

Noise Impact Study

Proposed Residential Development

7170 Goreway Drive,

City of Mississauga, Ontario

Prepared for:

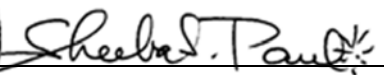
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Project Number: 01700110

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1 Introduction & Summary

HGC Engineering was retained by 2150745 Ontario Inc. to conduct a noise impact study for a proposed residential development to be located at 7170 Goreway Drive, in Mississauga, Ontario. The proposed development will include three blocks of 3-storey townhouses and a private road. Lands to the east and south of the subject site are existing residential with some commercial uses on the east side of Goreway Drive. The study is required by the Municipality as part of the planning and approvals process.

The primary sources of noise impacting the site were determined to be road traffic on Goreway Drive and air traffic. Relevant road traffic data was obtained from the City of Mississauga. The latest noise contours for the Lester B. Pearson International Airport were obtained. This data was used to predict future traffic sound levels at the locations of the proposed dwellings facades and in the outdoor amenity areas. The predicted sound levels were compared to the guidelines of the Ministry of Environment and Climate Change (MOECC) and the Municipality to develop noise control recommendations.

The sound level predictions indicate that future road and air traffic sound levels will exceed MOECC guidelines at the proposed residential buildings. Since the site is located between NEF 30 and 35 noise contours (approximately NEF 31), central air conditioning is required to be included in the dwellings. Upgraded building constructions (windows, doors, walls and ceiling/roof constructions) are required for the proposed buildings. Associated acoustical requirements are specified in this report. Warning clauses are recommended to inform future residents of the road and air traffic noise impacts and the neighbouring commercial facilities.



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2 Site Description & Noise Sources

The proposed residential development is located at 7170 Goreway Drive in the City of Mississauga, Ontario. Figure 1 shows an aerial photo illustrating the location of the subject site. A site plan prepared by Jardin Design Group Inc. dated November 27, 2017 and is shown in Figure 2. The proposed development will consist of three 3-storey townhouse blocks and a private road. An entry feature and walkway is proposed at the northeast corner of the property. The preliminary floor plans and building elevations (prepared by Jardin Design Group Inc. dated November 15) are attached in Appendix A.

A site visit was made by HGC Engineering personnel in December 2017 to make observations of the acoustic environment, and to identify the significant noise sources in the vicinity. The acoustical environment surrounding the site is urban in nature. The subject site is currently vacant.

Road traffic on Goreway Drive and air traffic were confirmed to be the primary sources of sound impacting the site. Goreway Drive is two lanes in each direction with a center turning lane. Lands to the north, west and south are existing residential. To the east of Goreway is a small 2-storey commercial plaza which includes A-One Food Centre, Cash Now, Next 2 Wireless and Pizza Depot. To the further south is a KFC and Taco Bell. A larger commercial plaza is located to the northeast of the site including a Fresh Co., Shoppers Drug Mart, and other retailers. Sounds from these facilities were not audible during the time of the site visit, there were no other significant sources of stationary noise noted within 500 m of the subject site. The subject site is located in a Class 1 (urban) acoustical environment where the background sound is primarily made up of the sounds of road traffic and human activity (the urban hum).



3 Noise Level Criteria

3.1 Road Traffic Noise

Guidelines for acceptable levels of road and air traffic noise impacting residential developments are given in the MOECC 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: MOECC Road 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	45 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 area where passive recreation is expected to occur. Balconies that are less than 4 m in depth are not considered to be outdoor living areas under MOECC guidelines.

The MOECC guidelines allow the daytime sound levels in OLA 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 recommended to reduce the OLA sound level to below 60 dBA and as close to 55 dBA as technically, economically and administratively feasible.

A central air conditioning system 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. Forced-air ventilation systems with ducts sized to accommodate the future installation of air conditioning by the occupant is required when nighttime sound levels at bedroom or living/dining room windows are in the range of 51 to 60 dBA or when daytime sound levels at bedroom or living/dining room windows are in the range of 56 to 65 dBA.

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 road traffic noise.

Warning clauses to notify future residents of possible noise excesses are also required when nighttime sound levels exceed 50 dBA at the plane of the bedroom or living/dining room window and daytime sound levels exceed 55 dBA in the outdoor living area and at the plane of the bedroom or living/dining room window due to road traffic.

3.2 Air Traffic Noise

Indoor sound limits due to air traffic are also defined in the MOECC in publication NPC-300. The maximum allowable Noise Exposure Forecast (NEF) limits are summarized in Table II.

Table II: Air Traffic Noise Criterion

Area	Indoor NEF/NEP
Living/Dining Room (indoor)	5
Bedroom (indoor)	0

The living/dining/family rooms, dens and bedrooms of the proposed dwelling units are the sensitive receptor locations. Typically, washrooms and kitchens are considered noise insensitive areas. There are no outdoor noise criteria for aircraft noise because there is no effective means of mitigation.

For residential dwellings located between the NEF 25 and 30, the MOECC requires that the dwelling be designed with the provision for central air conditioning. This requirement usually implies forced air heating systems with the ducts sized for future installation of central air conditioning. In addition, building components including windows, doors, walls and ceiling/roof must be designed to achieve the indoor sound level criteria. A warning clause is also required in property and tenancy agreements.

For residential dwellings located between the NEF 30 and 35, the MOECC requires that central air conditioning is mandatory with warning clauses in the property and tenancy agreements. In addition,

building components including windows, doors, walls and ceiling/roof must be designed to achieve the indoor sound level criteria in Table II.

There are no specific requirements if the dwellings are located in the area where the NEF/NEP contours are less than 25.

4 Traffic Noise Assessment

4.1 Road Traffic Data

Road traffic information for Goreway Drive was obtained from the City of Mississauga, in the form of ultimate Average Annual Daily Traffic (AADT) values, and is provided in Appendix B. An ultimate AADT of 35 000 vehicles per day, along with a speed limit of 60 km/h, was applied to Goreway Drive. A commercial vehicle percentage of 3% was used in the analysis and was further split into 1.65% and 1.35% for medium and heavy trucks, respectively. Table III summarizes the traffic volume data used in this study.

Table III: Ultimate Road Traffic Data

Road Name		Cars	Medium Trucks	Heavy Trucks	Total
Goreway Drive (Ultimate)	Daytime	30 555	520	425	31 500
	Nighttime	3 395	57	48	3 500
	Total	33 950	577	473	35 000

4.2 Road Traffic Noise Predictions

To assess the levels of road traffic noise which will impact the site in the future, predictions were made using STAMSON version 5.04, a computer algorithm developed by the MOECC. Sample STAMSON output is included in Appendix C.

Prediction locations were chosen around the residential site to obtain a good representation of the future sound levels at the dwellings with exposure to the Goreway Drive. Future daytime sound in the outdoor amenity areas (optional rooftop terraces) to determine whether noise barriers will be necessary. Sound levels were predicted at the plane of the top storey bedroom and/or living/dining

room windows during daytime and nighttime hours to investigate ventilation requirements. The results of these predictions are summarized in Table IV.

The distance setback of the buildings indicated on the site plan was used in the analysis, along with an aerial photo to determine the distance to the major roadway. In accordance with MOECC guidelines, Goreway Drive was divided into two segments (eastbound and westbound). The acoustic requirements may be subject to modifications if the site plan is changed significantly.

Table IV: Predicted Road Traffic Sound Levels [dBA], Without Mitigation

Prediction Location	Block No.	Description	Daytime - in OLA+ L _{EQ(16)}	Daytime - at Façade L _{EQ(16)}	Nighttime - at Façade L _{EQ(8)}
[A]	1	East façade adjacent to Goreway Drive	59	67	60
[B]	2	Block near Etude Drive	57	63	56
[C]	3	Interior Block	55	58	51

Note: + Optional rooftop terrace with minimum 1.07 m high solid parapet wall.

4.3 Air Traffic

The 2005 Composite Noise Contour Map for the Lester B. Pearson International Airport was obtained and is included as Figure 3. This Map indicated that the proposed site is located between the 30 and 35 NEF/NEP contour, approximately NEF 31.

The NEF contour map was used to determine the Acoustical Insulation Factors (AIF) required for the building components for the proposed dwellings. The MOECC indoor noise criteria for aircraft traffic noise was used as a guideline.

4.4 Traffic Noise Recommendations

The predictions indicate that the future traffic sound levels will exceed MOECC guidelines at the façades of the proposed residential buildings with exposure to Goreway Drive. The following discussion outlines recommendations for ventilation requirements and warning clauses to achieve the noise criteria stated in Table I.

4.4.1 Outdoor Living Areas & Acoustic Barriers

The dwelling units include small balconies that are less than 4 m in depth. These balconies are not considered to be outdoor living areas and there are exempt from traffic noise assessment.

There are optional rooftop terraces that have portions that are larger than 4 m in depth. These rooftop terraces are considered to be outdoor living areas under MOECC guidelines, and therefore require a traffic noise assessment. The predicted sound level in the rooftop terraces with exposure to Goreway Drive in Block A will be 59 dBA with a 1.07 m high solid parapet. The predicted sound level in the easterly rooftop terrace of Block B with exposure to Goreway Drive in Block B will be 57 dBA with a 1.07 m high solid parapet.

For the roof terraces, a table of barrier heights is provided below, as requested by the City.

Table V: Summary of Barrier Heights (m) Required to Meet Various Sound Levels

Block No.	Desired Sound Level (dBA)				
	55	56	57	58	59
1	2	1.7	1.5	1.3	1.07
2	1.4	1.2	1.07	--	--
3	1.07	--	--	--	--

Parapets should be of solid construction and should shield the terrace area entirely from the roadway. The parapet should have a surface density of no less than 20 kg/m². The walls may be constructed from a variety of materials such as wood, brick, pre-cast concrete or other concrete/wood composite systems provided that it is free of gaps or cracks within or below its extent.

4.4.2 Indoor Living Areas & Ventilation Requirements

Inclusion of Central Air Conditioning

Since the site is located between the 30 to 35 NEF contours for Lester B. Pearson International Airport, central air conditioning is required for all the residential units so that windows may remain closed. The guidelines also recommend warning clauses for the building. Window or through-the-wall air conditioning units are not recommended for any residential units because of the noise they

produce and because the units penetrate through the exterior wall which degrades the overall noise insulating properties of the envelope. The location, installation and sound ratings of the outdoor air conditioning devices should minimize noise impacts and comply with criteria of MOECC publication NPC-300, as applicable.

