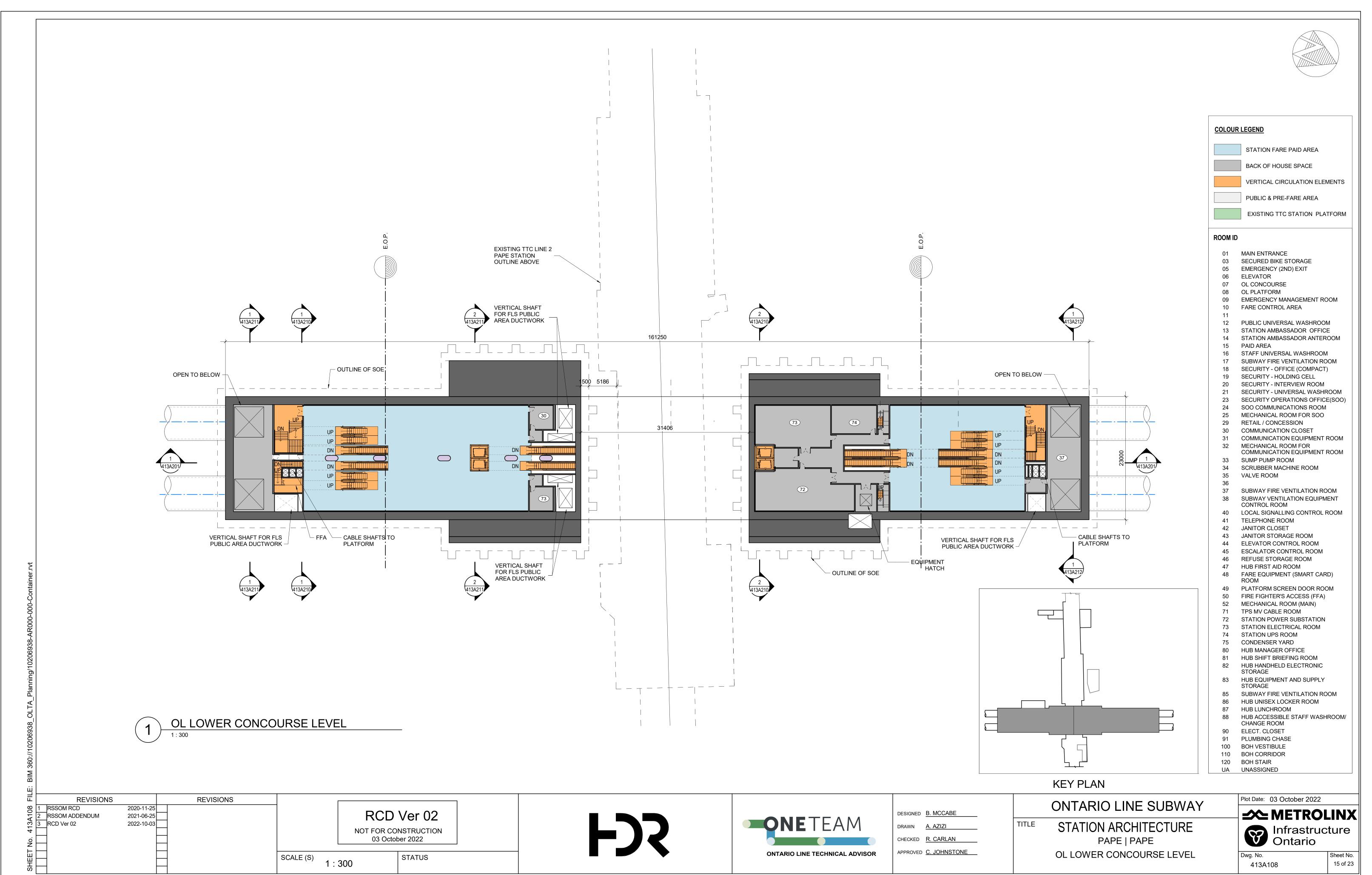
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CHECKED R. CARLAN

