

Environmental Noise Control Study

Proposed Commercial Development

3700 Twin Falls Place, Block 2
Ottawa, Ontario

Prepared for Gastops c/o CSV Architects

Report PG7255-1, Dated November 20, 2024

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1.0 Introduction

Paterson Group (Paterson) was commissioned by Gastops c/o CSV Architects to conduct an environmental noise control study for the proposed residential development to be located at 3700 Twin Falls Place Block 2, in the City of Ottawa.

The objective of the current study is to:

- ☐ Determine the primary noise sources impacting the site and compare the projected sound levels to guidelines set out by the Ministry of Environment, Conservation and Parks (MOECP) and the City of Ottawa.
- ☐ Review the projected noise levels and offer recommendations regarding warning classes, construction materials or alternative sound barriers.

The following report has been prepared specifically and solely for the aforementioned project which is described herein. It contains our findings and includes acoustical recommendations pertaining to the design and construction of the subject residential development as they are understood at the time of writing this report.

This study has been conducted according to the City of Ottawa document - Engineering Noise Control Guidelines (ENCG), dated January 2016, and the Ontario Ministry of the Environment Guideline NPC-300.

2.0 Proposed Development

It is understood that the proposed development will consist of a warehouse development. Associated at-grade roadways and parking areas are also anticipated as a part of the proposed commercial development.

3.0 Methodology and Noise Assessment Criteria

The City of Ottawa outlines three (3) sources of environmental noise that must be analyzed separately:

- ☐ Surface Transportation Noise
- ☐ Stationary Noise
 - New noise-sensitive development applications (noise receptors) in proximity to existing or approved stationary sources of noise, and
 - New stationary sources of noise (noise generating) in proximity to existing or approved noise-sensitive developments.
- ☐ Aircraft noise

Surface Transportation Noise

The City of Ottawa's Official Plan, in addition to the ENCG, dictate that the influence area must contain any of the following conditions to classify as a surface transportation noise source for a subject site:

- ☐ Within 100 m of the right-of-way of an existing or proposed arterial, collector or major collector road; a light rail transit corridor; bus rapid transit, or transit priority corridor.
- ☐ Within 250 m of the right-of-way for an existing or proposed highway or secondary rail line.
- ☐ Within 300 m from the right of way of a proposed or existing rail corridor or a secondary main railway line.
- ☐ Within 500 m of an existing 400 series provincial highway, freeway or principle main railway line.

The NPC-300 outlines the limitations of the stationary and environmental noise levels in relation to the location of the receptors. These can be found below in the following tables:

Table 1 - Sound Level Limits for Outdoor Living Areas

Time Period	Required $L_{eq(16)}$ (dBA)
16-hour, 7:00-23:00	55
I. Standards taken from Table 2.2a; Sound Level Limit for Outdoor Living Areas - Road and Rail	

Table 2 - Sound Level Limits for Indoor Living Area

Type of Space	Time Period	Required L_{eq} (dBA)	
		Road	Rail
Living/Dining, den areas of residences, hospitals, nursing homes, schools, daycare centres, etc	7:00-23:00	45	40
Theatres, places of worship, libraries, individual or semi-private offices, conference rooms, reading rooms	23:00-7:00	45	40
Sleeping quarters	7:00-23:00	45	40
	23:00-7:00	40	35
I. Standards taken from Table 2.2b; Sound Level Limit for Indoor Living Areas - Road and Rail			

It is noted in ENCG that the limits outlined in Table 2 are for the sound levels on the interior of the glass pane. The ENCG further goes on to state that the limit for the exterior of the pane of glass will be 55 dBA.

If the sound level limits are exceeded at the window panes for the indoor living areas, the following Warning Clauses may be referenced:

Table 3 - Warning Clauses for Sound Level Exceedances

Warning Clause	Description
Warning Clause Type A	"Purchasers/tenants are advised that sound levels due to increasing road traffic (rail traffic) (air 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."
Warning Clause Type B	"Purchasers/tenants are advised that despite the inclusion of noise control features in the development and within the building units, sound levels due to increasing road traffic (rail traffic) (air traffic) may on occasions 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."
Warning Clause Type C	"This building has been designed with the provision for adding central air conditioning at the occupant's discretion. Installation of central air conditioning by the occupant in low and medium-density developments 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."
Warning Clause Type D	"This building 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."
I.	Clauses taken from section C8 Warning Clauses; Environmental Noise Guidelines - NPC-300

Stationary Noise

Stationary noise sources include sources or facilities that are fixed or mobile and can cause a combination of sound and vibration levels emitted beyond the property line. These sources may include commercial air conditioner units, generators and fans. Facilities that may contribute to stationary noise may include car washes, snow disposal sites, transit stations and manufacturing facilities.

The proposed development is not in proximity to any existing or approved stationary sources of noise. Therefore, a stationary noise analysis will not be required with respect to off-site stationary noise sources impacting the proposed development.

Aircraft/Airport Noise

Aircraft noise is distinct as compared to surface transportation noise or stationary noise, as it is typically a lower frequency for longer durations. The sound level may also differ between different types of aircraft creating an unknown spectrum of noise. Due to these differences, the analysis of aircraft noise is performed separately from both the stationary and surface traffic noise studies.

For aircraft noise, the levels are defined by the Noise Exposure Forecast (NEF), which measures the sound produced by all types of aircraft at an airport, taking into consideration the number of flights, the duration of the noise, the time of day and the frequency components of the sound (pure tones). The Noise Exposure Projection (NEP) is similar to the NEF but takes into consideration a long-term projection beyond 10 years. Annexe 10 - Land Use Constraints Due to Aircraft Noise located with the City of Ottawa's Official Plan outlines the NEF/NEP boundaries in addition to the Airport Vicinity Development Zone (AVDZ).

The limitations for the aircraft/airport noise are dictated by the local airport in collaboration with the City of Ottawa. It is stated within the ENCG that there is no development within the 30 NEF/NEP contour, but that a detailed noise analysis with respect to aircraft/airport noise study is required any time the property is located within the AVDZ. The NPC-300 stipulates that an aircraft/airport noise analysis is required where the sensitive land use is located at or above the NEF/NEP contour of 25. Reference can be made to Drawing 6 in Appendix 1.

The following table from the City of Ottawa Environmental Noise Control Guidelines outlines the limitations for indoor aircraft noise for commercial buildings:

Table 4.2b: Supplementary Indoor Sound Level Limits for Aircraft Noise (adopted from NPC-300 table C-10) * Applicable over a 24-hour period *	
Type of Space	Indoor NEF/NEP
General offices, reception areas, retail stores, etc.	15
Individual or semi-private offices, conference rooms, etc.	10
Sleeping quarters of hotels/motels, theatres, libraries, places of worship.	5

4.0 Analysis

4.1 Surface Transportation Noise

The subject site is currently undeveloped and bordered by Limebank Road to the northeast, Leitrim Road to the northwest and Spratt Road to the south. Limebank Road was identified within the 100 m radius. Based on City of Ottawa Documents and Client Drawings it is understood that Leitrim Road is to be realigned for future airport construction. The future realignment of Leitrim Road will fall within the 100 m radius of the proposed commercial development; therefore, it was included as part of the current investigation.

Based on the new City of Ottawa Official Plan, Schedule F, Limebank Road is considered a 4-Lane Urban Arterial Divided (4-UAD). The proposed realignment of Leitrim Road was modelled as a 2-lane Urban Arterial (2-UAU) as per information provided in the Transportation Committee Report 32 dated May 9, 2018. Other roads within the 100 m radius of the proposed development are not classified as either arterial, collector or major collector roads and therefore are not included in this study.

All noise sources are presented in Drawing PG7255-1-Site Geometry located in Appendix 1.

The noise levels from road traffic are provided by the City of Ottawa which takes into consideration the right-of-way width and the implied roadway class. It is understood that these values represent the maximum allowable capacity of the proposed roadways. The parameters to be used for sound-level predictions can be found below.

Table 4 - Traffic and Road Parameters						
Road	Implied Roadway	AADT (Veh/day)	Posted Speed (km/h)	Day/Night Split %	Medium Truck %	Heavy Truck %
Limebank Road	4 Lane Urban Arterial Divided	35,000	80	92/8	7	5
Realigned - Leitrim Road	2 Lane Urban Arterial	15,000	80	92/8	7	5
Data obtained from the City of Ottawa document ENCG or City of Ottawa Officials						

Two (2) levels of reception points were selected for this analysis. The following elevations were selected from the heights provided on the survey plan for the subject buildings.

Table 5 - Elevation of Reception Points			
Floor Number	Elevation at the Centre of Window / Ground Surface (m)	Floor Use	Daytime/Nighttime Analysis
Ground Floor	1.5	Office Area	Daytime/Nighttime
Second Floor	9.5	Office Area	Daytime/Nighttime

For this analysis, a reception point was taken at the approximate centre of each floor of the structure. Reception points are detailed in Drawing PG7255-2-Receptor Locations presented in Appendix 1.

All horizontal distances have been measured from the reception point to the edge of the right-of-way. The roadways were analyzed where they intersected the 100 m buffer zone, which is reflected in the local angles described in Paterson Drawings PG7255-3A to 3D-Site Geometry in Appendix 1.

Table 7 - Summary of Reception Points and Geometry, located in Appendix 1, provides a summary of the points of reception and their geometry concerning the noise sources. The analysis is completed so that no effects of sound reflection off the building facade are considered, as stipulated by the ENG C. It should be noted that one receptor is assigned to the side of the building affected by noise. The anticipated noise at each receptor represents the worst-case scenario for the proposed building.

The analysis was completed using STAMSON version 5.04, a computer program which uses the road and rail traffic noise prediction methods using ORNAMENT (Ontario Road Noise Analysis Method for Environment and Transportation) and STEAM (Sound from Trains Environment Analysis Method), publications from the Ontario Ministry of Environment and Energy.

The subject site is relatively level and at grade with the neighbouring roads within a 100 m radius.

4.2 Aircraft/Airport Noise

Due to the proximity to the Ottawa International Airport (YOW), an aircraft/airport noise study will be required. The subject site is located (3700 Twin Falls Place) within the Airport Operating Influence Zone, NEF/NEP boundary as stated on the Ottawa Official Plan Schedule C14 - Land Use Constraints Due to Aircraft Noise.

IBANA-Calc Version 1.2 Revision 122, provided by Transport Canada, the Department of National Defense and the National Research Council was utilized for this analysis. IBANA-Calc contains a large database of typical building materials and sound insulation designs. When completing the analysis, it was determined based on project construction specifications that the roof structure was to consist of a steel deck and the windows were to be double-paned. For the purposes of this analysis, a conservative cross-section previously designed in IBANA-Calc was utilized. The cross-section chosen contained a steel deck with the lowest value of noise reduction insulation. While the final room layouts have not yet been finalized, a preliminary floor plan was provided and is attached in Appendix 3. The approximate floor area and wall area were utilized in the calculations.

When performing the noise analysis, it is critical to determine both the noise source and the insulating properties of the proposed building. Three types of aircraft produce different noise: jet-turbine powered aircraft, propeller aircraft and rotary wing helicopters. Jet-turbine-powered aircraft departures and arrivals are typically the primary noise source of airports. IBANA-Calc contains the information for the noise levels and frequency of "Standard Aircraft".

The top floor was selected as the 'worst case' scenario for aircraft noise. It is understood that the roof will consist of the following construction based on the :

- ☐ Concrete topping per structural or DensDeck Roof Sheathing, glued and screwed
- ☐ Steel deck
- ☐ OWSJ
- ☐ 22 mm furring hat channel at max 610 mm o.c at u/s of OWSJ
- ☐ 13 mm gypsum board, painted

While this exact scenario is not pre-loaded into IBANA-Calc, a similar, but conservative, roofing was selected as follows:

- ☐ Granular membrane and peel and stick membranes
- ☐ 13 mm wood fiberboard
- ☐ 70 mm thick polyisocyanurate insulation
- ☐ kraft paper
- ☐ 0.7 mm steel decking
- ☐ Steel joists on 1610 mm center

- ☐ 16 mm ceiling tiles hung from steel decking.

Additionally, the exterior walls and windows were included in the analysis. Based on the provided construction drawings, the following is the typical construction of an exterior wall:

- ☐ 1 layer of 16mm Type X Gypsum board
- ☐ 125 mm sprayed-on urethane insulation
- ☐ 6 mm poly vapour barrier
- ☐ 203 mm steel studs @ 610 mm o/c
- ☐ 203 mm batt insulation
- ☐ 13mm exterior grade gypsum board
- ☐ Vapour permeable self-adhered air barrier
- ☐ 102mm semi-rigid rockwool continuous insulation (RSI 2.88c.i.)
- ☐ 25 mm air space
- ☐ Exterior cladding
- ☐ Exterior cladding per elevation

5.0 Results

5.1 Surface Transportation

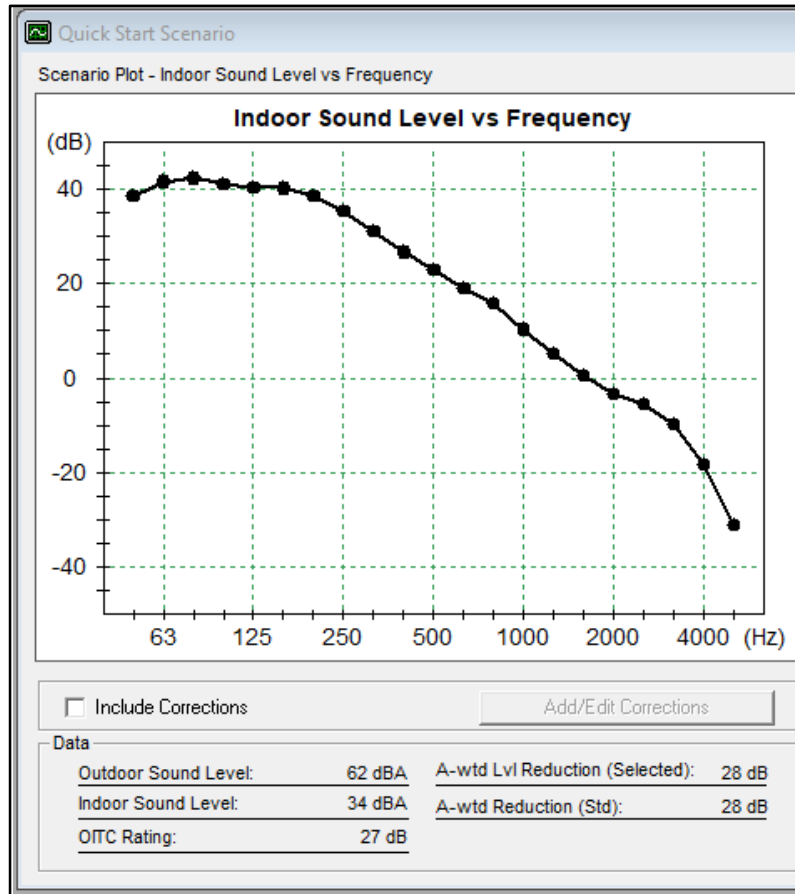
The primary descriptors are the 16-hour daytime and the 8-hour nighttime equivalent sound levels, $L_{eq(16)}$ and the $L_{eq(8)}$ for City roads.

