

# **Noise Impact Study**

## **Proposed Residential Development**

### **7170 Goreway Drive,**

### **City of Mississauga, Ontario**

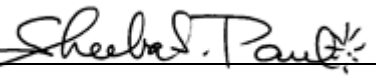
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Project Number: 01700110

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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.

This report is an update of the previous study, titled “Noise Impact Study, Proposed Residential Development, 7170 Goreway Drive, Mississauga, ON” date October 18, 2019 to address comments from the City of Mississauga to address noise from exterior A/C units and traffic noise on ground level amenity areas, and includes the latest site plans, elevations, and floor plans.

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 the Environment, Conservation and Parks (MECP) and the Municipality to develop noise control recommendations.

The sound level predictions indicate that future road and air traffic sound levels will exceed MECP 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.

An acoustical model was constructed to analyze the noise impact of rooftop air conditioning units. The results show that the sound emissions of the assumed rooftop units can meet the applicable guideline limits at nearby noise sensitive receptors and on the neighboring rooftop patios with a



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maximum sound level as provided.

## 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 May 26, 2021 and is shown in Figure 2. The proposed development will consist of three 3-storey townhouse blocks and a private road. The floor plans and building elevations (prepared by Jardin Design Group Inc. dated February 16, 2021) 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, and 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).



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### 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 MECP publication NPC-300, “Environmental Noise Guideline Stationary and Transportation Sources – Approval and Planning”, release date October 21, 2013 and are listed in Table I below. The values in Table I are energy equivalent (average) sound levels [ $L_{EQ}$ ] in units of A-weighted decibels [dBA].

**Table I: MECP Road Traffic Noise Criteria [dBA]**

| Space                      | Daytime $L_{EQ}$ (16 hour)<br>Road | Nighttime $L_{EQ}$ (8 hour)<br>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 MECP guidelines.

The MECP 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 MECP 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 MECP 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 MECP 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.

### **3.3 Criteria Governing Stationary Noise Sources**

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

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

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



## 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         |
|-------------------------------------------|--------------|---------------|---------------|--------------|---------------|
| <b>Goreway Drive</b><br><i>(Ultimate)</i> | Daytime      | 30 555        | 520           | 425          | 31 500        |
|                                           | Nighttime    | 3 395         | 57            | 48           | 3 500         |
|                                           | <b>Total</b> | <b>33 950</b> | <b>577</b>    | <b>473</b>   | <b>35 000</b> |

### 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 MECP. All STAMSON output are 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 levels in the outdoor amenity areas (optional rooftop terraces and ground level amenity areas) were investigated 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 MECP

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<br>L <sub>EQ(16)</sub> | Daytime - at Façade<br>L <sub>EQ(16)</sub> | Nighttime - at Façade<br>L <sub>EQ(8)</sub> |
|---------------------|-----------|---------------------------------------|-----------------------------------------|--------------------------------------------|---------------------------------------------|
| [A]                 | 1         | East façade adjacent to Goreway Drive | 59*                                     | 65                                         | 59                                          |
| [B]                 | 2         | East façade adjacent to Etude Drive   | 57*                                     | 58                                         | 51                                          |
| [C]                 | 3         | Interior Block                        | 56*                                     | 57                                         | 51                                          |
| [D]                 | --        | Ground level amenity area             | <55                                     | --                                         | --                                          |

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 MECF 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 MECF 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.

The predicted sound level at the ground level amenity areas close to Block 3 is below 55 dBA. Physical mitigation is not required.

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 MECP guidelines, and therefore require a traffic noise assessment. The predicted sound level in the rooftop terraces with exposure to Goreway Drive in Block 1 will be 59 dBA with a 1.07 m high solid parapet. The predicted sound level in the easterly rooftop terraces of Block 2 with exposure to Goreway Drive will be 57 dBA with a 1.07 m high solid parapet. The predicted sound level in easterly rooftop terrace of Block 3 will be 56 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. The Planning department will select the required parapet height.

**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         | 1.5                       | 1.2  | 1.07 | --  | --   |
| 3         | 1.4                       | 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/m<sup>2</sup>. 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 MECP 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 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 MECP 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 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 February 16, 2021, provided in Appendix A, were reviewed to determine acoustical requirements for glazing. In general, the living/dining rooms have window to floor area ratios of 12%, dens have window to floor area ratios of 25%, and bedrooms have window to floor area ratios of 40%.

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 29 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 VI: 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                      |

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 gypsum board, insulation batts, flat roof joists, beam construction 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 - 25%                             | 29  | Any double glazed unit               |
|                                  | Bedroom           | 40%                                  | 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 MECF 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 MECF 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, Conservation and Parks 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, Conservation and Parks.

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 MECP as examples and can be modified by the Municipality as required.

## 5 Stationary Source Assessment

Noise emissions from exterior air conditioning units are assessed separately from traffic sources under MECP guidelines. These facilities are considered to be Stationary Sources of Sound and criteria for their assessment are contained in the following section.

### 5.1 Stationary Source Noise Predictions

Predictive noise modelling was used to assess the sound impact of rooftop air conditioning units of the proposed residential units in accordance to MECP guidelines. The noise prediction model was constructed based on a review of the proposed site, floor plans, roof plans, satellite photos, and estimates of sound emission levels of A/C units taken from similar past HGC Engineering project files.

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

| Source            | Octave Band Centre Frequency [Hz] |     |     |     |    |    |    |    |
|-------------------|-----------------------------------|-----|-----|-----|----|----|----|----|
|                   | 63                                | 125 | 250 | 500 | 1k | 2k | 4k | 8k |
| Lennox 2-Ton Unit | --                                | 52  | 62  | 65  | 69 | 67 | 61 | 54 |

Note: The overall sound rating of the above unit is 76 dBA.