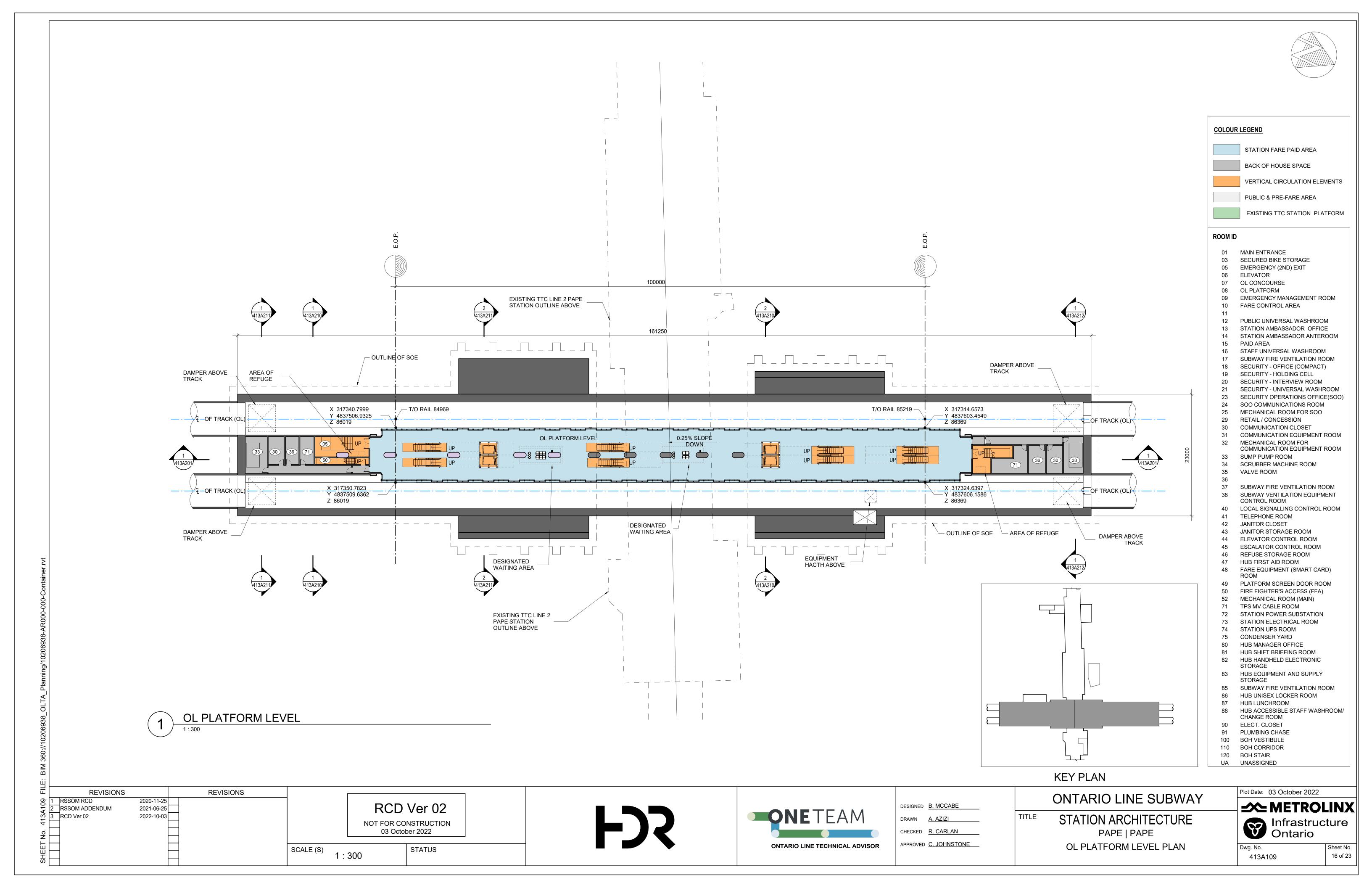
ONTARIO LINE TECHNICAL ADVISOR

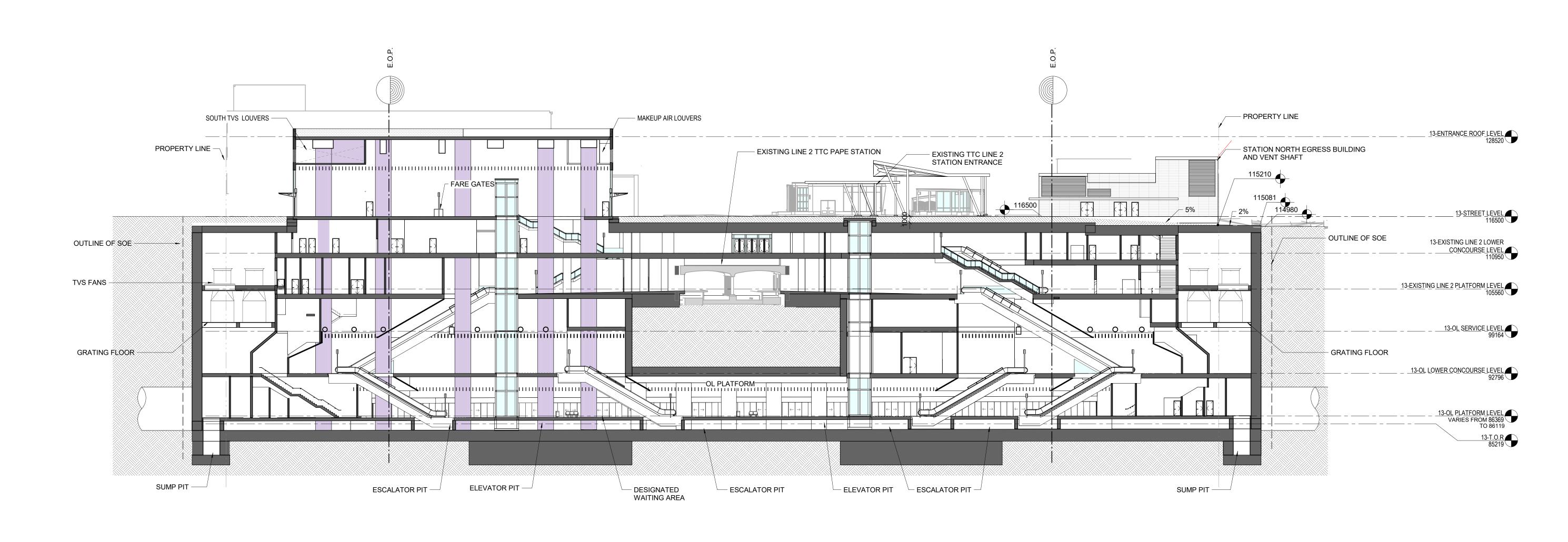
APPROVED C. JOHNSTONE

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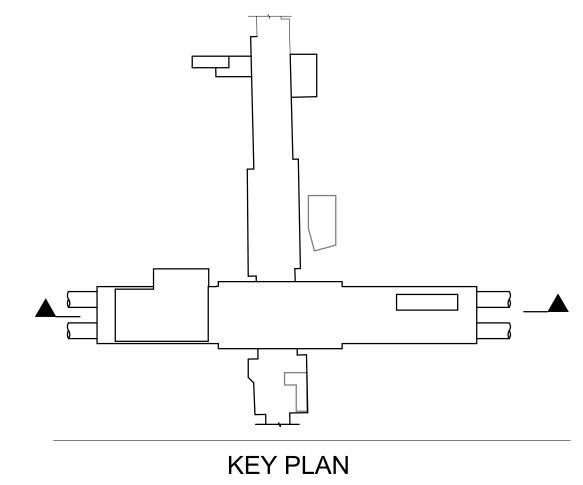


413A108





LONGITUDINAL SECTION.