4.4.3 **Building Façade Constructions**

Since the buildings are located between the 30 to 35 NEF/NEP contours for the Lester B. Pearson International Airport, air traffic noise must be considered in the building designs over the remainder of the site. The site is located at approximately NEF 31. The acoustic insulation factors (AIF) required for road traffic and air traffic must be combined to obtain an overall AIF for the buildings. The required building components are selected based on the overall AIF value.

To do so, calculations were performed to determine the acoustical insulation factors to maintain indoor sound levels within MOECC guidelines. The calculation methods were developed by the National Research Council (NRC). They are based on the predicted future sound levels at the building facades, and the anticipated area ratios of the facade components (walls, windows, ceiling/roof and doors) and the floor area of the adjacent room.

Glazing Requirements

Floor plans and building elevations prepared by Jardin Design Group Inc. dated November 27, 2017 were reviewed to determine acoustical requirements for glazing. In general, the living/dining rooms have window to floor area ratios of 12% and dens have ratios of 23%. The smaller bedrooms have window to floor area ratios of 30%.

Based upon these ratios, it was determined that the glazing for the development must achieve a sound transmission class (STC) rating of at least 33 for bedrooms and STC of at least 30 for living/dining rooms and dens in order to achieve the target indoor sound level criteria due to road and air traffic. Awning windows, and swing or sliding doors to balconies should have tight seals sufficient to achieve similar acoustical performance ratings.

Sample window assemblies which may achieve the STC requirements are summarized in Table VI

below. Note that acoustic performance varies with manufacturer's construction details, and these are only guidelines to provide some indication of the type of glazing likely to be required. Acoustical test data for the selected assemblies should be requested from the supplier, to ensure that the stated acoustic performance levels will be achieved by their assemblies.

Table III: Glazing Constructions Satisfying STC Requirements

STC Requirement	Glazing Configuration (STC)
28 – 29	Any double glazed unit
30 – 31	3(13)3
32 – 33	4(10)4
34	4(19)4
35 – 36	6(10)4, 5(16)4
37	6(13)6, 6(20)5, 5(25)6
38	6(25)5, 6L(13)6

In Table VI, the numbers outside the parentheses indicate minimum pane thicknesses in millimetres and the number in parentheses indicates the minimum inter-pane gap in millimetres. “L” indicates a laminated pane. OBC indicates any glazing construction meeting the minimum requirements of the Ontario Building Code.

If the exterior wall construction, floor plans and window areas are changed significantly, an acoustical consultant should provide revised recommendations for the glazing constructions.

Exterior Wall Construction

The elevation drawings indicate brick or a masonry exterior wall with accents. This construction is acceptable.

Exterior Doors

Any insulated metal exterior door meeting OBC requirements will be sufficient to provide noise insulation. Patio doors have been included in the window area.

Ceiling/Roof System

A ceiling/roof construction consisting of a concrete slab, rigid insulation and built up roofing would provide adequate sound insulation for the dwelling units.

Table VII: Summary of Minimum Glazing Requirements

Description	Space	Range of Window to Floor Area Ratios	STC		Sample Minimum Glazing Constructions
All facades of proposed building	Living/Dining/Den	12 - 23%	30		3(13)3
	Bedroom	30%	33		4(10)4

Note: If these ratios are exceeded, HGC Engineering should be contacted for a revised recommendation.

4.4.4 Warning Clauses

The MOECC guidelines recommend that warning clauses be included in the property and tenancy agreements and offers of purchase and sale for all dwelling units with anticipated traffic sound level excesses.

Suggested wording for future dwellings with sound level excesses the MOECC criteria is given below:

Type A:

Purchasers are advised that despite the inclusion of noise control features in the development and within the building units, sound levels due to increasing road and air traffic may occasionally interfere with some activities of the dwelling occupants as the sound levels activities exceed the Municipality's and the Ministry of the Environment and Climate Change's noise criteria.

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

Type B:

Purchasers are advised that in order to achieve an acceptable indoor environment this unit has been equipped with a central air conditioning system, to allow the windows and doors to be kept closed, thereby ensuring that the indoor sounds levels meet the noise criteria of the Municipality and the Ministry of the Environment and Climate Change.

Suitable wording for the proposed building near commercial uses is given below.

Type C:

Purchasers are advised that sound levels due to the proximity of the adjacent commercial facilities, sound levels from the commercial facilities may at times be audible.

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

5 Summary & Recommendations

The following list and Table VIII summarizes the recommendations made in this report. The reader is referred to previous sections of the report where these recommendations are applied and discussed in more detail.

1. Central air conditioning is required for all the proposed buildings.
2. Upgraded building and glazing constructions are required for the proposed buildings as noted in Section 4.4.3.
3. Warning clauses should be used to inform future residents of the traffic noise concerns and the neighbouring commercial facilities.



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

Block No.	Acoustic Barrier	Ventilation Requirements*	Type of Warning Clause	Minimum Glazing Constructions**
1	+	Central A/C	A, B, C	LR/DR: STC-30 BR: STC-33
2	+	Central A/C	A, B, C	LR/DR: STC-30 BR: STC-33
3	+	Central A/C	A, B, C	LR/DR: STC-30 BR: STC-33

Notes:

* The location, installation and sound rating of the air conditioning condensers must be compliant with MOECC Guideline NPC-300 as applicable.

-- no specific requirement

LR/DR – Living Room/Dining Room

BR – Bedroom

+ 1.07 m high solid parapet around optional roof terrace. See additional barrier heights in Section 4.4.1.

** See Section 4.4.3.

5.1 Implementation

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

- 1) Prior to the issuance of occupancy permits for this development, the Municipality'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.



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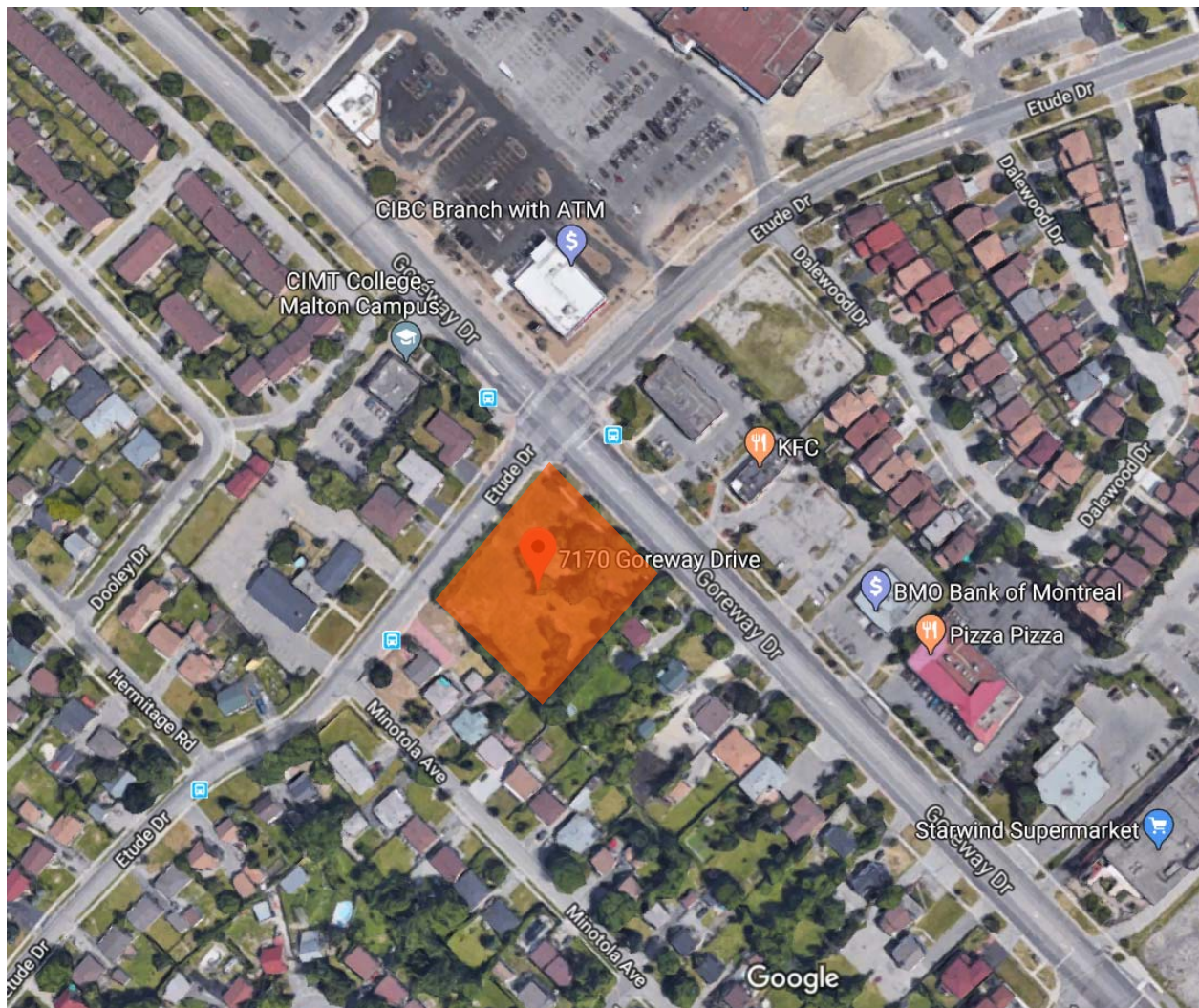
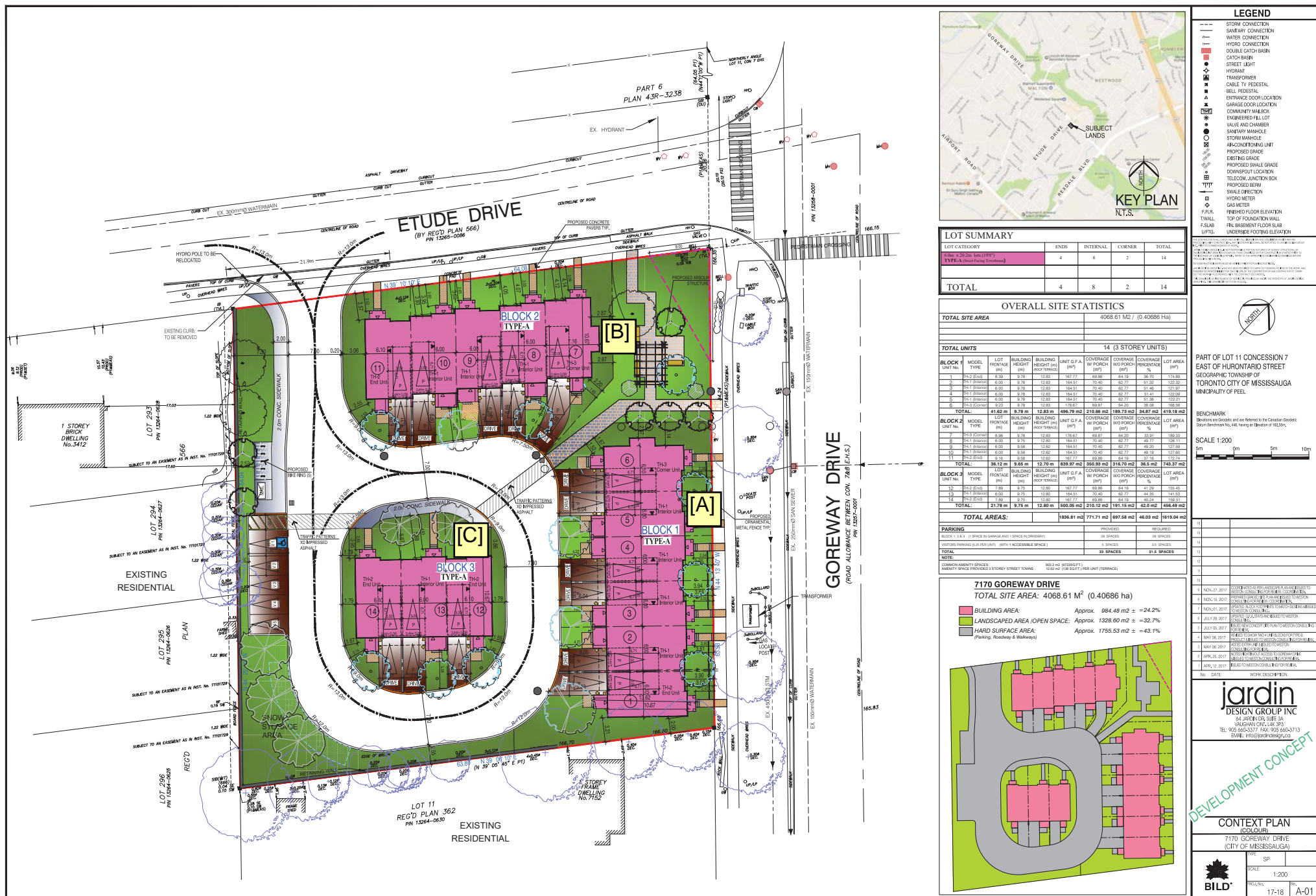


