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Noise Feasibility Study

Proposed Mixed-Use/Residential Development

5688 Main Street

Stouffville, Ontario

Prepared for:

Hyson Developments Inc.
42 Ballantrae Road
Stouffville, ON
L4A 1M5

Prepared by:

Andrew Rogers, BASc

and

Sheeba Paul, MEng, PEng

HGC Project No.: 02300807

September 17, 2024

VERSION CONTROL

Noise Feasibility Study,
5688 Main Street,
Stouffville, Ontario.

Ver.	Date	Version Description / Changelog	Prepared By
0	September 17, 2024	Noise Feasibility Study in support of approvals process.	A. Rogers/ S. Paul

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1 Introduction and Summary

HGC Engineering was retained by Hyson Developments Inc. to conduct a Noise Feasibility Study for a proposed mixed-use/residential development located at the northwest corner of Main Street and Palmwood Gate in Stouffville, Ontario. The purpose of this study is to determine the impact of environmental noise from the surrounding area in accordance with the Ministry of Environment, Conservation, and Parks (MECP) guidelines. The site proposes one 13-storey mixed-use/residential building with a 6-storey podium and two levels of underground parking. This study is required by the municipality as part of the approvals process.

The primary noise sources at the proposed development site were determined to be road traffic on Main Street and Palmwood Gate. Secondary sources of noise include road traffic on Sandale Road and West Lawn Crescent. Road traffic data was obtained from the Town of Whitchurch-Stouffville. The data was used to predict future traffic sound levels at the locations of the proposed building façades and in the outdoor living areas. The predicted sound levels were evaluated with respect to the guidelines of the Ministry of the Environment, Conservation and Parks (MECP).

The sound level predictions indicate that with suitable noise control measures integrated into the design of the building, it is feasible to achieve MECP guideline sound levels. An alternative means of ventilation to open windows will be required for the development. Associated acoustical requirements are specified in this report. Noise warning clauses are also required to inform future occupants of the sound level excesses and the proximity to retail/commercial/industrial uses.

A computer model of the area was created to predict the sound levels at the facades of the proposed building due to off-site stationary noise sources from existing commercial, retail, and/or industrial facilities around the site area. The results indicate that the sound emissions of the nearby stationary noise sources are within the MECP guideline sound levels. Noise mitigation for stationary noise sources is not required.

2 Site Description and Noise Sources

A key plan for the site is attached as Figure 1. The site is located on the northwest corner of Main Street and Palmwood Gate, specifically at 5688 Main Street in Stouffville, Ontario. A site plan prepared by Taes Architects Inc. dated August 21, 2024, is provided as Figure 2. The proposed development will include one 13-storey mixed-use/residential building with a 6-storey podium and two levels of underground parking. Preliminary floor plans are included in Appendix A.

HGC Engineering personnel visited the site during the month of November 2023 to observe the acoustical environment, measure background sound levels, and identify significant noise sources within the vicinity. This area is considered Class 1 in terms of its acoustical environment. Road traffic on Main Street and Palmwood Gate were confirmed to be the dominant noise sources.

There are existing low rise residential dwellings north of the proposed development. East and west of the site along Main Street are various retail/commercial facilities. There is a commercial plaza directly east including an LCBO, Shopper's Drug Mart, and a bakery. West of the site is a mid-rise residential building (6-storeys) that is currently under construction, with a grocery store (Metro) further west. To the southeast of the site there are a variety of restaurants, as well as another commercial plaza including some restaurants and retail units. South of the site across Main Street is a pharmaceutical manufacturer (Teva Canada and Novopharm Limited). The significant surrounding stationary noise sources are assessed in Section 6. Due to the proximity of the site to a variety of existing retail, commercial and/or industrial uses, it is recommended that a noise warning clause to identify that such uses may be audible at times be included in the tenancy agreements, as described in Section 7.

3 Traffic Noise Assessment

3.1 Traffic Noise Criteria

Guidelines for acceptable levels of road traffic noise impacting residential developments are given in the MECP publication NPC-300, "Environmental Noise Guideline Stationary and Transportation Sources – Approval and Planning", release date October 21, 2013 and are listed in Table I below. The values in Table I are energy equivalent (average) sound levels [L_{EQ}] in units of A-weighted decibels [dBA].

Table I: MECP Traffic Noise Criteria (dBA)

Space	Daytime L_{EQ} (16 hour) Road	Nighttime L_{EQ} (8 hour) Road
Outdoor Living Areas	55 dBA	--
Inside Living/Dining Rooms	45 dBA	40 dBA
Inside Bedrooms	45 dBA	40 dBA

Daytime refers to the period between 07:00 and 23:00, while nighttime refers to the period between 23:00 and 07:00. The term "Outdoor Living Area" (OLA) is used in reference to an outdoor patio, a backyard, a terrace or other areas where passive recreation is expected to occur. Balconies and terraces that are less than 4 m in depth are not considered to be outdoor living areas under MECP guidelines, and accordingly the noise criteria are not applicable there. Large private terraces require consideration if they are the only OLA for the occupant; in general. Common outdoor amenity terraces associated with high-rise buildings are the only OLA that require consideration.

The guidelines in the MECP publication allow the daytime sound levels in an Outdoor Living Area to be exceeded by up to 5 dBA, without mitigation, if warning clauses are placed in the purchase and rental agreements to the property. Where OLA sound levels exceed 60 dBA, physical mitigation is required to reduce the OLA sound level to below 60 dBA and as close to 55 dBA as technically, economically, and administratively practical.

A central air conditioning system as an alternative means of ventilation to open windows is required for dwellings where nighttime sound levels outside bedroom or living/dining room windows exceed 60 dBA or daytime sound levels outside bedroom or living/dining room windows exceed 65 dBA. If the sound level at the plane of a bedroom or living/dining room window is greater than 55 dBA and less than or equal to 65 dBA, the dwelling should be designed with a provision for the installation of central air conditioning in the future, at the occupant’s discretion.

Building components such as walls, windows and doors must be designed to achieve indoor sound level criteria when the plane of window nighttime sound level is greater than 60 dBA or the daytime sound level is greater than 65 dBA due to traffic noise.

Warning clauses are required to notify future residents of possible excesses when nighttime sound levels exceed 50 dBA at the plane of the bedroom/living/dining room window and daytime sound

levels exceed 55 dBA in the outdoor living area and at the plane of the bedroom/living/dining room window due to traffic.

4 Traffic Noise Assessment

4.1 Road Traffic Data

Road traffic data for Main Street, Palmwood Gate, Sandale Road, and West Lawn Crescent was obtained from the Town of Whitchurch-Stouffville and is provided in Appendix B. The data for Main Street was provided as hourly traffic data for the year 2017. The data for the other roadways was provided as Average Annual Daily Traffic (AADT) volumes. For each roadway the data was projected to the year 2034 assuming a typical growth rate of 2.5% per year. A day/night split of 90%/10%, along with a posted speed limit of 50 km/h was applied for all roadways. A commercial percentage of 3.5%, split into 1.3% medium trucks and 2.2% heavy trucks was applied for Main Street. A commercial percentage of 1.0%, split into 0.4% medium trucks and 0.6% heavy trucks was applied for both Palmwood Gate and Sandale Road. A commercial percentage of 2.0%, split into 0.8% medium trucks and 1.2% heavy trucks was applied for West Lawn Crescent. Table II below summarizes the road traffic volume data used in this study.

Table II: 2034 Projected Road Traffic Data

Street	Time	Cars	Medium Trucks	Heavy Trucks	Total
Main Street	Daytime	22 981	321	513	**23 815**
	Nighttime	2 553	36	57	**2 646**
	Total	**25 534**	**357**	**570**	**26 461**
Palmwood Gate	Daytime	826	3	5	**834**
	Nighttime	92	0	1	**93**
	Total	**918**	**3**	**6**	**927**
Sandale Road	Daytime	14 288	56	89	**14 433**
	Nighttime	1 588	6	10	**1 604**
	Total	**15 876**	**62**	**99**	**16 037**
West Lawn Crescent	Daytime	5 645	44	71	**5 760**
	Nighttime	627	5	8	**640**
	Total	**6 272**	**49**	**79**	**6 400**

4.2 Traffic Noise Prediction

To assess the levels of traffic noise that will impact the site, an acoustic model of the development was created, and predictions were made using a numerical computer modelling package (*CadnaA version 2024 MR1, build: 205.5427*). The model is based on the methods from ISO Standard 9613-2.2, "*Acoustics - Attenuation of Sound During Propagation Outdoors*", which accounts for reduction in sound level with distance due to geometrical spreading, air absorption, ground attenuation and acoustical shielding by intervening structures.

The road noise sources were included in the model as line sources producing equivalent sound pressure levels at a reference distance to those predicted by STAMSON 5.04, a computer algorithm developed by the MECP, based on the daytime and nighttime traffic volumes presented in Section 4.1. Calibration outputs from STAMSON are included as Appendix C.

The model was used to predict traffic noise levels at each of the residential building facades and in the outdoor living areas. Predicted daytime and nighttime sound levels at the façades are shown graphically in Figures 3 and 4. A summary of the maximum sound levels at each residential façade are shown in Table III below.

Table III: Maximum Sound Level Predictions [dBA]

Façade	Daytime $L_{EQ-16\ hr}$	Nighttime $L_{EQ-8\ hr}$
North Façade	50	42
East Façade	62	55
South Façade	65	58
West Façade	61	54
At-Grade OLA	<55	--
2nd Floor OLA*	<55	--

Note: * Assuming a standard minimum 1.07 m high solid parapet around the area.

5 Discussion and Recommendations

The sound level predictions indicate that the future traffic sound levels will exceed the MECP guidelines at some of the façades of the proposed building. Recommendations are provided in the following sections.

5.1 Outdoor Living Areas

The dwelling units in the proposed development are expected to have balconies that are less than 4 m in depth. These areas are not considered to be outdoor amenity areas under MECP guidelines, and therefore are exempt from traffic noise assessment.

The predicted daytime sound levels in the at-grade and 2nd Floor outdoor amenity areas are less than the MECP limit of 55 dBA (with the inclusion of a standard minimum 1.07 m high solid parapet surrounding the elevated area). No additional noise abatement is required for these spaces.

5.2 Indoor Living Areas and Ventilation Requirements

The predicted future sound level at the building façades will be between 56 and 65 dBA during the daytime hours and/or between 51 and 60 dBA during the nighttime hours. To address these excesses, the MECP guidelines recommend that the building be equipped with an alternative means of ventilation to open windows. The initial installation of central air conditioning will meet and exceed this requirement.

Window or through-the-wall air conditioning units are not recommended because of the noise they produce and because the units penetrate through the exterior wall which degrades the overall sound insulating properties of the envelope. Acceptable units are those housed in their own insulated closet with an access door for maintenance. The location, installation and sound ratings of the outdoor air conditioning devices should minimize noise impacts and comply with criteria of MECP publication NPC-300. Associated warning clauses are also recommended.

5.3 Building Façade Constructions

Since the future road traffic sound levels outside all the façades of the proposed building will be within 60 dBA at night and within 65 dBA during the daytime, any exterior wall, insulated metal exterior door and double-glazed window construction meeting the minimum requirements of the Ontario Building Code (OBC) will provide adequate sound insulation.

6 Stationary Source Assessment

Noise sources associated with industrial and commercial facilities are assessed separately from traffic sources under MECP guidelines. These facilities are considered to be Stationary Sources of Sound and criteria for their assessment are contained in the following section.

6.1 Criteria Governing Stationary Noise Sources

An industrial or commercial facility is classified in MECP guidelines as a stationary source of sound (as opposed to sources such as traffic or construction, for example) for noise assessment purposes. The proposed development is located in an urban acoustical environment classified as Class I according to MECP guidelines, which can be characterized by the background sound level being dominated by traffic and human activity.

The façade of a residence, or any associated usable outdoor area, is considered a sensitive point of reception. NPC-300 stipulates that the exclusionary minimum sound level limit for a stationary noise source in an urban Class 1 area is 50 dBA during daytime (07:00 to 19:00) and evening (19:00 to 23:00) hours, and 45 dBA during nighttime hours (23:00 to 07:00). If the background sound levels due to road traffic exceed the exclusionary minimum limits, then the background sound level becomes the criterion. The background sound level is defined as the sound level that is present when the stationary source under consideration is not operating, and may include traffic noise and natural sounds.

Elevated background sound levels due to road traffic on Main Street is considerable, especially at the façade adjacent to the roadway. Hourly data for Main Street was obtained from the Town of Whitchurch-Stouffville. Minimum background sound levels were calculated using a numerical computer modelling package (*CadnaA version 2024 MR1, build: 205.5427*). The model is based on the methods from ISO Standard 9613-2.2, "*Acoustics - Attenuation of Sound During Propagation Outdoors*", which accounts for reduction in sound level with distance due to geometrical spreading, air absorption, ground attenuation and acoustical shielding by intervening structures. The road noise sources were included in the model as line sources producing equivalent sound pressure levels at a reference distance to those predicted by STAMSON 5.04, a computer algorithm developed by the MECP. The higher of the minimum background sound levels due to road traffic, and the

exclusionary minimum sound levels at the façades of the proposed building are shown in Figure 5. Note that the minimum background sound levels due to road traffic are less than the exclusionary minimum sound levels during nighttime hours and therefore 45 dBA has been used as the criteria.

Commercial activities such as the occasional movement of customer vehicles, occasional deliveries, and garbage collection are not of themselves considered to be significant noise sources in the MECP guidelines. Accordingly, these sources have not been considered in this study. Noise from safety equipment (e.g. back-up beepers) are also exempt from consideration.

The MECP guidelines stipulate that the sound level impact during a "predicable worst case hour" be considered. This is defined to be an hour when a typically busy "planned and predictable mode of operation" occurs at the subject facility or facilities, coincident with a period of minimal background sound. Compliance with MECP criteria generally results in acceptable levels of sound at residential receptors although there may still be residual audibility during periods of low background sound.