REVISIONS **REVISIONS** 1 RSSOM RCD
2 RSSOM ADDENDUM
3 RCD Ver 02 2020-11-25 2021-06-25 2022-10-03 RCD Ver 02 NOT FOR CONSTRUCTION 03 October 2022 SCALE (S) STATUS 1:300

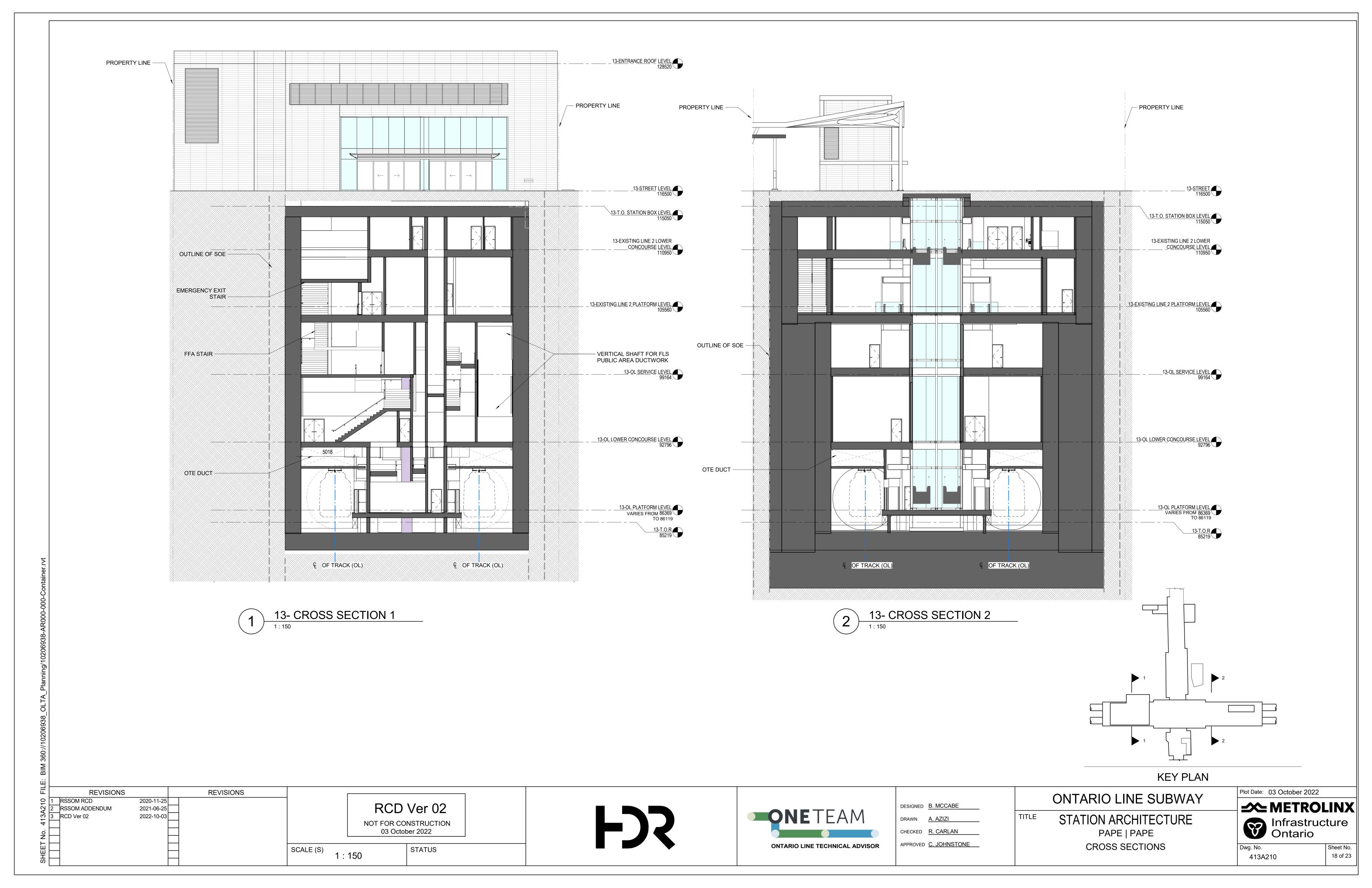


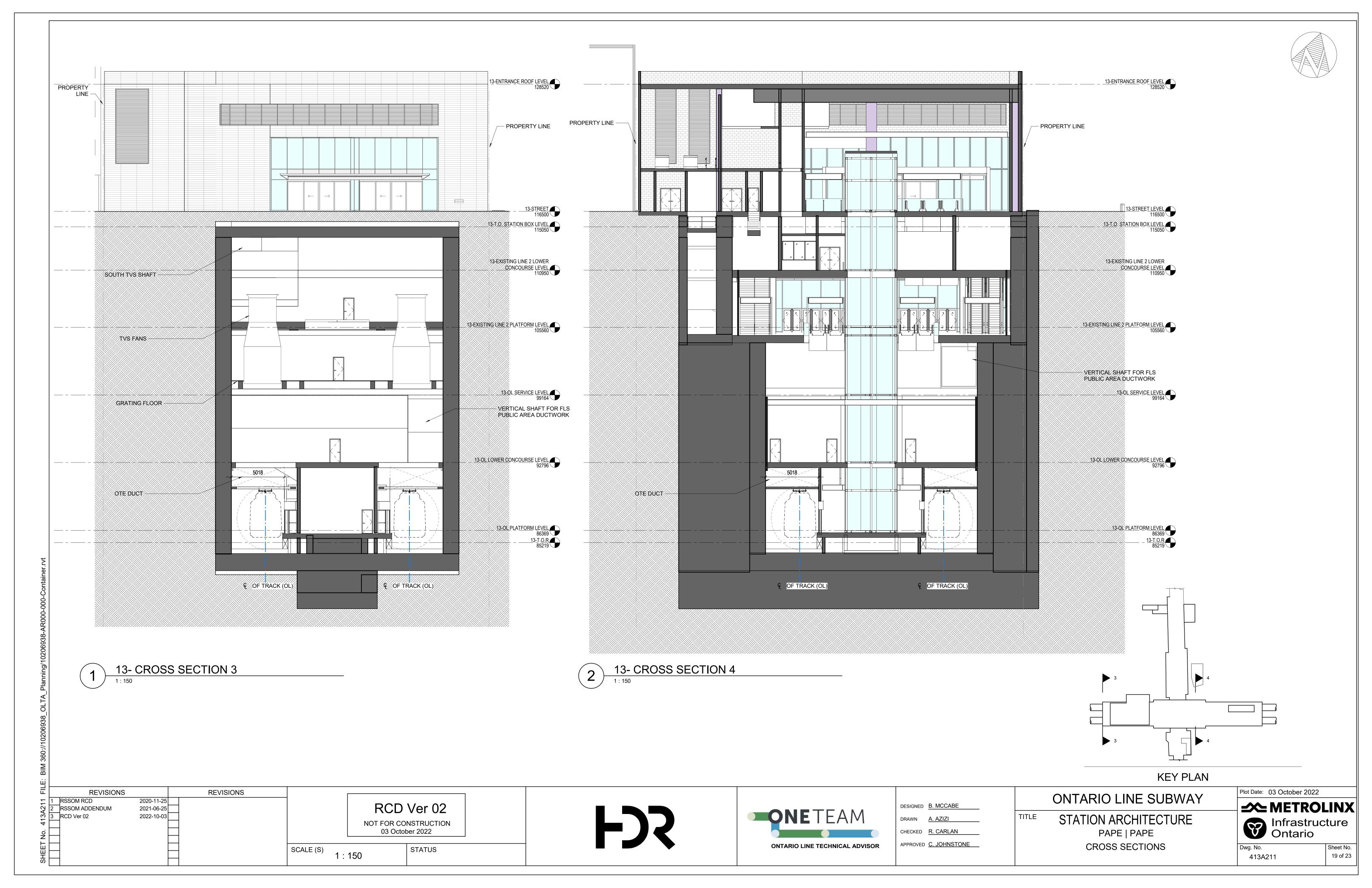