Figure 1 - Key Plan



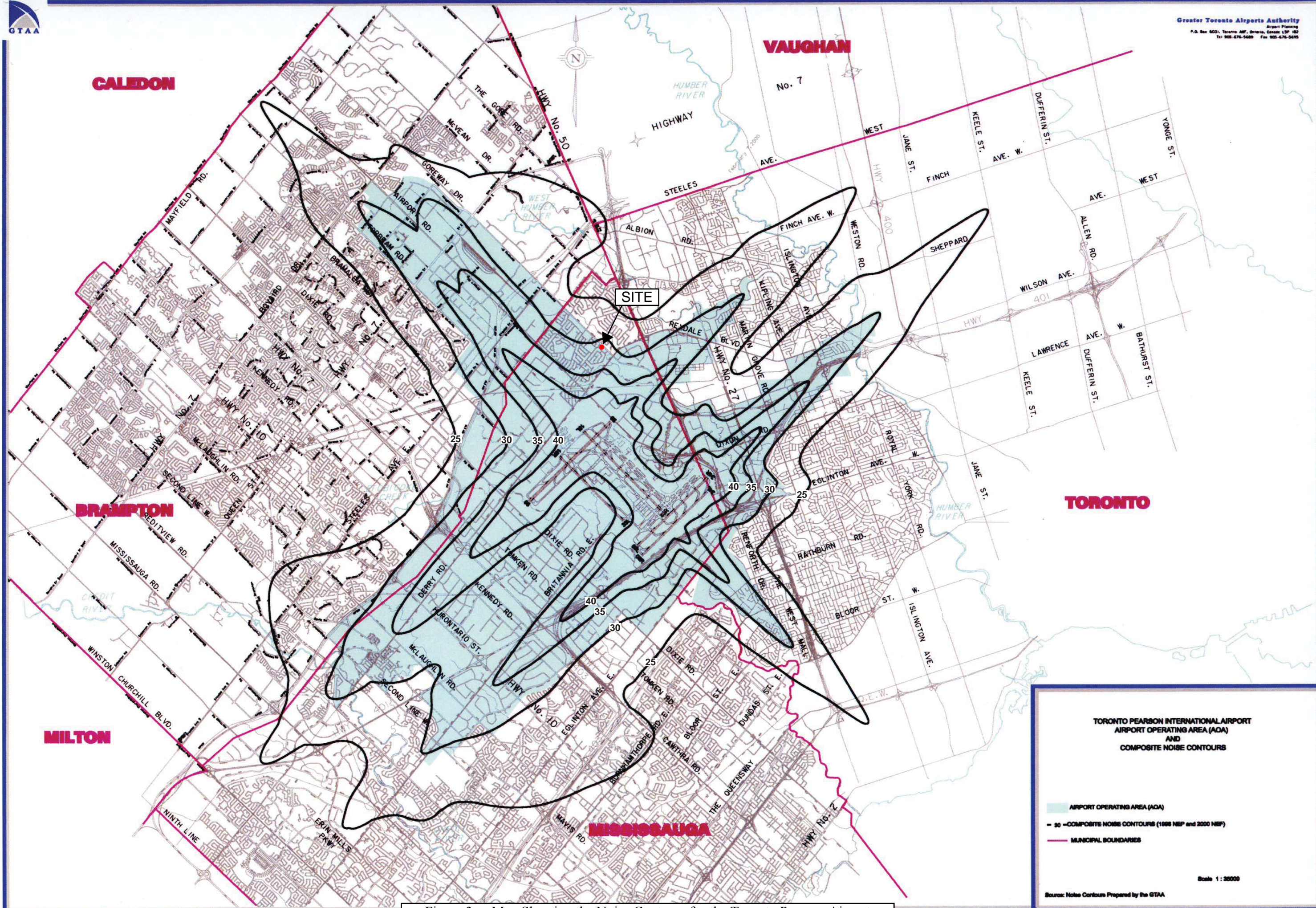


Figure 3 - Map Showing the Noise Contours for the Toronto Pearson Airport

APPENDIX A

Supporting Drawings

TOWNHOUSE CORNER LOT (TH-3)

PRELIMINARY
NOT TO BE USED FOR CONSTRUCTION



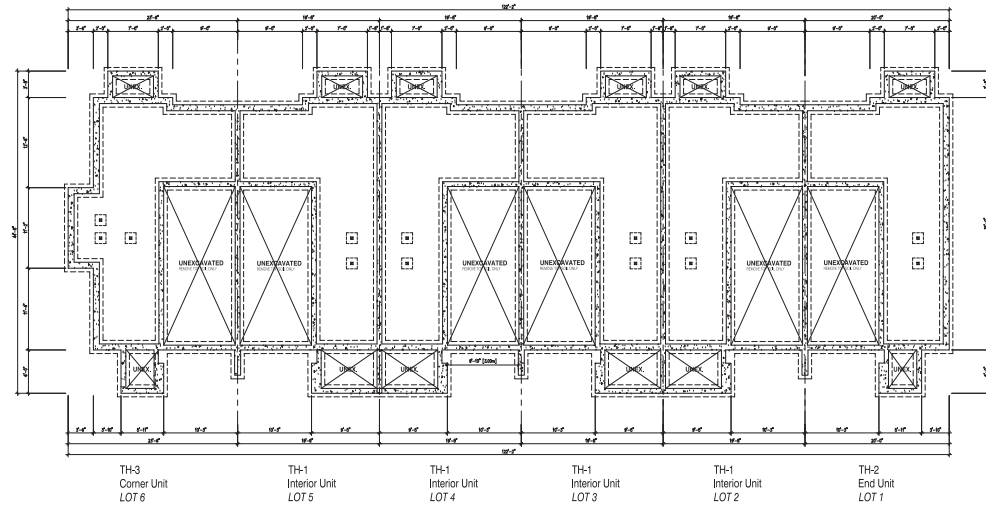
GOREWAY DRIVE & ETUDE DRIVE

MISSISSAUGA

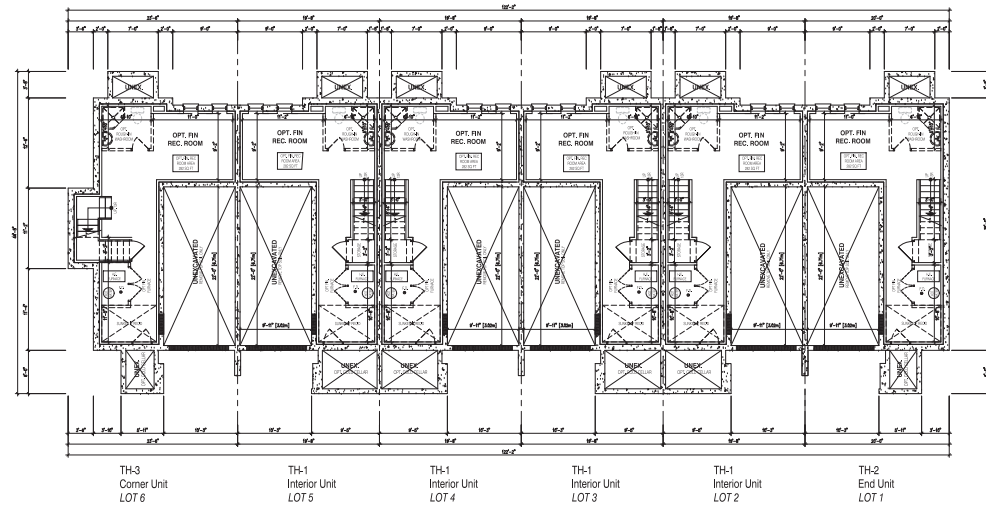
6.0m 3 STOREY STREET FACING TOWNHOUSE

BLOCK 1

PRELIMINARY
NOT TO BE USED FOR CONSTRUCTION



FOUNDATION PLAN



BASEMENT PLAN

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FOUNDATION & BSMT. PLAN

WESTON CONSULTING
7170 GORE ROAD (MISSISSAUGA)

BILD

1:8" = 1'0"