The above data were inputted into a predictive computer model. The software used for this purpose (*Cadna-A version 2021, build: 183.5110*) is a computer implementation of ISO Standard 9613-2.2 “Acoustics - Attenuation of Sound During Propagation Outdoors.” The ISO method accounts for reduction in sound level with distance due to geometrical spreading, air absorption, ground attenuation and acoustical shielding by intervening structures such as barriers.

The following information and assumptions were used in the analysis.

- A 2-ton Lennox 13ACX air conditioning unit was assumed for each residential unit. As mechanical and electrical plans are not yet available, locations of the A/C units were assumed to be on the rooftop terrace level near the stairwell access door. Figure 4 shows the suitable locations of the A/C units.

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

***Assumed day worst-case scenario:***

- A/C units operating at full capacity (100%).

***Assumed night worst-case scenario:***

- A/C units operating at 50% capacity to account for on/off cycles.

## 5.2 Results

The unmitigated sound levels due to stationary noise sources associated with the rooftop A/C units at the existing nearby noise sensitive receptors and on the proposed development are summarized in Table IX. As a conservative approach, the exclusionary sound limits are used as the criteria.

**Table IX: Predicted Sound Levels from the Existing Commercial Site on the Proposed Residential Building [dBA]**

|                                | Daytime<br>(07:00 –<br>23:00) | Nighttime<br>(23:00 –<br>07:00) | Criteria<br>(Daytime /<br>Nighttime) |
|--------------------------------|-------------------------------|---------------------------------|--------------------------------------|
| Nearby Existing Residences     | <50                           | <45                             | 50 / 45                              |
| Proposed Dwellings (Block 1-3) | <50                           | <45                             |                                      |
| Rooftop Patios*                | 49                            | --                              |                                      |

Note: \* Predicted sound levels from neighboring rooftop A/C units (sound contributions from a unit's own rooftop A/C unit on itself were not included)

The results of the calculations indicate that the predicted sound levels due to the operation of the rooftop A/C units are within MECP limits at the façades of the nearby existing residences and at the adjacent rooftop patio, during a worst case operational scenario. Mitigation is not required. If sound levels of the rooftop units are greater than those assumed in this analysis, acoustic barriers between the rooftop terraces may be required.

If the location of the A/C units or the tonnage are changed significantly, the stationary noise analysis should be refined to ensure that the sound level limits are met at all noise sensitive receptors.

## 6 Summary & Recommendations

The following list and Table X 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 residential 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 X: 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-29<br>BR: STC-33     |
| 2         | +                | Central A/C               | A, B, C                | LR/DR: STC-29<br>BR: STC-33     |
| 3         | +                | Central A/C               | A, B, C                | LR/DR: STC-29<br>BR: STC-33     |

Notes:

\* The location, installation and sound rating of the air conditioning condensers must be compliant with MECP 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.