DESIGNED B. MCCABE CHECKED R. CARLAN

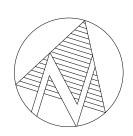
TITLE STATION ARCHITECTURE PAPE | PAPE LONGITUDINAL SECTION

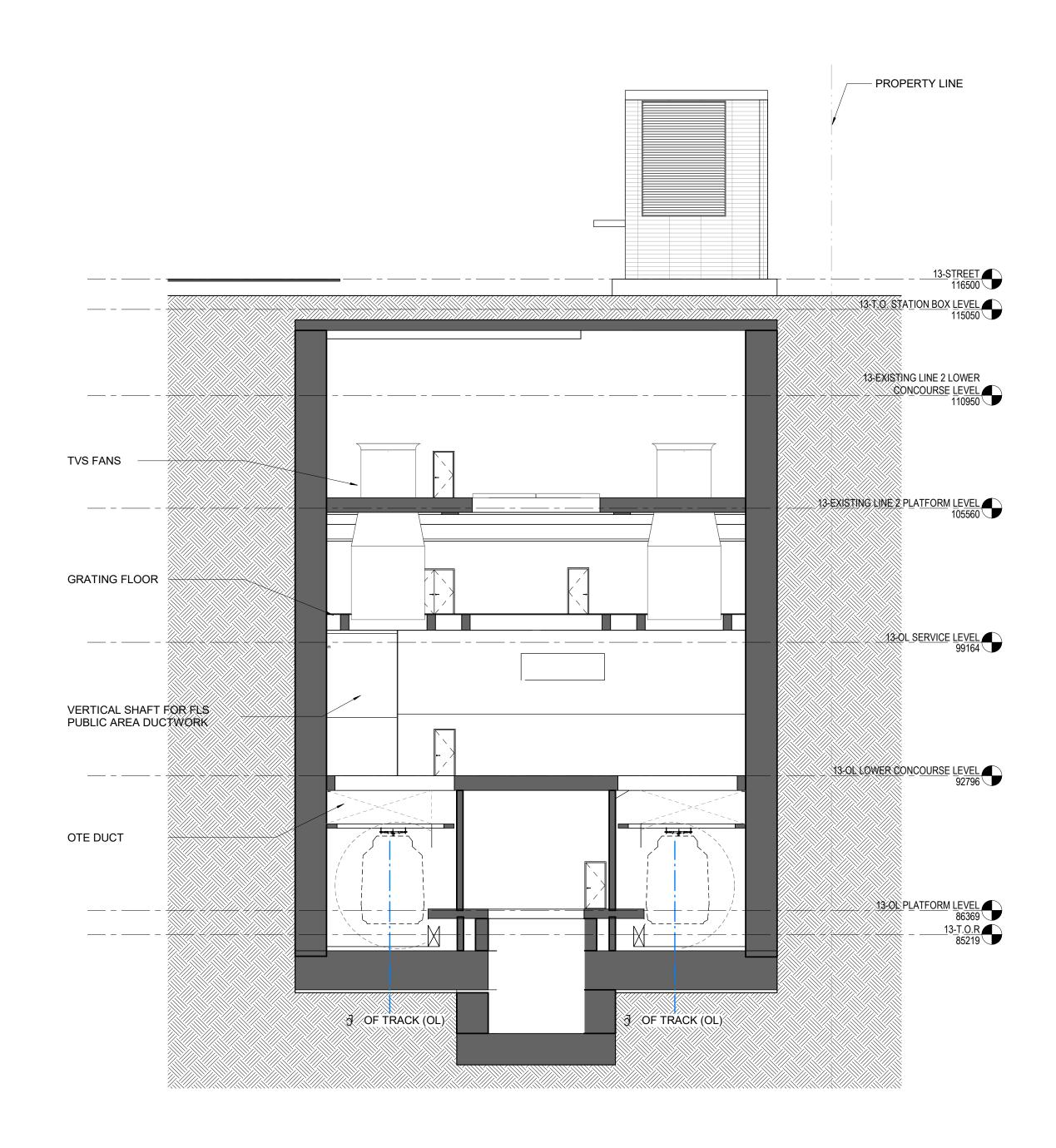
ONTARIO LINE SUBWAY

Plot Date: 03 October 2022 **≠** METROLINX Infrastructure Ontario 413A201 17 of 23