6.2 Assessment of Existing Stationary Noise Sources on Proposed Residential Development

6.2.1 Existing Stationary Source Noise Predictions

Predictive noise modelling was used to assess the sound impact of the nearby stationary sources at the most critically impacted façades of the proposed building in accordance with MECP guidelines. The noise prediction model was constructed based on a review of the proposed site plan, site visits, satellite aerial photos, and estimates of sound emission levels of stationary sources taken from similar past HGC Engineering project files.

Table IV: Source Sound Power Levels [dB re 10-12 W]

Source	Octave Band Centre Frequency [Hz]								Overall [dBA]
	63	125	250	500	1k	2k	4k	8k	
Lennox 3-Ton HVAC (TGA036)	--	63	66	70	71	68	62	53	75
Lennox 5-Ton HVAC (KG060)	--	67	72	77	76	73	68	61	80
Carrier 18-Ton HVAC (50TJ020)	91	89	86	84	84	78	76	67	88
Lennox 25-Ton HVAC (LGH300)	--	81	82	87	87	82	77	69	90
Make-Up Air Unit	94	93	90	88	84	82	79	74	90
Cooling Tower	95	91	86	86	84	85	86	85	92
4 Fan Chiller Unit	91	87	85	84	83	77	70	66	87
12 Fan Chiller Unit	96	92	90	89	88	82	75	71	92
Medium Truck Refrigeration Unit	96	91	92	81	81	78	72	64	87
Large Truck Refrigeration Unit	101	88	89	84	85	82	76	70	90
Medium Truck Passby	108	90	92	90	94	91	84	77	97
Large Truck Passby	101	100	94	96	97	95	91	86	101

The above data were inputted into a predictive computer model. The software used for this purpose (*Cadna-A version 2024 MR1, build: 205.5427*) is a computer implementation of ISO Standard 9613-2.2 "Acoustics - Attenuation of Sound During Propagation Outdoors." The ISO method accounts for reduction in sound level with distance due to geometrical spreading, air absorption, ground attenuation and acoustical shielding by intervening structures such as barriers.

The following information and assumptions were used in the analysis.

- Rooftop mechanical equipment were assumed to be Lennox TGA036 3-Ton, Lennox KG060 5-Ton, Carrier 50TJ020 18-Ton, and Lennox LGH300 25-Ton HVAC units at a height of 1.5 m above the roof.
- Truck deliveries, with refrigeration units, were assumed to take place in the loading area to the east of Metro, and were included in the model.
- Sound data for the above sources was obtained from past HGC Engineering project files of similar facilities, which were either originally obtained from the manufacturer (for HVAC equipment) or measured at similar facilities.
- Location of stationary noise sources are shown in Figure 6. Rooftop HVAC units, make-up air units, cooling towers, chiller units, and refrigeration units are shown as green crosses. Truck passbys are shown as green lines.

In this impact assessment, we have considered typical worst-case (busiest hour) scenarios for each time period to be as follows:

Assumed day worst-case scenario:

- Chiller units, make-up air units, and cooling towers operating continuously.
- All other rooftop HVAC equipment operating for 50 minutes out of an hour.
- Medium and large refrigeration units operating for 30 minutes out of an hour.
- Two medium and two large truck delivery each hour.

Assumed night worst-case scenario:

- Chiller units, make-up air units, and cooling towers operating continuously.
- All other rooftop HVAC equipment operating for 15 minutes out of an hour.
- No truck deliveries.

6.2.2 Results

The unmitigated sound levels due to stationary noise sources at the façades of the proposed building are summarized in Table V and presented graphically in Figures 7a and 7b.

Table V: Predicted Sound Levels from the Existing Retail/Commercial Facilities on the Proposed Building [dBA]

Façade	Daytime (07:00 – 23:00)	Nighttime (23:00 – 07:00)	Criteria (Daytime / Nighttime)
North	44	<40	50 / 45
East	44	40	50 / 45
South	42	40	54 / 45
West	45	43	50 / 45

The results of the calculations indicate that the predicted sound levels due to the operation of the nearby stationary sources of noise are within MECP limits at the façades of the proposed building during an assumed worst-case operational scenario. Mitigation is not required for stationary noise sources in the area.

It is noted that the operations of the industrial facility to the south are required to meet the applicable sound level criteria at the nearby noise sensitive receptors. This includes the mid-rise residential building that is under construction to the west of the subject site, which is approximately the same distance from the industrial facility as the subject site, and at the retirement home to the southeast of the industrial facility, which is closer to the industrial facility than the subject site.

7 Warning Clauses

The MECP guidelines recommend that warning clauses be included in the property and tenancy agreements for all units with anticipated traffic sound level excesses. Examples are provided below.

Suggested wording for future dwellings with sound level excesses.

Type A:

> Purchasers/tenants are advised that sound levels due to increasing road traffic may occasionally interfere with some activities of the dwelling occupants as the sound levels exceed the sound level limits of the Municipality and the Ministry of the Environment, Conservation and Parks.

Suitable wording for future dwellings requiring central air conditioning systems is given below.

Type D:

> This dwelling unit has been supplied with a central air conditioning system which will allow windows and exterior doors to remain closed, thereby ensuring that the indoor sound levels are within the sound level limits of the Municipality and the Ministry of the Environment, Conservation and Parks. (Note: the location and installation of the outdoor air conditioning device should be done so as to minimize the noise impacts and comply with criteria of MECP publication NPC-300.)

Suitable wording to inform future residents of the nearby retail, commercial, and/or industrial facilities and that sounds from these facilities may at times be audible.

Type E:

> Purchasers/tenants are advised that due to the proximity of the nearby retail, commercial, and/or industrial facilities, noise from the facilities may at times be audible.

These sample clauses are provided by the MECP as examples and can be modified by the Municipality as required.

8 Impact of the Development on Itself

Section 5.8.1.1 of the Ontario Building Code (OBC), released on January 1, 2020, specifies the minimum required sound insulation characteristics for demising partitions, in terms of Sound Transmission Class (STC) or Apparent Sound Transmission Class (ASTC) values. In order to maintain adequate acoustical privacy between separate suites in a multi-tenant building, inter-suite walls must meet or exceed STC-50 or ASTC-47. Suite separation from a refuse chute or elevator shaft must meet or exceed STC-55. In addition, it is recommended that the floor/ceiling constructions separating suites from any amenity or commercial spaces also meet or exceed STC-55. Tables 1 and 2 in Section SB-3 of the Supplementary Guideline to the OBC provide a comprehensive list of constructions that will meet the above requirements.

Tarion's Builder Bulletin B19R requires the internal design of condominium projects to integrate suitable acoustic features to insulate the suites from noise from each other and amenities in accordance with the OBC and limit the potential intrusions of mechanical and electrical services of the buildings on its residents. If B19R certification is needed, an acoustical consultant is required to review the mechanical and electrical drawings and details of demising construction and mechanical/electrical equipment, when available, to help ensure that the noise impact of the development on itself is maintained within acceptable levels.

9 Impact of the Development on the Environment

Sound levels from noise sources such as rooftop air-conditioners, cooling towers, exhaust fans, etc. should not exceed the minimum one-hour L_{EQ} ambient (background) sound level from traffic, at any potentially impacted residential point of reception. Based on the levels observed during our site visit, the typical minimum ambient sound levels in the area are expected to be above the minimum exclusionary limits of 50 dBA or more during the day and 45 dBA or more at night. Thus, any electro-mechanical equipment associated with this development (e.g., emergency generator testing, fresh-air handling equipment, etc.) should be designed such that they do not result in noise impact beyond these ranges. At the time of this study, the design of the proposed building was in its initial stages, and the mechanical systems had not yet been developed.

The details of the mechanical equipment will be reviewed at the SPA stage when that information is available. It appears from the renderings that the majority of rooftop mechanical equipment will be housed in a mechanical penthouse on the roof of each proposed building. Any rooftop equipment not housed in the penthouse will be assessed and sufficiently shielded from neighbouring residences, as needed.

It is also HGC Engineering's experience with numerous developments, that typical HVAC equipment and parking garage exhaust fans can meet the applicable MECP noise criteria at neighbouring residential uses, either with low noise emission fans or relocation of the fans or through mitigation in the form of duct silencers or acoustic lining. Prior to building permit, an acoustical consultant should review the mechanical drawings and details of potential exhaust vents/fans, when available, to help ensure that the noise impact of the development on the environment, and of the development on itself, are maintained within acceptable levels. This is typically completed at the detailed noise study stage, at SPA.

10 Summary of Recommendations

The following list and Table VI summarize the recommendations made in this report.

1. An alternative means of ventilation to open windows is required for the building. Central air conditioning will meet this requirement. The location, installation and sound ratings of the air conditioning devices should comply with NPC-300.

2. Any glazing construction meeting the minimum requirements of the Ontario Building Code (OBC) will provide adequate sound insulation for the proposed dwellings in the development.

3. Warning clauses are required in the property and tenancy agreements and offers of purchase and sale in order to inform future owners/tenants of the sound level excesses and the proximity to the retail/commercial/industrial uses.

4. Tarion Builders Bulletin B19R requires that the internal design of condominium projects integrates suitable acoustic features to insulate the suites from noise from each other and amenities in accordance with the OBC, and limit the potential intrusions of mechanical and electrical services of the buildings on its residents. If B19R certification is to be sought, an acoustical consultant is required to review the mechanical and electrical drawings and details of demising constructions and mechanical/electrical equipment, when available, to help ensure that the noise impact of the development on itself are maintained within acceptable levels.

The reader is referred to the previous sections of the report where these recommendations are discussed in more detail. The following table summarizes the noise control recommendations and noise warning clauses for the dwellings in the proposed building.

Table VI: Summary of Noise Control Requirements and Noise Warning Clauses

Description	Acoustic Barrier	Ventilation Requirements*	Type of Warning Clause	Required STC+
All Façades	--	Alternative Ventilation	A, D, E	OBC
At-Grade OLA	--	--	--	--
2nd Floor OLA	--	--	--	--

Notes:
-- no specific requirement
* The location, installation and sound rating of the air conditioning condensers must be compliant with MECP Guideline NPC-300, as applicable.

10.1 Implementation

To ensure that the noise recommendations outlined above are fully implemented, it is recommended that:

1. Prior to the issuance of building permits for this development, a Professional Engineer qualified to perform acoustical engineer services in the Province of Ontario should review the architectural and mechanical plans to verify that the noise control recommendations have been included in their entirety.

2. Prior to the issuance of occupancy permits for this development, the City's building inspector or a Professional Engineer qualified to perform acoustical engineer services in the province of Ontario should certify that the noise control measures have been properly incorporated, installed, and constructed.