### 6.1 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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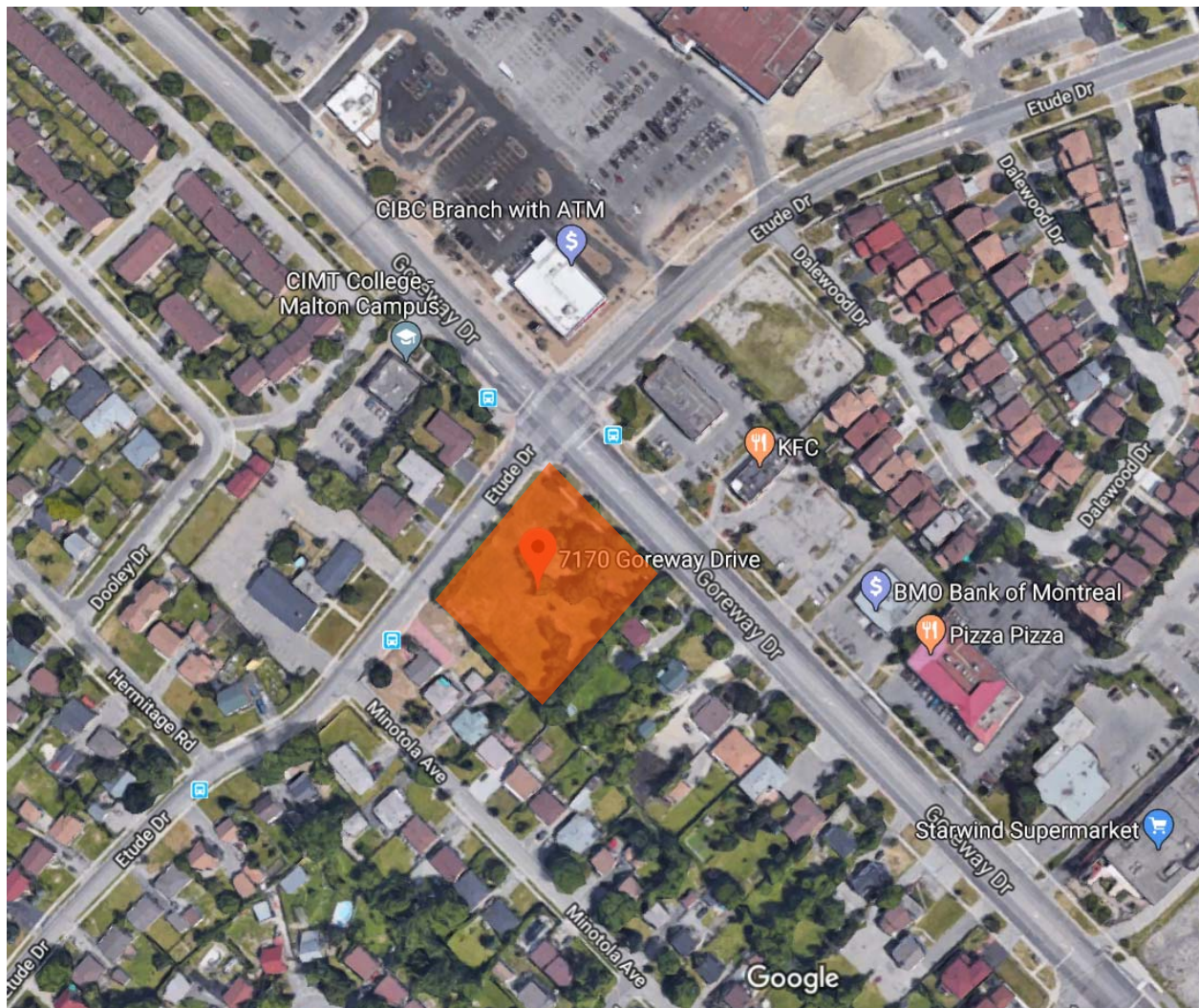
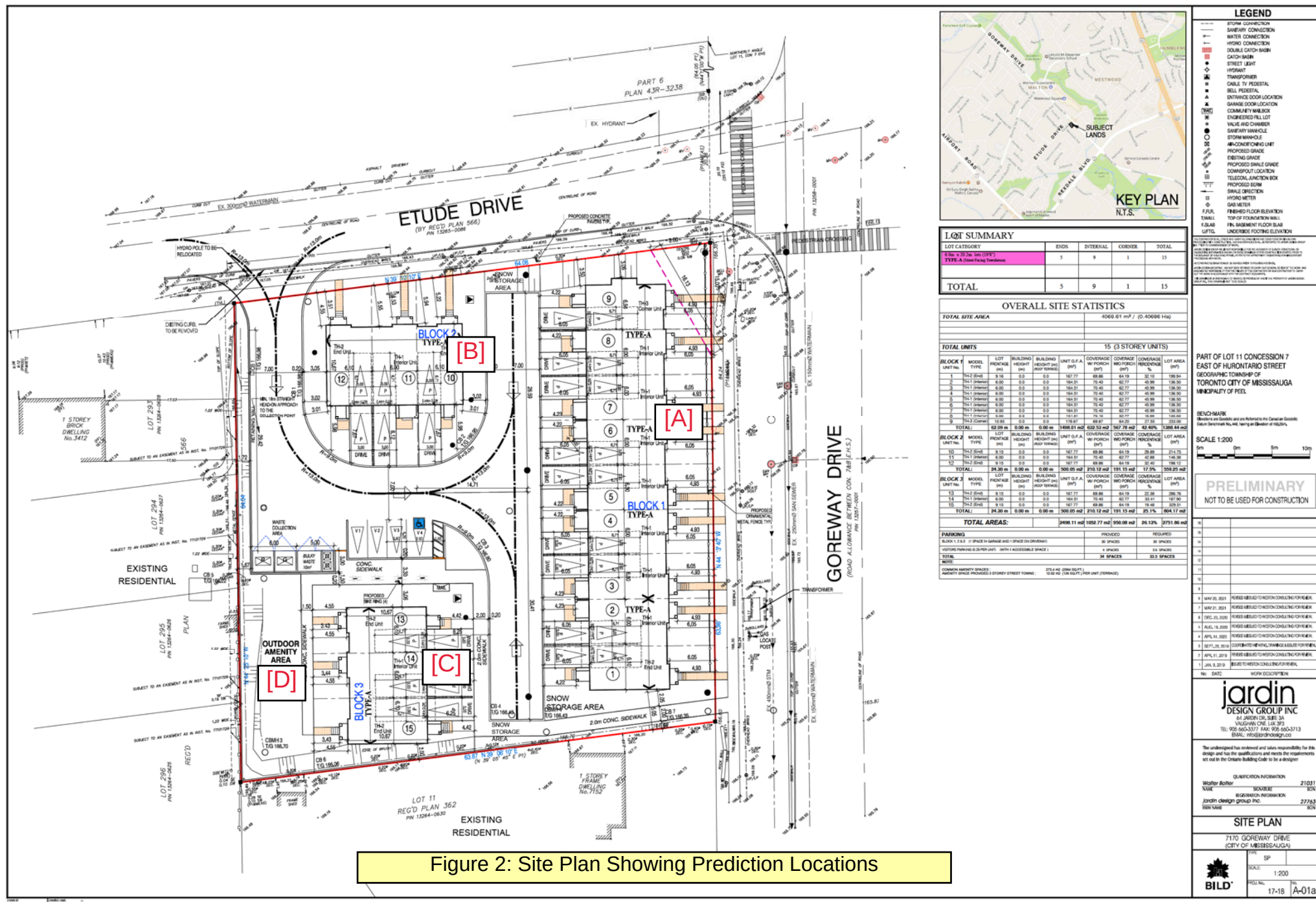