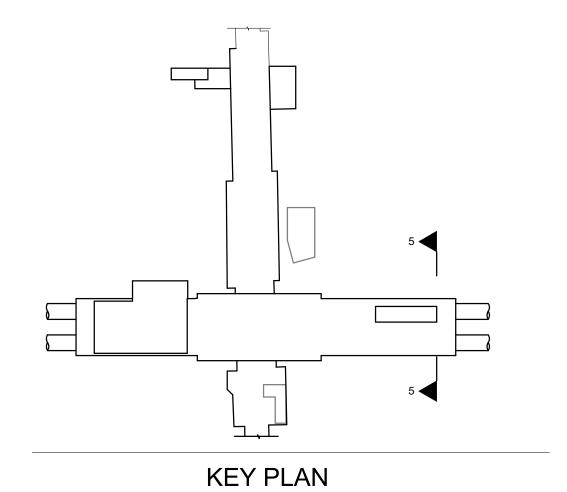








13- CROSS SECTION 5



ONTARIO LINE TECHNICAL ADVISOR

DESIGNED B. MCCABE

CHECKED R. CARLAN

ONTARIO LINE SUBWAY TITLE STATION ARCHITECTURE

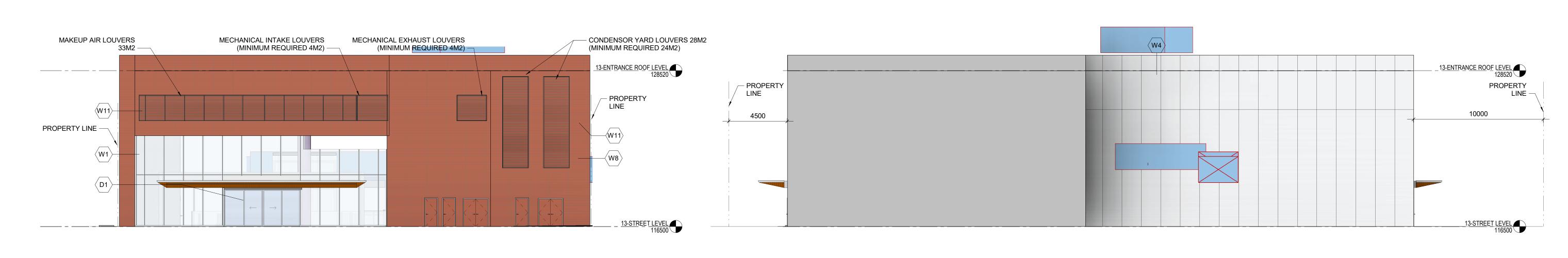
Plot Date: 03 October 2022 **≠** METROLINX Infrastructure Ontario Sheet No. 20 of 23

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REVISIONS **REVISIONS** REVISION
RSSOM RCD
RSSOM ADDENDUM
RCD Ver 02
RCD Ver 02 2020-11-25 2021-06-25 2022-10-03 RCD Ver 02 NOT FOR CONSTRUCTION 03 October 2022 STATUS SCALE (S) 1:150