TH-1B 1

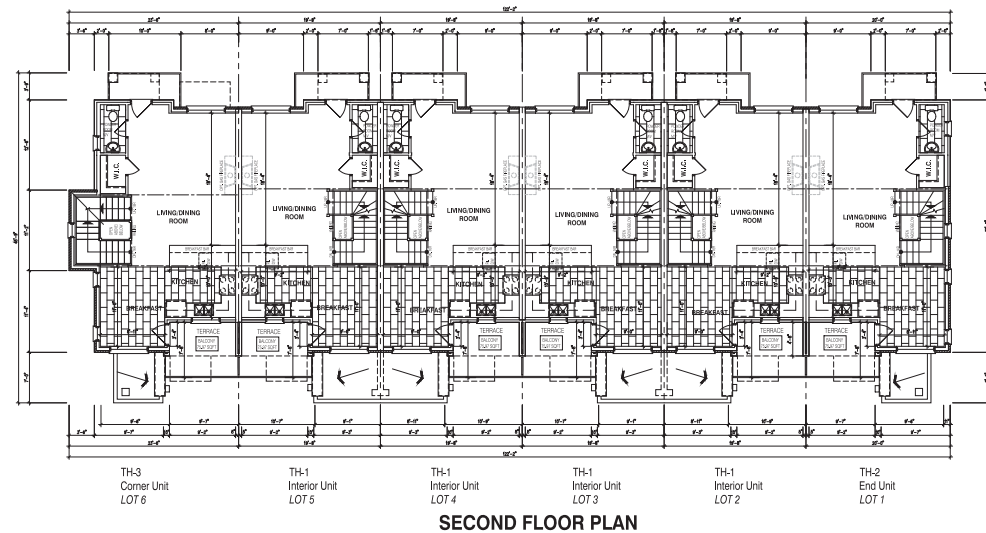
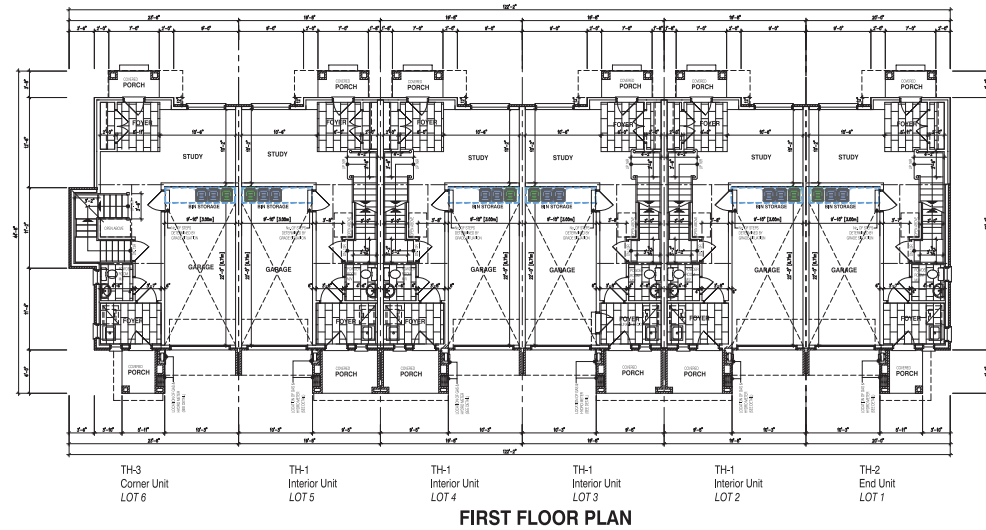
GOREWAY DRIVE & ETUDE DRIVE

MISSISSAUGA

6.0m 3 STOREY STREET FACING TOWNHOUSE

BLOCK 1

PRELIMINARY
NOT TO BE USED FOR CONSTRUCTION



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MAIN & 2ND FLOOR PLAN
WESTON CONSULTING
7170 GORE ROAD (MISSISSAUGA)

BILD
1/8" = 1'-0"
TH-1B 2

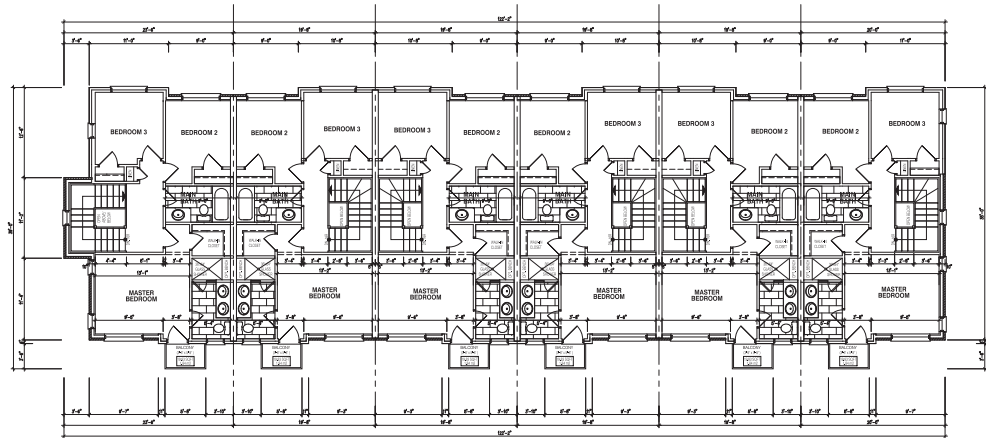
GOREWAY DRIVE & ETUDE DRIVE

MISSISSAUGA

6.0m 3 STOREY STREET FACING TOWNHOUSE

BLOCK 1

PRELIMINARY
NOT TO BE USED FOR CONSTRUCTION



TH-3
Corner Unit
LOT 6

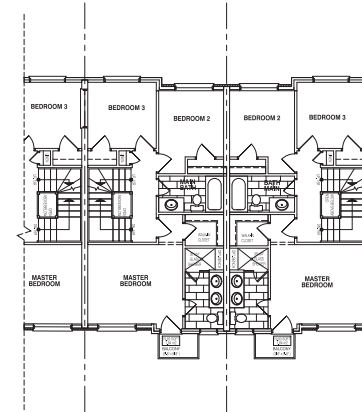
TH-1
Interior Unit
LOT 5

TH-1
Interior Unit
LOT 4

TH-1
Interior Unit
LOT 3

TH-1
Interior Unit
LOT 2

TH-2
End Unit
LOT 1

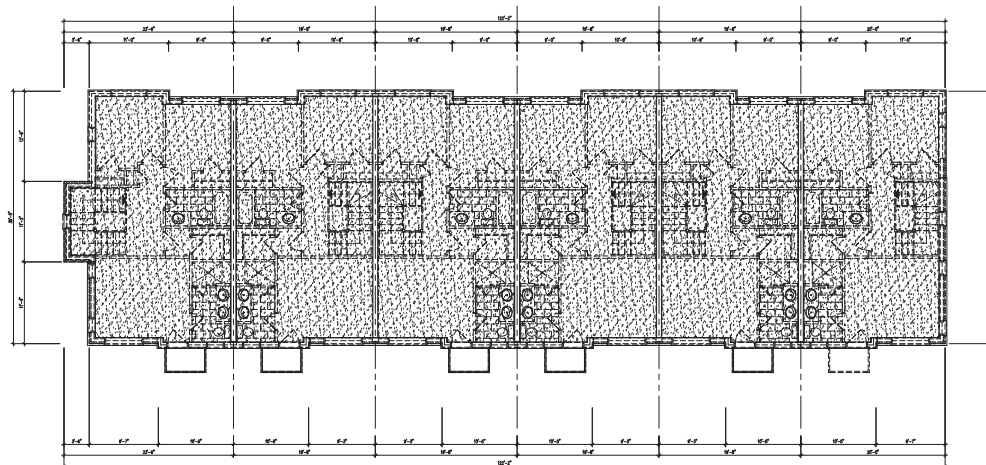


TH-1
Interior Unit
LOT 3

TH-1
Interior Unit
LOT 2

TH-2
End Unit
LOT 1

OPT. 3RD FLOOR - TO TERRACE



TH-3
Corner Unit
LOT 6

TH-1
Interior Unit
LOT 5

TH-1
Interior Unit
LOT 4

TH-1
Interior Unit
LOT 3

TH-1
Interior Unit
LOT 2

TH-2
End Unit
LOT 1

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
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BILD
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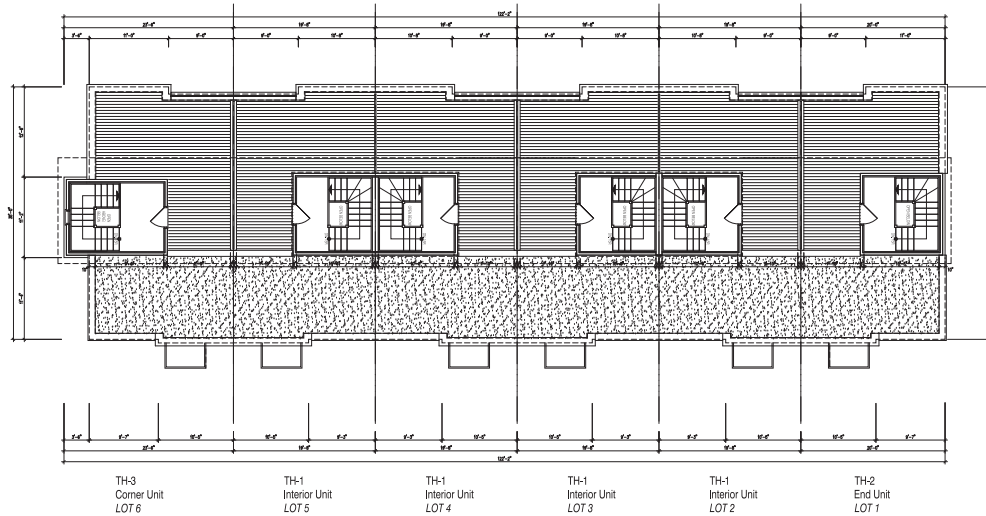
GOREWAY DRIVE & ETUDE DRIVE