Figure 1 - Key Plan



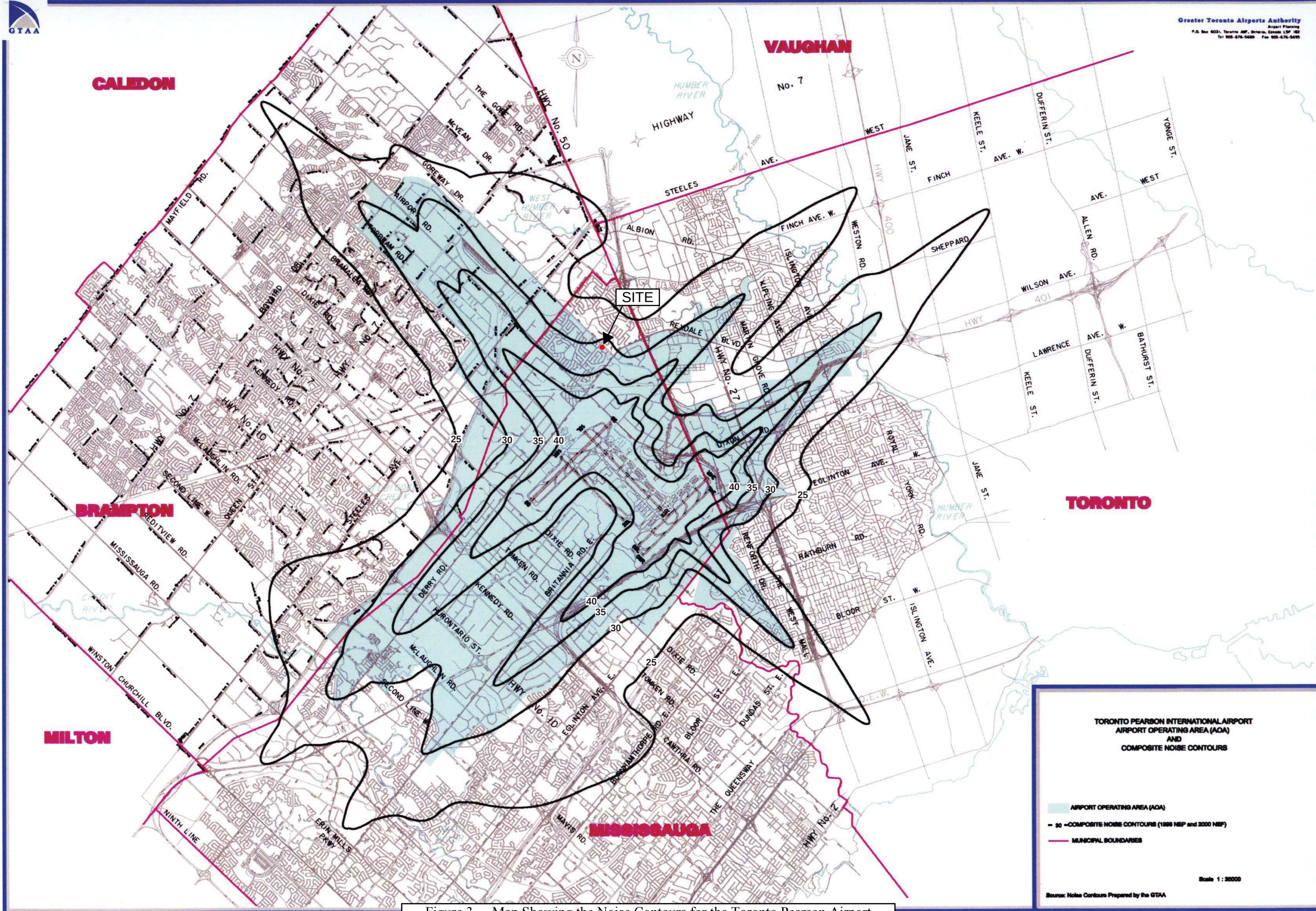


Figure 3 - Map Showing the Noise Contours for the Toronto Pearson Airport

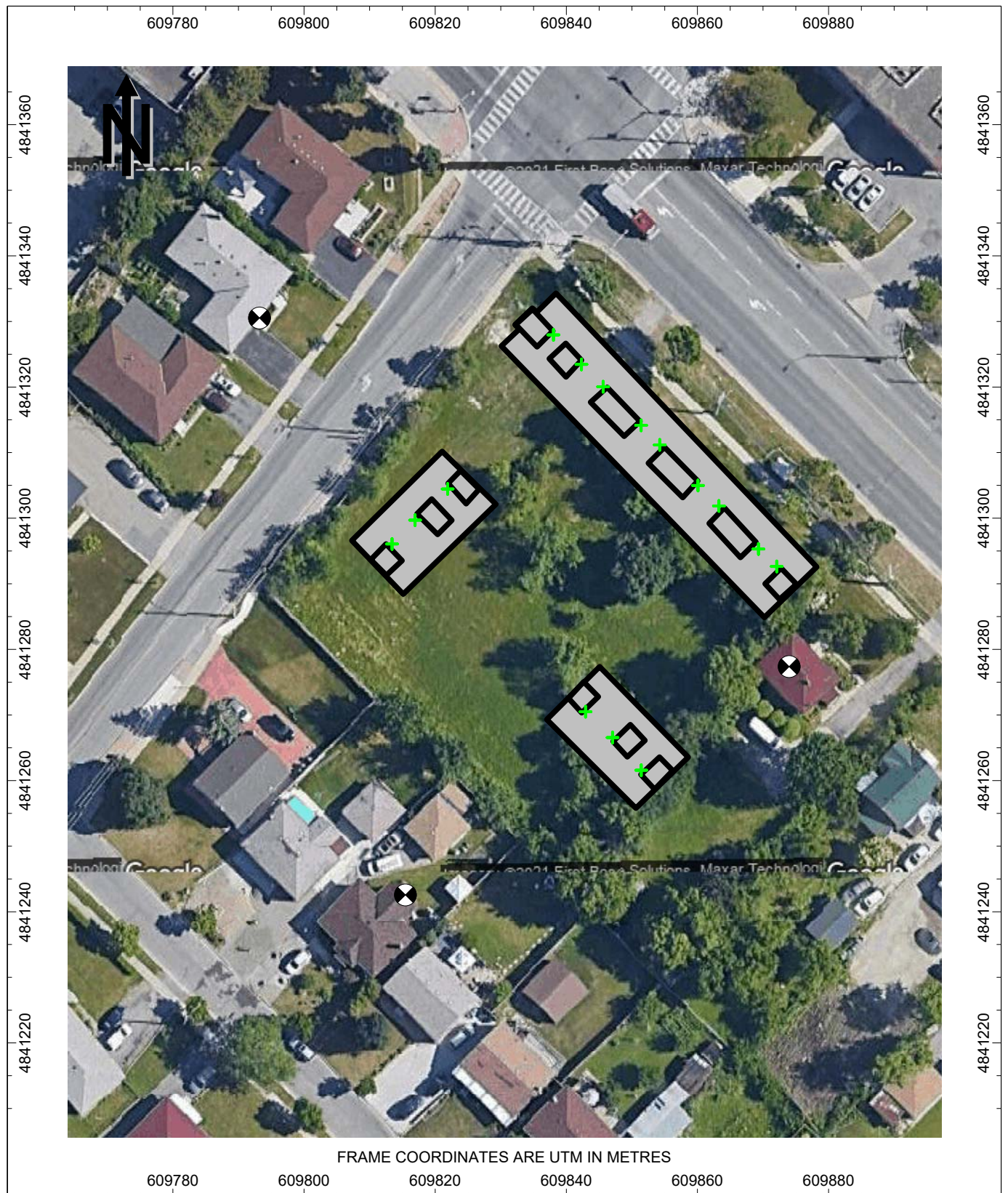


Figure 4: Location of Rooftop A/C Units

**GOREWAY DRIVE & ETUDE DRIVE**  
**MISSISSAUGA**  
**6.0m 3 STOREY STREET FACING TOWNHOUSE**



|                                                                                                                                              |           |              |           |
|----------------------------------------------------------------------------------------------------------------------------------------------|-----------|--------------|-----------|
| <h1 style="text-align: center;">BLOCK FLOOR PLANS</h1> <p style="text-align: center;">WESTON CONSULTING<br/>7170 GORE ROAD (MISSISSAUGA)</p> |           |              |           |
|                                                         | TYPE      | T            | AREA      |
|                                                                                                                                              | SCALE:    | 1/8" = 1'-0" |           |