APPROVED <u>C. JOHNSTONE</u>

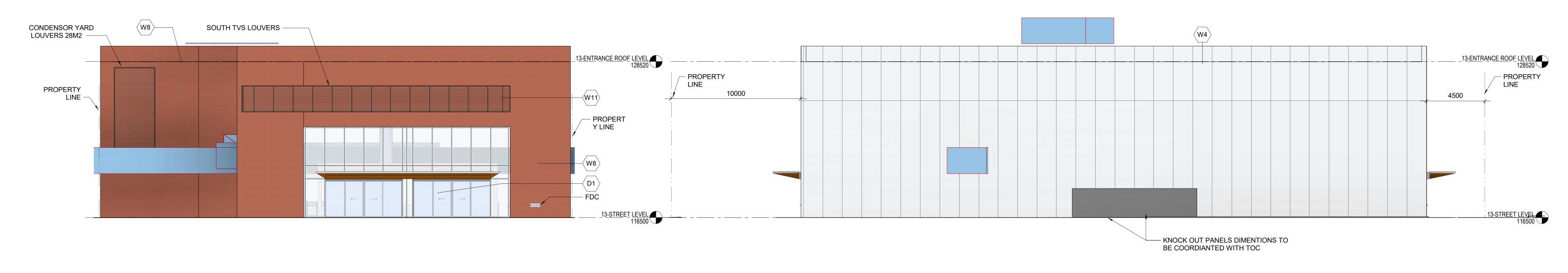
PAPE | PAPE **CROSS SECTIONS**



MAIN ENTRANCE BUILDING DANFORTH ELEVATION

1: 150

2 MAIN ENTRANCE BUILDING WEST ELEVATION
1: 150



MAIN ENTRANCE BUILDING DANFORTH ELEVATION

4 MAIN ENTRANCE BUILDING EAST ELEVATION

1: 150





DESIGNED B. MCCABE

DRAWN A. AZIZI

CHECKED R. CARLAN