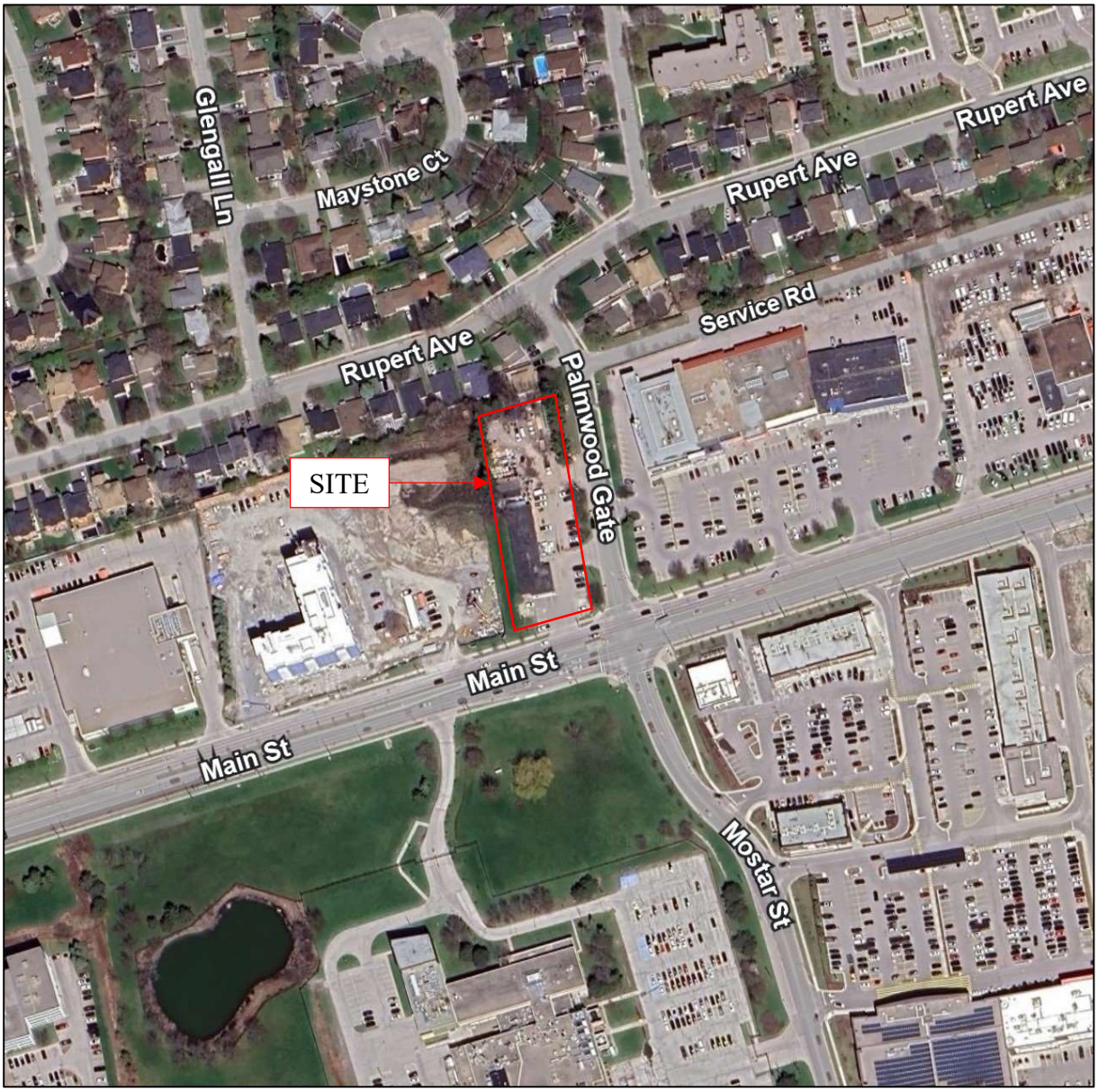
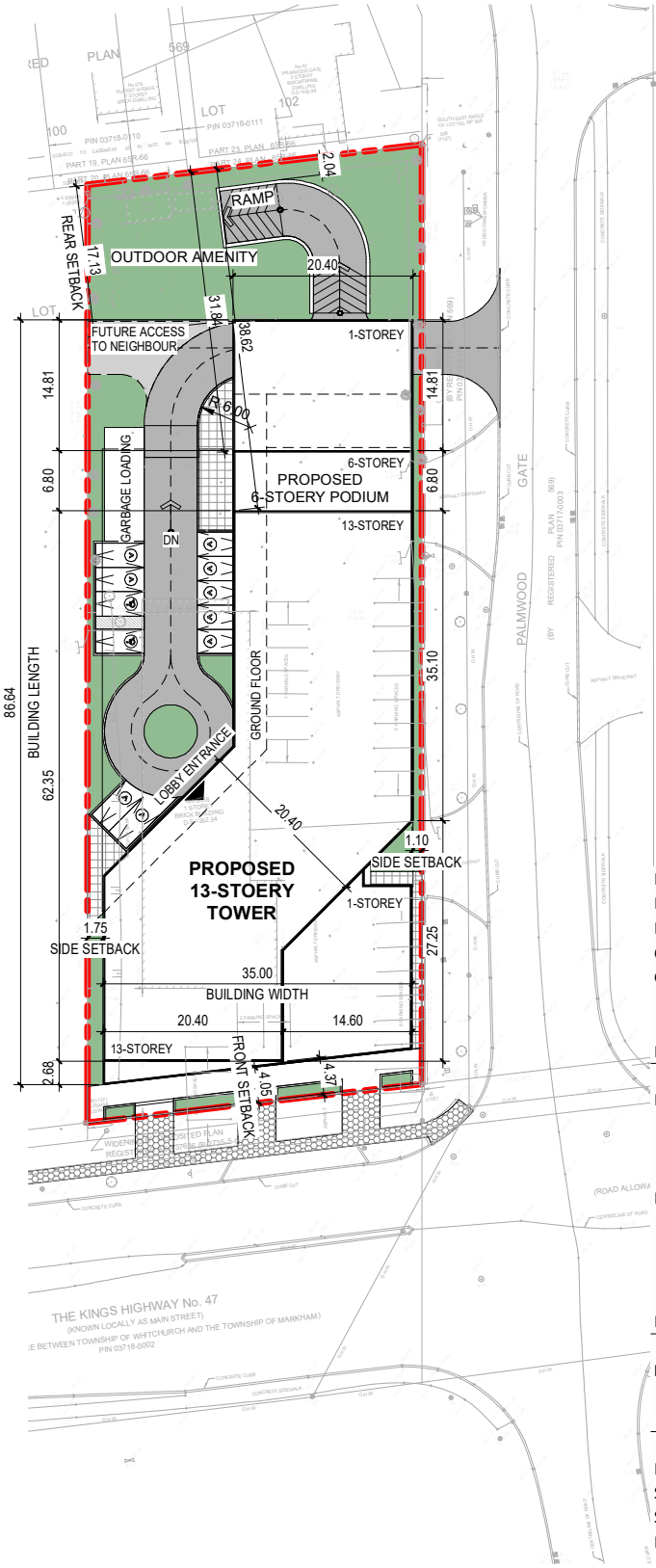


Figure 1: Key Plan



SITE STATISTICS

LOT AREA:	4,021.77 M²	(0.99 Acres)
LOT FRONTAGE:	37.85 M	
BUILDING AREA:	2,098.42 M²	(22,587.94 F²)
COVERAGE:	52.18%	
GFA(GLOSS FLOOR AREA):	20,276.10 M²	(218,257.25 F²)
COMMERCIAL AREA:	610.92 M²	(6,576.10 F²)
RESIDENTIAL AREA:	19,665.18 M²	(211,681.15 F²)
FSI:	5.04	
NUMBER OF RESIDENTIAL UNITS:	254	
1 BEDROOM UNITS:	68	(26.77%)
2 BEDROOM UNITS:	150	(59.06%)
3 BEDROOM UNITS:	36	(14.17%)
PARKING SPACE NUMBER:	286	
SURFACE:	11	
MEZZANINE:	65	
UNDERGROUND P1:	103	
UNDERGROUND P2:	107	
PARKING...	1.13	(PARKING/UNIT)
BUILDING HEIGHT:	45.00 M	(13 STOREYS)
PODIUM:	6	STOREYS
MID-RISE:	7	STOREYS
FRONT SETBACK:	4.05 M	
SIDE SETBACK (EAST):	1.10 M	
SIDE SETBACK (WEST):	1.75 M	
REAR SETBACK:	17.44 M	

Figure 2: Proposed Site Plan

Drawing No.

A- 001

SITE PLAN

Date	Issue Date	Checked
Scale	1 : 500	Drawn
Project No.	T2022062	

CONDOMINIUM

5688 MAIN STREET

Whitchurch-Stouffville, ON

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98 SCARSDALE ROAD,
TORONTO, ONTARIO, M3B 2R7
T: 416 800 3284
F:416 800 3485