The proposed traffic noise levels were analyzed at all reception points. The results of the STAMSON software are located in Appendix 2, and the summary of the results is noted in Table 6 below.

Table 6 – Proposed Noise Levels				
Reception Point	Description	OLA (dBA)	Daytime at Facade $L_{eq(16)}$ (dBA)	Nighttime at Facade $L_{eq(8)}$ (dBA)
REC 1-1	Northern Elevation – Ground Level	-	61	54
REC 2-1	Eastern Elevation – Ground Level	-	66	59
REC 3-1	Southern Elevation – Ground Level	-	68	60
REC 3-2	Southern Elevation – Second Level	-	69	62
REC 4-1	Western Elevation – Ground Level	-	54	47

5.2 Aircraft/Airplane Noise

The following figure demonstrates the indoor sound level versus frequency for the scenario of the top floor. This analysis is considered the worst-case scenario for the building. The results of the IBANA-Calc are presented in Appendix 3.



6.0 Discussion and Recommendations

6.1 Outdoor Living Areas

No outdoor living areas were identified as part of the commercial development.

6.2 Indoor Living Areas and Ventilation

Surface Transportation Noise

The results of the STAMSON modelling indicate that the $L_{eq(16)}$ for the proposed development ranges between 54 dBA and 69 dBA. The noise values calculated exceed the limit of 65 dBA as specified by the ENGCC and therefore **Warning Clause Type D** will be required to be stated on any deeds of sale and an analysis of the building materials will be required.

Warning Clause Type D: "This building 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."

Proposed Construction Specifications

It is understood that typical window and wall details are proposed for the residential buildings. The effectiveness of the noise insulation can be expressed as the Acoustical Insulation Factor (AIF), calculated as follows:

$$AIF = L_{eq(16)}(Exterior) - L_{eq(16)}(Interior) + 10\log_{10}(N) + 2 \text{ dBA}$$

Where:

$L_{eq(16)}(Exterior)$ = Calculated value at the window pane

$L_{eq(16)}(Interior)$ = 45 dBA

N = number of components in the room

No floor plans or detailed design drawings were provided for this portion of the review. A conservative approach is to assume that there are 2 components per room. Therefore, the AIF would need to be at least 29 dBA.

A conversion from AIF to a Standard Transmission Class (STC) rating will require knowledge of room dimensions in addition to the wall and window dimensions. However, a conservative approach would be to increase the AIF factor by 3. **Therefore, provided the building materials of either the windows and/or exterior walls have an STC rating of 32 or higher, this would be a sufficient noise attenuation device.** Reference can be made to Appendix 4 for building material industry standards.

Aircraft/Airport Noise

An indoor noise value of 34 dBA was calculated using conservative values in a worst-case scenario analysis. Therefore, utilizing the formula $NEF = L_{eq(24)} - 32 \text{ dBA}$, the NEF for the bedroom is determined to be 2 dBA. Therefore, the insulating factor of the proposed building is considered acceptable for the proposed aircraft/airport noise.

7.0 Summary of Findings

The subject site is located at 3700 Twin Falls Place, Block 2 within the City of Ottawa. It is understood that the proposed development will consist of a two-storey commercial building. The associated analysis identified two surface transportation noise sources: Limebank Road, and Leirtrim Road (re-alignment). The proposed commercial development was additionally located within the Airport Operating Influence Zone.

Several reception points were selected for the analysis, consisting of panes of glass reception points at each ground floor elevation.

All elevations excluding the southern elevation exceeded the 65 dBA guideline specified by the ENGCC and will require Warning Clause Type D.

Warning Clause Type D: "This building 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."

A review of building materials was completed as part of this analysis, and provided the building materials of either the windows and/or exterior walls have an STC rating of 32 or higher, this would be a sufficient noise attenuation device

An aircraft/airport noise analysis was completed on the subject site due to the proximity of the subject site to the Airport Operating Influence Zone contour identified by the Ottawa Airport (YOW). The analysis indicates that the noise source does not exceed 2 NEF/NEP within the building.

8.0 Statement of Limitations

The recommendations made in this report are in accordance with our present understanding of the project. Our recommendations should be reviewed when the project drawings and specifications are complete.

The present report applies only to the project described in this document. Use of this report for purposes other than those described herein or by person(s) other than Gastops c/o CSV Architects or their agent(s) is not authorized without review by this firm for the applicability of our recommendations to the altered use of the report.

Paterson Group Inc.



Otilia McLaughlin, B.Eng.



Stephanie A. Boisvenue, P.Eng.

Report Distribution:

- ☐ Gastops c/o CSV Architects.
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APPENDIX 1

TABLE 7 – SUMMARY OF RECEPTION POINTS AND GEOMETRY

DRAWING PG7255-3 – SITE PLAN

DRAWING PG7255-4 – RECEPTOR LOCATION PLAN

DRAWING PG7255-5 – SITE GEOMETRY

DRAWING PG7255-5A- SITE GEOMETRY (REC 1-1)

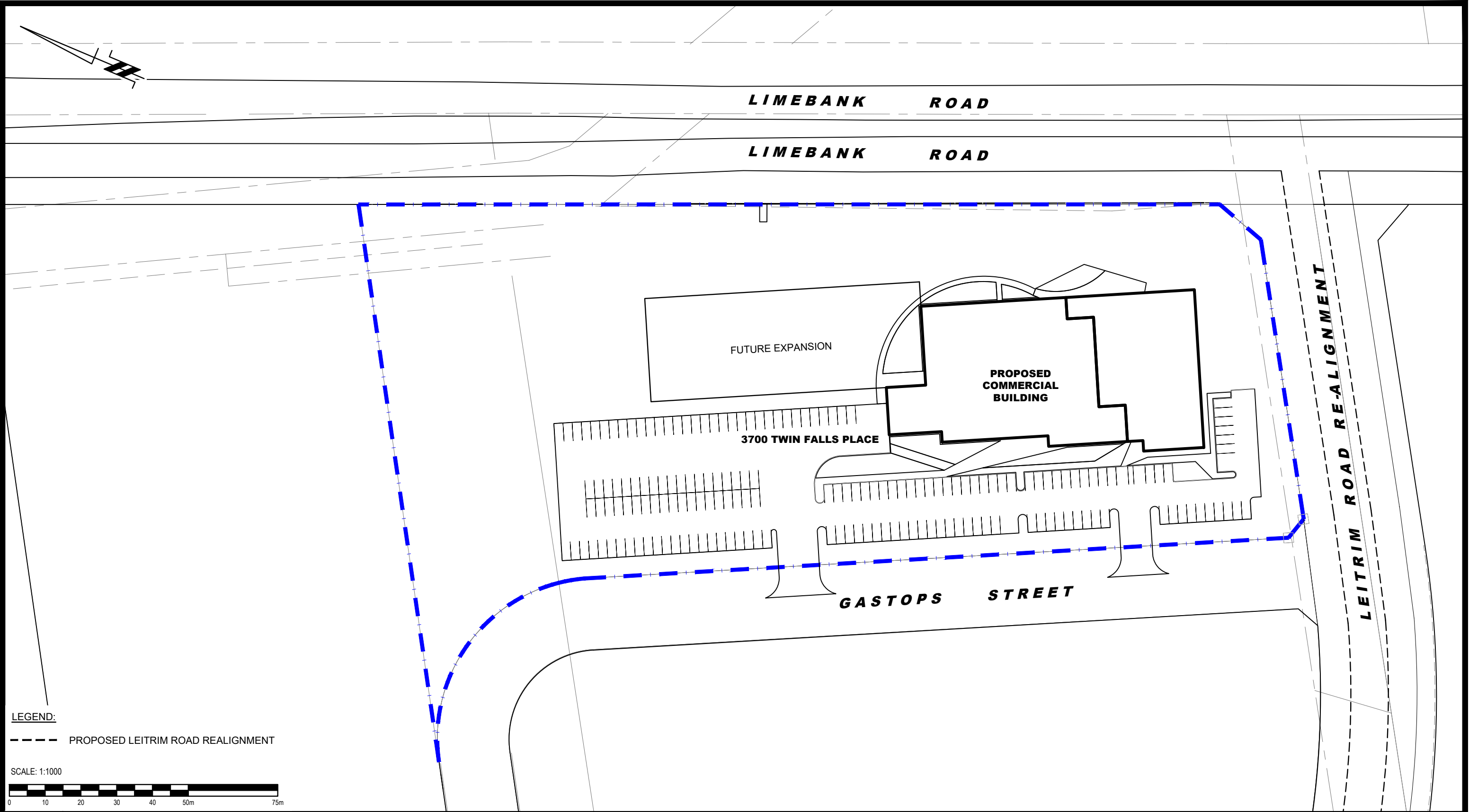
DRAWING PG7255-5B- SITE GEOMETRY (REC 2-1)

DRAWING PG7255-5C- SITE GEOMETRY (REC 3-1 & REC 3-2)

DRAWING PG7255-5D- SITE GEOMETRY (REC 4-1)

DRAWING PG7255-6-AIRCRAFT NOISE LIMITATIONS


Table 7 - Summary of Reception Points and Geometry																						
3700 Twin Falls Place - Block 2																						
Point of Reception	Location	Leq Day (dBA)	Leq Night (dBA)	Limebank Road									Leitrim Road (re-alignment)									
				Horizontal (m)	Vertical (m)	Total (m)	Local Angle (degree)	Number of Rows of Houses	Density (%)	Barrier Height (m)	Barrier Distance (m)	Barrier Distance (m)	Horizontal (m)	Vertical (m)	Total (m)	Local Angle (degree)	Number of Rows of Houses	Density (%)	Barrier Height (m)	Barrier Distance (m)	Barrier Height (m)	Barrier Distance (m)
REC 1-1	Northern Elevation, 1st Floor	61	54	73	1.5	73.0	-70, 26	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
REC 2-1	Eastern Elevation, 1st Floor	66	59	47	1.5	47.0	-78, 66	n/a	n/a	n/a	n/a	n/a	67	1.5	67.0	0, 65	n/a	n/a	n/a	n/a	n/a	n/a
REC 3-1	Southern Elevation, 1st Floor	68	60	67	1.5	67.0	0, 50	n/a	n/a	n/a	n/a	n/a	30	1.5	30.0	-83, 80	n/a	n/a	n/a	n/a	n/a	n/a
REC 3-2	Southern Elevation, 2nd Floor	69	62	67	9.5	67.7	0, 50	n/a	n/a	n/a	n/a	n/a	30	9.5	31.5	-83, 80	n/a	n/a	n/a	n/a	n/a	n/a
REC 4-1	Western Elevation, 1st Floor	54	47	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	75	1.5	75.0	0, 49	n/a	n/a	n/a	n/a	n/a	n/a

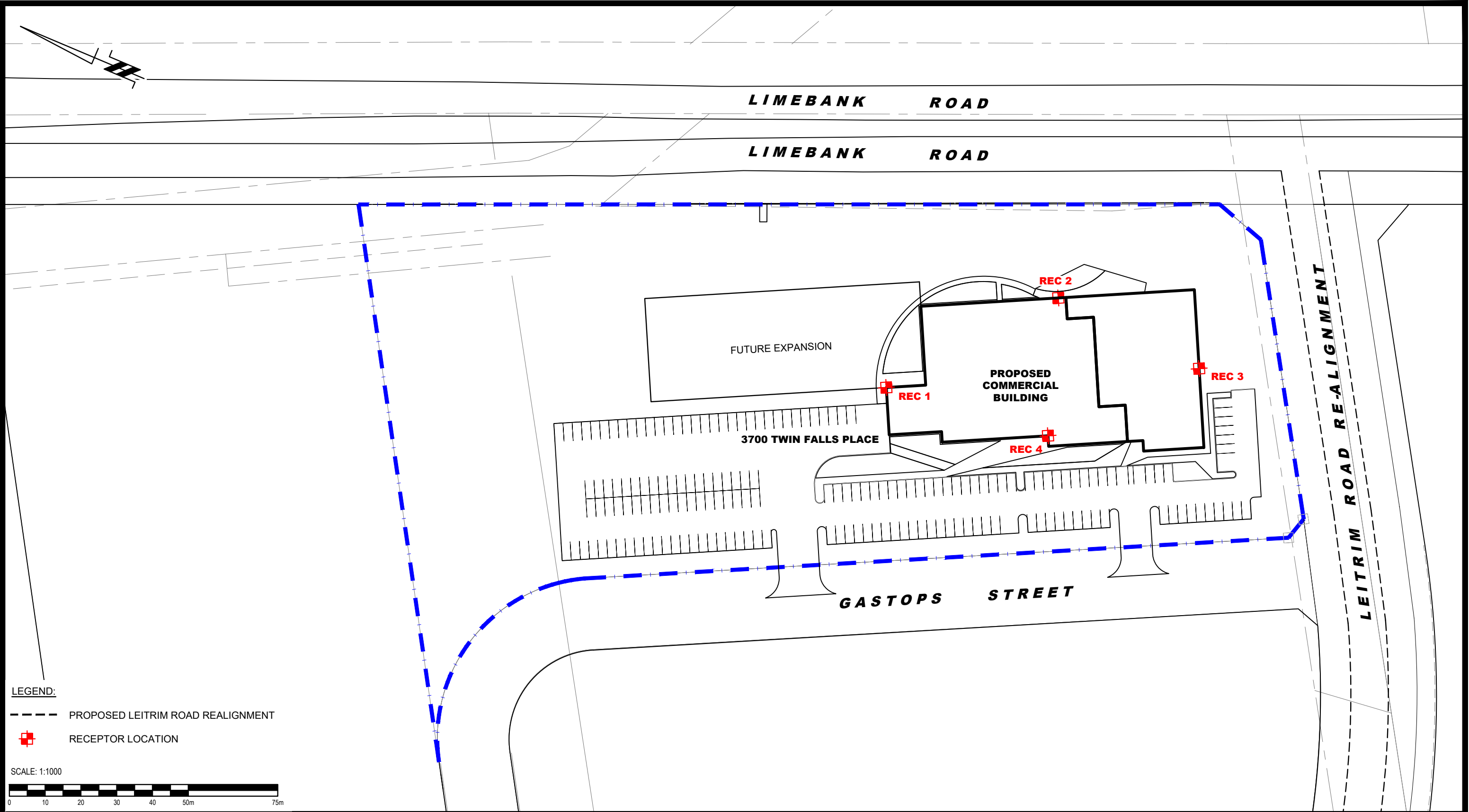


LEGEND:

--- PROPOSED LEITRIM ROAD REALIGNMENT

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					Approved by:	SB	Revision No.:	
	NO.	REVISIONS	DATE	INITIAL				