|                                                                                                                                              | PROJ. No. | 17-18        | DRAW. No. |
|                                                                                                                                              |           |              | 1         |

## BLOCKS 2 & 3

### PRELIMINARY

NOT TO BE USED FOR CONSTRUCTION

The diagram illustrates the OPT. ROOF TOP TERRACE PLAN for three units. The units are labeled as follows:

- TH-2 End Unit LOT 14
- TH-1 Interior Unit LOT 13
- TH-2 End Unit LOT 12

The plan shows the layout of the roof top terrace, including the units and the surrounding area. Dimensions are provided for each unit and the overall terrace area.

Overall dimensions: 25'-0" (width) x 25'-0" (depth).

Unit dimensions:

- TH-2 End Unit LOT 14: 11'-0" (width) x 11'-0" (depth)
- TH-1 Interior Unit LOT 13: 10'-0" (width) x 10'-0" (depth)
- TH-2 End Unit LOT 12: 11'-0" (width) x 11'-0" (depth)

The plan also shows the location of the units and the surrounding area, including the roof top terrace and the building footprint.

TH-2  
End Unit  
LOT 14

TH-1  
Interior Unit  
LOT 13

TH-2  
End Unit  
LOT 12

TH-2  
End Unit  
LOT 14

TH-1  
Interior Unit  
LOT 13

TH-2  