No.	Issues	Date	By
1	Pre-Consultation	2022-12-15	

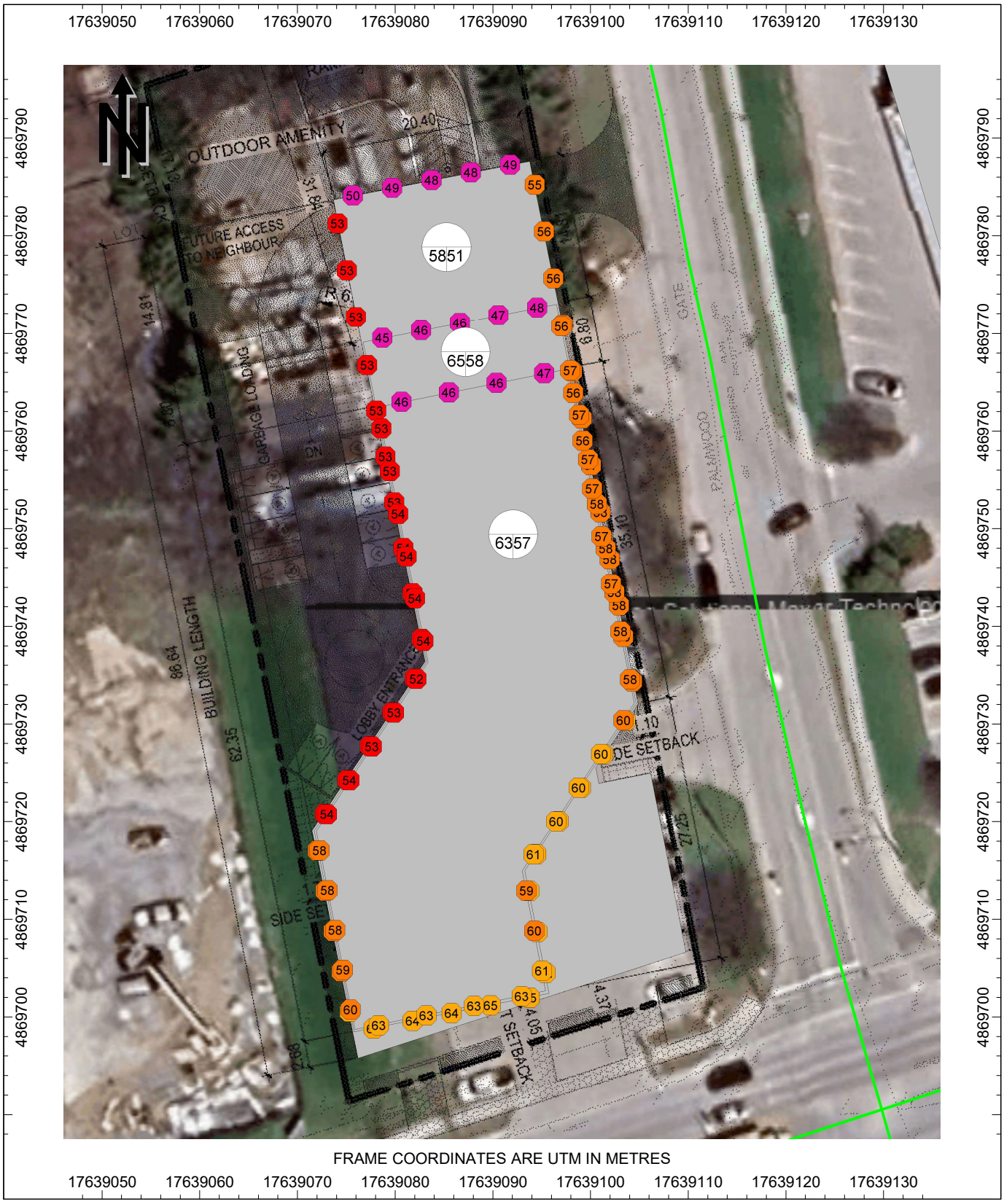


Figure 3: Daytime Traffic Sound Level Predictions at Building Facades

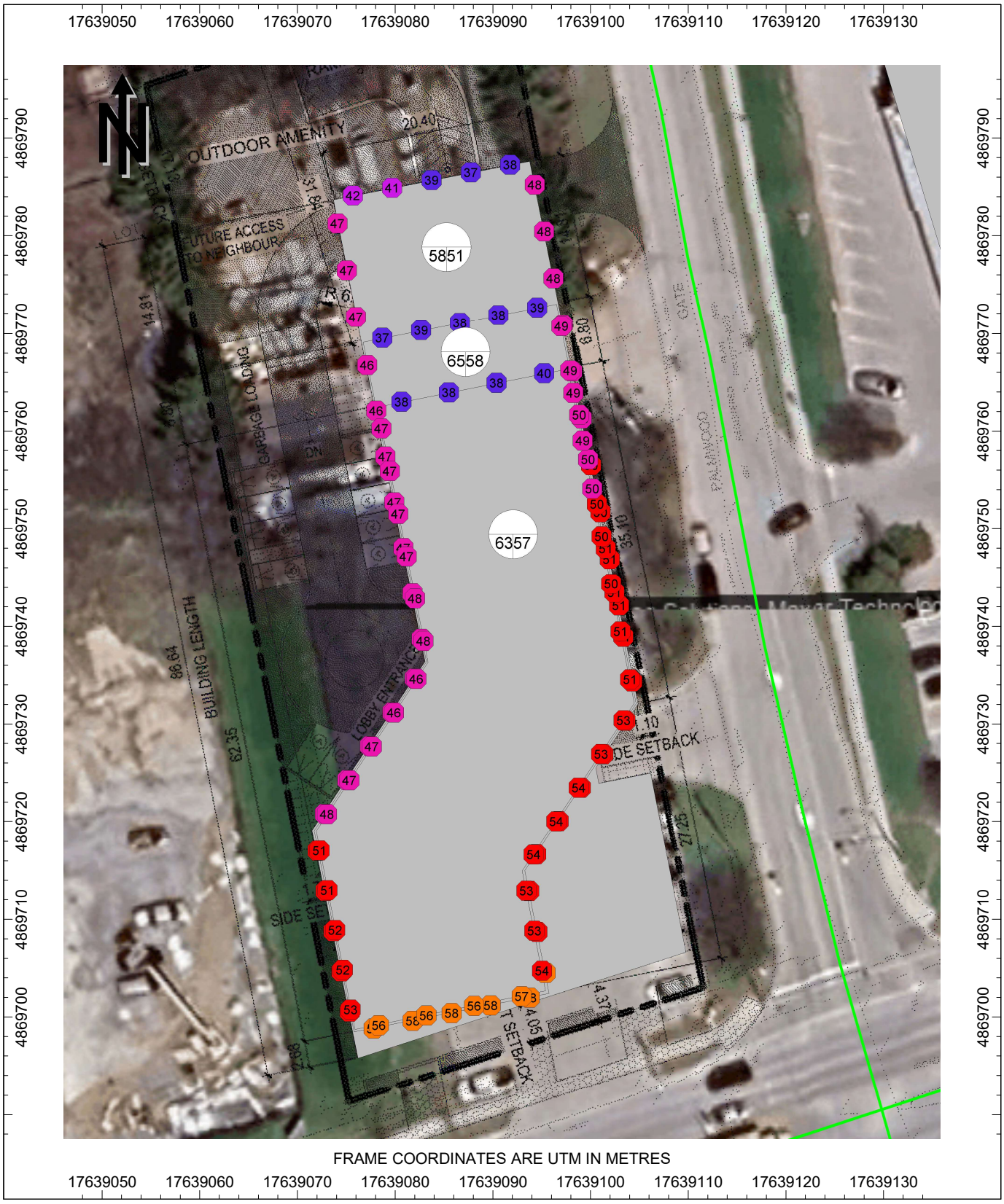


Figure 4: Nighttime Traffic Sound Level Predictions at Building Facades

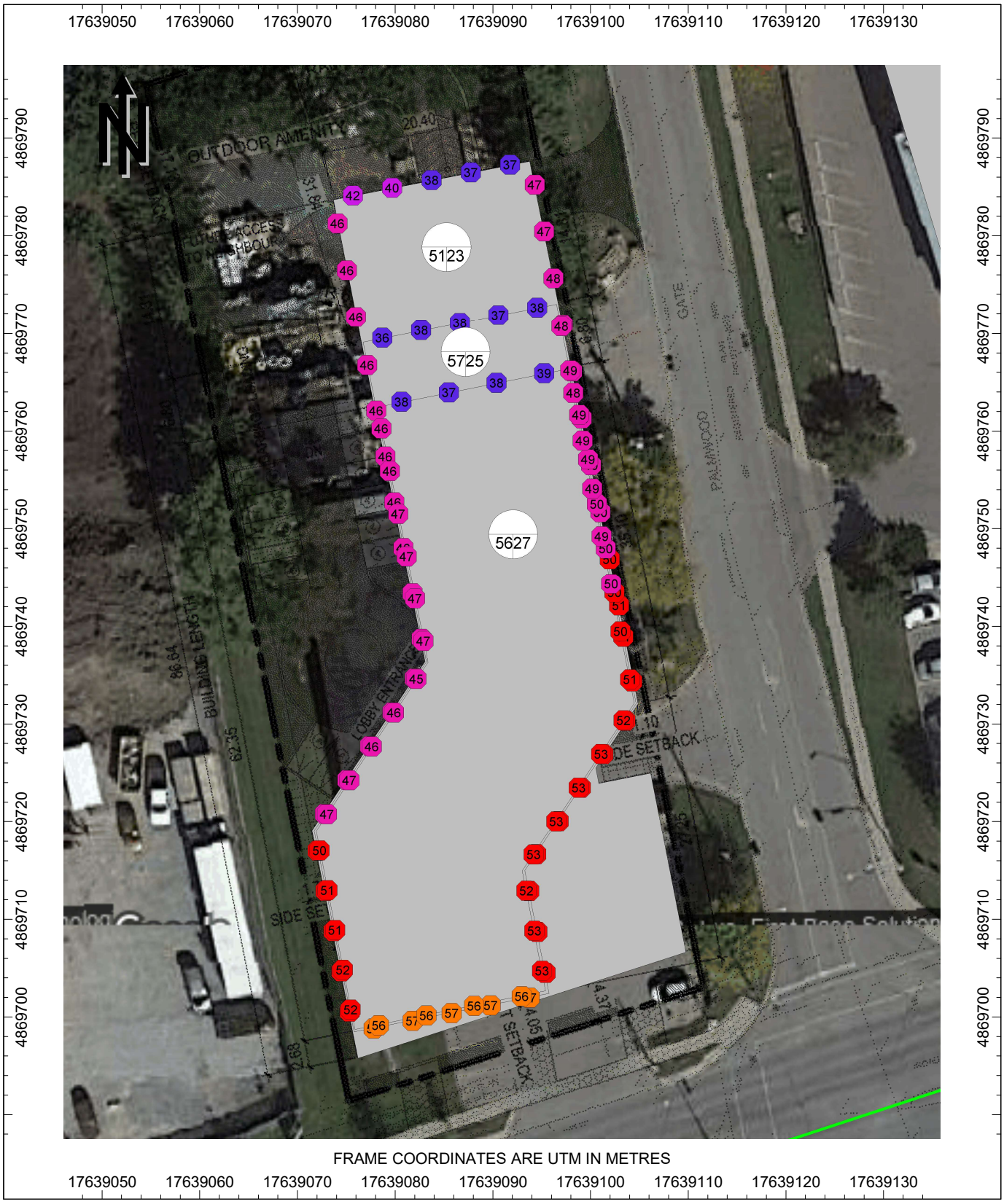


Figure 5: Stationary Noise Sound Level Criteria, Daytime

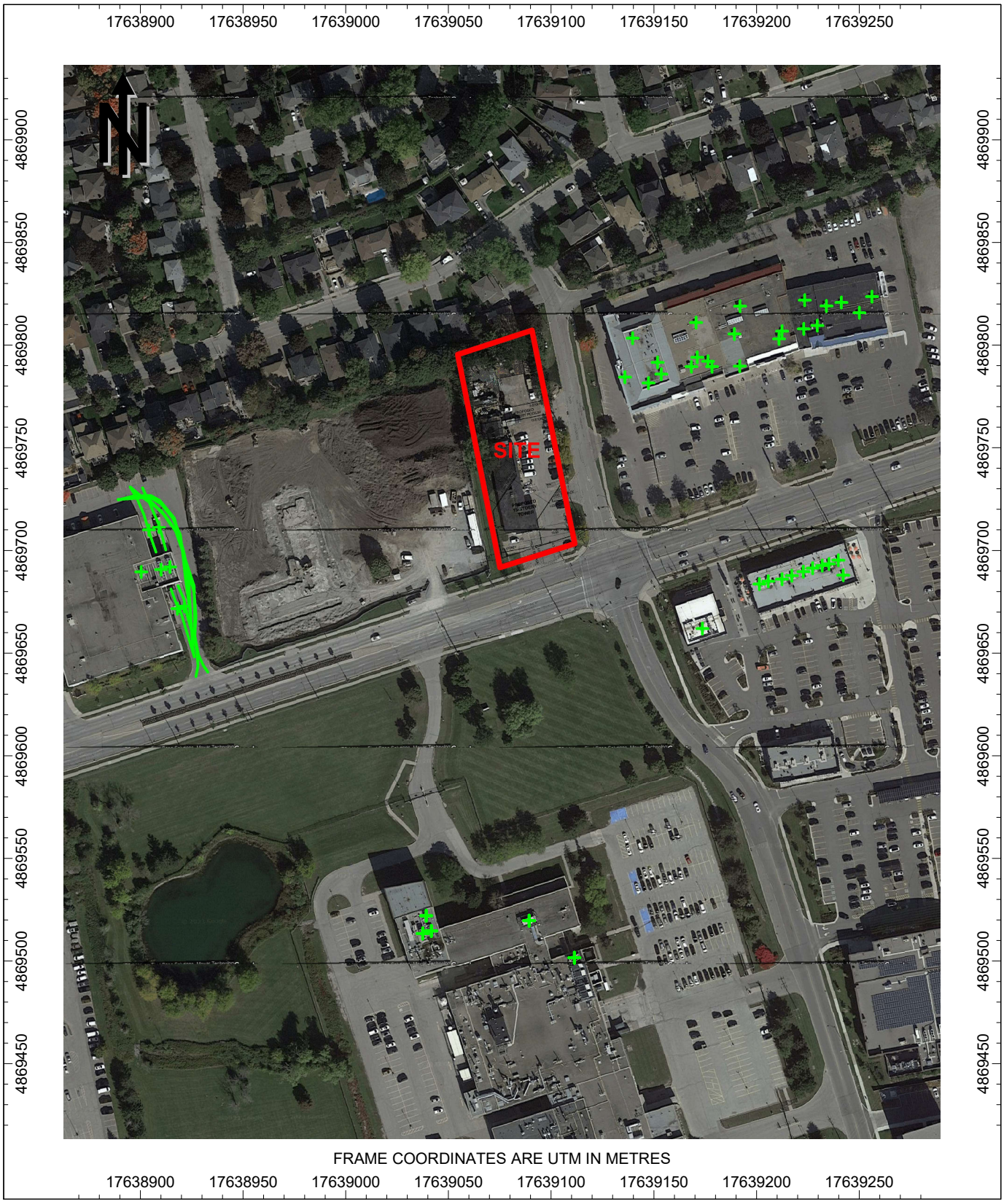


Figure 6: Location of Existing Stationary Noise Sources

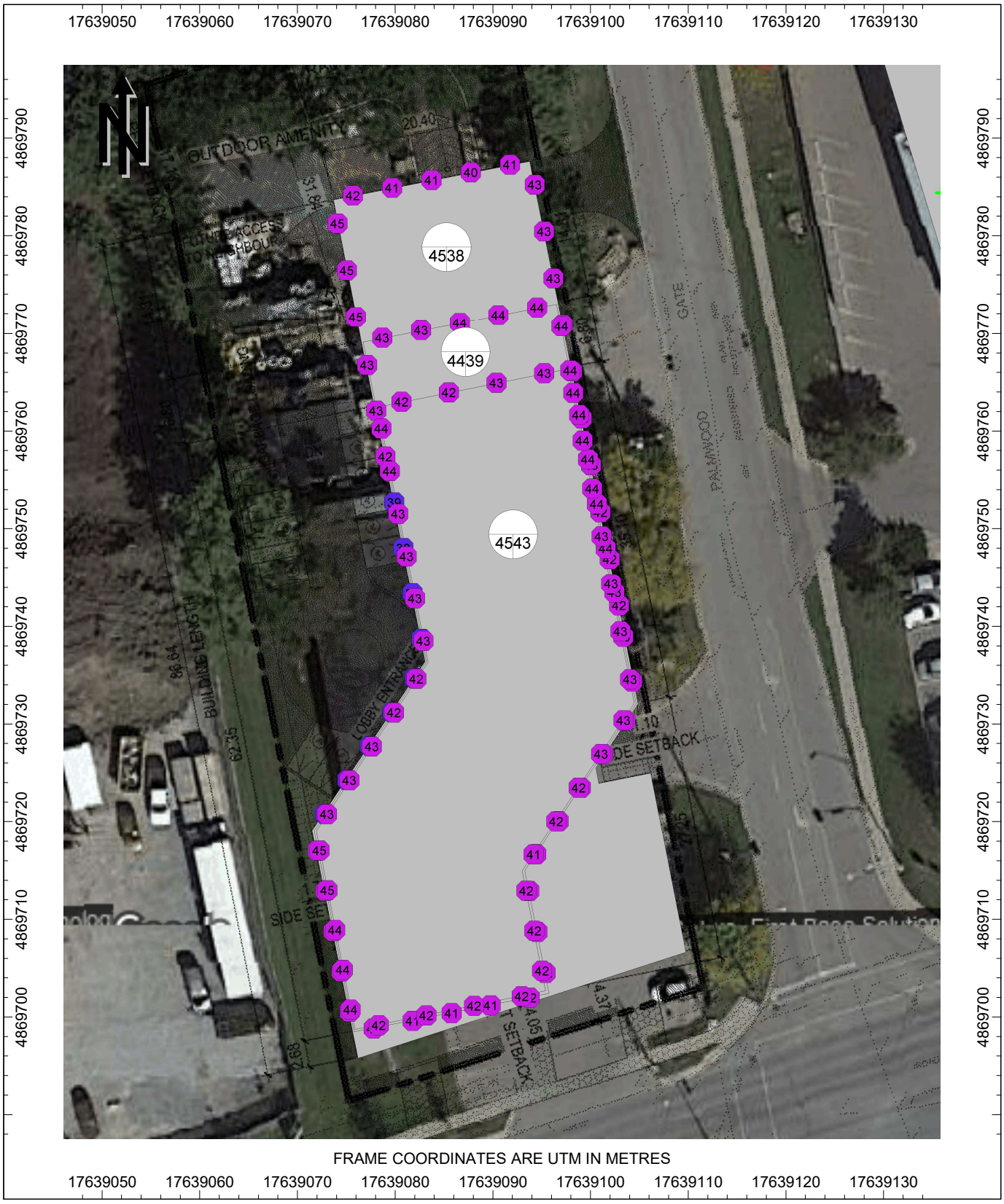


Figure 7a: Impact of Nearby Existing Stationary Noise, Daytime

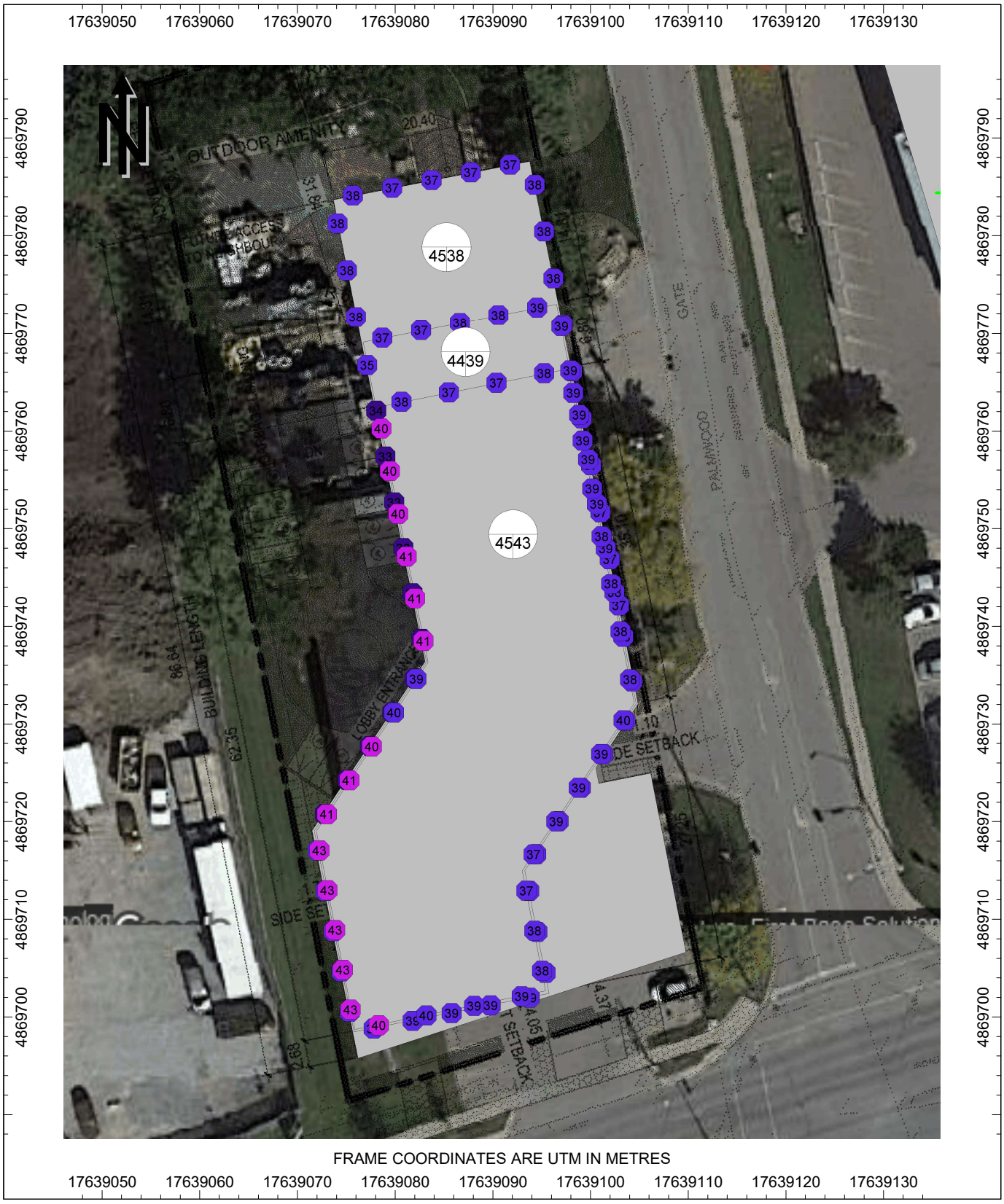


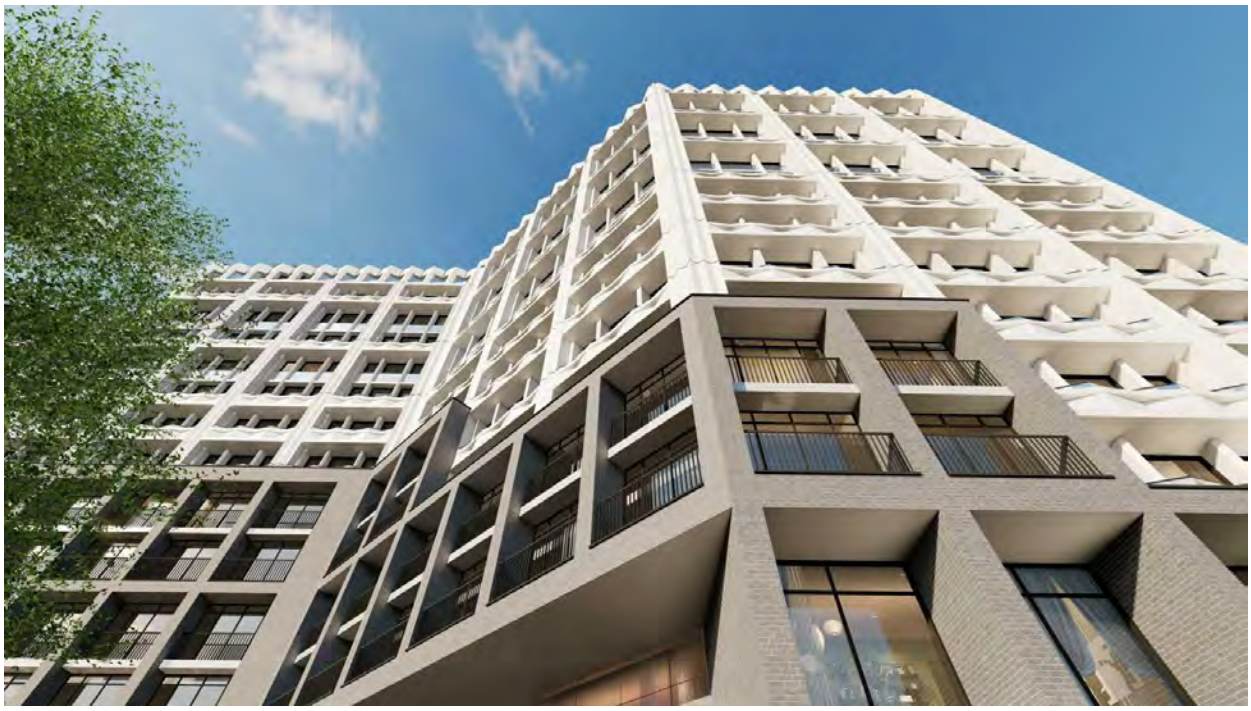
Figure 7b: Impact of Nearby Existing Stationary Noise, Nighttime

Appendix A

Supporting Drawings

NEW CONDO DEVELOPMENT OF 5688 MAIN ST.

WITCHURCH-STOUFFVILLE, ONTARIO



Drawing No.

A- 000

COVER PAGE

Date	Issue Date	Checked
Scale	1 : 1	Drawn
Project No.		T2022062

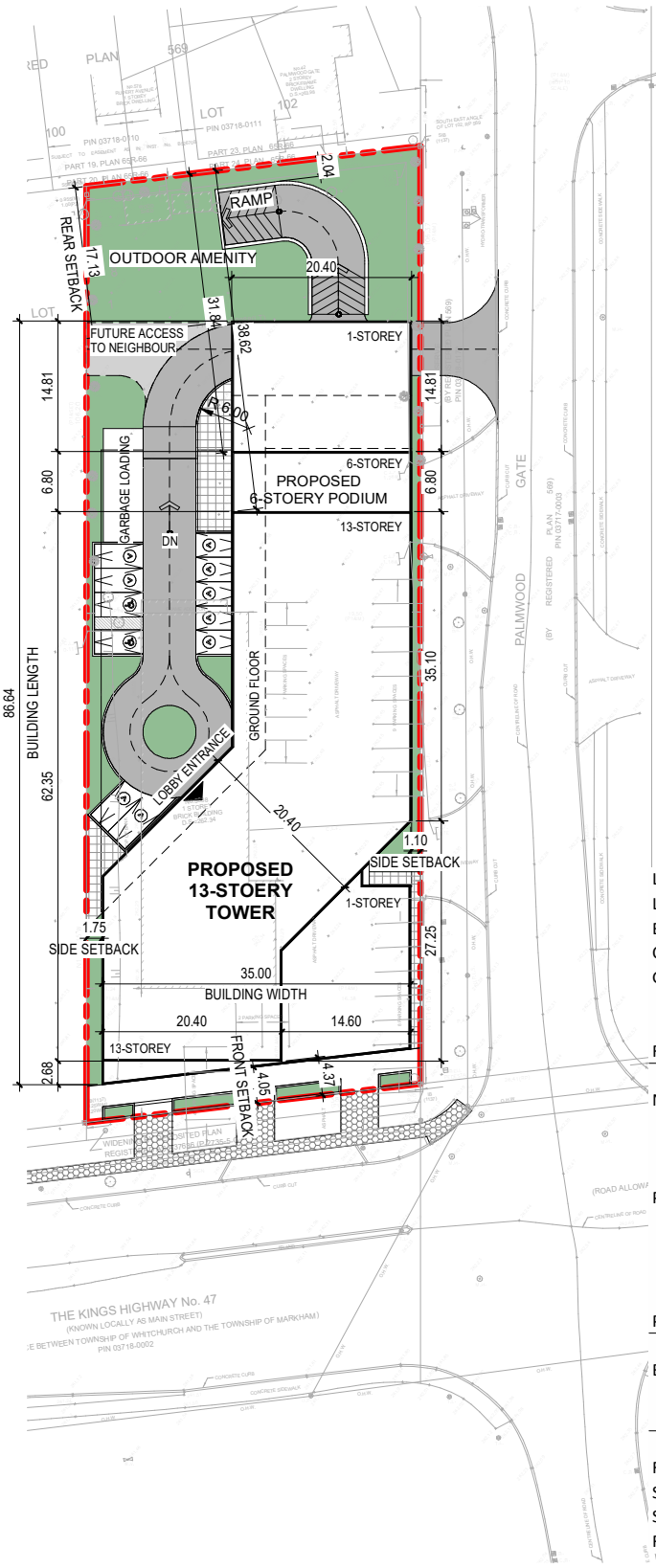
CONDOMINIUM

5688 MAIN STREET

Whitchurch-Stouffville, ON

TAES Architects Inc.
98 SCARSDALE ROAD,
TORONTO, ONTARIO, M3B 2R7
T: 416 800 3284
F:416 800 3485