9 AURIGA DRIVE
OTTAWA, ON
K2E 7T9
TEL: (613) 226-7381

NO.	REVISIONS	DATE	INITIAL

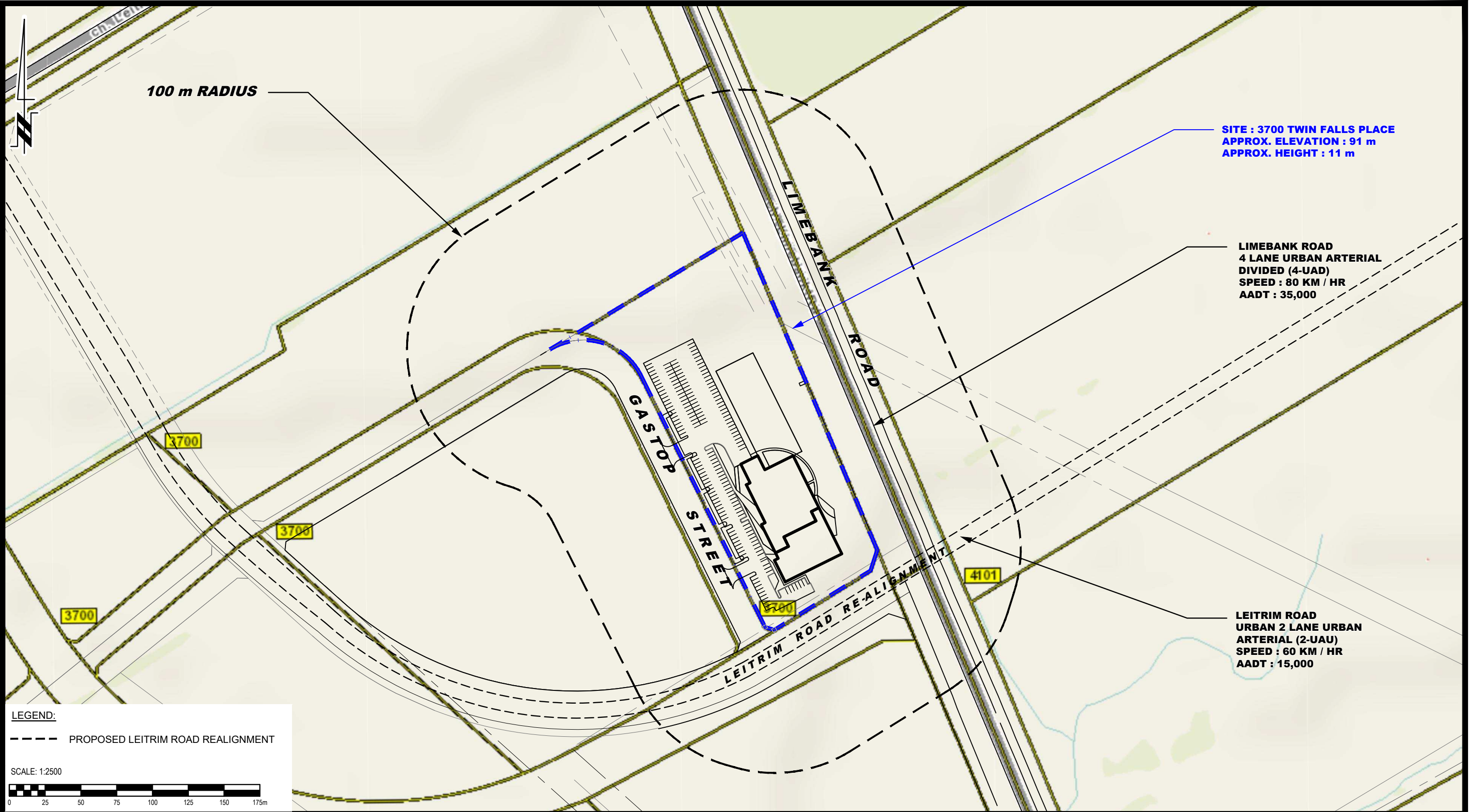
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RECEPTOR LOCATION PLAN

GASTOPS C.O. CSV
NOISE ATTENUATION STUDY
PROPOSED COMMERCIAL DEVELOPMENT
3700 TWIN FALLS PLACE - BLOCK 2

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Checked by:	OM	Dwg. No.:	PG7255-4
Approved by:	SB	Revision No.:	





9 AURIGA DRIVE
OTTAWA, ON
K2E 7T9
TEL: (613) 226-7381

NO.	REVISIONS	DATE	INITIAL

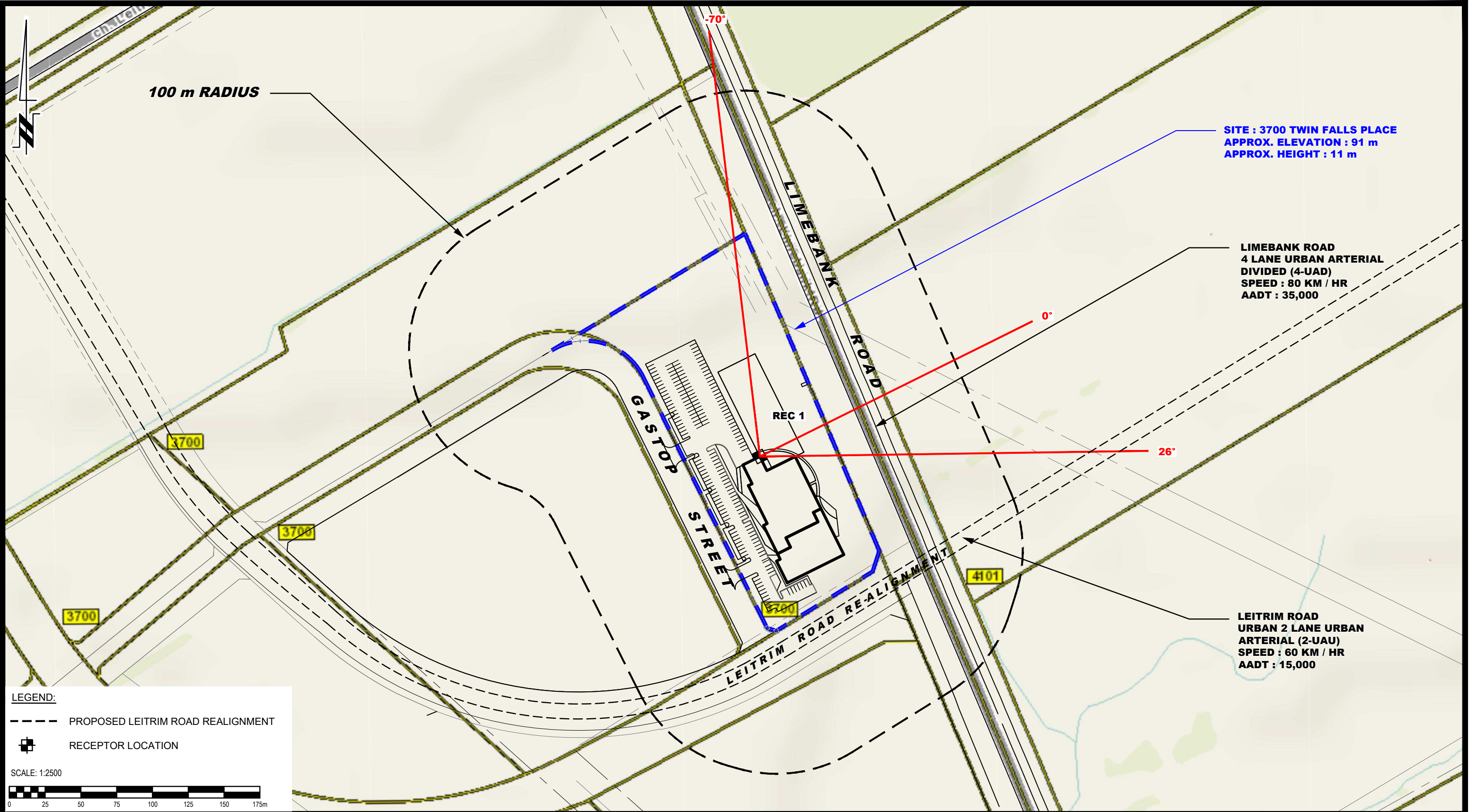
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NOISE ATTENUATION STUDY
PROPOSED COMMERCIAL DEVELOPMENT
3700 TWIN FALLS PLACE - BLOCK 2

SITE GEOMETRY

ONTARIO

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Checked by:	OM	Dwg. No.:	PG7255-5
Approved by:	SB	Revision No.:	



LEGEND:

--- PROPOSED LEITRIM ROAD REALIGNMENT

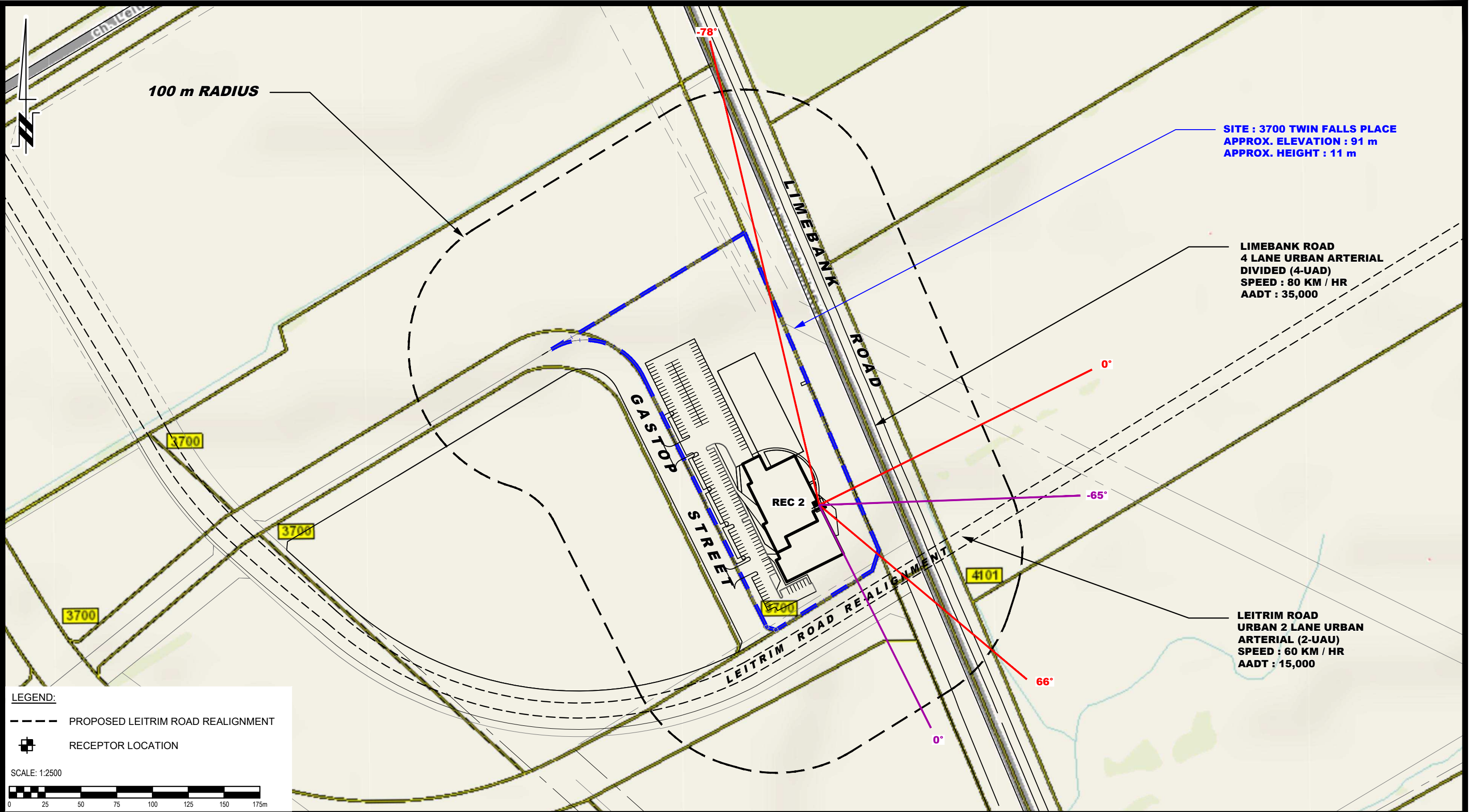
⊕ RECEPTOR LOCATION

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0 25 50 75 100 125 150 175m

<div><div><div>PATERSON GROUP</div><div>9 AURIGA DRIVE OTTAWA, ON K2E 7T9 TEL: (613) 226-7381</div></div></div>					GASTOPS C.O. CSV NOISE ATTENUATION STUDY PROPOSED COMMERCIAL DEVELOPMENT 3700 TWIN FALLS PLACE - BLOCK 2	Scale: 1:2500 Drawn by: YA Checked by: OM Approved by: SB	Date: 11/2024 Report No.: PG7255-2 Dwg. No.: PG7255-5A Revision No.:
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LEGEND:

--- PROPOSED LEITRIM ROAD REALIGNMENT

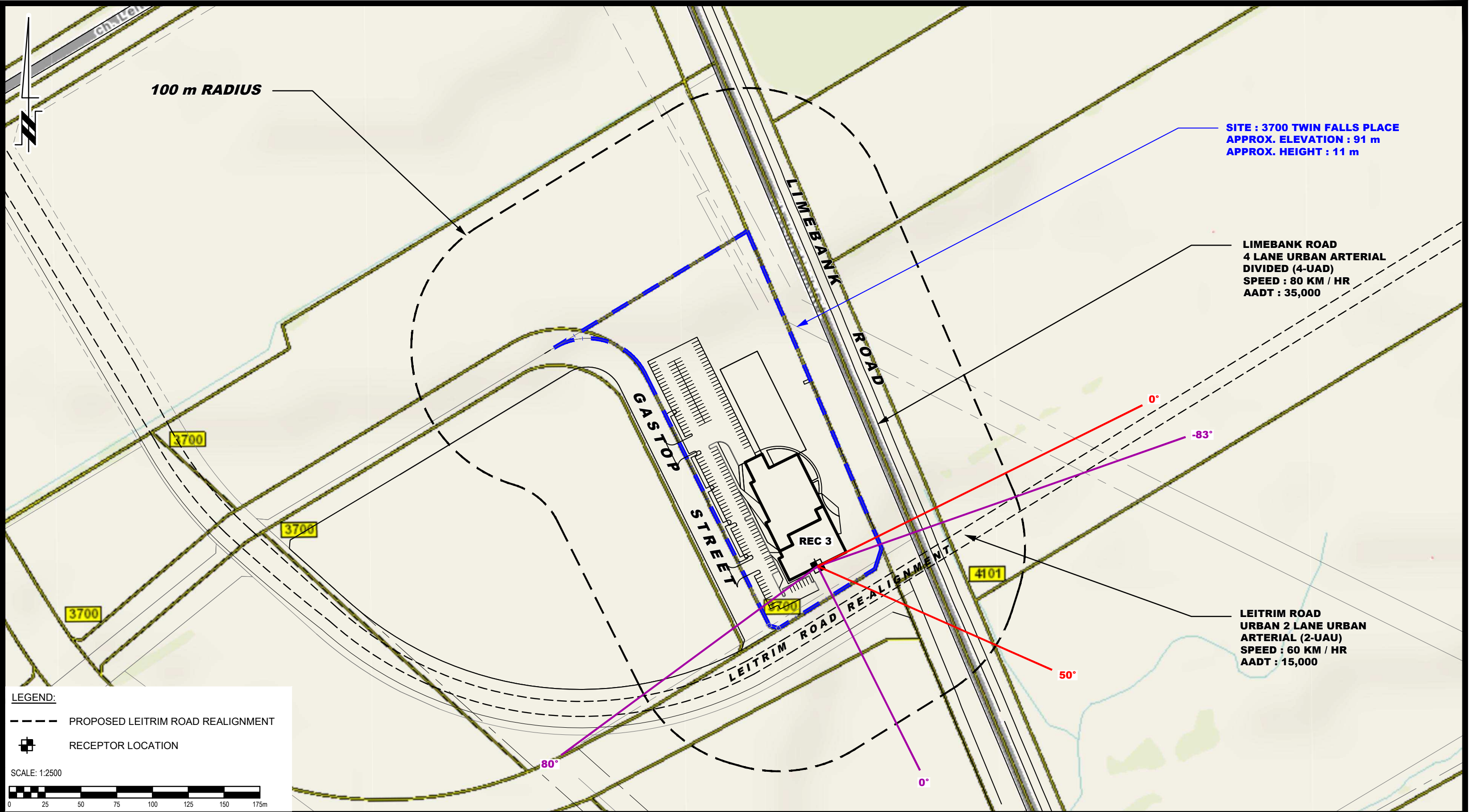
⊕ RECEPTOR LOCATION

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0 25 50 75 100 125 150 175m

<div><div><div>PATERSON GROUP</div><div>9 AURIGA DRIVE OTTAWA, ON K2E 7T9 TEL: (613) 226-7381</div></div></div>					GASTOPS C.O. CSV NOISE ATTENUATION STUDY PROPOSED COMMERCIAL DEVELOPMENT 3700 TWIN FALLS PLACE - BLOCK 2	Scale: 1:2500 Drawn by: YA Checked by: OM Approved by: SB	Date: 11/2024 Report No.: PG7255-2 Dwg. No.: PG7255-5B Revision No.:
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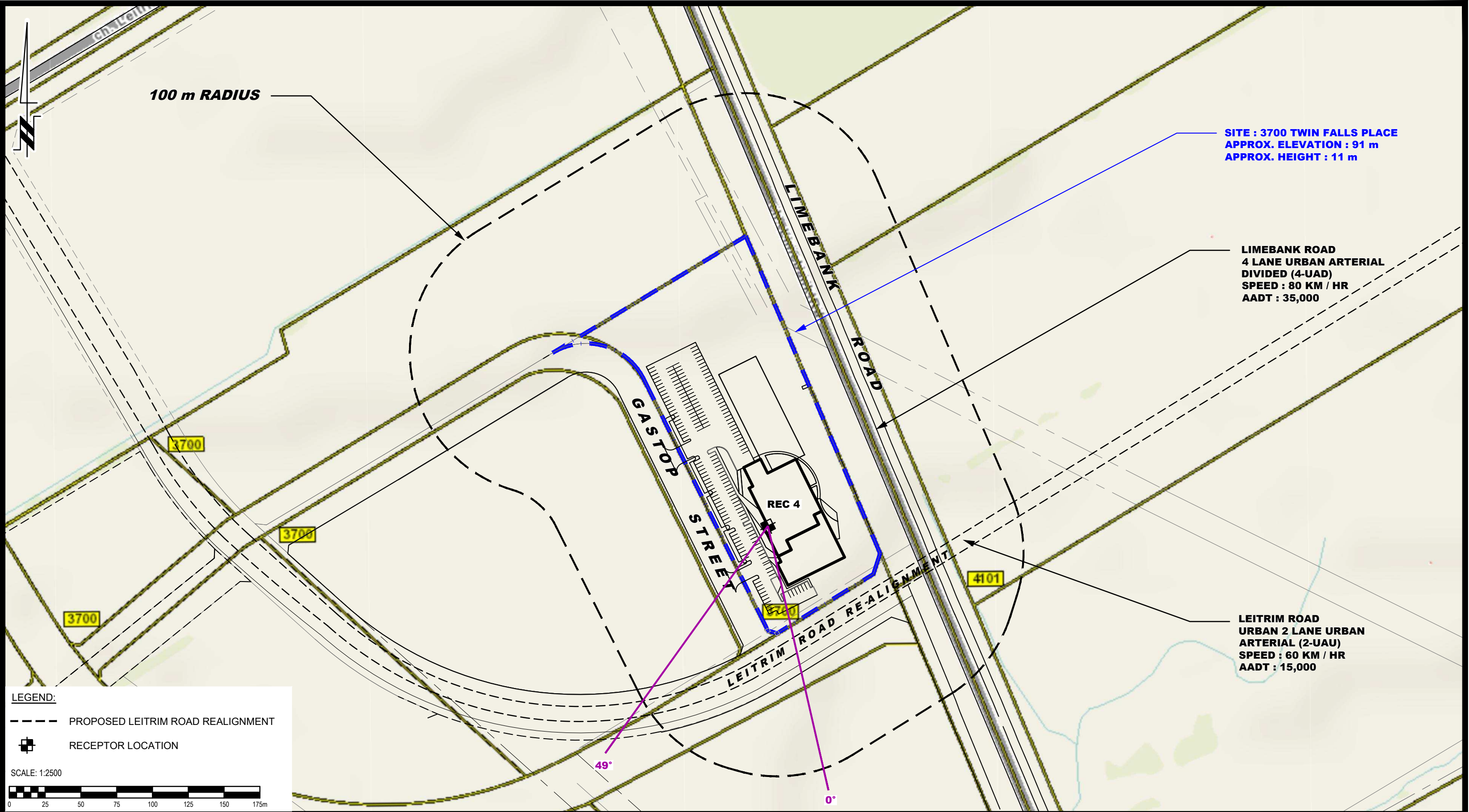
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⊕ RECEPTOR LOCATION

SCALE: 1:2500

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<div><div><div>PATERSON GROUP</div><div>9 AURIGA DRIVE OTTAWA, ON K2E 7T9 TEL: (613) 226-7381</div></div></div>					OTTAWA, Title:	GASTOPS C.O. CSV NOISE ATTENUATION STUDY PROPOSED COMMERCIAL DEVELOPMENT 3700 TWIN FALLS PLACE - BLOCK 2 ONTARIO	Scale:	1:2500	Date:	11/2024
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							Approved by:	SB	Revision No.:	



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	NO.	REVISIONS	DATE	INITIAL			

OTTAWA, Title:	SITE GEOMETRY - REC 4
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APPENDIX 2

STAMSON RESULTS

STAMSON 5.0 NORMAL REPORT Date: 06-11-2024 16:21:32
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: REC11.te Time Period: Day/Night 16/8 hours
Description: REC 1-1 Northern Elevation

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

Car traffic volume : 28336/2464 veh/TimePeriod *
Medium truck volume : 2254/196 veh/TimePeriod *
Heavy truck volume : 1610/140 veh/TimePeriod *
Posted speed limit : 80 km/h
Road gradient : 0 %
Road pavement : 1 (Typical asphalt or concrete)

* Refers to calculated road volumes based on the following input:

24 hr Traffic Volume (AADT or SADT): 35000
Percentage of Annual Growth : 0.00
Number of Years of Growth : 0.00
Medium Truck % of Total Volume : 7.00
Heavy Truck % of Total Volume : 5.00
Day (16 hrs) % of Total Volume : 92.00

Data for Segment # 1: Limebank (day/night)

Angle1 Angle2 : -70.00 deg 26.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 0
Surface : 1 (Absorptive ground surface)
Receiver source distance : 73.00 / 73.00 m
Receiver height : 1.50 / 1.50 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

↑

Results segment # 1: Limebank (day)

Source height = 1.50 m

ROAD (0.00 + 61.44 + 0.00) = 61.44 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-70	26	0.66	76.17	0.00	-11.41	-3.32	0.00	0.00	0.00	61.44

Segment Leq : 61.44 dBA

Total Leq All Segments: 61.44 dBA

↑

Results segment # 1: Limebank (night)

Source height = 1.50 m

ROAD (0.00 + 53.84 + 0.00) = 53.84 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-70	26	0.66	68.57	0.00	-11.41	-3.32	0.00	0.00	0.00	53.84

Segment Leq : 53.84 dBA

Total Leq All Segments: 53.84 dBA

↑

TOTAL Leq FROM ALL SOURCES (DAY): 61.44
(NIGHT): 53.84

↑

↑

STAMSON 5.0 NORMAL REPORT Date: 06-11-2024 18:37:38
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: REC21.te Time Period: Day/Night 16/8 hours
Description: REC 2-1 Eastern Elevation

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

Car traffic volume : 28336/2464 veh/TimePeriod *
Medium truck volume : 2254/196 veh/TimePeriod *
Heavy truck volume : 1610/140 veh/TimePeriod *
Posted speed limit : 80 km/h
Road gradient : 0 %
Road pavement : 1 (Typical asphalt or concrete)

* Refers to calculated road volumes based on the following input:

24 hr Traffic Volume (AADT or SADT): 35000
Percentage of Annual Growth : 0.00
Number of Years of Growth : 0.00
Medium Truck % of Total Volume : 7.00
Heavy Truck % of Total Volume : 5.00
Day (16 hrs) % of Total Volume : 92.00

Data for Segment # 1: Limebank (day/night)

Angle1 Angle2 : -78.00 deg 66.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 0
Surface : 1 (Absorptive ground surface)
Receiver source distance : 47.00 / 47.00 m
Receiver height : 1.50 / 1.50 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

▲

Road data, segment # 2: Leitrim (day/night)

Car traffic volume : 12144/1056 veh/TimePeriod *
Medium truck volume : 966/84 veh/TimePeriod *
Heavy truck volume : 690/60 veh/TimePeriod *
Posted speed limit : 100 km/h
Road gradient : 0 %
Road pavement : 1 (Typical asphalt or concrete)

* Refers to calculated road volumes based on the following input:

24 hr Traffic Volume (AADT or SADT): 15000
Percentage of Annual Growth : 0.00
Number of Years of Growth : 0.00
Medium Truck % of Total Volume : 7.00
Heavy Truck % of Total Volume : 5.00
Day (16 hrs) % of Total Volume : 92.00

Data for Segment # 2: Leitrim (day/night)

```

-----
Angle1   Angle2       :   0.00 deg   65.00 deg
Wood depth      :           0       (No woods.)
No of house rows :           0 / 0
Surface         :           1       (Absorptive ground surface)
Receiver source distance : 67.00 / 67.00 m
Receiver height  :   1.50 / 1.50 m
Topography      :           1       (Flat/gentle slope; no barrier)
Reference angle  :   0.00
  
```

↑

Results segment # 1: Limebank (day)

Source height = 1.50 m

ROAD (0.00 + 66.10 + 0.00) = 66.10 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-78	66	0.66	76.17	0.00	-8.23	-1.83	0.00	0.00	0.00	66.10

Segment Leq : 66.10 dBA

↑

Results segment # 2: Leitrim (day)

Source height = 1.50 m

ROAD (0.00 + 58.62 + 0.00) = 58.62 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
0	65	0.66	74.50	0.00	-10.79	-5.09	0.00	0.00	0.00	58.62

Segment Leq : 58.62 dBA

Total Leq All Segments: 66.81 dBA

↑

Results segment # 1: Limebank (night)

Source height = 1.50 m

ROAD (0.00 + 58.50 + 0.00) = 58.50 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-78	66	0.66	68.57	0.00	-8.23	-1.83	0.00	0.00	0.00	58.50

Segment Leq : 58.50 dBA

↑

Results segment # 2: Leitrim (night)

Source height = 1.50 m

ROAD (0.00 + 51.03 + 0.00) = 51.03 dBA

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

0	65	0.66	66.91	0.00	-10.79	-5.09	0.00	0.00	0.00	51.03
---	----	------	-------	------	--------	-------	------	------	------	-------

Segment Leq : 51.03 dBA

Total Leq All Segments: 59.22 dBA

↑

TOTAL Leq FROM ALL SOURCES (DAY): 66.81

(NIGHT): 59.22

↑

↑

STAMSON 5.0 NORMAL REPORT Date: 06-11-2024 19:07:13
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: REC31.te Time Period: Day/Night 16/8 hours
Description: REC 3-1 Southern Elevation

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

Car traffic volume : 28336/2464 veh/TimePeriod *
Medium truck volume : 2254/196 veh/TimePeriod *
Heavy truck volume : 1610/140 veh/TimePeriod *
Posted speed limit : 80 km/h
Road gradient : 0 %
Road pavement : 1 (Typical asphalt or concrete)

* Refers to calculated road volumes based on the following input:

24 hr Traffic Volume (AADT or SADT): 35000
Percentage of Annual Growth : 0.00
Number of Years of Growth : 0.00
Medium Truck % of Total Volume : 7.00
Heavy Truck % of Total Volume : 5.00
Day (16 hrs) % of Total Volume : 92.00

Data for Segment # 1: Limebank (day/night)

Angle1 Angle2 : 0.00 deg 50.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 0
Surface : 1 (Absorptive ground surface)
Receiver source distance : 67.00 / 67.00 m
Receiver height : 1.50 / 1.50 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

▲

Road data, segment # 2: Leitrim (day/night)

Car traffic volume : 12144/1056 veh/TimePeriod *
Medium truck volume : 966/84 veh/TimePeriod *
Heavy truck volume : 690/60 veh/TimePeriod *
Posted speed limit : 100 km/h
Road gradient : 0 %
Road pavement : 1 (Typical asphalt or concrete)

* Refers to calculated road volumes based on the following input:

24 hr Traffic Volume (AADT or SADT): 15000
Percentage of Annual Growth : 0.00
Number of Years of Growth : 0.00
Medium Truck % of Total Volume : 7.00
Heavy Truck % of Total Volume : 5.00
Day (16 hrs) % of Total Volume : 92.00

Data for Segment # 2: Leitrim (day/night)

```

-----
Angle1   Angle2           : -83.00 deg    80.00 deg
Wood depth           :      0      (No woods.)
No of house rows      :      0 / 0
Surface              :      1      (Absorptive ground surface)
Receiver source distance : 30.00 / 30.00 m
Receiver height       :   1.50 / 1.50 m
Topography           :      1      (Flat/gentle slope; no barrier)
Reference angle       :      0.00
  
```

↑

Results segment # 1: Limebank (day)

Source height = 1.50 m

ROAD (0.00 + 59.43 + 0.00) = 59.43 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
0	50	0.66	76.17	0.00	-10.79	-5.94	0.00	0.00	0.00	59.43

Segment Leq : 59.43 dBA

↑

Results segment # 2: Leitrim (day)

Source height = 1.50 m

ROAD (0.00 + 67.95 + 0.00) = 67.95 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-83	80	0.66	74.50	0.00	-5.00	-1.56	0.00	0.00	0.00	67.95

Segment Leq : 67.95 dBA

Total Leq All Segments: 68.52 dBA

↑

Results segment # 1: Limebank (night)

Source height = 1.50 m

ROAD (0.00 + 51.84 + 0.00) = 51.84 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
0	50	0.66	68.57	0.00	-10.79	-5.94	0.00	0.00	0.00	51.84

Segment Leq : 51.84 dBA

↑

Results segment # 2: Leitrim (night)