End Unit  
LOT 12

**ROOF PLAN  
FOR OPT. TERRACE**

**SECTION A-A**

[illegible]

The undersigned has reviewed and takes responsibility for this design and has the qualifications and meets the requirements set out in the Ontario Building Code to be a designer

**QUALIFICATION INFORMATION**  
Required unless design is exempt under Division C, Subsection 3.2.5 of the building code

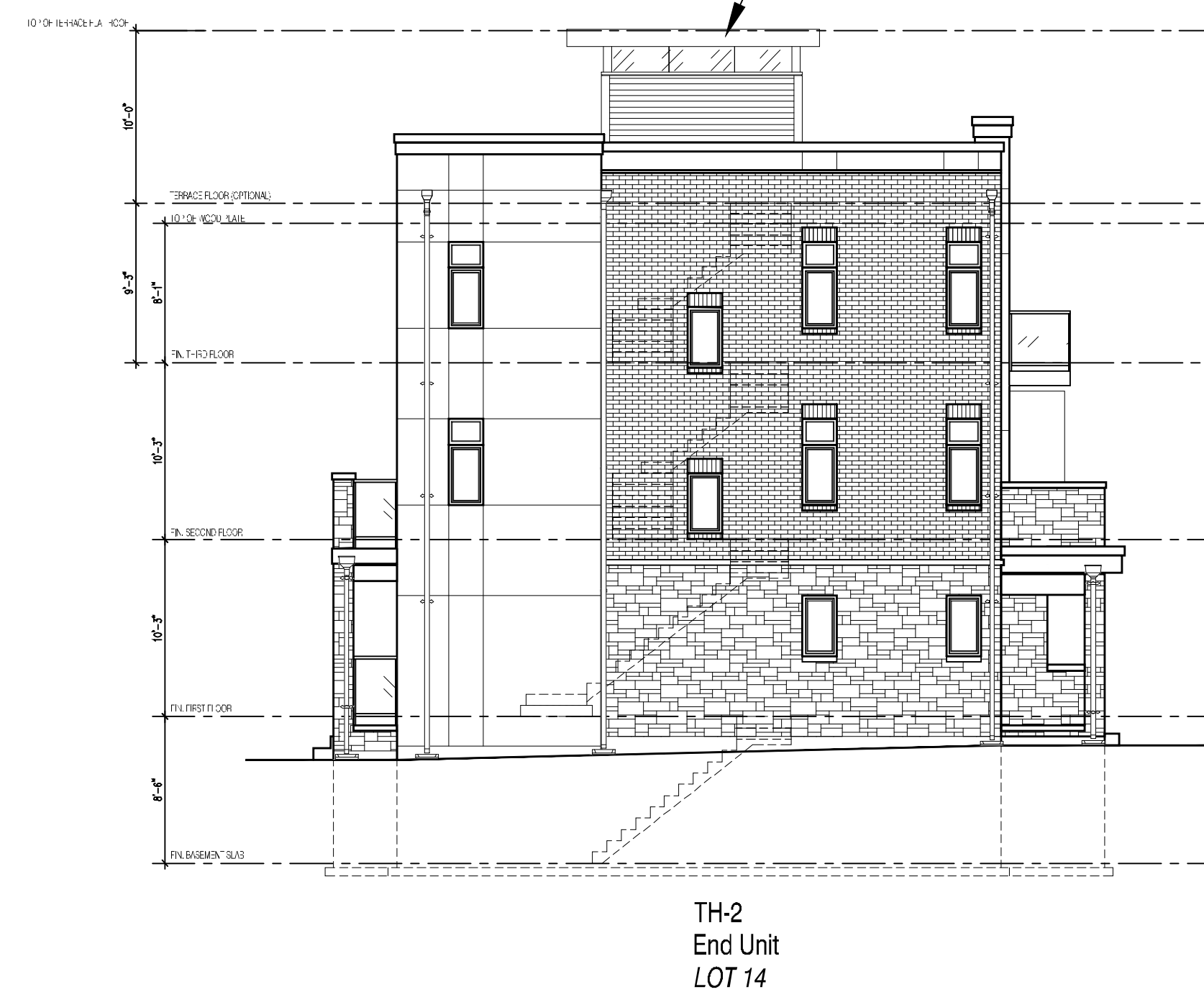
|                                                                                          |       |
|------------------------------------------------------------------------------------------|-------|
| <b>Walter Botter</b>                                                                     | 21037 |
| NAME                                                                                     | BCIN  |
| <b>SIGNATURE INFORMATION</b>                                                             |       |
| Required unless design is exempt under Division C, Subsection 3.2.4 of the building code |       |
| <b>jardin design group inc.</b>                                                          | 27763 |
| EMPLOYER                                                                                 |       |