No.	Issues	Date	By
1	Pre-Consultation	2022-12-15	



SITE STATISTICS

LOT AREA:	4,021.77 M²	(0.99 Acres)
LOT FRONTAGE:	37.85 M	
BUILDING AREA:	2,098.42 M²	(22,587.94 F²)
COVERAGE:	52.18%	
GFA(GLOSS FLOOR AREA):	20,276.10 M²	(218,257.25 F²)
COMMERCIAL AREA:	610.92 M²	(6,576.10 F²)
RESIDENTIAL AREA:	19,665.18 M²	(211,681.15 F²)
FSI:	5.04	
NUMBER OF RESIDENTIAL UNITS:	254	
1 BEDROOM UNITS:	68	(26.77%)
2 BEDROOM UNITS:	150	(59.06%)
3 BEDROOM UNITS:	36	(14.17%)
PARKING SPACE NUMBER:	286	
SURFACE:	11	
MEZZANINE:	65	
UNDERGROUND P1:	103	
UNDERGROUND P2:	107	
PARKING...	1.13	(PARKING/UNIT)
BUILDING HEIGHT:	45.00 M	(13 STOREYS)
PODIUM:	6	STOREYS
MID-RISE:	7	STOREYS
FRONT SETBACK:	4.05 M	
SIDE SETBACK (EAST):	1.10 M	
SIDE SETBACK (WEST):	1.75 M	
REAR SETBACK:	17.44 M	

Drawing No.

A- 001

SITE PLAN

Date	Issue Date	Checked
Scale	1 : 500	Drawn
Project No.	T2022062	

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5688 MAIN STREET

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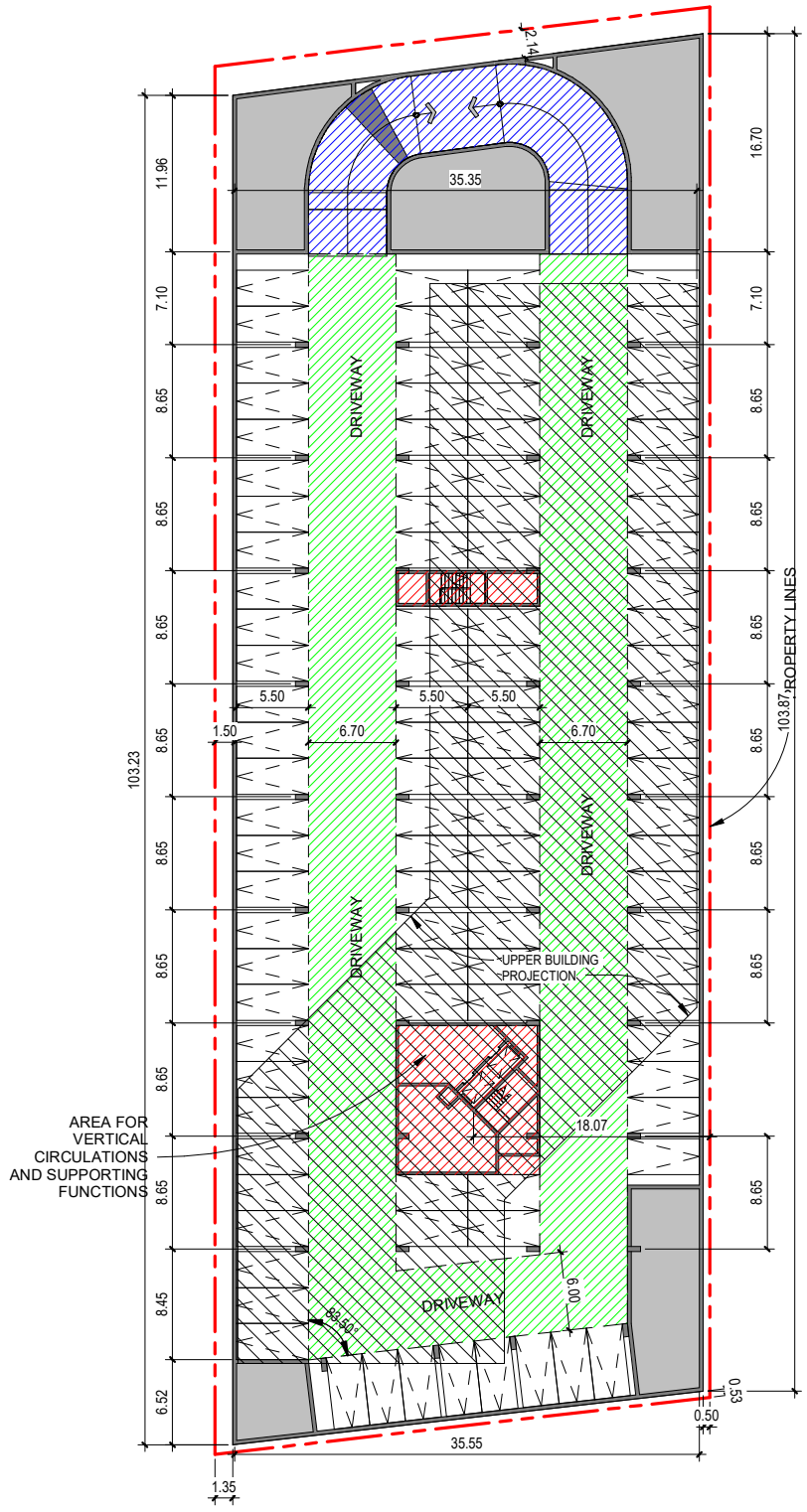

P1: 103 PARKING SPACES
P2: 109 PARKING SPACES

* SUBSEQUENT MEP REQUIREMENTS WILL LOSE SOME PARKING SPACES.

Drawing No.