Source height = 1.50 m

ROAD (0.00 + 60.35 + 0.00) = 60.35 dBA

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

-83	80	0.66	66.91	0.00	-5.00	-1.56	0.00	0.00	0.00	60.35
-----	----	------	-------	------	-------	-------	------	------	------	-------

Segment Leq : 60.35 dBA

Total Leq All Segments: 60.92 dBA

↑

TOTAL Leq FROM ALL SOURCES (DAY): 68.52

(NIGHT): 60.92

↑

↑

STAMSON 5.0 NORMAL REPORT Date: 06-11-2024 19:40:13
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: REC32.te Time Period: Day/Night 16/8 hours
Description: REC 3-2 Southern Elevation

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

Car traffic volume : 28336/2464 veh/TimePeriod *
Medium truck volume : 2254/196 veh/TimePeriod *
Heavy truck volume : 1610/140 veh/TimePeriod *
Posted speed limit : 80 km/h
Road gradient : 0 %
Road pavement : 1 (Typical asphalt or concrete)

* Refers to calculated road volumes based on the following input:

24 hr Traffic Volume (AADT or SADT): 35000
Percentage of Annual Growth : 0.00
Number of Years of Growth : 0.00
Medium Truck % of Total Volume : 7.00
Heavy Truck % of Total Volume : 5.00
Day (16 hrs) % of Total Volume : 92.00

Data for Segment # 1: Limebank (day/night)

Angle1 Angle2 : 0.00 deg 50.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 0
Surface : 1 (Absorptive ground surface)
Receiver source distance : 67.00 / 67.00 m
Receiver height : 9.50 / 9.50 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

^

Road data, segment # 2: Leitrim (day/night)

Car traffic volume : 12144/1056 veh/TimePeriod *
Medium truck volume : 966/84 veh/TimePeriod *
Heavy truck volume : 690/60 veh/TimePeriod *
Posted speed limit : 100 km/h
Road gradient : 0 %
Road pavement : 1 (Typical asphalt or concrete)

* Refers to calculated road volumes based on the following input:

24 hr Traffic Volume (AADT or SADT): 15000
Percentage of Annual Growth : 0.00
Number of Years of Growth : 0.00
Medium Truck % of Total Volume : 7.00
Heavy Truck % of Total Volume : 5.00
Day (16 hrs) % of Total Volume : 92.00

Data for Segment # 2: Leitrim (day/night)

```

-----
Angle1   Angle2           : -83.00 deg    80.00 deg
Wood depth           :      0      (No woods.)
No of house rows     :      0 / 0
Surface              :      1      (Absorptive ground surface)
Receiver source distance : 30.00 / 30.00 m
Receiver height       :   9.50 / 9.50 m
Topography           :      1      (Flat/gentle slope; no barrier)
Reference angle       :   0.00
  
```

↑

Results segment # 1: Limebank (day)

Source height = 1.50 m

ROAD (0.00 + 61.13 + 0.00) = 61.13 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
0	50	0.42	76.17	0.00	-9.23	-5.81	0.00	0.00	0.00	61.13

Segment Leq : 61.13 dBA

↑

Results segment # 2: Leitrim (day)

Source height = 1.50 m

ROAD (0.00 + 69.04 + 0.00) = 69.04 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-83	80	0.42	74.50	0.00	-4.28	-1.19	0.00	0.00	0.00	69.04

Segment Leq : 69.04 dBA

Total Leq All Segments: 69.69 dBA

↑

Results segment # 1: Limebank (night)

Source height = 1.50 m

ROAD (0.00 + 53.53 + 0.00) = 53.53 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
0	50	0.42	68.57	0.00	-9.23	-5.81	0.00	0.00	0.00	53.53

Segment Leq : 53.53 dBA

↑

Results segment # 2: Leitrim (night)

Source height = 1.50 m

ROAD (0.00 + 61.44 + 0.00) = 61.44 dBA

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

-83	80	0.42	66.91	0.00	-4.28	-1.19	0.00	0.00	0.00	61.44
-----	----	------	-------	------	-------	-------	------	------	------	-------

Segment Leq : 61.44 dBA

Total Leq All Segments: 62.09 dBA

↑

TOTAL Leq FROM ALL SOURCES (DAY): 69.69

(NIGHT): 62.09

↑

↑

STAMSON 5.0 NORMAL REPORT Date: 06-11-2024 19:43:22
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: REC41.te Time Period: Day/Night 16/8 hours
Description: REC 4-1 Western Elevation

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

Car traffic volume : 12144/1056 veh/TimePeriod *
Medium truck volume : 966/84 veh/TimePeriod *
Heavy truck volume : 690/60 veh/TimePeriod *
Posted speed limit : 80 km/h
Road gradient : 0 %
Road pavement : 1 (Typical asphalt or concrete)

* Refers to calculated road volumes based on the following input:

24 hr Traffic Volume (AADT or SADT): 15000
Percentage of Annual Growth : 0.00
Number of Years of Growth : 0.00
Medium Truck % of Total Volume : 7.00
Heavy Truck % of Total Volume : 5.00
Day (16 hrs) % of Total Volume : 92.00

Data for Segment # 1: Leitrim (day/night)

Angle1 Angle2 : 0.00 deg 49.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 0
Surface : 1 (Absorptive ground surface)
Receiver source distance : 75.00 / 75.00 m
Receiver height : 1.50 / 1.50 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

↑

Results segment # 1: Leitrim (day)

Source height = 1.50 m

ROAD (0.00 + 54.87 + 0.00) = 54.87 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
0	49	0.66	72.49	0.00	-11.60	-6.02	0.00	0.00	0.00	54.87

Segment Leq : 54.87 dBA

Total Leq All Segments: 54.87 dBA

↑

Results segment # 1: Leitrim (night)

Source height = 1.50 m

ROAD (0.00 + 47.27 + 0.00) = 47.27 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
0	49	0.66	64.89	0.00	-11.60	-6.02	0.00	0.00	0.00	47.27

Segment Leq : 47.27 dBA

Total Leq All Segments: 47.27 dBA

⬆

TOTAL Leq FROM ALL SOURCES (DAY): 54.87
(NIGHT): 47.27

⬆

⬆

APPENDIX 3

IBANA-CALC RESULTS

Aircraft Noise Sound Insulation Scenario Calculation Results

Project: PG7255
ProjectID: PG7255
Date:2024-11-06
Outdoor level: NEF 30 or Leq24 62 or Ldn 63 dBA

Source Spectrum details:

100% Standard Aircraft
Corrections:

Receiving room:

Floor Area: 49480.00 ft²
Absorbtion: 100% of floor area

Construction Description:

Element 1: GMEM4_PSMEM0.2_WFB13_POLYISO70_PAP0.3_STE0.8_SJ254(1610)

Construction Type: Steel Deck
Area: 47071.00 ft²
Test ID: TLF-99-007a
Test Date: 1999-03-30

Granular membrane and peel and stick membranes, 13 mm wood fibre board, 70 mm thick polyisocyanurate insulation, kraft paper, 0.7 mm steel decking, steel joists on 1610 mm centre, no vents installed.

Element 2: VIN1_OSB11_WS140(610)_GFB152_G13

Construction Type: 2by6 Wall
Area: 17405.00 ft²
Test ID: TLA-99-121a
Test Date: 1999-03-15

Vinyl siding, 11 mm OSB, 140 mm wood studs on 610 mm centre with glass fibre cavity insulation, 1 of 13 mm gypsum board.

Sound Level vs. Frequency - Spectrum Values:

Frequency(Hz) Indoor Sound Level(dB)

50	38.6
63	41.6
80	42.4
100	41.2
125	40.5
160	40.3
200	38.7

250	35.5
315	31.1
400	26.7
500	23.0
630	18.9
800	15.8
1000	10.3
1250	5.2
1600	0.6
2000	-3.3
2500	-5.5
3150	-9.8
4000	-18.3
5000	-31.2

A-Weighted Sound Level vs. Frequency - Spectrum Values:

Frequency(Hz) A-Wtd Sound Level(dBA)

50	8.4
63	15.4
80	19.9
100	22.1
125	24.4
160	26.9
200	27.8
250	26.9
315	24.5
400	21.9
500	19.8
630	17.0
800	15.0
1000	10.3
1250	5.8
1600	1.6
2000	-2.1
2500	-4.2
3150	-8.6
4000	-17.3
5000	-30.7

Transmission Loss vs. Frequency - Spectrum Values:

Frequency(Hz) Transmission Loss(dB)

50	16.7
63	15.0
80	15.7
100	18.3
125	19.3
160	19.3
200	20.3

250	22.5
315	25.9
400	29.6
500	32.8
630	36.2
800	38.5
1000	42.7
1250	46.6
1600	49.5
2000	51.3
2500	51.7
3150	53.5
4000	58.8
5000	65.6

Source Sound Level vs. Frequency - Spectrum Values:

Frequency(Hz) Source Sound Level(dB)

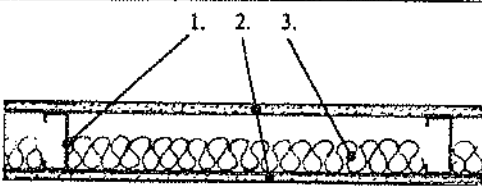
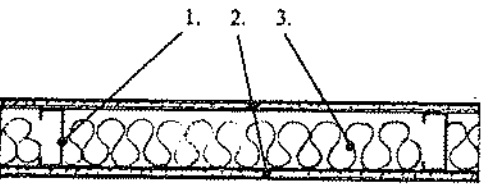
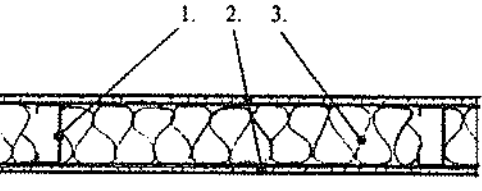
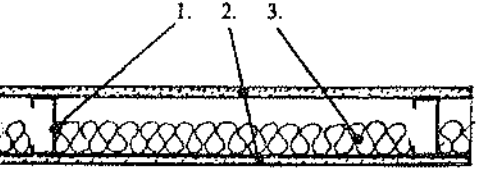
50	54.8
63	56.0
80	57.5
100	58.9
125	59.3
160	59.0
200	58.5
250	57.5
315	56.5
400	55.8
500	55.2
630	54.6
800	53.7
1000	52.5
1250	51.2
1600	49.6
2000	47.4
2500	45.6
3150	43.3
4000	40.2
5000	34.3

Single Number Ratings

Outdoor Sound Level:	62	dBA
Indoor Sound Level:	34	dBA
A-wtd Level Reduction:	28	dB
A-wtd Reduction re Standard Source:	28	dB
OITC Rating:	27	dB

APPENDIX 4

INDUSTRY STANDARDS
CONSTRUCTION DRAWINGS
CONSTRUCTION SPECIFICATIONS

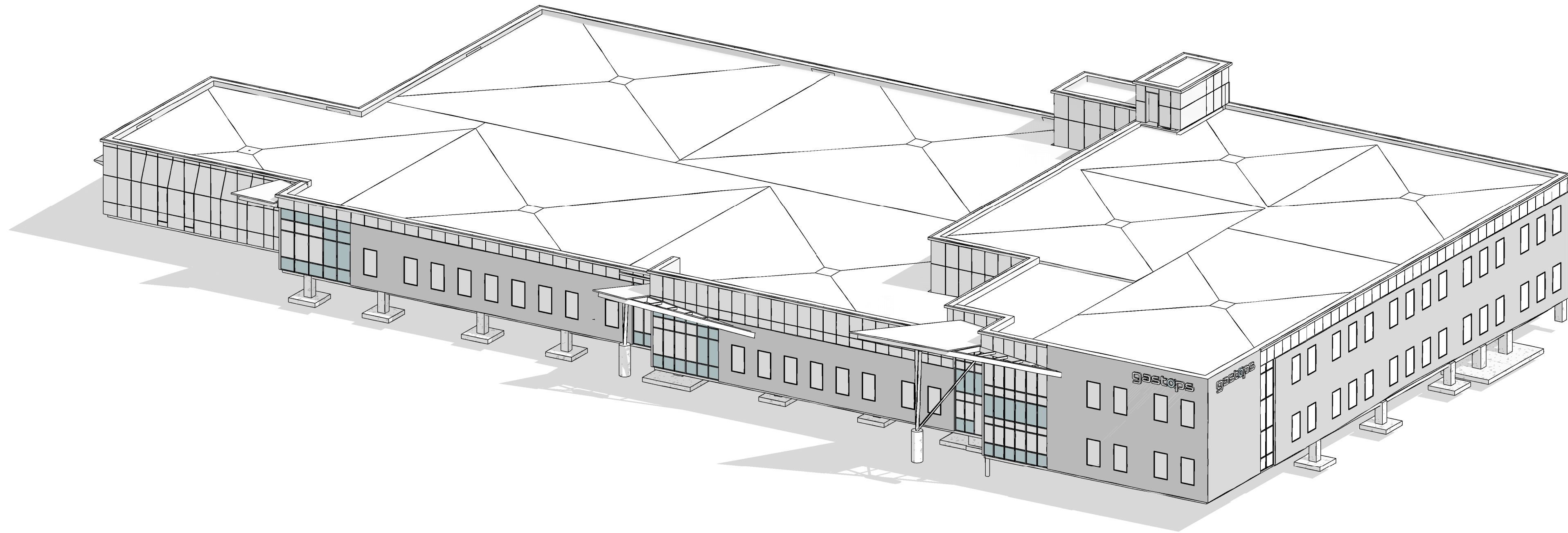
Sketch	Brief Description	...	Laboratory Test Number Year Frequencies Tested Source of Data	STC	Section Number
	1. 3 5/8" metal studs, 24"o.c. 2. 5/8" gypsum board screwed to studs. 3. 2" thick sound attenuation blanket.	...	National Research Council of Canada NRC #66 1968 16f National Research Council of Canada	47	1.3.3.1.5.7
	1. 3 5/8" metal studs, 24"o.c. 2. 5/8" type X gypsum board screwed to studs. 3. 3" thick sound attenuation blanket.	...	Owens/Corning Fiberglas OCF 469 1967 16f Owens/Corning Fiberglas	44	1.3.3.1.5.8
	1. 3 5/8" metal studs, 24"o.c. 2. 5/8" gypsum board screwed to studs. 3. 4" thick sound attenuation blanket compressed to fit in stud space.	...	National Research Council of Canada NRC #66 1968 16f National Research Council of Canada	45	1.3.3.1.5.9
	1. 3 5/8" metal studs, 24"o.c. 2. 5/8" type X gypsum board spot-laminated to studs with daubs of adhesive 12"o.c. drywall screws at third points along joints and ends. 3. 2" thick sound attenuation blanket.	...	Riverbank Acoustical Labs. TL66-253 1966 16f Celotex Corp.	51	1.3.3.1.5.10