APPROVED <u>C. JOHNSTONE</u>

TITLE STATION ARCHITECTURE
PAPE | PAPE
ELEVATIONS

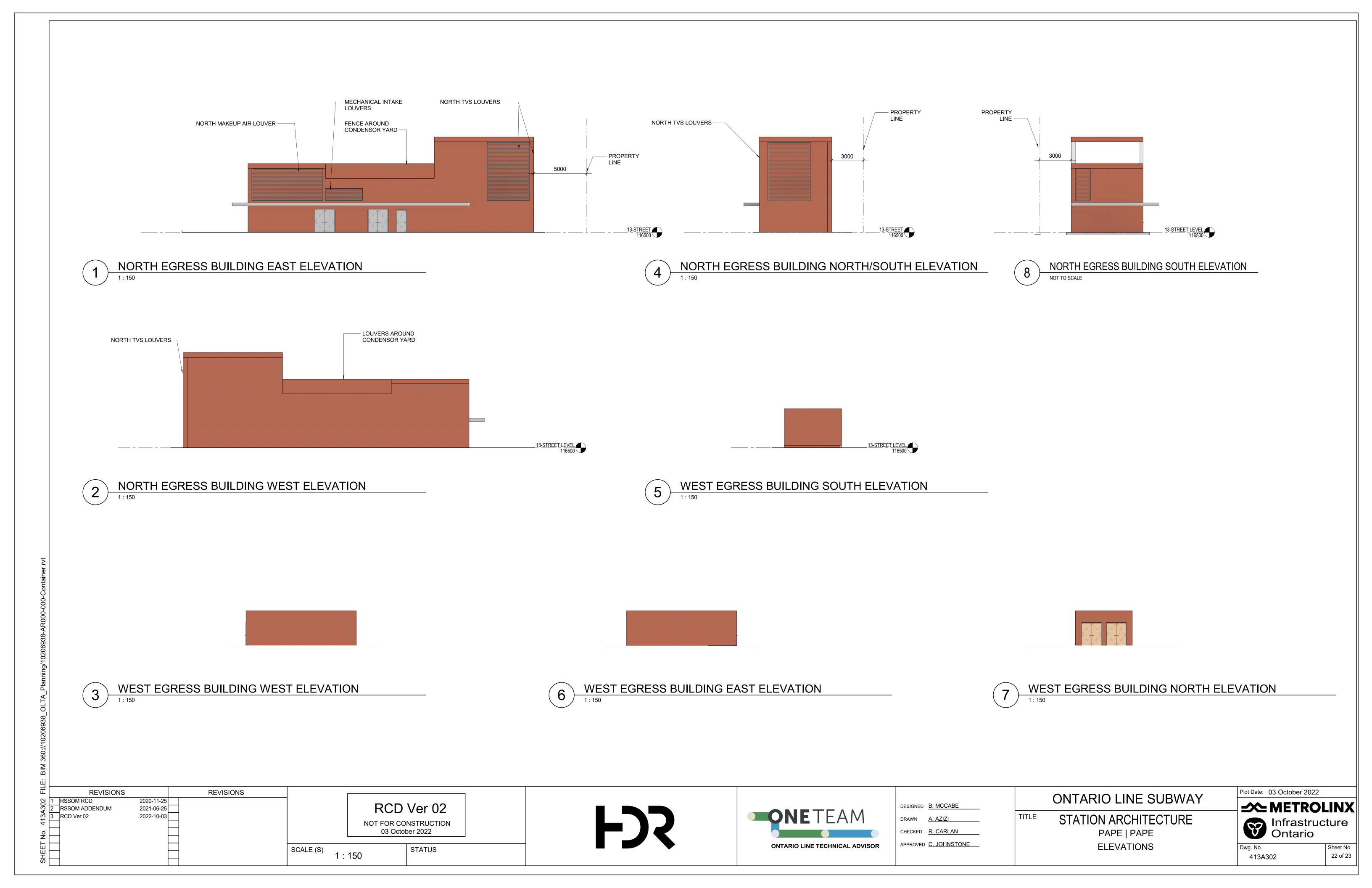
ONTARIO LINE SUBWAY

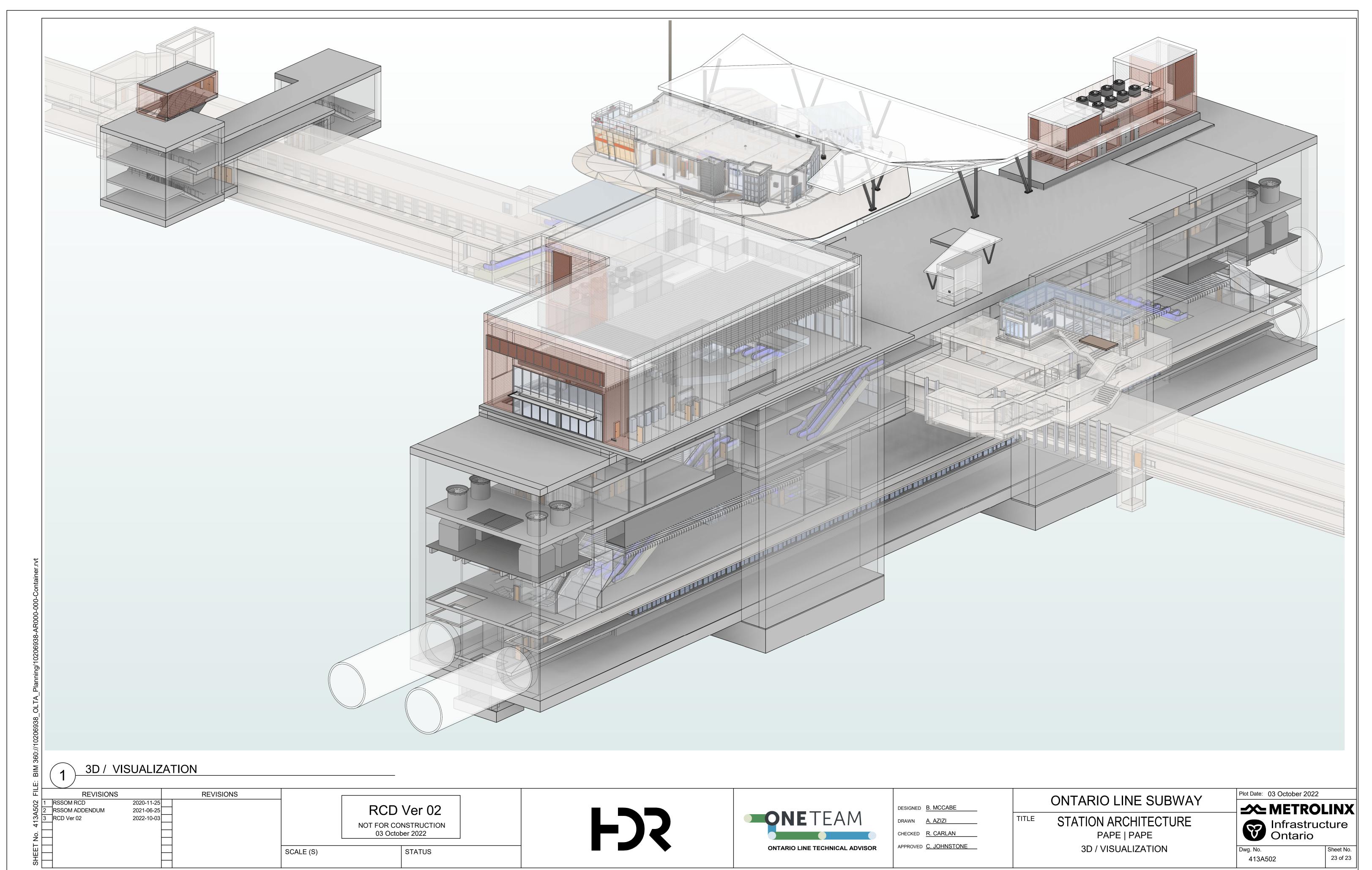
Plot Date: 03 October 2022

METROLINX
Infrastructure
Ontario

Dwg. No.
413A301

Sheet No.
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STATUS

SCALE (S)