A- 101

UNDERGROUND P1

Date	Issue Date	Checked
Scale	1 : 350	Drawn
Project No.	T2022062	

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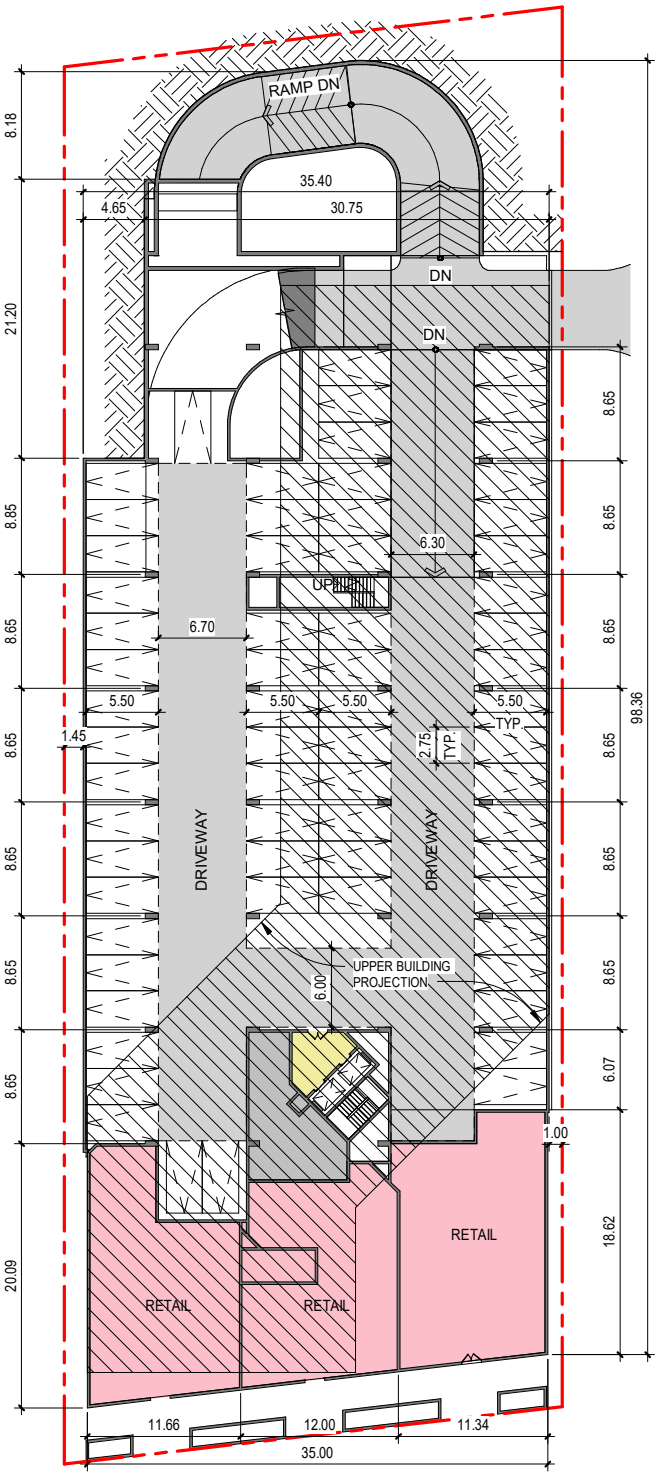
1	Pre-Consultation	2022-12-15	



MEZZANINE: 65 PARKING SPACES

* SUBSEQUENT MEP REQUIREMENTS WILL LOSE SOME PARKING SPACES.

Drawing No.

A- 102

MEZZANINE PLAN

Date	Issue Date	Checked
Scale	1 : 350	Drawn
Project No.		T2022062

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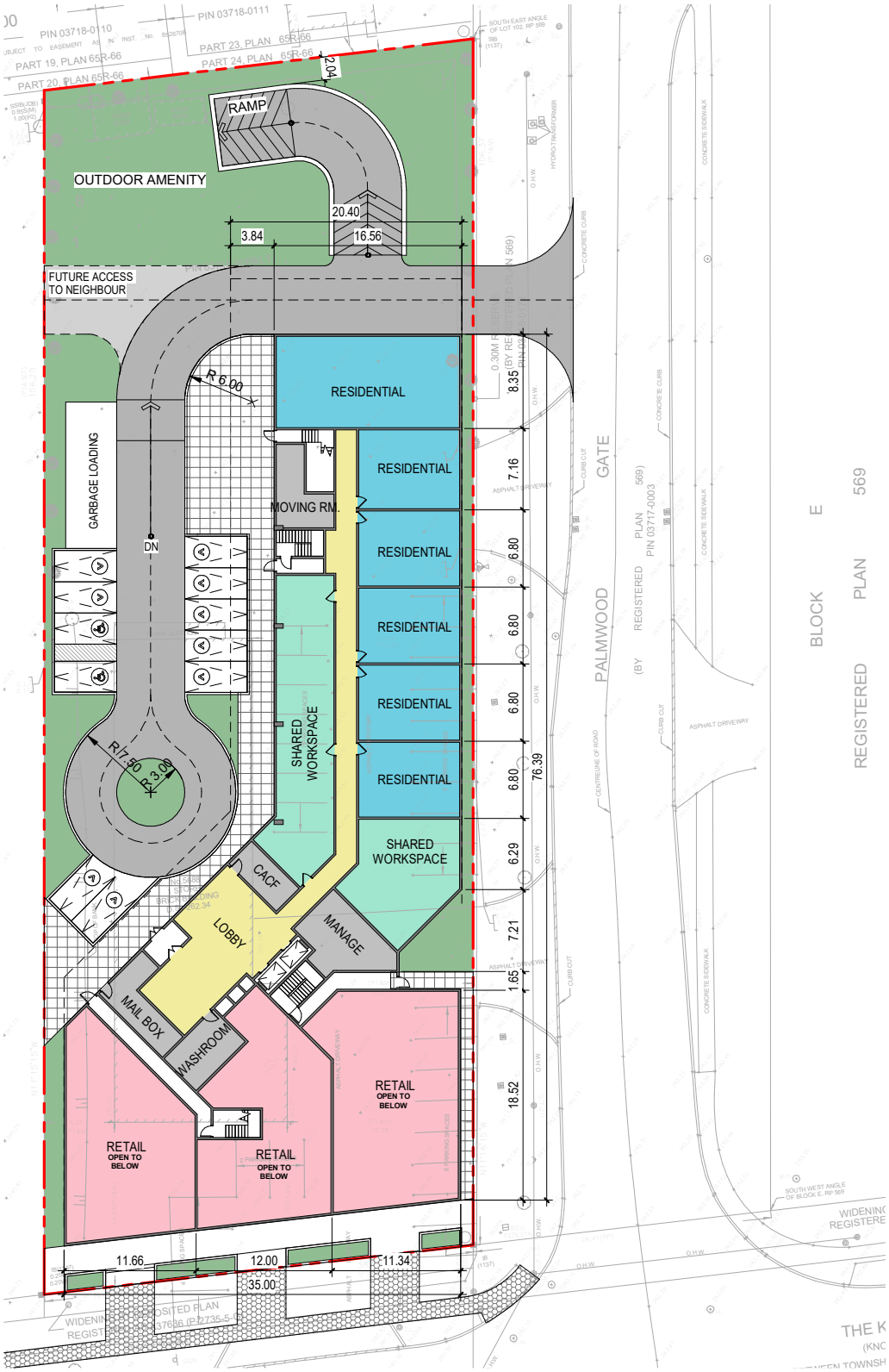
No.	Issues	Date	By



GROUND: 11 PARKING SPACES

Drawing No.

A- 103

GROUND FLOOR

Date	Issue Date	Checked
Scale	1 : 350	Drawn
Project No.		T2022062

CONDOMINIUM

5688 MAIN STREET

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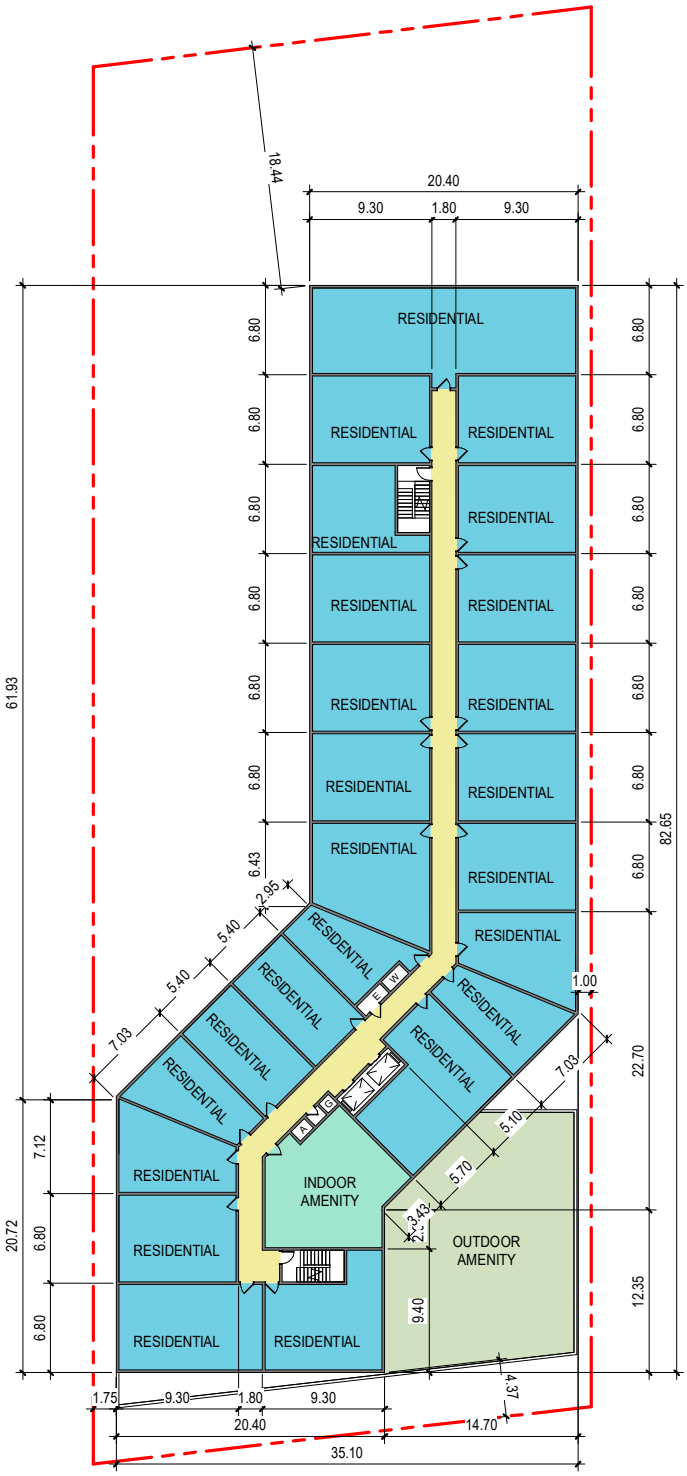
No.	Issues	Date	By
1	Pre-Consultation	2022-12-15	



Drawing No.

A- 104

SECOND FLOOR

Date	Issue Date	Checked
Scale	1 : 350	Drawn
Project No.		T2022062

CONDOMINIUM

5688 MAIN STREET

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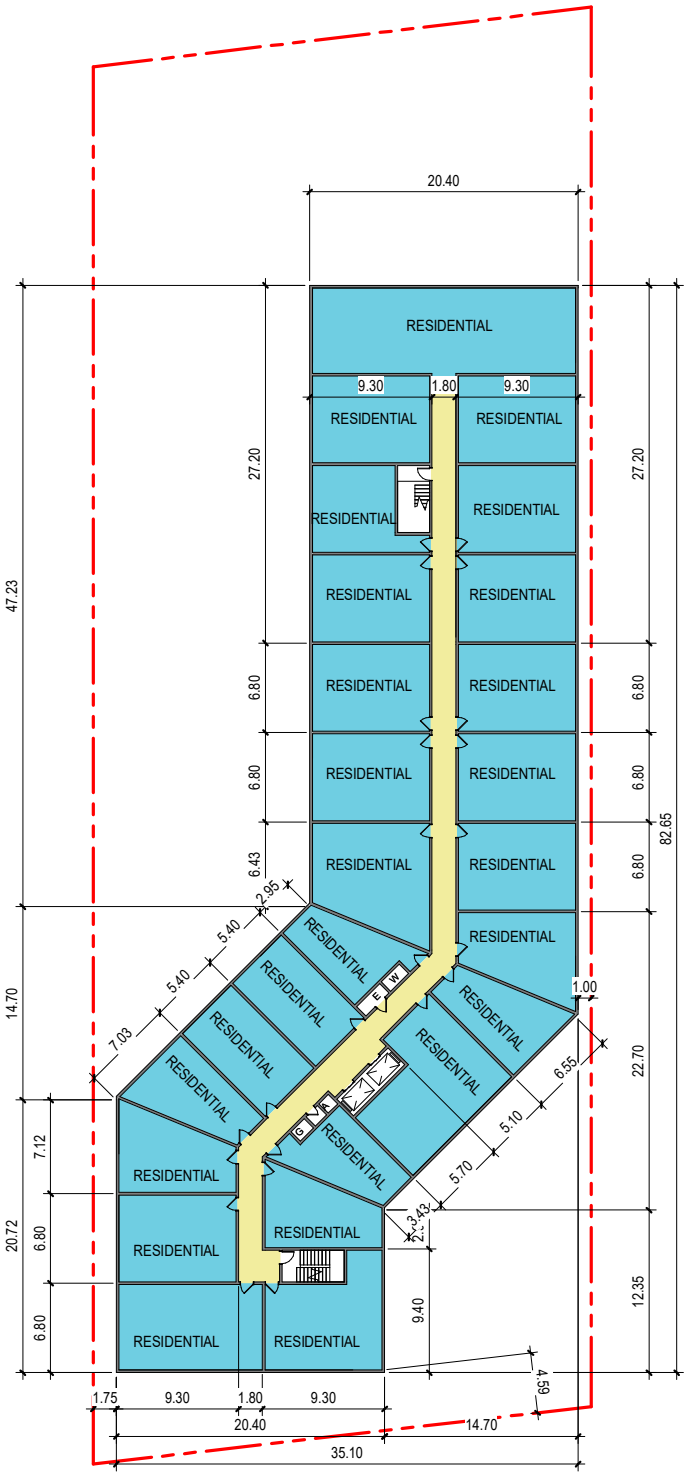
No.	Issues	Date	By
1	Pre-Consultation	2022-12-15	



Drawing No.