GASTOPS NEW FACILITY

3700 Twin Falls Place

ISSUED FOR SPC REVIEW: 2024-11-01

ARCHITECTURAL	
A001	GENERAL NOTES
A004	CODE MATRIX
A005	LIMITING DISTANCES
A010	ASSEMBLIES
A302	PERSPECTIVES
A400	BUILDING SECTIONS
A500	STAIR DETAILS
A501	LIFT DETAILS
A601	GROUND FLOOR REFLECTED CEILING PLAN
A602	SECOND FLOOR REFLECTED CEILING PLAN
A630	GROUND FLOOR FURNITURE & EQUIPMENT PLAN
A631	SECOND FLOOR FURNITURE PLAN
A640	WASHROOM INTERIOR ELEVATIONS
A700	DOOR SCHEDULE
A701	DOOR SCHEDULE - COMMON DOORS
A702	DOOR SCHEDULE - SUITE DOORS
A710	WINDOW SCHEDULE
A800	FIRE AND ACOUSTIC SEPARATION DETAILS
A810	FOUNDATION DETAILS
A820	ENVELOPE DETAILS
A830	ROOF DETAILS
A840	WINDOW DETAILS
A850	DOOR DETAILS



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190 O'Connor Street, Suite 100
Ottawa, Ontario K2P 2R3

STRUCTURAL ENGINEER
CLELAND JARDINE
580 Terry Fox Drive
Kanata, Ontario K0L 4B9

MECHANICAL ENGINEER
QUASAR CONSULTING
GROUP
150 Isabella Street, Suite 400
Ottawa, Ontario K1S 5H3

ELECTRICAL ENGINEER
QUASAR CONSULTING
GROUP
150 Isabella Street, Suite 400
Ottawa, Ontario K1S 5H3

CIVIL ENGINEER
EGIS GROUP
115 Walgreen Road
R.R. 3 Corp, Ontario K0A 1L0

LANDSCAPE ARCHITECT
URBAN TYPOLOGY INC
163 Sterling Road Unit 10
Toronto, Ontario M8R 2B2

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CLIENT

GASTOPS

OTTAWA
ONTARIO, CANADA

PROJECT

GASTOPS NEW
FACILITY

3700 Twin Falls Place

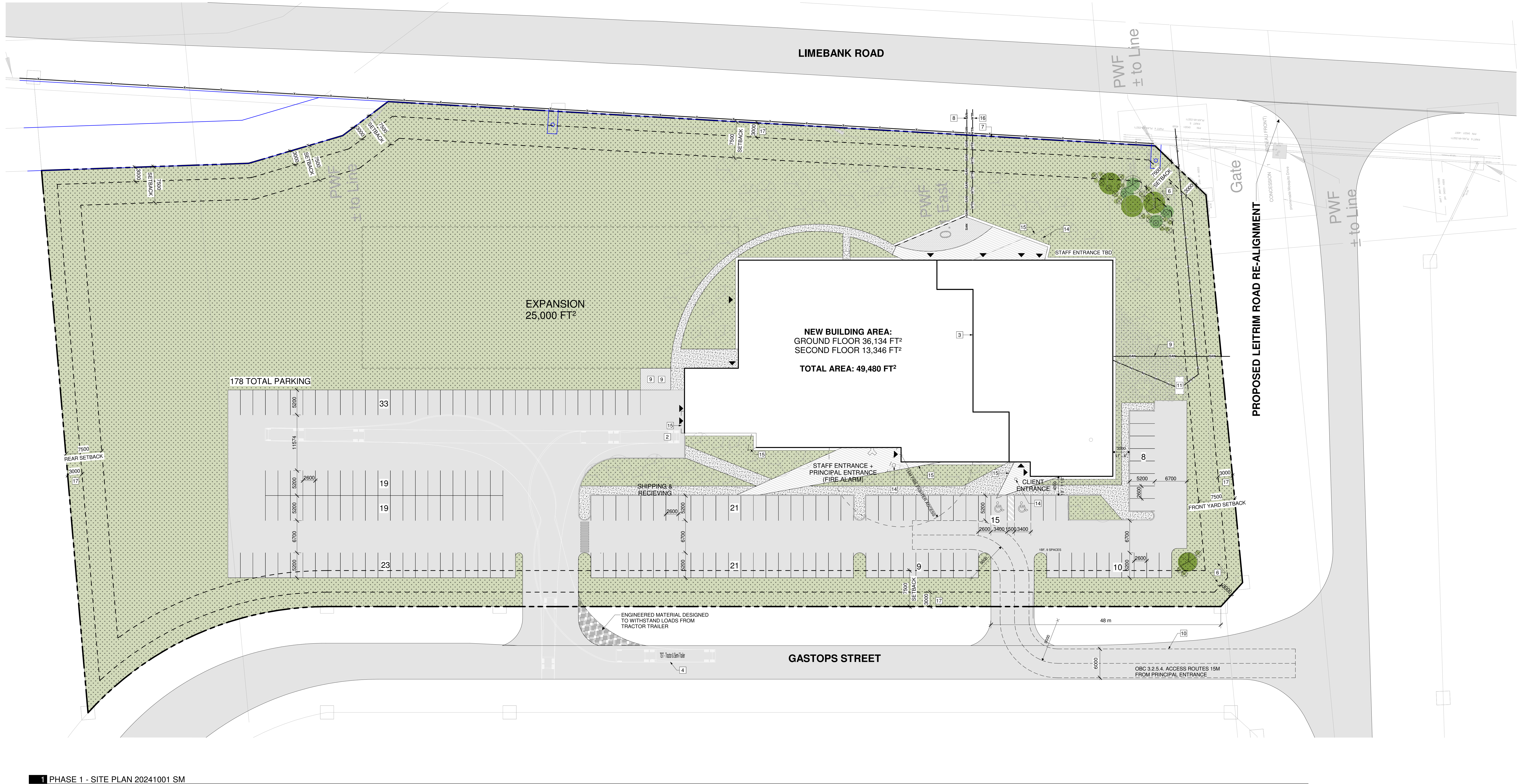
TITLE

COVER PAGE

PROJECT NO: 2023-2260
DRAWN: KM
APPROVED: PM
SCALE:
DATE PRINTED: 11/1/2024 3:21:10 PM

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3 A000



1 PHASE 1 - SITE PLAN 20241001 SM

A100 | 1:300

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3	2024-11-01	ISSUED FOR SPC REVIEW
2	2024-07-30	ISSUED FOR CLIENT COORDINATION
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OTTAWA
ONTARIO, CANADA

PROJECT

GASTOPS NEW
FACILITY

3700 Twin Falls Place

TITLE

SITE PLAN

PROJECT NO: 2023-2260
DRAWN: KUL RR
APPROVED: DH
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A100

SITE PLAN LEGEND:

	EXISTING BUILDING & SITE ELEMENTS		ENTRANCE/ BARRIER-FREE ENTRANCE		FIRE HYDRANT
	DEMOLISHED BUILDING & SITE ELEMENTS		MAIN ENTRANCE		MAINTENANCE HOLE
	ASPHALT PAVING		VEHICLE ACCESS		UTILITY POLE
	GRASS		PROPERTY LINE		SIAMESE CONNECTION
	CONCRETE SIDEWALK		FENCE PER SURVEY		DROPPED CURB
	CONCRETE PAD		DOMESTIC WATER PER CIVIL		TREE
	MULCH/PLANTING		SANITARY PER CIVIL		SHRUB
	GRAVEL/ RIVERSTONE/ MAINTENANCE STRIP		NEW STORM PER CIVIL		
	STONE DUST/ SAND		NEW ELECTRICAL SERVICE (BELOW GRADE) PER CIVIL		
	PAVER TYPE 1		GAS PER CIVIL		
	PAVER TYPE 2		OVERHEAD WIRE		
	PAVER TYPE 3		SUBJECT TO EASEMENT		
			CATCH BASIN		
			LIGHT STANDARD		

SITE PLAN GENERAL NOTES:

1. ALL GENERAL SITE INFORMATION AND CONDITIONS COMPILED FROM EXISTING PLANS AND SURVEYS
2. DO NOT SCALE THIS DRAWING
3. REPORT ANY DISCREPANCIES PRIOR TO COMMENCING WORK. NO RESPONSIBILITY IS BORN BY THE CONSULTANT FOR UNKNOWN SUBSURFACE CONDITIONS
4. CONTRACTOR TO CHECK AND VERIFY ALL DIMENSIONS ON SITE AND REPORT ANY ERRORS AND/OR OMISSIONS TO THE CONSULTANT
5. REINSTATE ALL AREAS AND ITEMS DAMAGED AS A RESULT OF CONSTRUCTION ACTIVITIES TO THE SATISFACTION OF THE CONSULTANT
6. CONTRACTOR TO LAYOUT PLANTING BEDS, PATHWAYS ETC. TO APPROVAL OF CONSULTANT PRIOR TO ANY JOB EXCAVATION
7. THE ACCURACY OF THE POSITION OF UTILITIES IS NOT GUARANTEED - CONTRACTOR TO VERIFY PRIOR TO EXCAVATION
8. INDIVIDUAL UTILITY COMPANY MUST BE CONTACTED FOR CONFIRMATION OF UTILITY EXISTENCE AND LOCATION PRIOR TO DIGGING
9. ALL DISTURBED AREAS TO BE RESTORED TO ORIGINAL CONDITION OR BETTER UNLESS OTHERWISE NOTED

SITE PLAN KEYNOTES:

- 1 FIRE ROUTE
- 2 DROP OFF / LOADING BAY
- 3 OUTLINE OF SECOND STOREY
- 4 TRUCK TURNING RADIUS
- 5 OUTLINE OF SECOND STOREY
- 6 CULVERT
- 7 STORM DITCH
- 8 EXISTING SANITARY CONNECTION
- 9 NEW SANITARY CONNECTION
- 10 FIRE TRUCK ROUTE
- 11 TRANSFORMER
- 12 GARBAGE
- 13 SOCCER
- 14 CANOPY COLUMN
- 15 CANOPY ABOVE
- 16 DOMESTIC WATER
- 17 3M LANDSCAPE BUFFER

LEGAL DESCRIPTION:

BLOCK 2 4R-8033

REFERENCE SURVEY:

BASED ON INFORMATION FROM A SURVEY RECEIVED

MUNICIPAL ADDRESS:

NOT ESTABLISHED

DEVELOPMENT INFORMATION:

SITE AREA:	24076 m ²
BUILDING AREA:	3358 m ²
GROSS FLOOR AREA:	4597 m ²
BUILDING HEIGHT:	9754 m / (2) STORIES
ZONE:	IL
SCHEDULE 1:	AREA [C]
SCHEDULE 1A:	AREA [C]
SCHEDULE 2:	

ZONING PROVISION:

MIN. LOT WIDTH:	NO MINIMUM
MIN. LOT AREA:	2000 m ²
MIN. LOT COVERAGE:	65%
MIN. FRONT YARD SETBACK:	7.5 m
MIN. CORNER YARD SETBACK:	7.5 m
MIN. REAR YARD SETBACK:	7.5 m
MIN. INTERIOR YARD SETBACK:	7.5 m
MAXIMUM FLOOR SPACE INDEX:	2
MAXIMUM BUILDING HEIGHT:	18 m
MINIMUM LANDSCAPE AREA:	NO MINIMUM
MINIMUM LANDSCAPE BUFFER:	3M

REQUIRED:

PARKING QUEUING + LOADING

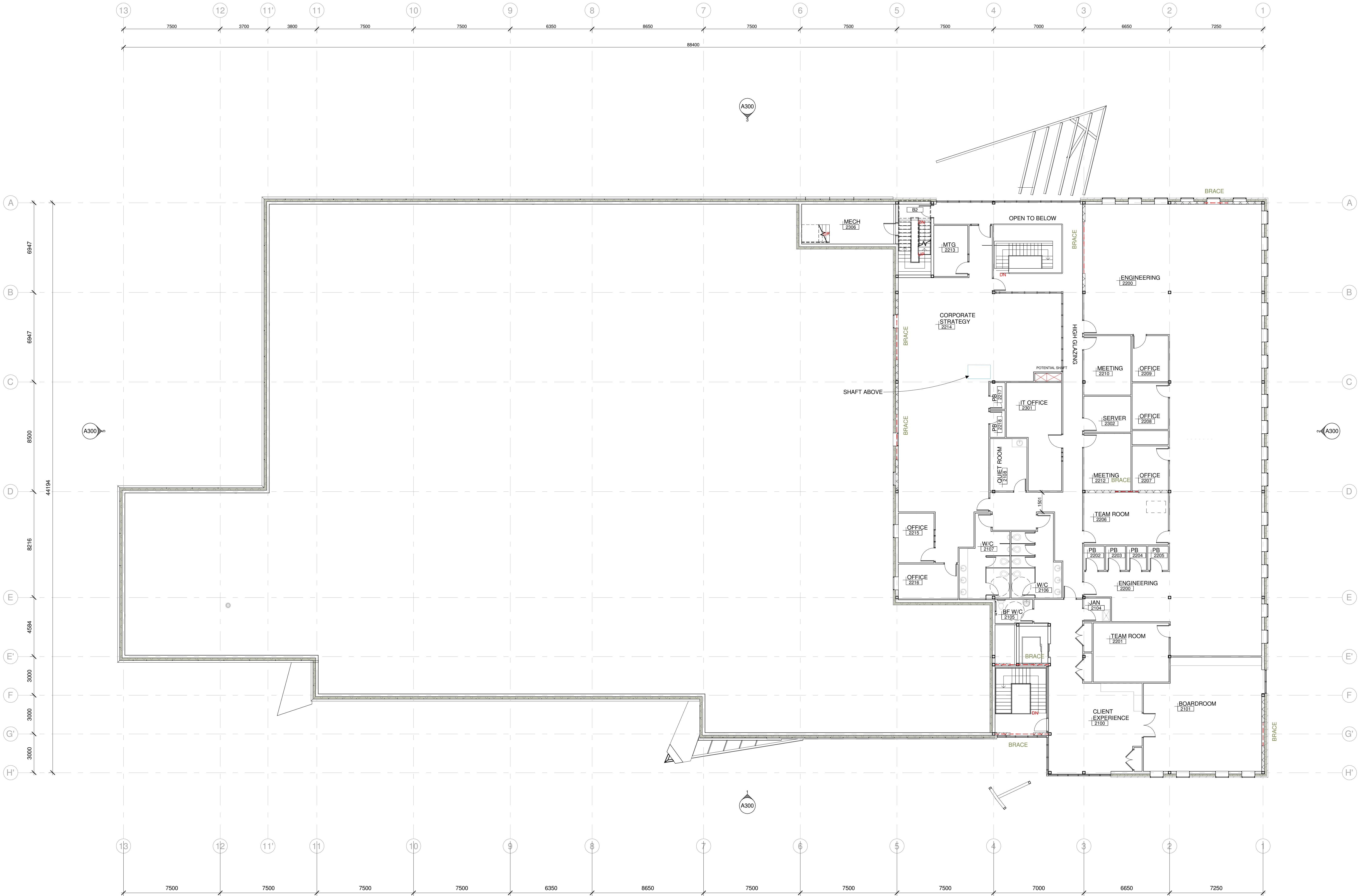
TOTAL SPACES:		178
TYPICAL SPACES:		176
ACCESSIBLE PARKING:	2	2
BICYCLE PARKING:	1 PER 1000 m ² OF GROSS FLOOR AREA (5)	0
REFUSE COLLECTION:		
GARBAGE COLLECTION:		

REQUIRED:

PROVIDED:







1 SECOND FLOOR
A202 | 1 : 125

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CLIENT

GASTOPS

OTTAWA
ONTARIO, CANADA

PROJECT

GASTOPS NEW
FACILITY

3700 Twin Falls Place

TITLE

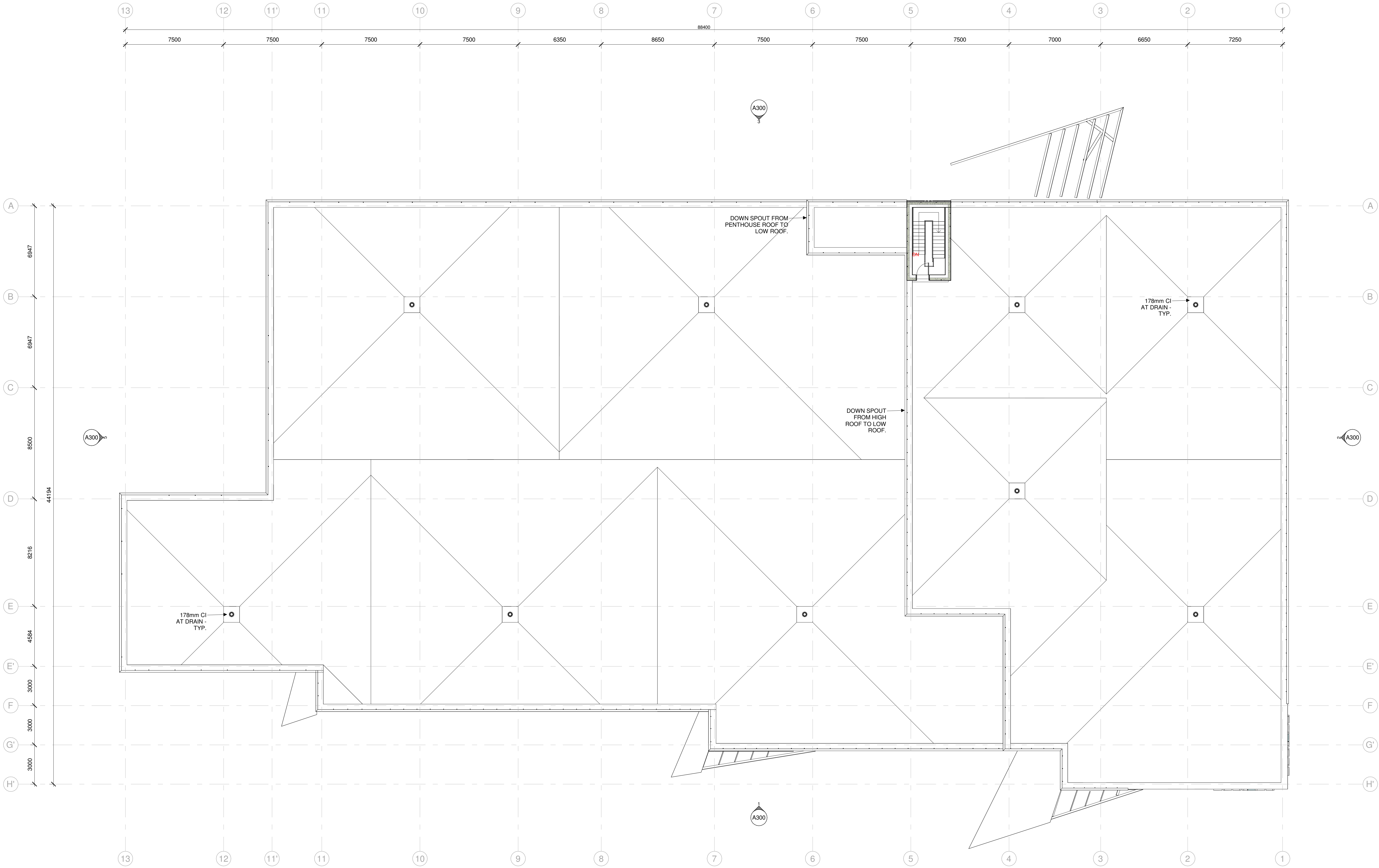
SECOND FLOOR PLAN

PROJECT NO: 2023-2260
DRAWN: KML PR
APPROVED: PM
SCALE: 1 : 125
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A202



1 ROOF PLAN
A203 | 1 : 125

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GASTOPS

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GASTOPS NEW
FACILITY

3700 Twin Falls Place

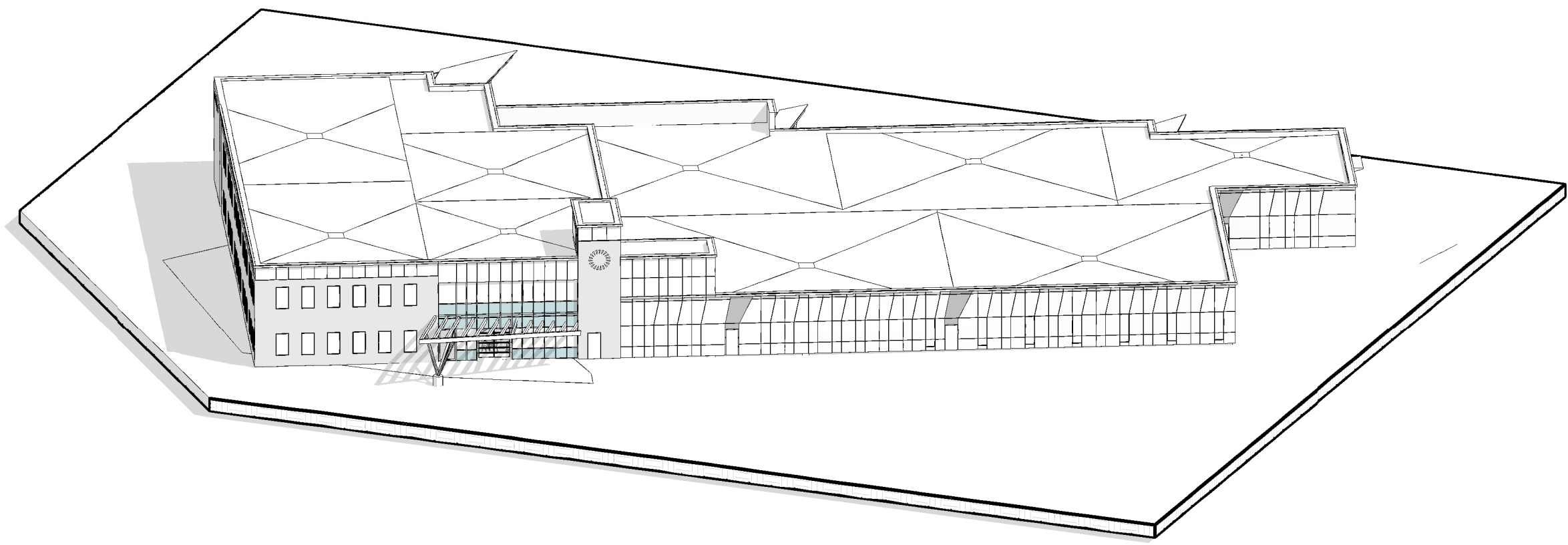
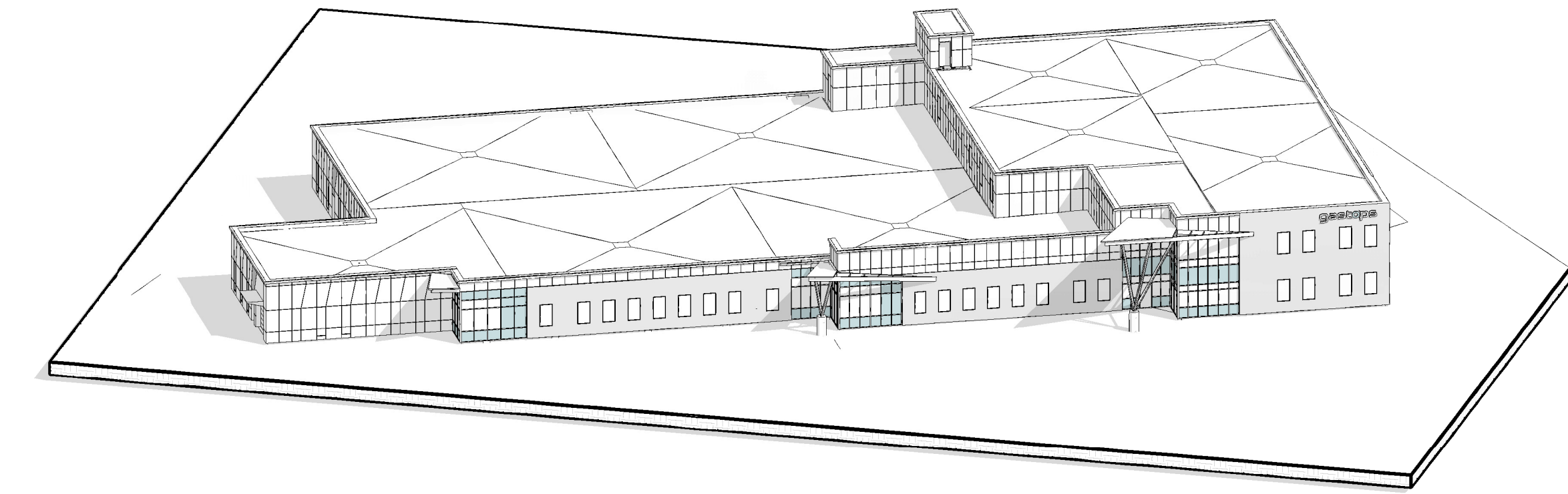
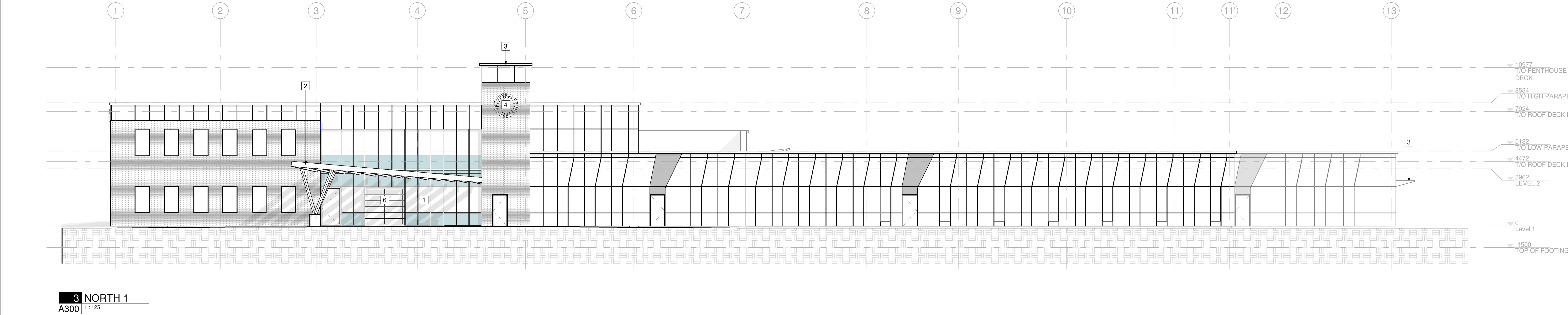
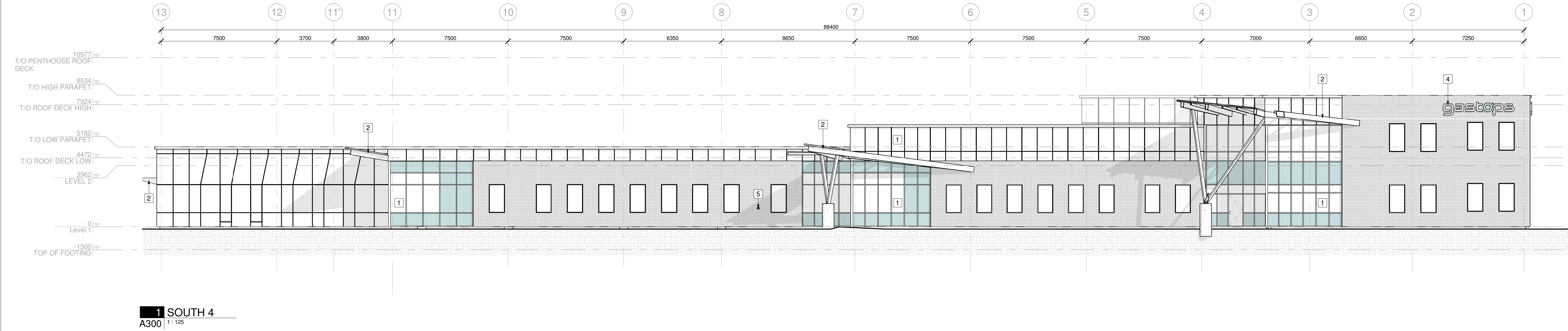
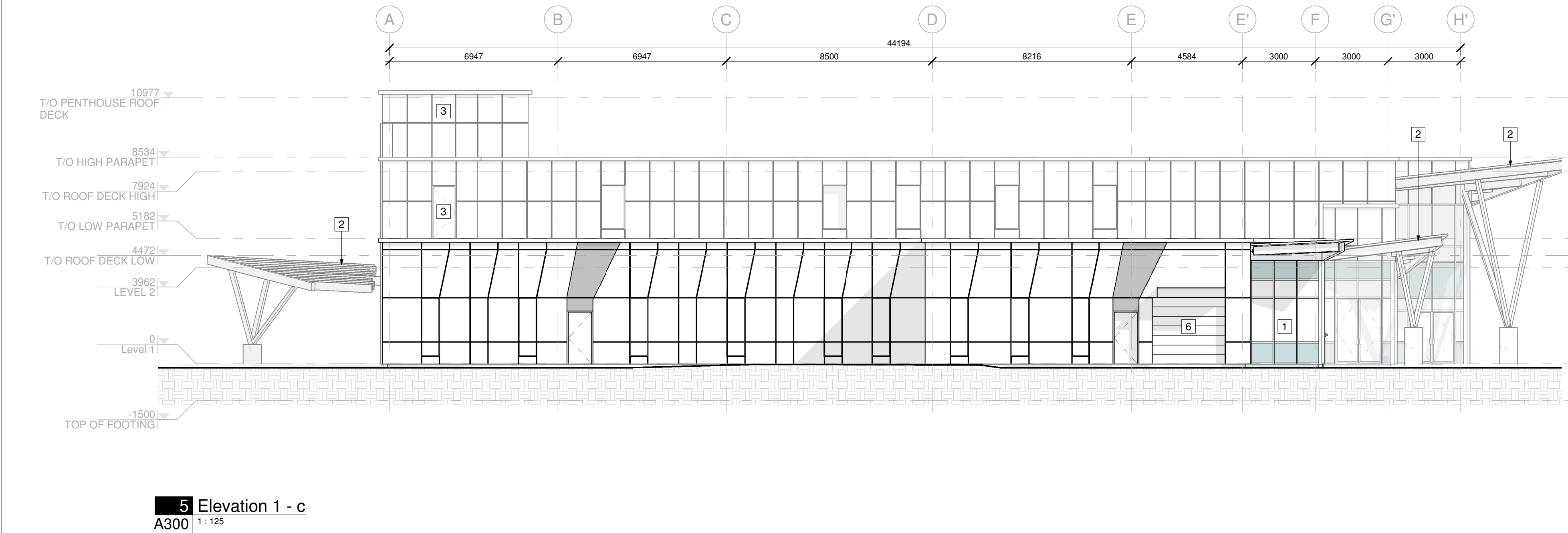
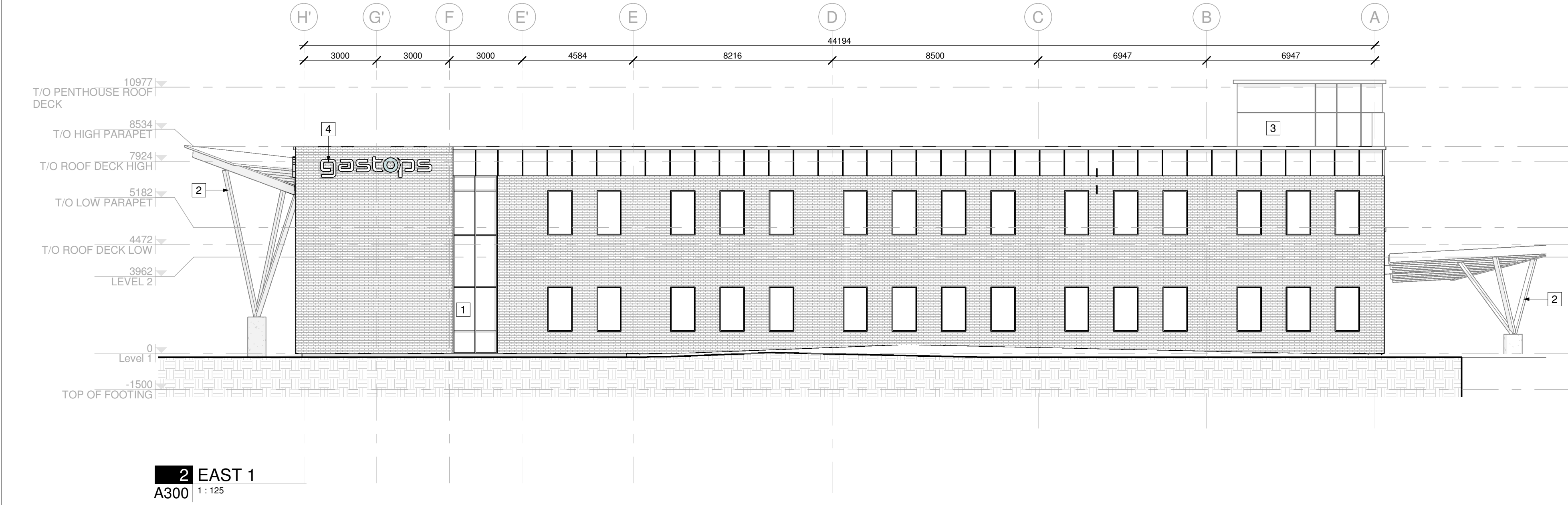
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ROOF PLAN