MISSISSAUGA

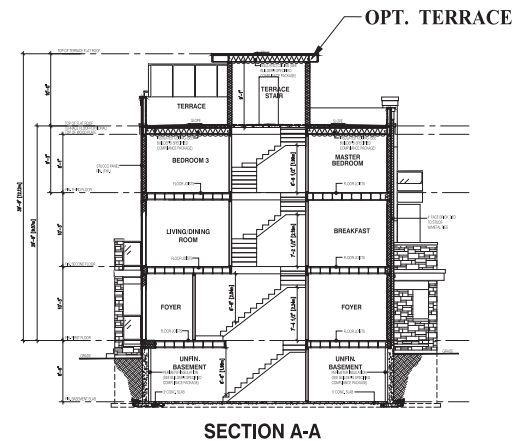
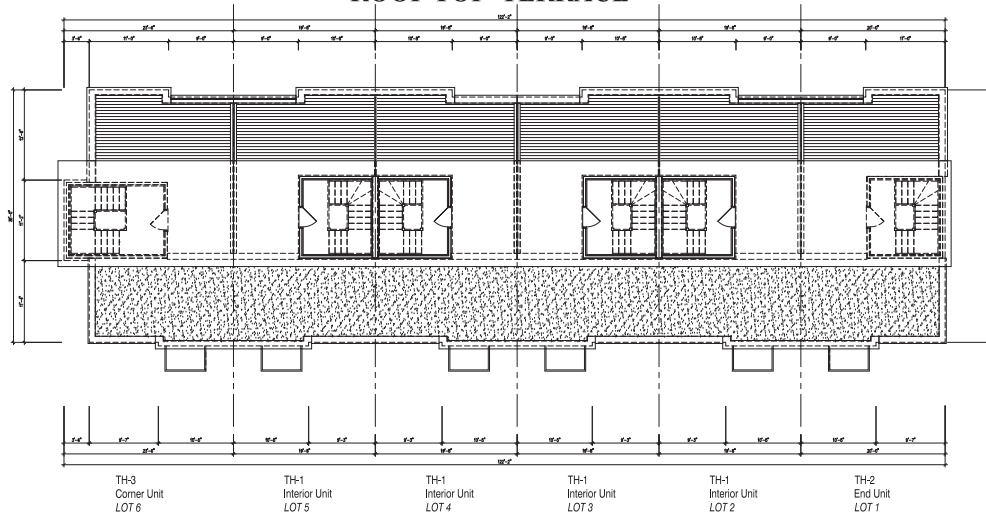
6.0m 3 STOREY STREET FACING TOWNHOUSE

BLOCK 1

PRELIMINARY
NOT TO BE USED FOR CONSTRUCTION



ROOF TOP TERRACE



DESIGN GROUP INC.
7170 GORE ROAD MISSISSAUGA
TEL: 905.882.1111 FAX: 905.882.1112
WWW.DESIGNGROUPINC.COM

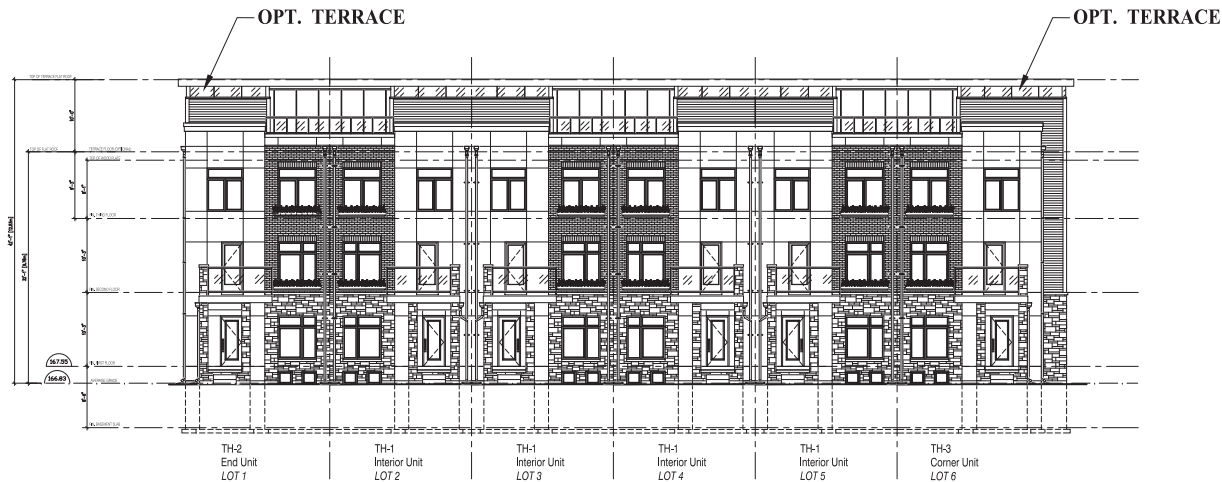
TERRACE FLOOR & ROOF PLAN
WESTON CONSULTING
7170 GORE ROAD MISSISSAUGA

BILD
1:8" = 1'0"
TH-1B 4

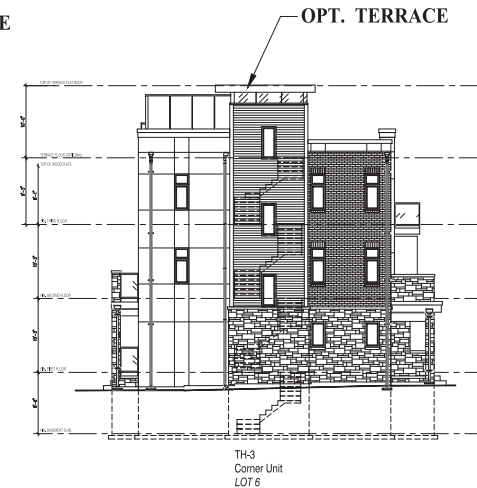
GOREWAY DRIVE & ETUDE DRIVE

MISSISSAUGA

6.0m 3 STOREY STREET FACING TOWNHOUSE



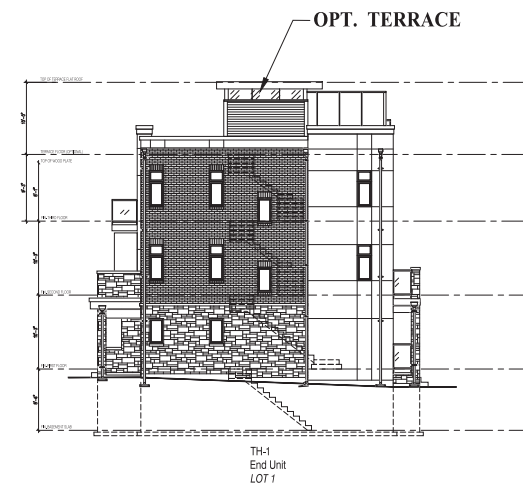
FRONT ELEVATION A
BLOCK 1



SIDE ELEVATION A
BLOCK 1



REAR ELEVATION A
BLOCK 1



SIDE ELEVATION A
BLOCK 1

BLOCK 1

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WWW.JARDINDSG.COM

SIDE ELEVATIONS

WESTON CONSULTING
7170 GORE ROAD (MISSISSAUGA)