OPT. ROOF TOP PLANS  
WESTON CONSULTING  
7170 GORE ROAD (MISSISSAUGA)

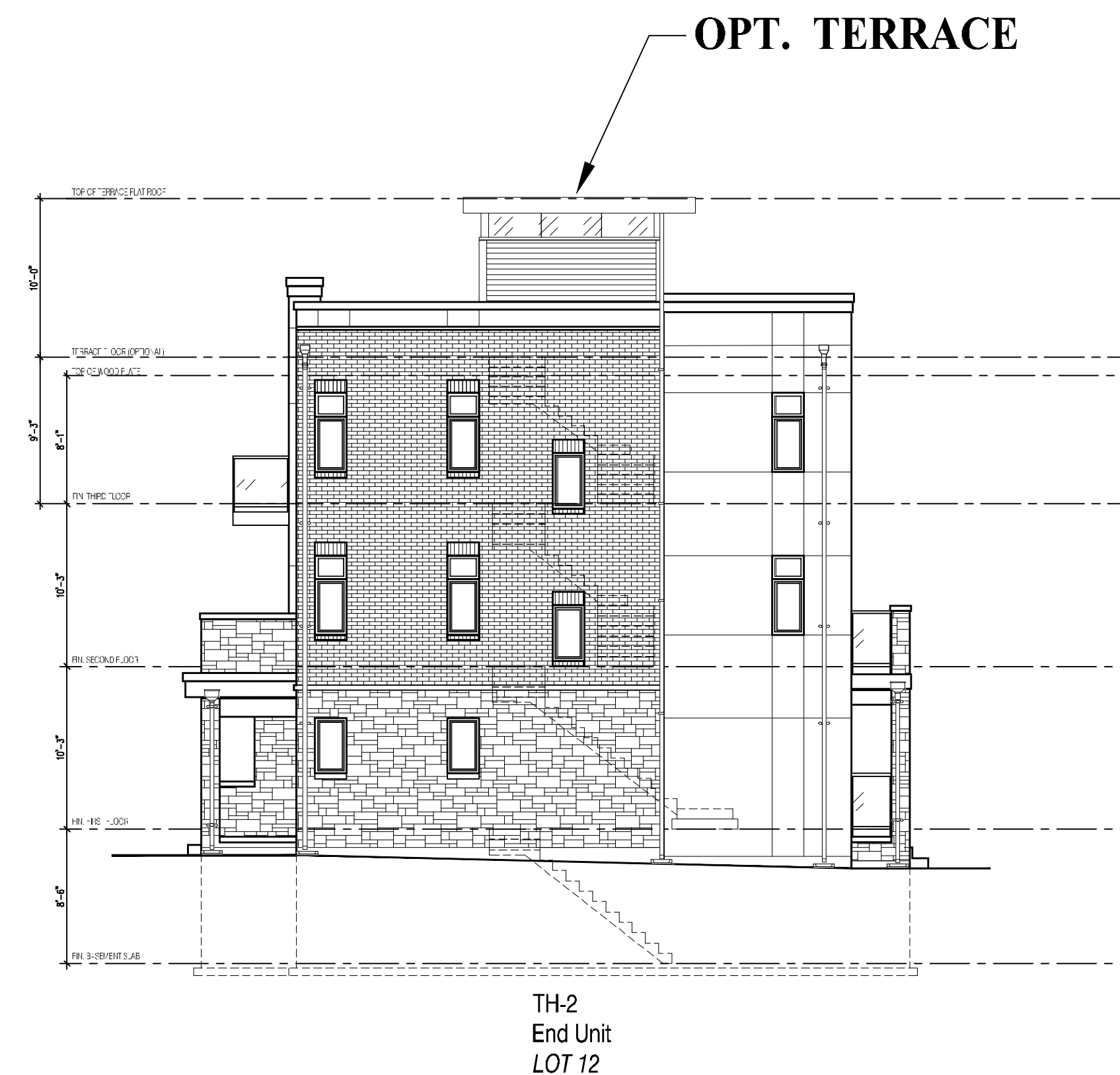


**BILD®**

—OPT. TERRACE



### SIDE ELEVATION A BLOCK 3



**SIDE ELEVATION A**  
**BLOCK 3**

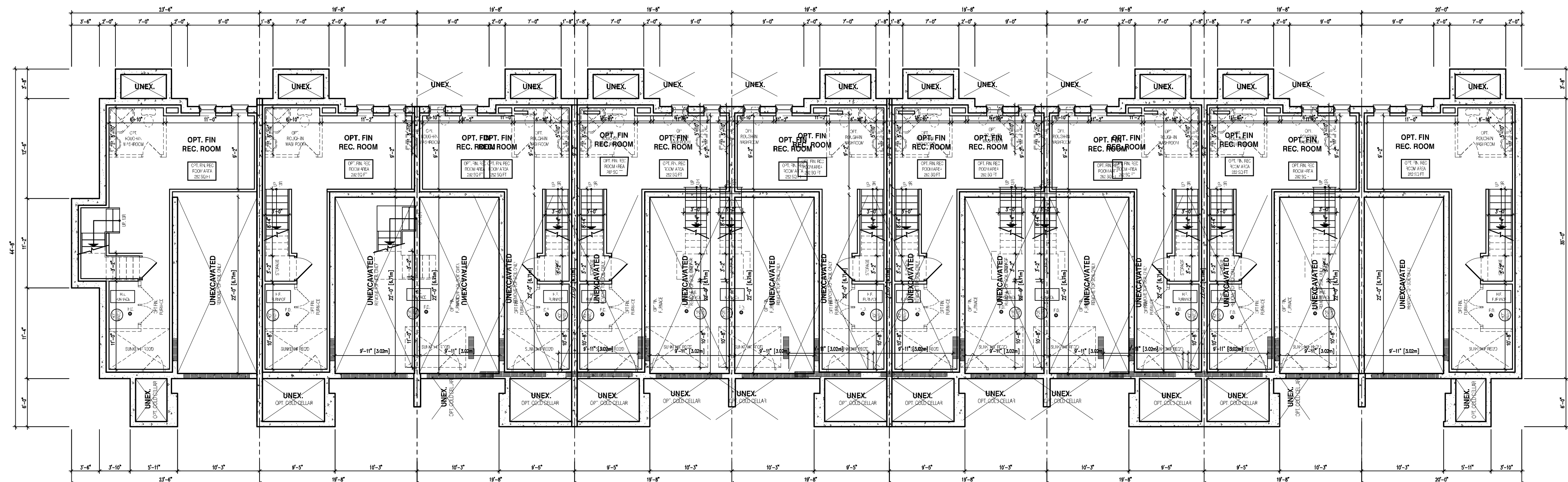
[illegible]

|                                                                                                      |                     |          |
|------------------------------------------------------------------------------------------------------|---------------------|----------|
| ELEVATIONS                                                                                           |                     |          |
| WESTON CONSULTING<br>7170 GORE ROAD (MISSISSAUGA)                                                    |                     |          |
| <br><b>BILD</b> | TYPIC               | AREA     |
|                                                                                                      | T                   | ----     |
|                                                                                                      | SCALE: 1/8" = 1'-0" |          |
|                                                                                                      | PROJ. No.           | DWG. No. |
|                                                                                                      | 17-18               | 3        |

[illegible]

TH-2  
End Unit  
LOT 1

## FOUNDATION PLAN



TH-2  
End Unit  
LOT 1

## BASEMENT PLAN

[illegible]

**jardin**  
DESIGN GROUP INC.

64 JARDIN DR. SUITE 3A  
VAUGHAN ONT. L4K 3P3  
TEL: 905 660-3377 FAX: 905 660-3711

The undersigned has reviewed and takes responsibility for this design and has the qualifications and meets the requirements set out in the

Ontario Building Code to be a designer

3.2.5 of the building code

Walter Botter 210

NAME \_\_\_\_\_ SIGNATURE \_\_\_\_\_ B \_\_\_\_\_  
REGISTRATION INFORMATION  
Required unless design is exempt under Division C, Subsection \_\_\_\_\_

|                            |     |
|----------------------------|-----|
| 3.2.4 of the building code |     |
| jardin design group inc.   | 277 |
| FIRM NAME                  | B   |

FOUNDATION & BSMT. PLAN

WESTON CONSULTING  
7170 GORE ROAD (MISSISSAUGA)

|                                                                                       |           |             |
|---------------------------------------------------------------------------------------|-----------|-------------|
|  | TYPE<br>T | AREA<br>--- |
|---------------------------------------------------------------------------------------|-----------|-------------|