A- 105

LOWER FLOOR TYPICAL LAYOUT

Date	Issue Date	Checked
Scale	1 : 350	Drawn
Project No.	T2022062	

CONDOMINIUM

5688 MAIN STREET

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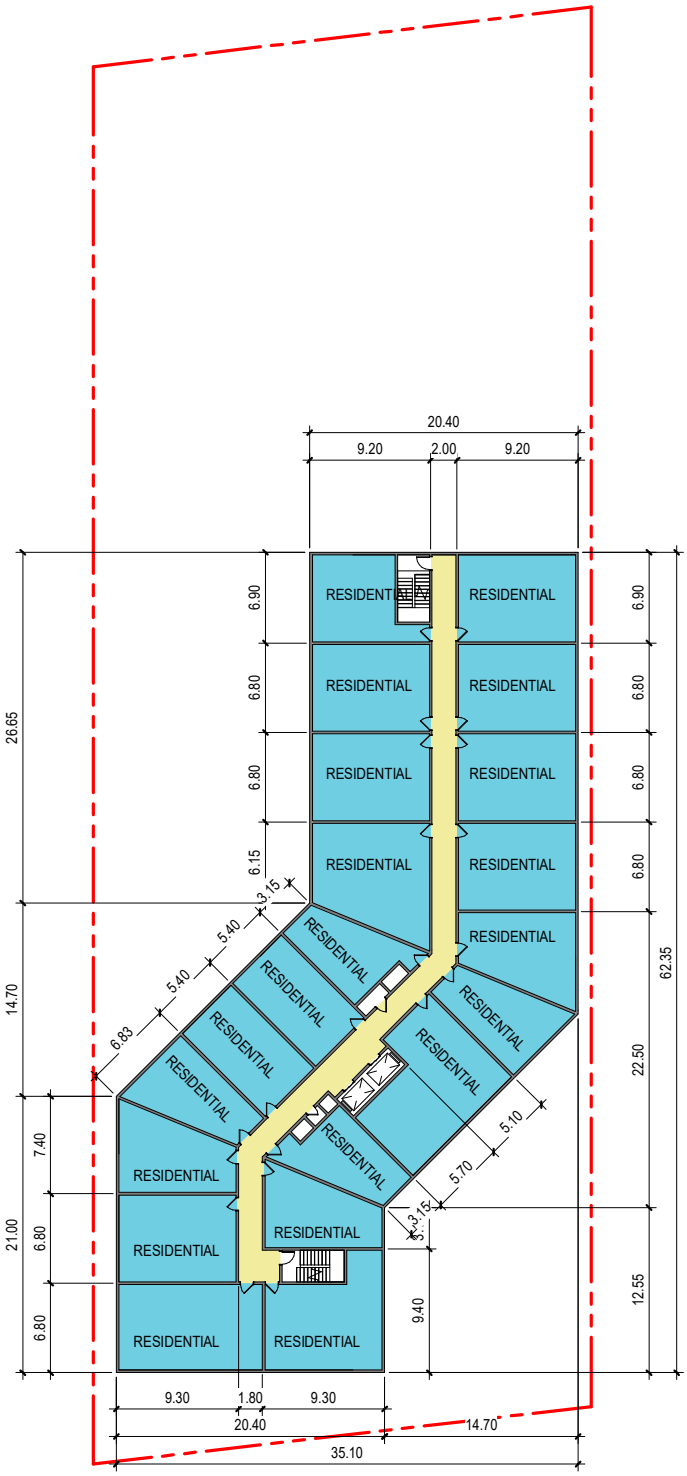
No.	Issues	Date	By
1	Pre-Consultation	2022-12-15	



8TH FLOOR

Drawing No.

A- 106

UPPER FLOOR TYPICAL LAYOUT

Date	Issue Date	Checked
Scale	1 : 350	Drawn
Project No.	T2022062	

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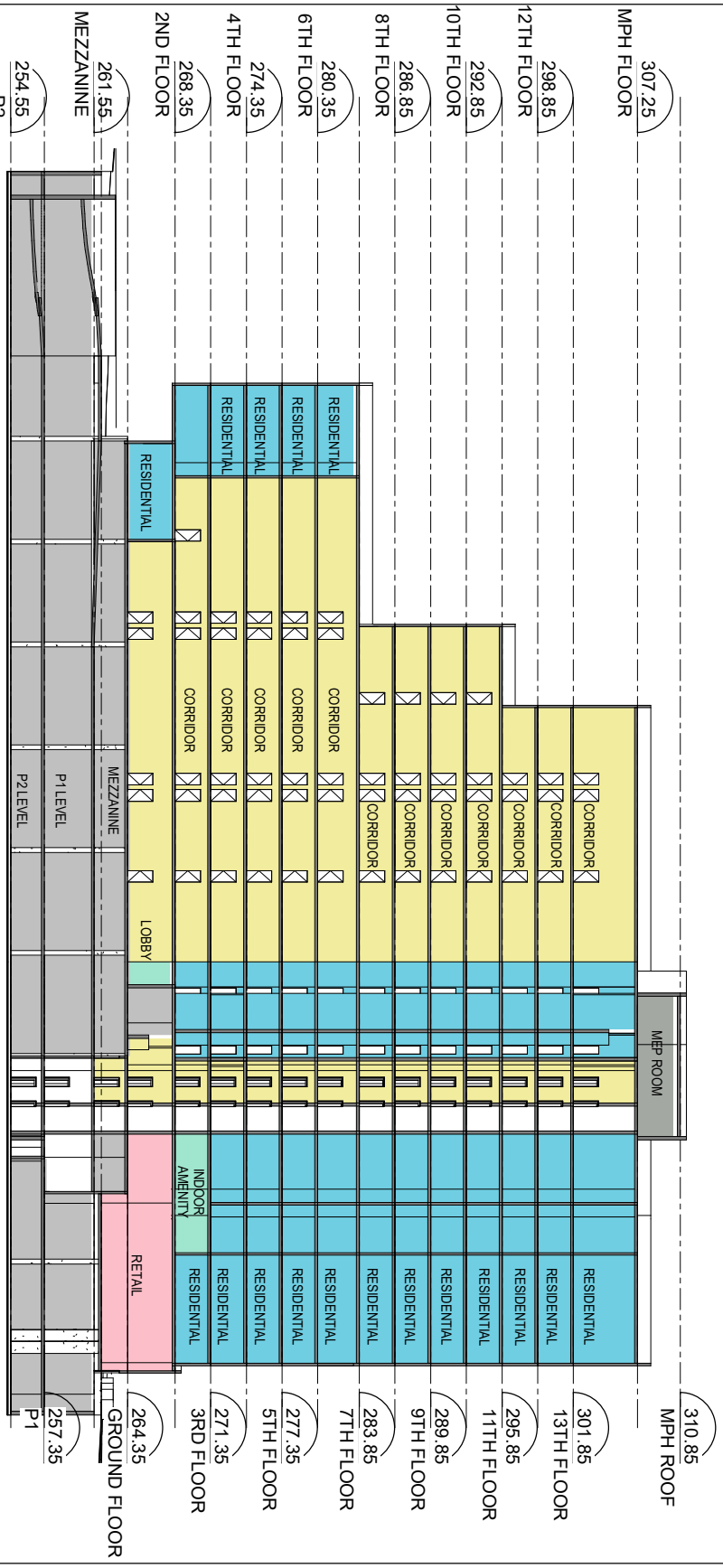
No.	Issues	Date	By



Drawing No.

A- 301

SECTION 1

Date	Issue Date	Checked
Scale	1 : 350	Drawn
Project No.		T2022062

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No.	Issues	Date	By

Drawing No.

A- 200

EAST ELEVATION

Date	Issue Date	Checked
Scale	1 : 300	Drawn
Project No.		T2022062

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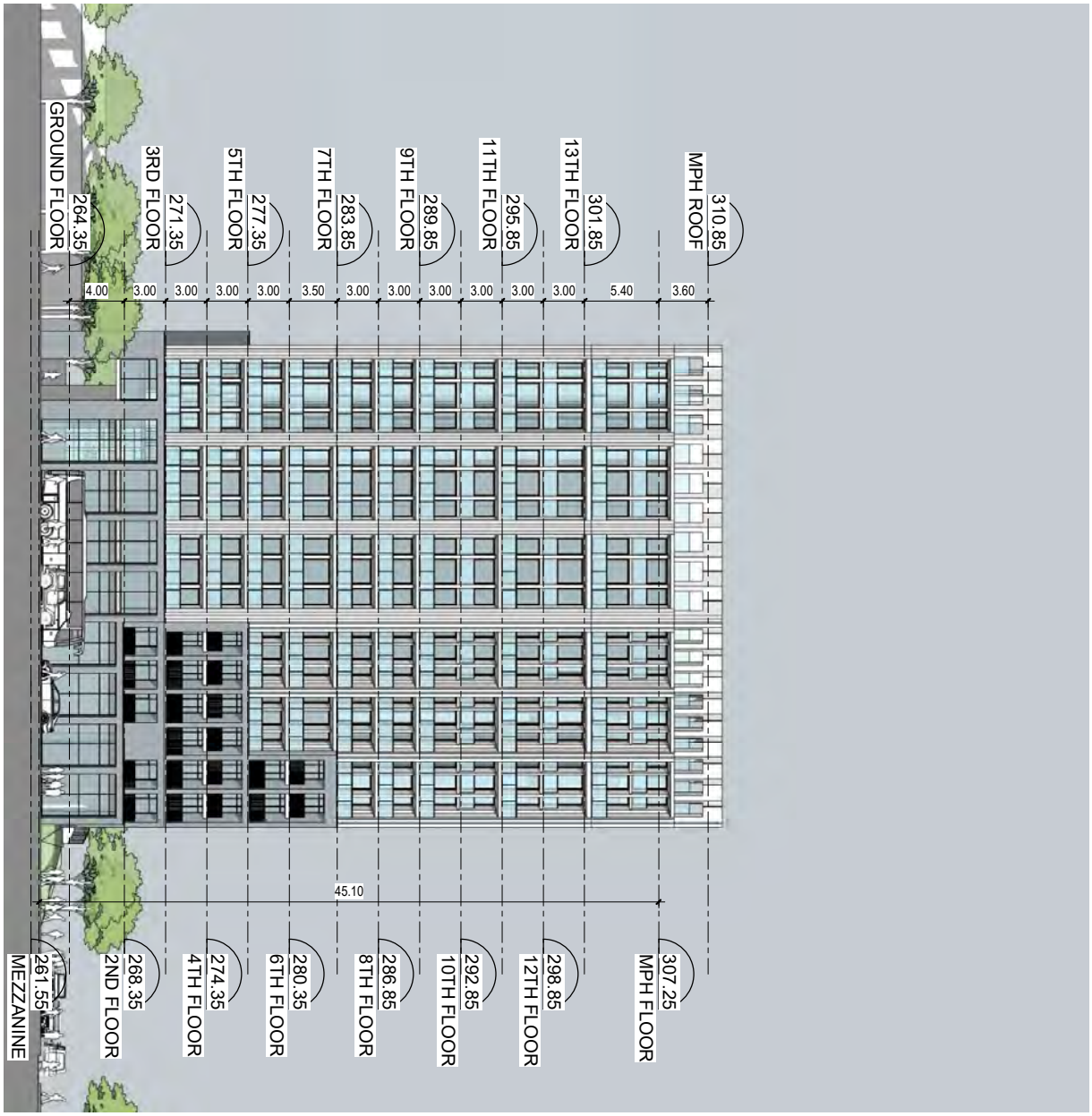
No.	Issues	Date	By
1	Pre-Consultation	2022-12-15	



Drawing No.

A- 201

SOTH ELEVATION

Date	Issue Date	Checked
Scale	1 : 300	Drawn
Project No.		T2022062

CONDOMINIUM

5688 MAIN STREET

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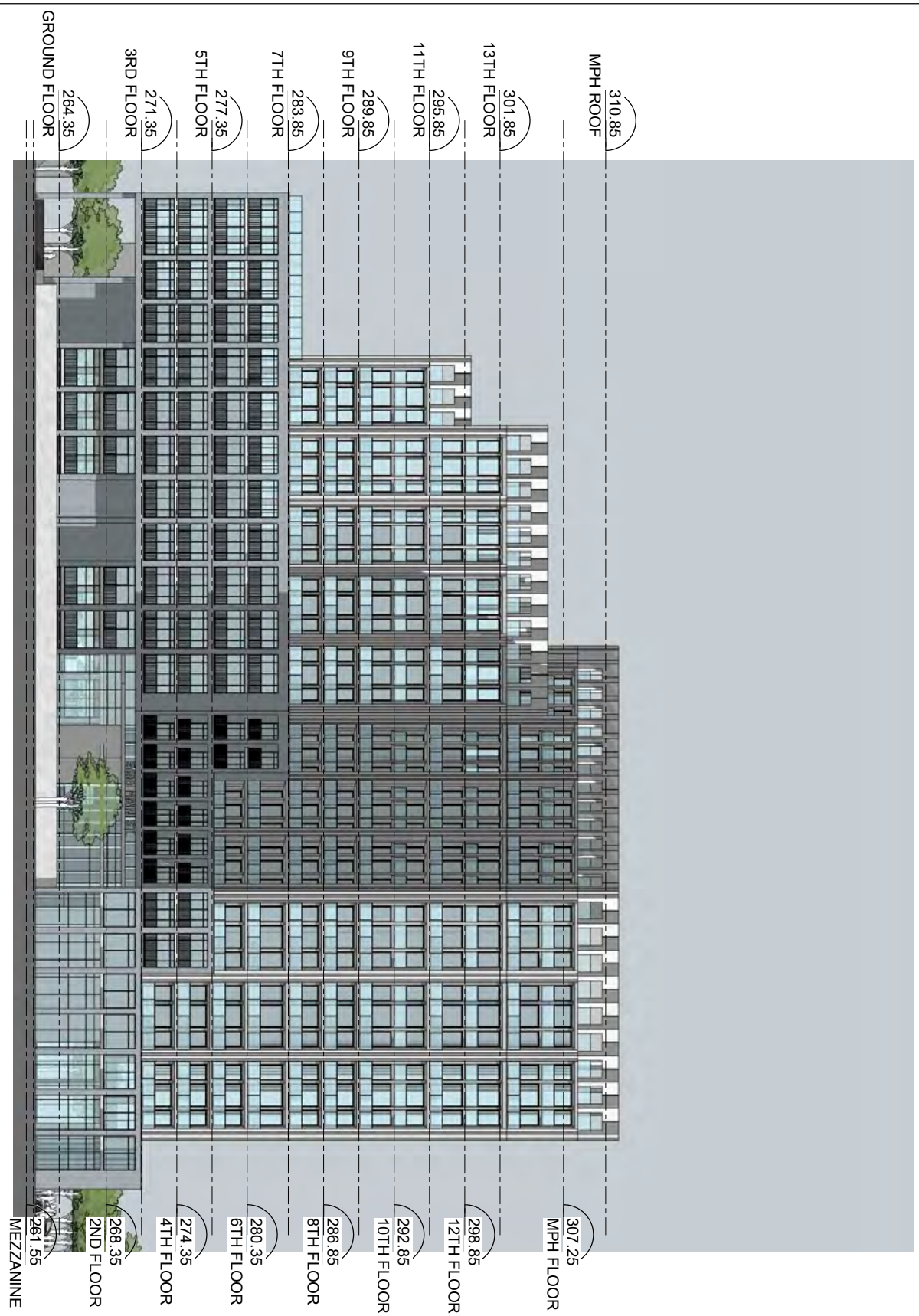
No.	Issues	Date	By
1	Pre-Consultation	2022-12-15	



Drawing No.