BILD

T	---
1/8" = 1/4"	
TH-1B	5

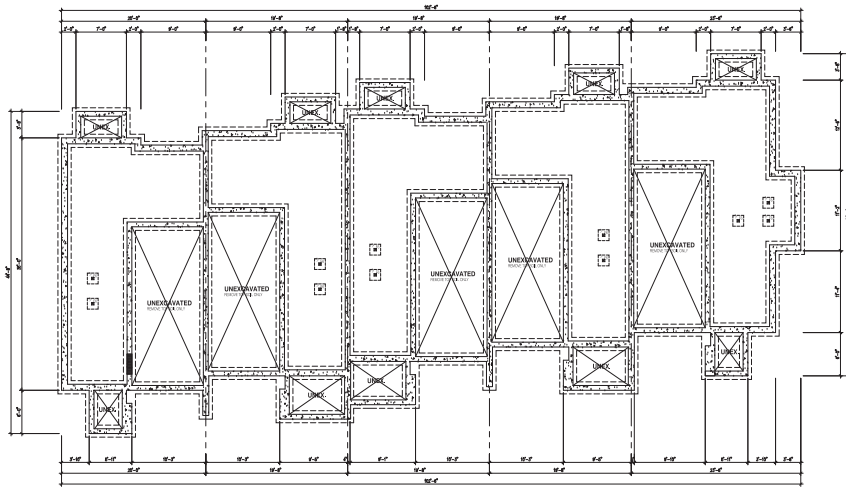
GOREWAY DRIVE & ETUDE DRIVE

MISSISSAUGA

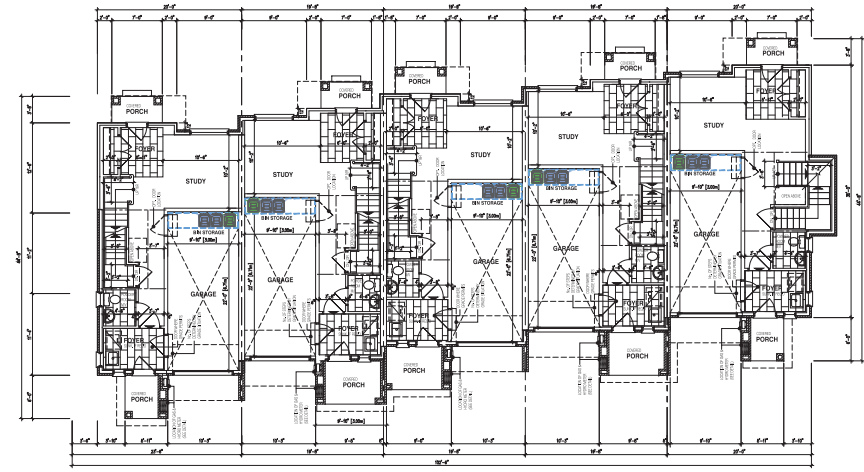
6.0m 3 STOREY STREET FACING TOWNHOUSE

BLOCK 2

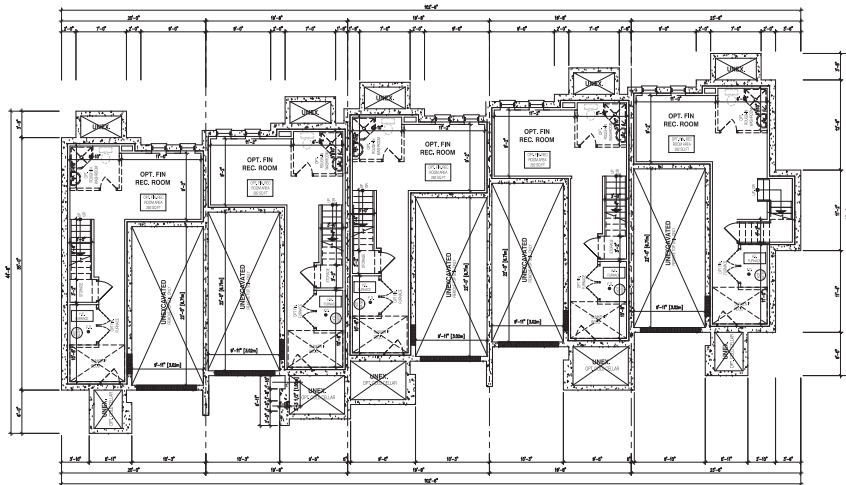
PRELIMINARY
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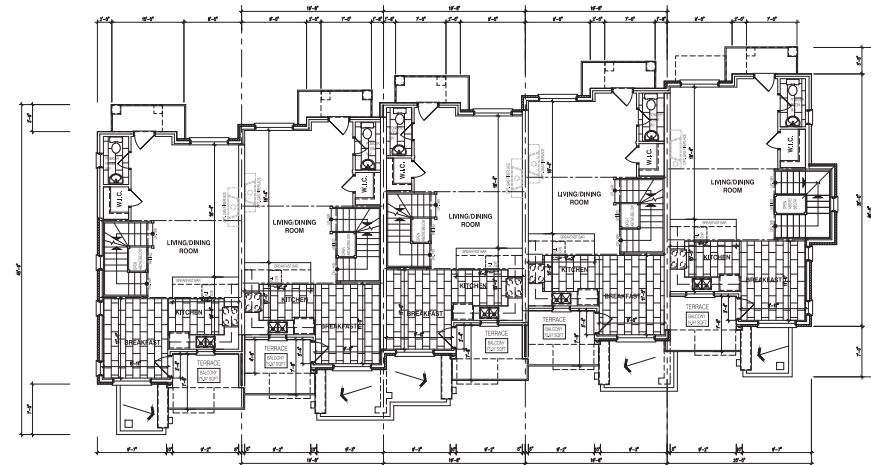
FOUNDATION PLAN



FIRST FLOOR PLAN



BASEMENT PLAN



SECOND FLOOR PLAN

1. PROJECT INFORMATION	2. CLIENT INFORMATION	3. DESIGNER INFORMATION	4. APPROVALS
PROJECT NAME: GOREWAY DRIVE & ETUDE DRIVE	CLIENT: [REDACTED]	DESIGNER: JARDIN DESIGN GROUP INC.	APPROVALS: [REDACTED]
PROJECT ADDRESS: 7170 GORE ROAD, MISSISSAUGA, ONTARIO L4V 1P6	CONTACT: [REDACTED]	DESIGNER: JARDIN DESIGN GROUP INC.	APPROVALS: [REDACTED]
PROJECT NO: [REDACTED]	DATE: [REDACTED]	DESIGNER: JARDIN DESIGN GROUP INC.	APPROVALS: [REDACTED]

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FOUNDATION & BSMT. PLAN
WESTON CONSULTING
7170 GORE ROAD, MISSISSAUGA

BILD
1/8" = 1'-0"
TH-1B 1

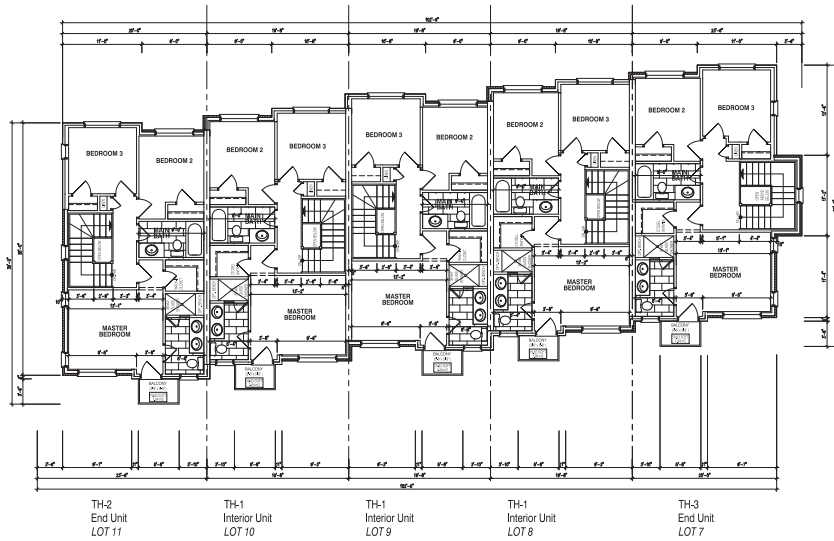
GOREWAY DRIVE & ETUDE DRIVE

MISSISSAUGA

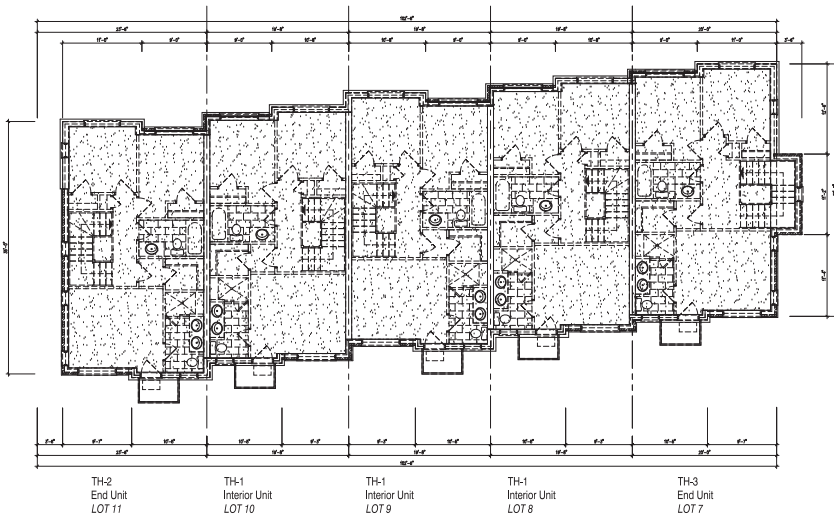
6.0m 3 STOREY STREET FACING TOWNHOUSE

BLOCK 2

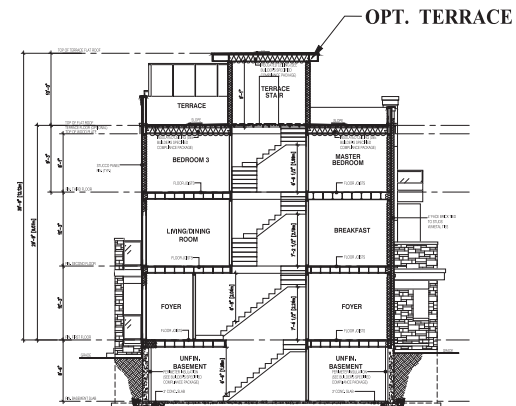
PRELIMINARY
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THIRD FLOOR PLAN



ROOF PLAN



SECTION A-A



ROOF TOP TERRACE PLAN

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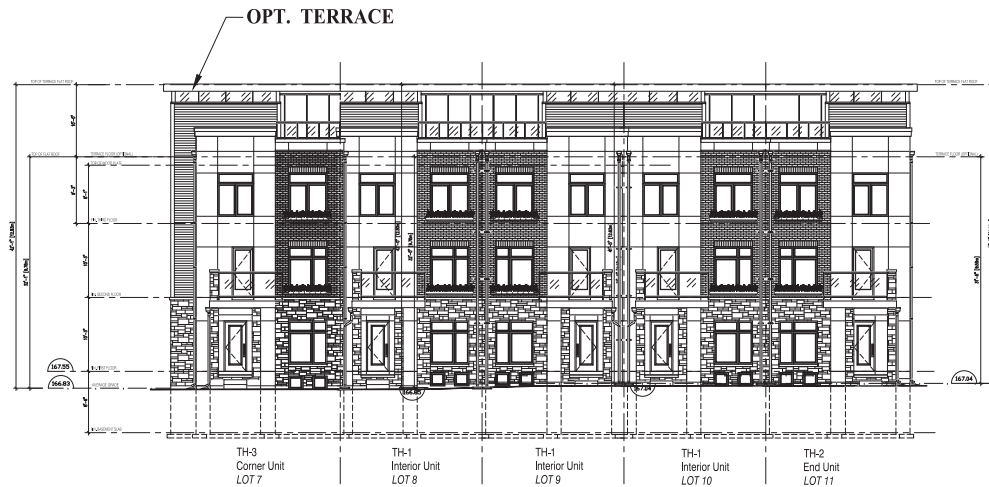
MAIN & 2ND FLOOR PLAN
WESTON CONSULTING
7170 GORE ROAD (MISSISSAUGA)

BILD
1" = 1/8" (1/4")
TH-1B 2

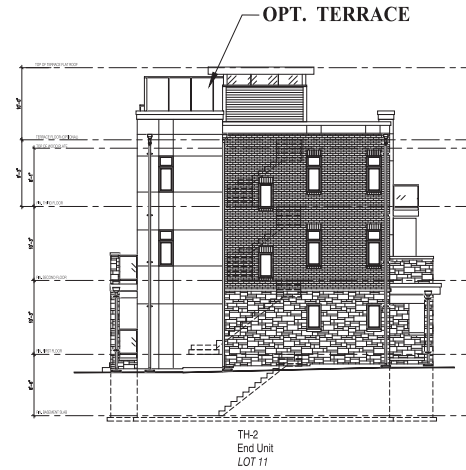
GOREWAY DRIVE & ETUDE DRIVE

MISSISSAUGA

6.0m 3 STOREY STREET FACING TOWNHOUSE



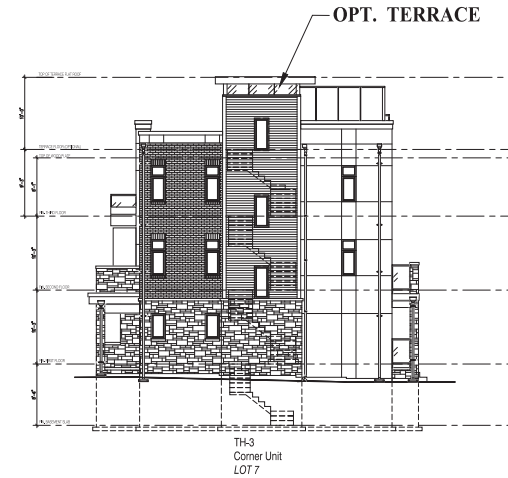
FRONT ELEVATION A
BLOCK 2



SIDE ELEVATION A
BLOCK 2



REAR ELEVATION A
BLOCK 2



SIDE ELEVATION A
BLOCK 2

BLOCK 2

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SIDE ELEVATIONS

WESTON CONSULTING
7170 GORE ROAD (MISSISSAUGA)