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SCALE: 1 : 125
DATE PRINTED: 11/1/2024 3:21:19 PM

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3 A203



ELEVATION NOTES:

- CONTRACTOR TO COORDINATE WITH MANUFACTURER'S SPECIFICATIONS AND INSTALLATIONS GUIDELINES FOR ALL MATERIAL SEALING, TRANSITIONS, SEPARATIONS, FLASHING DETAILS, CONNECTIONS, ANCHORAGES, ETC. CONTRACTOR TO PROVIDE DETAIL DRAWINGS OR MOCK-UP FOR ARCHITECT'S REVIEW AND APPROVAL FOR ALL SPECIAL CONDITIONS NOT SHOWN IN THE CONTRACT DOCUMENTS.

ELEVATION KEYNOTES:

- CURTAIN WALL
- CANOPY
- ELEVATOR OVERRUN & ROOFTOP ACCESS
- SIGNAGE
- SIAMESE CONNECTION
- OVERHEAD GARAGE DOOR

ELEVATION LEGEND:

HATCH PATTERNS SHOWN ARE FOR GRAPHIC PURPOSES ONLY AND SHOULD BE COORDINATED WITH ACTUAL SPECIFIED MATERIALS.

HATCH	SYMBOL	DESCRIPTION
		BRICK VENEER MANUFACTURER: COLOUR:
		METAL SIDING MANUFACTURER: COLOUR:

CSV ARCHITECTS

sustainable design · conception écologique

413.561.8118 190 O'Connor Street, Suite 100
www.csv.ca Ottawa, Ontario K2P 2R3

STRUCTURAL ENGINEER
CLELAND JARDINE
580 Terry Fox Drive
Kanata, Ontario K0L 4B9

MECHANICAL ENGINEER
QUASAR CONSULTING
GROUP
150 Isabella Street, Suite 400
Ottawa, Ontario K1S 5H3

ELECTRICAL ENGINEER
QUASAR CONSULTING
GROUP
150 Isabella Street, Suite 400
Ottawa, Ontario K1S 5H3

CIVIL ENGINEER
EGIS GROUP
115 Walgreen Road
R.R. 3 Corp, Ontario K0A 1L0

LANDSCAPE ARCHITECT
URBAN TYPOLOGY INC
163 Sterling Road Unit 10
Toronto, Ontario M9R 2B2

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CLIENT

GASTOPS

OTTAWA
ONTARIO, CANADA

PROJECT

GASTOPS NEW FACILITY

3700 Twin Falls Place

TITLE

ELEVATIONS

PROJECT NO: 2023-2260
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A300

Project Address: Gastops Way**Date:** 2024-11-01**Owner:** Gastops**CSV Project No.:** 2023-2260**GENERAL PROJECT DESCRIPTION**

- New construction of a 2-storey office and manufacturing facility.
- Building area +/- 36,134 ft²
- Gross floor area +/- 49,480 ft²
- OBC 3.2.2.68.A. Group F, Division 2, up to 6 storeys:
 - Non-combustible construction
 - Floor assemblies as fire separation with 1h FRR
 - Mezzanine 1h FRR
 - Supporting structures 1h FRR
- Building is sprinklered

SUBSTRUCTURE**A10 FOUNDATIONS**

Refer to Geotechnical Report for additional Detail

A1010 STANDARD FOUNDATIONS

- Poured-in-place strip footings and pad footings; t/o footing at depth of 1800mm.

A1013 PERIMETER DRAINAGE & INSULATION

- Perimeter weeping tile and granular, gravity drained to street.

A1030 SLAB ON GRADE

- 125mm wire mesh reinforced poured concrete slab
- 15mil polyethylene vapour and gas barrier
- 76mm rigid EPS insulation below slab (RSI 2.4 full slab)
- 200mm granular subbase

B SHELL**B10 SUPERSTRUCTURE****B1010 FLOOR CONSTRUCTION**

- Floors to be 1 H FRR
- Concrete topping
- OWSJ per structural
- 22mm furring hat channel at max. 610mm o.c. at u/s of OWSJ
- 13mm gypsum board, painted fire code Type C

STRUCTURAL COMPONENTS

- Steel columns per structural completed with FRR 1h fire protection
- Steel beams per structural completed with FRR 1h fire protection
- Steel stairs with concrete treads in stairwells

B1020 ROOF CONSTRUCTION

- Concrete topping per structural or DensDeck Roof Sheathing, glued and screwed
- Steel deck per structural

- OWSJ per structural
- 22mm furring hat channel at max. 610mm o.c. at u/s of OWSJ
- 13mm gypsum board, painted

B1023 CANOPIES

Entrances + Amenity Canopy

- Exposed sloped steel feature

B20 EXTERIOR ENCLOSURE

B2011 EXTERIOR WALLS CONSTRUCTION

Combination of Brick Veneer and Metal Panels exterior walls:

- 1 layer of 16mm Type X Gypsum board at interior side. Applied vertically with joints between layers staggered.
- 6mil poly vapour barrier
- 203 mm steel studs' corrosion protected cold formed steel studs. The max stud spacing of wall assemblies per structural but shall not exceed 610mm OC.
- 203 mm Batt insulation placed in stud cavity of a thickness to completely fill stud cavity
- 13mm exterior grade gypsum board at exterior side
- Vapour permeable self-adhered air barrier
- 102mm semi-rigid rockwool continuous insulation (RSI 2.88c.i.)
- 25mm air space
- Exterior cladding completed with thermally broken support system per manufacturer
- Exterior Cladding per elevation

B2021 WINDOWS & ENTRANCES

Aluminium/Fibreglass High-Performance frames (similar to Inline).

- Double glazed IGU with Low-E coating
- Door operators at main entrance and vestibule
- Insulated steel doors with thermally broken frames at stairwell exits
- Insulated overhead rolling door at shipping/receiving
- High-performance double-glazed curtain wall sections (similar to Kawneer 7500)

B2030 EXTERIOR DOORS

Main Entrance:

- Aluminium entrance doors

Exit Door:

- Insulated Steel Doors

Garage Door:

- Four-fold or similar
- Remote Control access

Access Control

- Keycard entry system
- Intercom @ front door

B30 ROOFING

B3010 ROOF COVERINGS

- Modified bitumen roofing, high albedo
- Sloped rigid mineral wool insulation, average depth of 90 mm, minimum thickness of 51mm (Min RSI 1.44c.i.)
- 203mm rigid mineral wool insulation (RSI 5.76c.i.)
- Self-adhering membrane air and vapour retarder

B3020	PROJECTIONS <ul style="list-style-type: none">• Scuppers• Parapets
C	INTERIORS
C10	INTERIOR CONSTRUCTION
C1010	NON-LOAD BEARING WALLS <ul style="list-style-type: none">• 16mm Type X gypsum board at both sides of wall• Min. 92mm steel studs fabricated from Min. 25 MSG carrion-protected steel, spaced a max of 610mm OC. Studs to be cut 19mm. less than assembly height.• Optional - Batt insulation can be placed in stud cavities for acoustics
C1020	INTERIOR DOORS <p>Manufacturing Area:</p> <ul style="list-style-type: none">• Hollow metal doors - Painted• Pressed steel frames - Painted <p>Office Area:</p> <ul style="list-style-type: none">• Solid core wood doors – Clear Stained• Pressed Steel frames - Painted ACCESS CONTROL <ul style="list-style-type: none">• Keycard entry OR keyed system
C20	STAIRS
C2010	STAIRCASES <p>Exit Stair:</p> <ul style="list-style-type: none">• Steel stair frame of structural section with closed risers; pan to receive concrete fill stair treads; integral balusters and hand-railing. <p>Feature Stair (Entry & Hanger):</p> <ul style="list-style-type: none">• Steel stair frame of structural section with closed risers; pan to receive concrete fill stair treads; glass guards and wood hand-railing.
C30	INTERIOR FINISHES <p>Low maintenance, durable finishes</p>
C3010	WALL FINISHES <ul style="list-style-type: none">• No-VOC Paint• Ceramic tile in washrooms to 1200mm AFF• Ceramic tile in showers in washrooms to underside of ceiling.
C3020	FLOOR FINISHES <p><u>Manufacturing & Lab Areas</u></p> <ul style="list-style-type: none">• Sealed Concrete• Painted Lines <p><u>Office Areas</u></p> <ul style="list-style-type: none">• Carpet Tile in Offices and Dorm Areas• Ceramic Tile in Main Lobby and all washrooms• Polished Concrete in all public spaces <p><u>Mechanical Spaces</u></p> <ul style="list-style-type: none">• Sealed Concrete <p><u>Lab & IT Room</u></p> <ul style="list-style-type: none">• Anti-Static resilient flooring

C3030	CEILING FINISHES <u>Exposed Structure with Dry Fall paint system:</u> <ul style="list-style-type: none"> • Manufacturing & Lab & Shipping/Receiving • Mechanical spaces • Hanger <u>Suspended ACT:</u> <ul style="list-style-type: none"> • Kitchen/Dining Areas • Quiet Rooms/Offices/Meeting Room • Corridors • Storage Rooms
D	SERVICES
D20	PLUMBING See attached Mechanical Design Brief for additional detail
D2010	PLUMBING FIXTURES <ul style="list-style-type: none"> • Emergency Showers and Eye Wash – combined units
D30	HVAC See attached Mechanical Design Brief for additional detail
	SYSTEM DESCRIPTION
D3010	ENERGY SUPPLY <ul style="list-style-type: none"> • Hydro and Natural Gas
D3020	HEAT GENERATING SYSTEMS See attached Mechanical Design Brief
D3030	COOLING GENERATING SYSTEMS See attached Mechanical Design Brief
D3040	DISTRIBUTION SYSTEMS See attached Mechanical Design Brief
D3060	CONTROLS & INSTRUMENTATION <ul style="list-style-type: none"> • BAS
D50	ELECTRICAL See attached Electrical Design Brief for additional detail
D5010	ELECTRICAL SERVICE AND DISTRIBUTION See attached Mechanical Design Brief
D5022	LIGHTING EQUIPMENT LED type light fixtures.
D5030	COMMUNICATION & SECURITY SYSTEMS <ul style="list-style-type: none"> • Card reader/electric strike access control system
D5037	FIRE ALARM SYSTEM <ul style="list-style-type: none"> • Fire alarm system required
D5092	EMERGENCY LIGHT AND POWER Natural Gas Emergency Generator sized to provide backup power for limited building use

E	EQUIPMENT & FURNISHINGS
E10	EQUIPMENT
E1020	INSTITUTIONAL EQUIPMENT A/V equipment – coordinate requirements with Program Data Sheets.
E1094	APPLIANCES •
E1099	OTHER EQUIPMENT •
E20	FURNISHINGS Refer to details below.
E2010	FIXED FURNITURE • Gear Lockers – wall and floor mounted – 44 total (24"x24" Ready Rack)
E2012	FIXED CASEWORK • Custom Millwork in Kitchens • Washroom Vanities
E2013	BLINDS AND OTHER WINDOW TREATMENT Blackout blinds: • Boardroom Window Shades: • All areas
E2022	FURNITURE AND ACCESSORIES Storage Shelving
F	SPECIAL CONSTRUCTION & SELECTIVE DEMOLITION
F10	SPECIAL CONSTRUCTION
F20	SELECTIVE DEMOLITION
G	BUILDING SITEWORK
G10	SITE PREPARATION
G1030	SITE EARTHWORK:
G20	SITE IMPROVEMENTS
G2010	DRIVEWAYS AND VEHICLE APRONS Heavy-duty asphalt at Vehicle Aprons (front and rear) and driveways
G2020	PARKING LOTS Light-duty asphalt at parking spaces only.
G2030	PEDESTRIAN PAVING Concrete walks.
G30	SITE MECHANICAL UTILITIES
G3010	WATER SERVICE See attached Civil Design Brief

- | | |
|--------------|--|
| G3020 | SANITARY SERVICE
See attached Civil Design Brief |
| G3030 | STORM SERVICE
See attached Civil Design Brief |
| G3060 | GAS SERVICE
See attached Mechanical Design Brief |
| G40 | SITE ELECTRICAL UTILITIES
See attached Electrical Design Brief |