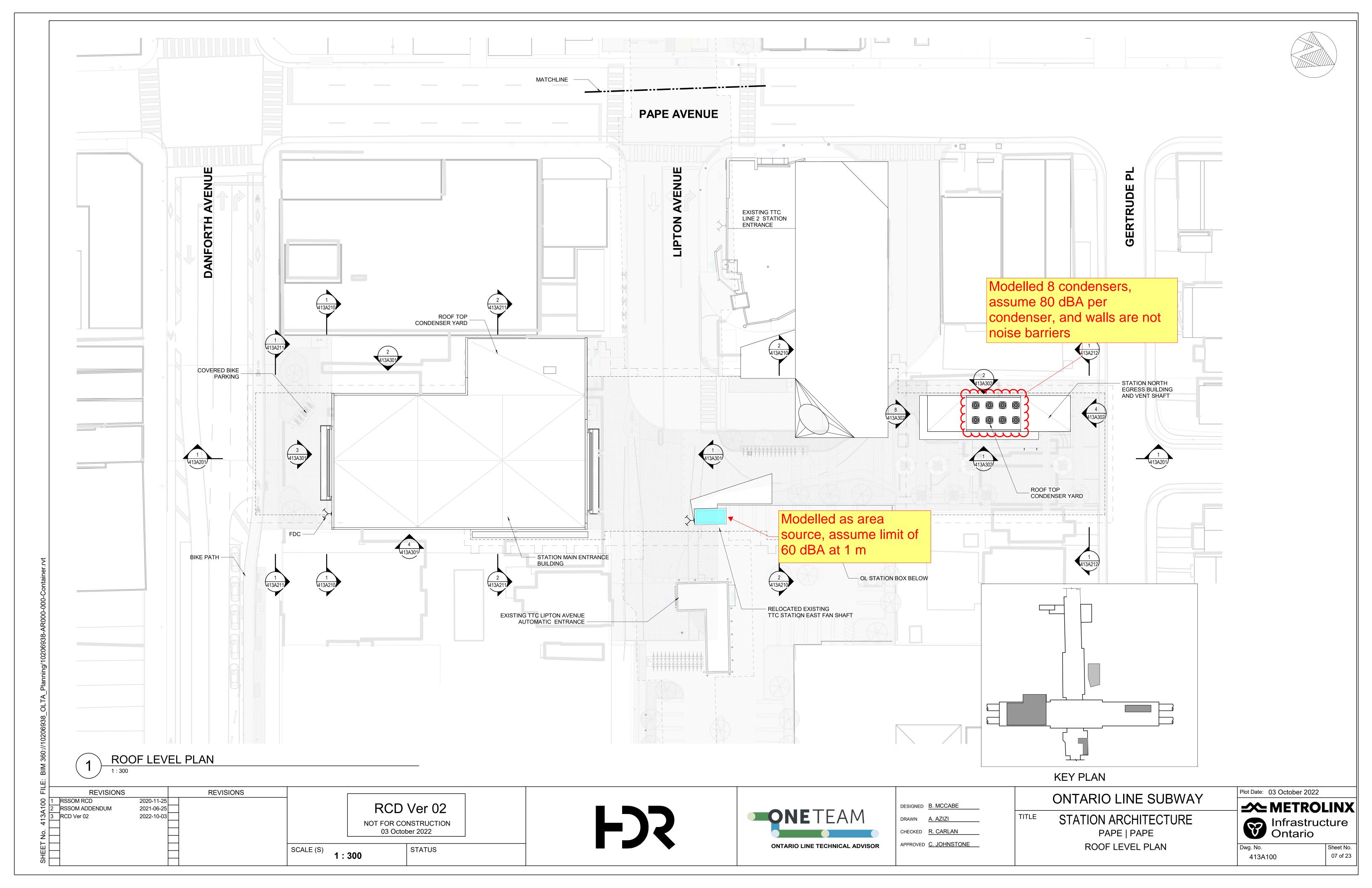
ONTARIO LINE TECHNICAL ADVISOR

Dwg. No. 413A502 Sheet No. 23 of 23

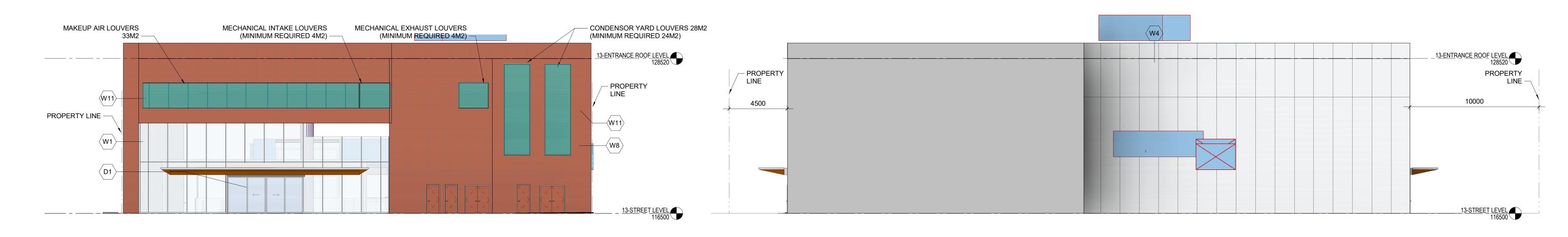
3D / VISUALIZATION



Appendix C. Pape Station Noise Sources

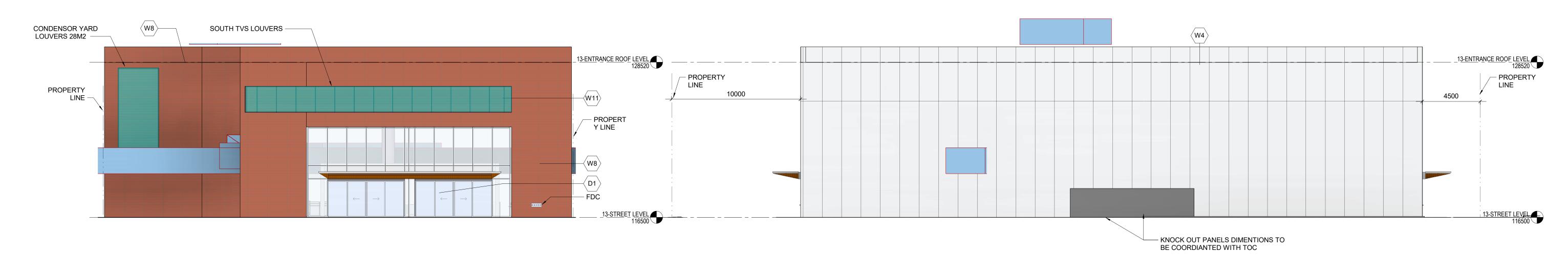


All louvers modelled as vertical area sources, assume limit of 60 dBA at 1 m



MAIN ENTRANCE BUILDING DANFORTH ELEVATION

MAIN ENTRANCE BUILDING WEST ELEVATION



MAIN ENTRANCE BUILDING DANFORTH ELEVATION

MAIN ENTRANCE BUILDING EAST ELEVATION

REVISIONS **REVISIONS** 1 RSSOM RCD
2 RSSOM ADDENDUM
3 RCD Ver 02 2020-11-25 RCD Ver 02 2021-06-25 2022-10-03 NOT FOR CONSTRUCTION 03 October 2022 SCALE (S) STATUS 1:150





DESIGNED B. MCCABE CHECKED R. CARLAN

TITLE STATION ARCHITECTURE PAPE | PAPE **ELEVATIONS**

ONTARIO LINE SUBWAY

Plot Date: 03 October 2022 **⇒** METROLINX Infrastructure Ontario 21 of 23 413A301

All louvers modelled as vertical area sources, assume limit of 60 dBA at 1 m - MECHANICAL INTAKE NORTH TVS LOUVERS -LOUVERS PROPERTY PROPERTY NORTH TVS LOUVERS -NORTH MAKEUP AIR LOUVER -FENCE AROUND CONDENSOR YARD -3000 - PROPERTY LINE 5000 NORTH EGRESS BUILDING EAST ELEVATION NORTH EGRESS BUILDING NORTH/SOUTH ELEVATION NORTH EGRESS BUILDING SOUTH ELEVATION LOUVERS AROUND CONDENSOR YARD NORTH TVS LOUVERS -NORTH EGRESS BUILDING WEST ELEVATION WEST EGRESS BUILDING SOUTH ELEVATION WEST EGRESS BUILDING EAST ELEVATION 1: 150 WEST EGRESS BUILDING WEST ELEVATION WEST EGRESS BUILDING NORTH ELEVATION REVISIONS **REVISIONS** Plot Date: 03 October 2022 ONTARIO LINE SUBWAY REVISION RESSOM RCD RSSOM ADDENDUM RCD Ver 02 2020-11-25 2021-06-25 2022-10-03 **⇒** METROLINX RCD Ver 02 F)S DESIGNED B. MCCABE TITLE STATION ARCHITECTURE Infrastructure Ontario NOT FOR CONSTRUCTION 03 October 2022 CHECKED R. CARLAN PAPE | PAPE APPROVED C. JOHNSTONE **ELEVATIONS** ONTARIO LINE TECHNICAL ADVISOR SCALE (S) STATUS 1:150 22 of 23 413A302