BILD

T	---
1/8" = 1/4"	
TH-1B	5

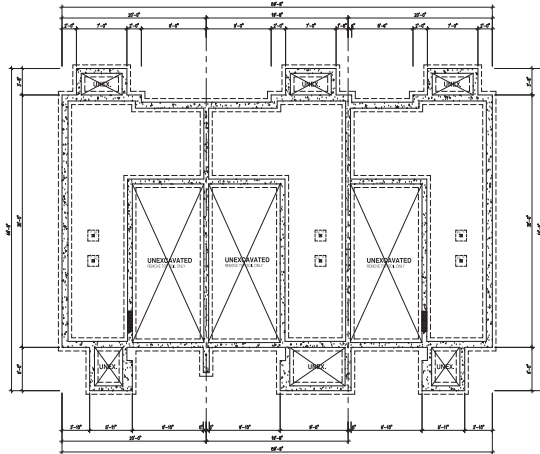
GOREWAY DRIVE & ETUDE DRIVE

MISSISSAUGA

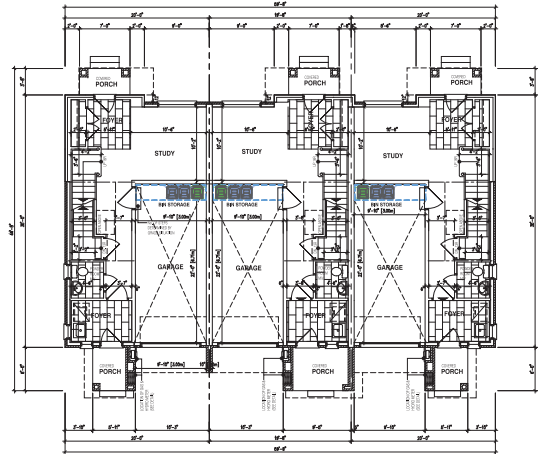
6.0m 3 STOREY STREET FACING TOWNHOUSE

BLOCK 3

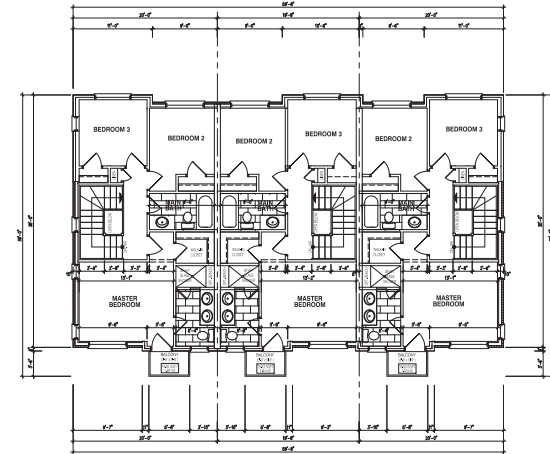
PRELIMINARY
NOT TO BE USED FOR CONSTRUCTION



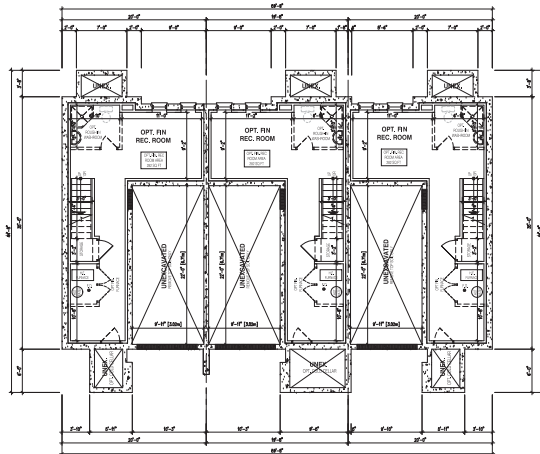
FOUNDATION PLAN



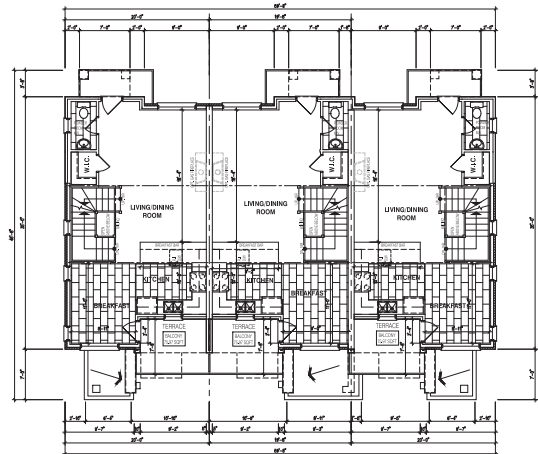
FIRST FLOOR PLAN



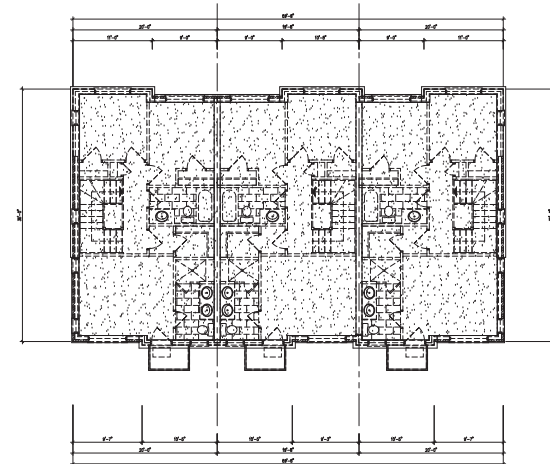
THIRD FLOOR PLAN



BASEMENT PLAN



SECOND FLOOR PLAN



ROOF PLAN

1. ALL DIMENSIONS ARE IN METERS UNLESS OTHERWISE SPECIFIED.
2. ALL DIMENSIONS ARE TO FACE UNLESS OTHERWISE SPECIFIED.
3. ALL DIMENSIONS ARE TO FACE UNLESS OTHERWISE SPECIFIED.
4. ALL DIMENSIONS ARE TO FACE UNLESS OTHERWISE SPECIFIED.
5. ALL DIMENSIONS ARE TO FACE UNLESS OTHERWISE SPECIFIED.
6. ALL DIMENSIONS ARE TO FACE UNLESS OTHERWISE SPECIFIED.
7. ALL DIMENSIONS ARE TO FACE UNLESS OTHERWISE SPECIFIED.
8. ALL DIMENSIONS ARE TO FACE UNLESS OTHERWISE SPECIFIED.
9. ALL DIMENSIONS ARE TO FACE UNLESS OTHERWISE SPECIFIED.
10. ALL DIMENSIONS ARE TO FACE UNLESS OTHERWISE SPECIFIED.
11. ALL DIMENSIONS ARE TO FACE UNLESS OTHERWISE SPECIFIED.
12. ALL DIMENSIONS ARE TO FACE UNLESS OTHERWISE SPECIFIED.
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17. ALL DIMENSIONS ARE TO FACE UNLESS OTHERWISE SPECIFIED.
18. ALL DIMENSIONS ARE TO FACE UNLESS OTHERWISE SPECIFIED.
19. ALL DIMENSIONS ARE TO FACE UNLESS OTHERWISE SPECIFIED.
20. ALL DIMENSIONS ARE TO FACE UNLESS OTHERWISE SPECIFIED.

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BLOCK FLOOR PLANS

WESTON CONSULTING
7170 GORE ROAD (MISSISSAUGA)

T	1
1/8" = 1/4"	
TH-1B	1

BILD

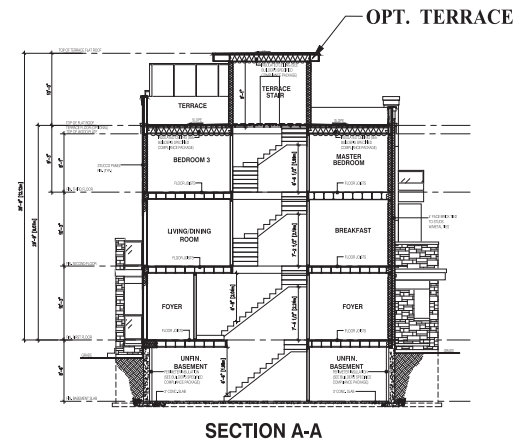
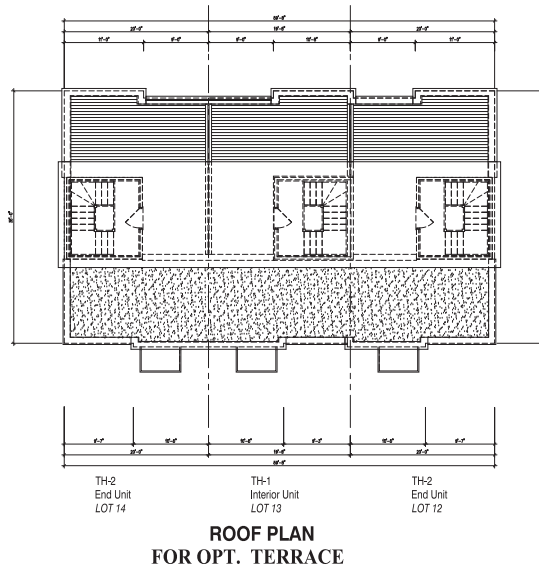
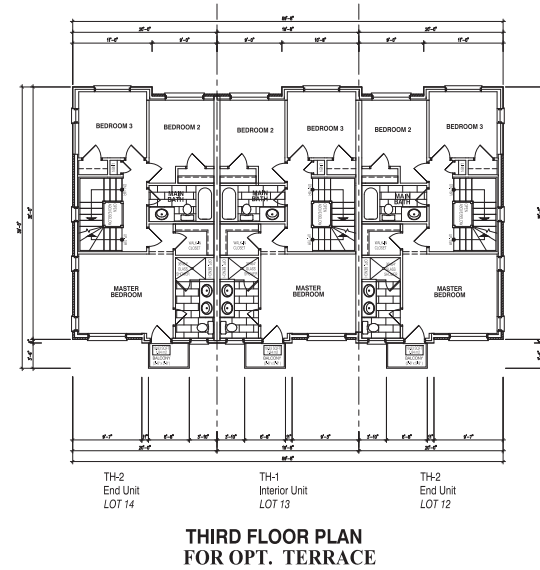
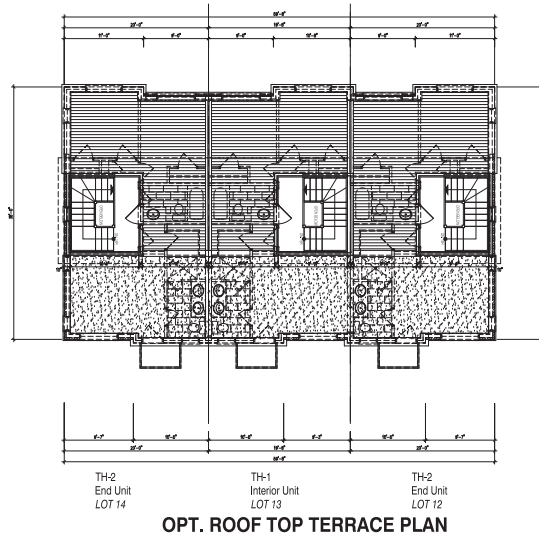
GOREWAY DRIVE & ETUDE DRIVE