A- 202

WEST ELEVATION

Date	Issue Date	Checked
Scale	1 : 300	Drawn
Project No.		T2022062

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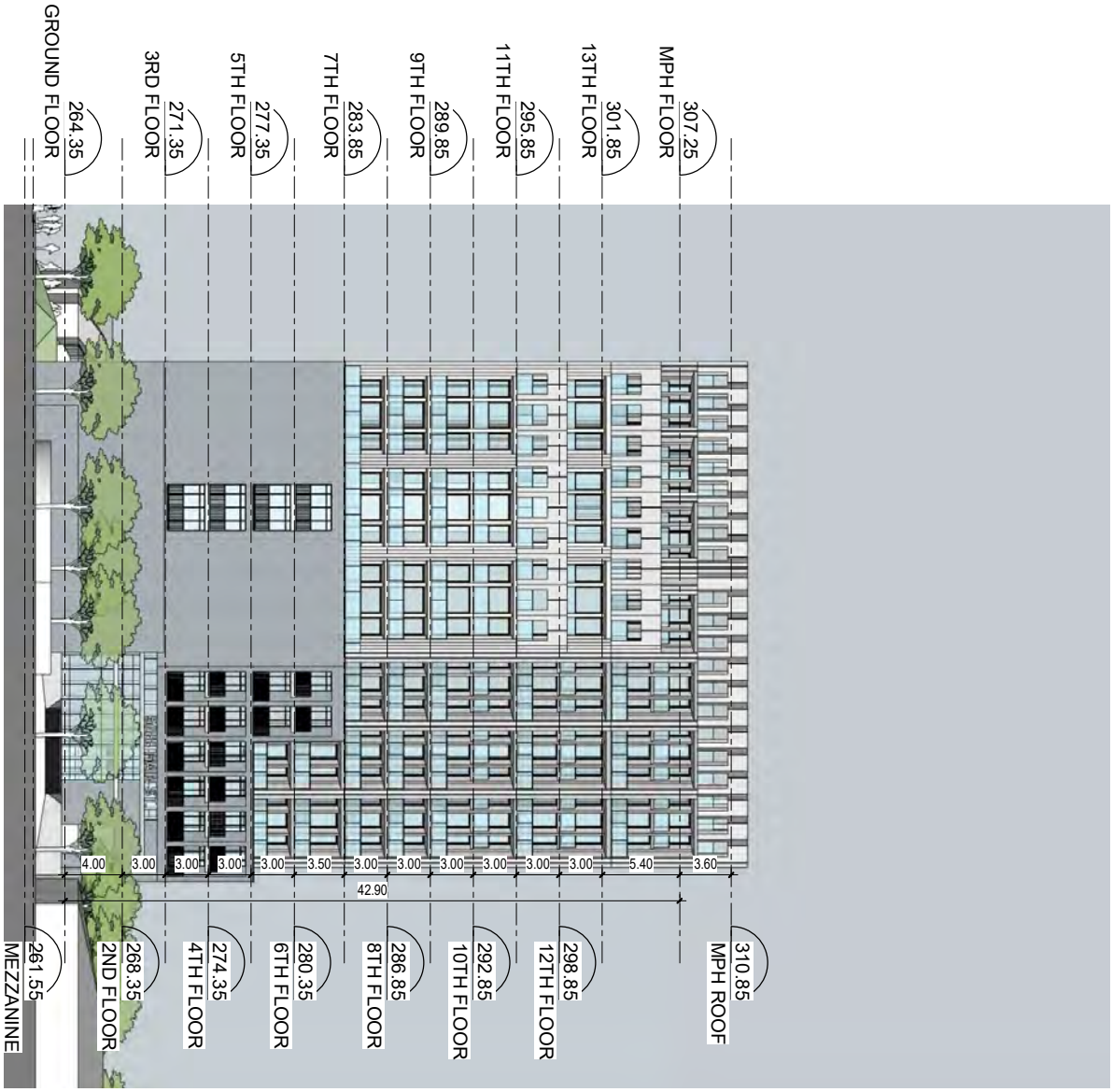
No.	Issues	Date	By
1	Pre-Consultation	2022-12-15	



Drawing No.

A- 203

NORTH ELEVATION

Date	Issue Date	Checked
Scale	1 : 300	Drawn
Project No.		T2022062

CONDOMINIUM

5688 MAIN STREET

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No.	Issues	Date	By
1	Pre-Consultation	2022-12-15	

Drawing No.

A- 901

PERSPECTIVE

Date	Issue Date	Checked
Scale		Drawn
Project No.		T2022062

CONDOMINIUM

5688 MAIN STREET

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No.	Issues	Date	By
1	Pre-Consultation	2022-12-15	

Drawing No.

A- 902

PERSPECTIVE

Date	Issue Date	Checked
Scale		Drawn
Project No.		T2022062

CONDOMINIUM

5688 MAIN STREET

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F:416 800 3485

No.	Issues	Date	By
1	Pre-Consultation	2022-12-15	

Drawing No.

A- 903

PERSPECTIVE

Date	Issue Date	Checked
Scale		Drawn
Project No.		T2022062

CONDOMINIUM

5688 MAIN STREET

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F:416 800 3485

No.	Issues	Date	By
1	Pre-Consultation	2022-12-15	

Appendix B

Road Traffic Data

StreetName	Limits	Funcls	Lanes	Oneway	Divided	Truck_Route	Bus_Route	AADT	AADT1	AADT_Date	AADT_Measured	%Comml	%Growth	ESAL1_Annual	ESAL_Total	DTN	MTD	%Bus	ESAL_Annual
MAIN STREET	SANDIFORD DRIVE-MOSTAR STREET	Arterial Road	5	N	N		Y	17257	22131	01-01-1998	Y	3.5	1	224018	2240180	485	1.82		174650
SANDALE ROAD	MAIN STREET-RUPERT AVENUE	Local Road	3	N	N		N	6757	8580	01-01-1999	Y	1	1	31347	313470	69	2.43		24683
WEST LAWN CRESCENT	MAIN STREET-RUPERT AVENUE	Collector Road	2	N	N		N	2697	3424	01-01-1999	Y	2	1	24834	248340	54	2.43		19554
PALMWOOD GATE	MAIN STREET-SERVICE ROAD	Local Road	2	N	N		N	500	575	01-01-2009	N	1	1	2104	21040	5	2.43		1827
PALMWOOD GATE	SERVICE ROAD-RUPERT AVENUE	Local Road	2	N	N		N	500	575	01-01-2009	N	1	1	2104	21040	5	2.43		1827

Appendix C

Calibration Stamson Output

```
STAMSON 5.0        NORMAL REPORT        Date: 04-09-2024 07:55:49
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: main.te              Time Period: Day/Night 16/8 hours
Description: Main Street calibration output.


Road data, segment # 1:  (day/night)
-----------------------------------
Car traffic volume  : 22981/2553  veh/TimePeriod
Medium truck volume :   321/36    veh/TimePeriod
Heavy truck volume  :   513/57    veh/TimePeriod
Posted speed limit  :    50 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

Data for Segment # 1:  (day/night)
---------------------------------
Angle1   Angle2           : -90.00 deg   90.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  15.00 / 15.00  m
Receiver height           :   1.50 / 1.50   m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00

Results segment # 1:  (day)
---------------------------

Source height = 1.21 m

ROAD (0.00 + 67.83 + 0.00) = 67.83 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90     90   0.00  67.83   0.00   0.00   0.00   0.00   0.00   0.00  67.83
-------------------------------------------------------------------------------

Segment Leq : 67.83 dBA

Total Leq All Segments: 67.83 dBA

Results segment # 1:  (night)
-----------------------------

Source height = 1.21 m

ROAD (0.00 + 61.30 + 0.00) = 61.30 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90     90   0.00  61.30   0.00   0.00   0.00   0.00   0.00   0.00  61.30
-------------------------------------------------------------------------------

Segment Leq : 61.30 dBA

Total Leq All Segments: 61.30 dBA



TOTAL Leq FROM ALL SOURCES (DAY): 67.83
                           (NIGHT): 61.30
```

```
STAMSON 5.0        NORMAL REPORT        Date: 04-09-2024 07:58:28
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: palmwood.te          Time Period: Day/Night 16/8 hours
Description: Palmwood Gate calibration output.


Road data, segment # 1:  (day/night)
-----------------------------------
Car traffic volume  :   826/320   veh/TimePeriod
Medium truck volume :     3/0     veh/TimePeriod
Heavy truck volume  :     5/1     veh/TimePeriod
Posted speed limit  :    50 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

Data for Segment # 1:  (day/night)
---------------------------------
Angle1   Angle2           : -90.00 deg   90.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  15.00 / 15.00  m
Receiver height           :   1.50 / 1.50   m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00

Results segment # 1:  (day)
---------------------------

Source height = 0.88 m

ROAD (0.00 + 50.79 + 0.00) = 50.79 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90     90   0.00  50.79   0.00   0.00   0.00   0.00   0.00   0.00  50.79
-------------------------------------------------------------------------------

Segment Leq : 50.79 dBA

Total Leq All Segments: 50.79 dBA

Results segment # 1:  (night)
-----------------------------

Source height = 0.75 m

ROAD (0.00 + 48.90 + 0.00) = 48.90 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90     90   0.00  48.90   0.00   0.00   0.00   0.00   0.00   0.00  48.90
-------------------------------------------------------------------------------

Segment Leq : 48.90 dBA

Total Leq All Segments: 48.90 dBA



TOTAL Leq FROM ALL SOURCES (DAY): 50.79
                           (NIGHT): 48.90
```

STAMSON 5.0 NORMAL REPORT Date: 04-09-2024 07:59:22
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: sandale.te Time Period: Day/Night 16/8 hours
Description: ***Sandale Road calibration output.***

Road data, segment # 1: (day/night)

Car traffic volume : 14288/1588 veh/TimePeriod
Medium truck volume : 56/6 veh/TimePeriod
Heavy truck volume : 89/10 veh/TimePeriod
Posted speed limit : 50 km/h
Road gradient : 0 %
Road pavement : 1 (Typical asphalt or concrete)

Data for Segment # 1: (day/night)

Angle1 Angle2 : -90.00 deg 90.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 0
Surface : 2 (Reflective ground surface)
Receiver source distance : 15.00 / 15.00 m
Receiver height : 1.50 / 1.50 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

Results segment # 1: (day)

Source height = 0.89 m

ROAD (0.00 + 63.22 + 0.00) = 63.22 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.00	63.22	0.00	0.00	0.00	0.00	0.00	0.00	63.22

Segment Leq : 63.22 dBA

Total Leq All Segments: 63.22 dBA

Results segment # 1: (night)

Source height = 0.89 m

ROAD (0.00 + 56.69 + 0.00) = 56.69 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.00	56.69	0.00	0.00	0.00	0.00	0.00	0.00	56.69

Segment Leq : 56.69 dBA

Total Leq All Segments: 56.69 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 63.22
(NIGHT): 56.69

```
STAMSON 5.0        NORMAL REPORT        Date: 04-09-2024 08:00:10
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: w_lawn.te            Time Period: Day/Night 16/8 hours
Description: West Lawn Crescent calibration output.


Road data, segment # 1:  (day/night)
-----------------------------------
Car traffic volume  :  5645/627   veh/TimePeriod
Medium truck volume :    44/5     veh/TimePeriod
Heavy truck volume  :    71/8     veh/TimePeriod
Posted speed limit  :    50 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

Data for Segment # 1:  (day/night)
---------------------------------
Angle1   Angle2           : -90.00 deg   90.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  15.00 / 15.00  m
Receiver height           :   1.50 / 1.50   m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00

Results segment # 1:  (day)
---------------------------

Source height = 1.05 m

ROAD (0.00 + 60.37 + 0.00) = 60.37 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90     90   0.00  60.37   0.00   0.00   0.00   0.00   0.00   0.00  60.37
-------------------------------------------------------------------------------

Segment Leq : 60.37 dBA

Total Leq All Segments: 60.37 dBA

Results segment # 1:  (night)
-----------------------------

Source height = 1.06 m

ROAD (0.00 + 53.87 + 0.00) = 53.87 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90     90   0.00  53.87   0.00   0.00   0.00   0.00   0.00   0.00  53.87
-------------------------------------------------------------------------------

Segment Leq : 53.87 dBA

Total Leq All Segments: 53.87 dBA



TOTAL Leq FROM ALL SOURCES (DAY): 60.37
                           (NIGHT): 53.87
```