MISSISSAUGA

6.0m 3 STOREY STREET FACING TOWNHOUSE

BLOCK 3

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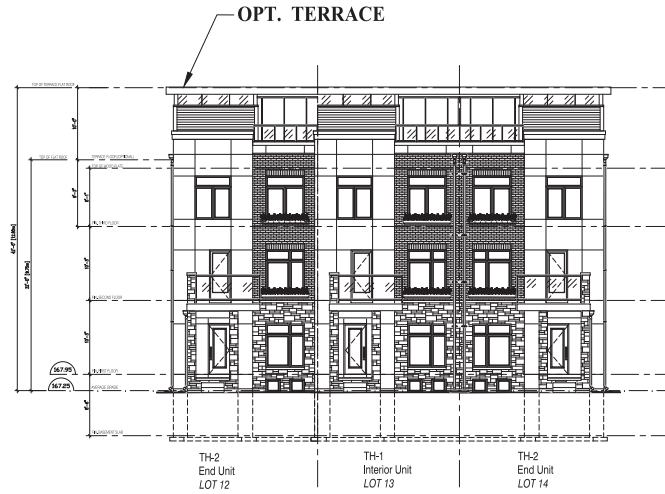
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OPT. ROOF TOP PLANS
WESTON CONSULTING
7170 GORE ROAD (MISSISSAUGA)
1/8" = 1'-0"
T-1
17-HB 2

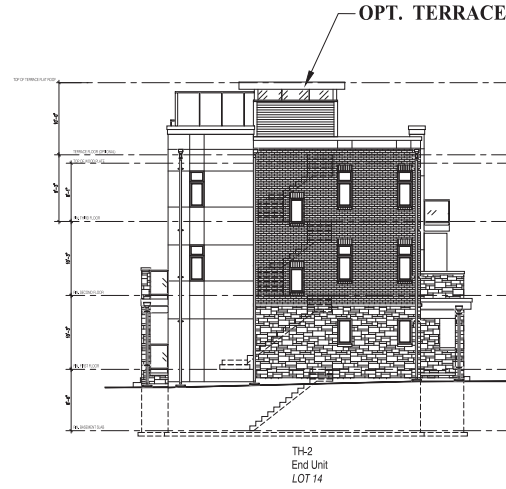
GOREWAY DRIVE & ETUDE DRIVE

MISSISSAUGA

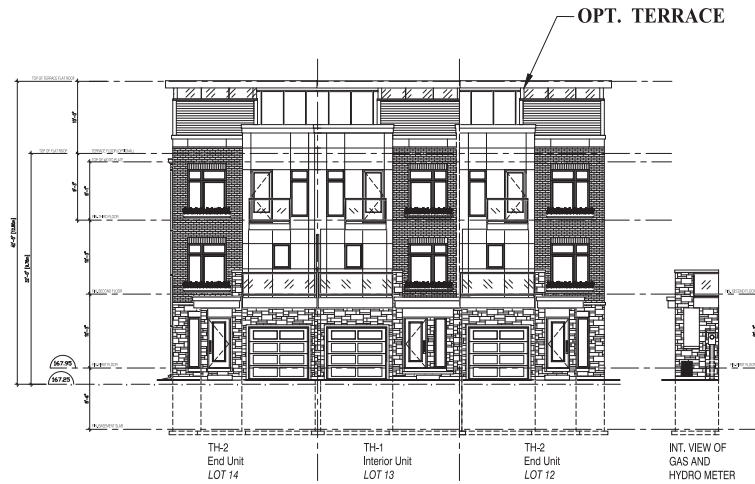
6.0m 3 STOREY STREET FACING TOWNHOUSE



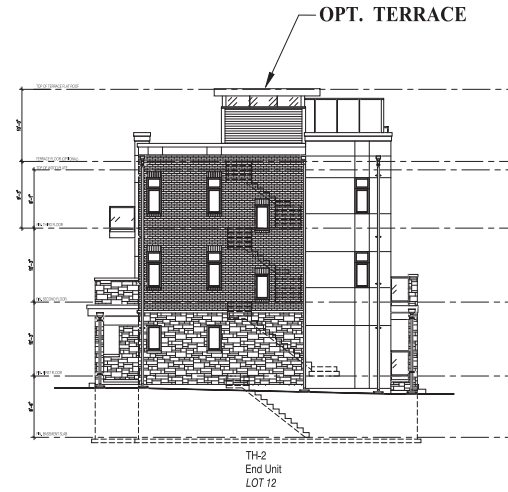
FRONT ELEVATION A
BLOCK 3



SIDE ELEVATION A
BLOCK 3



REAR ELEVATION A
BLOCK 3



SIDE ELEVATION A
BLOCK 3

BLOCK 3

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BLOCK ELEVATIONS

WESTON CONSULTING
7170 GORE ROAD (MISSISSAUGA)

BILD

T	---
1:8" = 1/4"	
TH-1B	5

APPENDIX B

Rail Traffic Information

Date: 17-Sep-15

NOISE REPORT FOR PROPOSED DEVELOPMENT

REQUESTED BY:

Name: Victor Garcia

Company: HGC Engineering

Fax#: () - 0



PREPARED BY:

Name: Michael Long x 3016

Tel#: (905) 615-3200

Location: Goreway Drive at Etude Drive

Look Up ID#: 346

ON SITE TRAFFIC DATA

Specific	Street Names				
	Goreway Drive				
AADT:	35,000				
# of Lanes:	5 lanes				
% Trucks:	3%				
Medium/Heavy Trucks Ratio:	55/45				
Day/Night Traffic Split:	90/10				
Posted Speed Limit:	60 kph				
Gradient of Road:	<2%				
Ultimate R O W:	35m				

Comments:

Ultimate Traffic Data Only

APPENDIX C

Sample Stanson 5.04 Output

STAMSON 5.0 NORMAL REPORT Date: 20-12-2017 14:07:44
 MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: a.te Time Period: Day/Night 16/8 hours
 Description: **Block 1, Daytime and nighttime sound levels, east façade adjacent to Goreway Drive, prediction location [A]**

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

```
-----
Car traffic volume   : 15278/1698   veh/TimePeriod   *
Medium truck volume :    260/29    veh/TimePeriod   *
Heavy truck volume  :    213/24    veh/TimePeriod   *
Posted speed limit  :     60 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): 17500
Percentage of Annual Growth       : 0.00
Number of Years of Growth         : 0.00
Medium Truck % of Total Volume    : 1.65
Heavy Truck % of Total Volume     : 1.35
Day (16 hrs) % of Total Volume    : 90.00
```

Data for Segment # 1: Goreway S (day/night)

```
-----
Angle1   Angle2       : -90.00 deg   90.00 deg
Wood depth      :      0      (No woods.)
No of house rows :      0 / 0
Surface         :      1      (Absorptive ground surface)
Receiver source distance : 17.00 / 17.00 m
Receiver height  :    7.70 / 7.80 m
Topography      :      1      (Flat/gentle slope; no barrier)
Reference angle  :    0.00
```

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

```
-----
Car traffic volume   : 15278/1698   veh/TimePeriod   *
Medium truck volume :    260/29    veh/TimePeriod   *
Heavy truck volume  :    213/24    veh/TimePeriod   *
Posted speed limit  :     60 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): 17500
Percentage of Annual Growth       : 0.00
Number of Years of Growth         : 0.00
Medium Truck % of Total Volume    : 1.65
Heavy Truck % of Total Volume     : 1.35
Day (16 hrs) % of Total Volume    : 90.00
```



Data for Segment # 2: Goreway N (day/night)

```

-----
Angle1   Angle2           : -90.00 deg   90.00 deg
Wood depth           :           0       (No woods.)
No of house rows     :           0 / 0
Surface              :           1       (Absorptive ground surface)
Receiver source distance : 26.00 / 26.00 m
Receiver height       :   7.70 / 7.80 m
Topography           :           1       (Flat/gentle slope; no barrier)
Reference angle       :           0.00
  
```

Results segment # 1: Goreway S (day)

Source height = 1.08 m

ROAD (0.00 + 64.99 + 0.00) = 64.99 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj
-90	90	0.49	66.94	0.00	-0.81	-1.15	0.00	0.00	0.00

```

-----
SubLeq
---
-90      90      0.49  66.94      0.00  -0.81  -1.15      0.00      0.00      0.00
64.99
-----
---
  
```

Segment Leq : 64.99 dBA

Results segment # 2: Goreway N (day)

Source height = 1.08 m

ROAD (0.00 + 62.24 + 0.00) = 62.24 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj
-90	90	0.49	66.94	0.00	-3.55	-1.15	0.00	0.00	0.00

```

-----
SubLeq
---
-90      90      0.49  66.94      0.00  -3.55  -1.15      0.00      0.00      0.00
62.24
-----
---
  
```

Segment Leq : 62.24 dBA

Total Leq All Segments: 66.84 dBA

Results segment # 1: Goreway S (night)

Source height = 1.08 m

ROAD (0.00 + 58.49 + 0.00) = 58.49 dBA

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

-90	90	0.48	60.44	0.00	-0.81	-1.14	0.00	0.00	0.00
58.49									

Segment Leq : 58.49 dBA

Results segment # 2: Goreway N (night)

Source height = 1.08 m

ROAD (0.00 + 55.75 + 0.00) = 55.75 dBA

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

-90	90	0.48	60.44	0.00	-3.54	-1.14	0.00	0.00	0.00
55.75									

Segment Leq : 55.75 dBA

Total Leq All Segments: 60.34 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 66.84
(NIGHT): 60.34