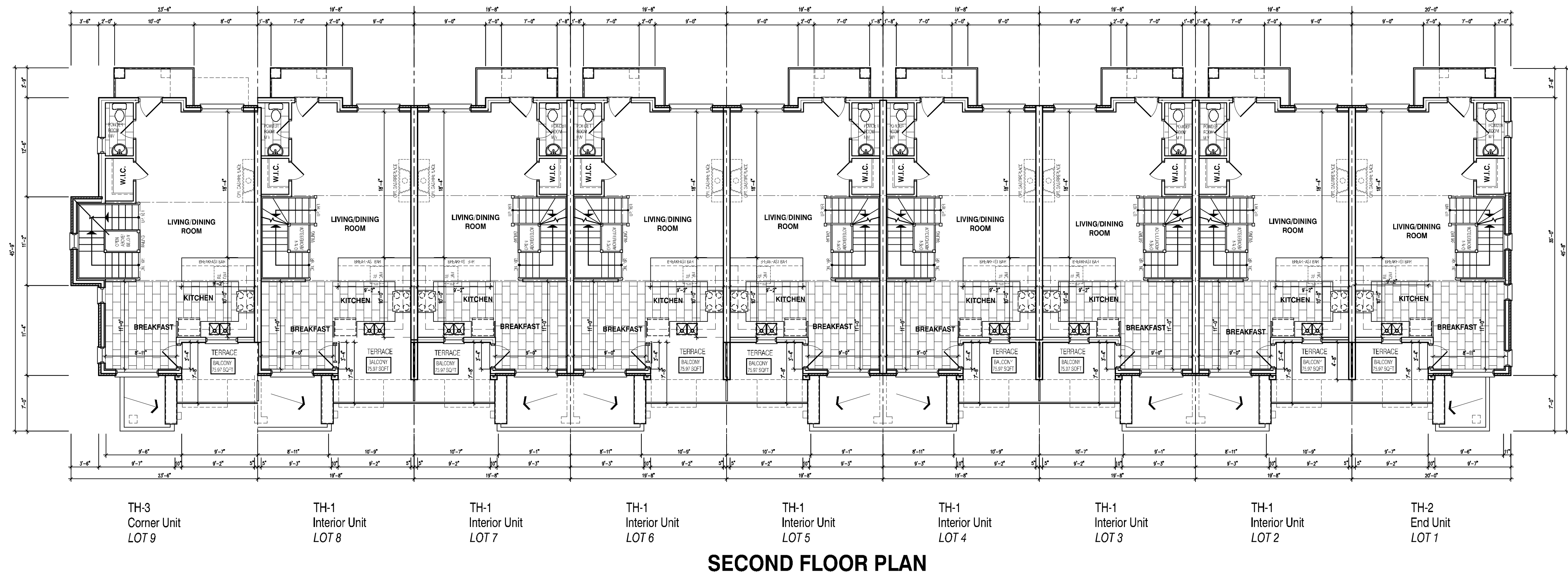
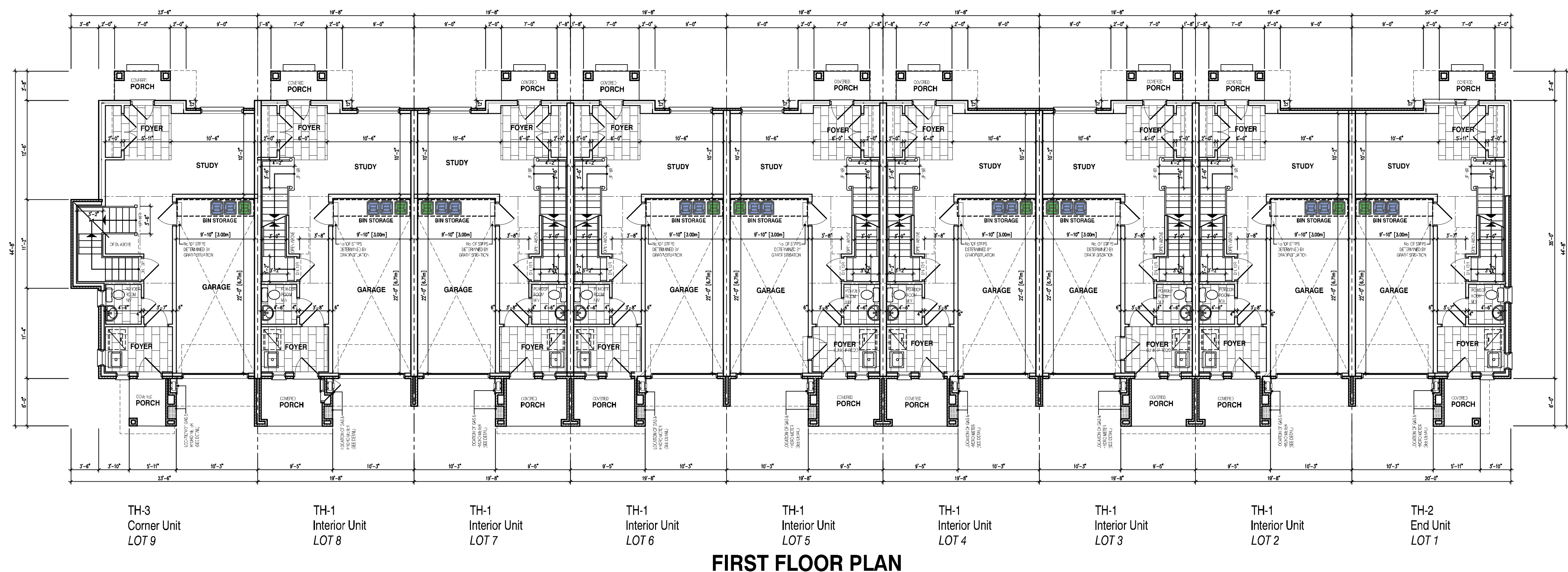
$$1/8^{\text{th}} = 1^{\text{st}} \cdot 0^{\text{th}}$$

|       |           |          |
|-------|-----------|----------|
| BILD* | PROJ. No. | JAG. No. |
|       | 17-18     | 1        |

|  |  |       |   |
|--|--|-------|---|
|  |  | 11-13 | 1 |
|--|--|-------|---|

GOREWAY DRIVE & ETUDE DRIVE  
MISSISSAUGA  
6.0m 3 STOREY STREET FACING TOWNHOUSE

BLOCK 1  
PRELIMINARY  
NOT TO BE USED FOR CONSTRUCTION



10  
9  
8  
7  
6  
5  
4  
3  
2  
1

1. FEB 10 2022 BUILD FOR TOWN  
2. FEB 10 2022 BUILD FOR NEIGHBORHOOD  
3. DATE WORK DESCRIPTION

**jardin**  
DESIGN GROUP INC  
600 BROADVIEW AVE. SUITE 300  
MISSISSAUGA, ONT. L4X 1L3  
TEL: 905-663-3377 FAX: 905-663-3713  
EMAIL: INFO@JARDINDSG.COM

The undersigned has reviewed and taken responsibility for the design and has the qualifications and meets the requirements set out in the Ontario Building Code to be a designer.

QUALIFICATION INFORMATION  
Required unless design is exempt under Division C, Subsection 1.2.3 of the building code

Walter Botter 21033  
NAME REGISTRATION INFORMATION  
Required unless design is exempt under Division C, Subsection 1.2.4 of the building code  
jardin design group inc. 27763  
FIRM NAME

MAIN & 2ND FLOOR PLAN

WESTON CONSULTING  
7170 GORE ROAD (MISSISSAUGA)

**BILD**

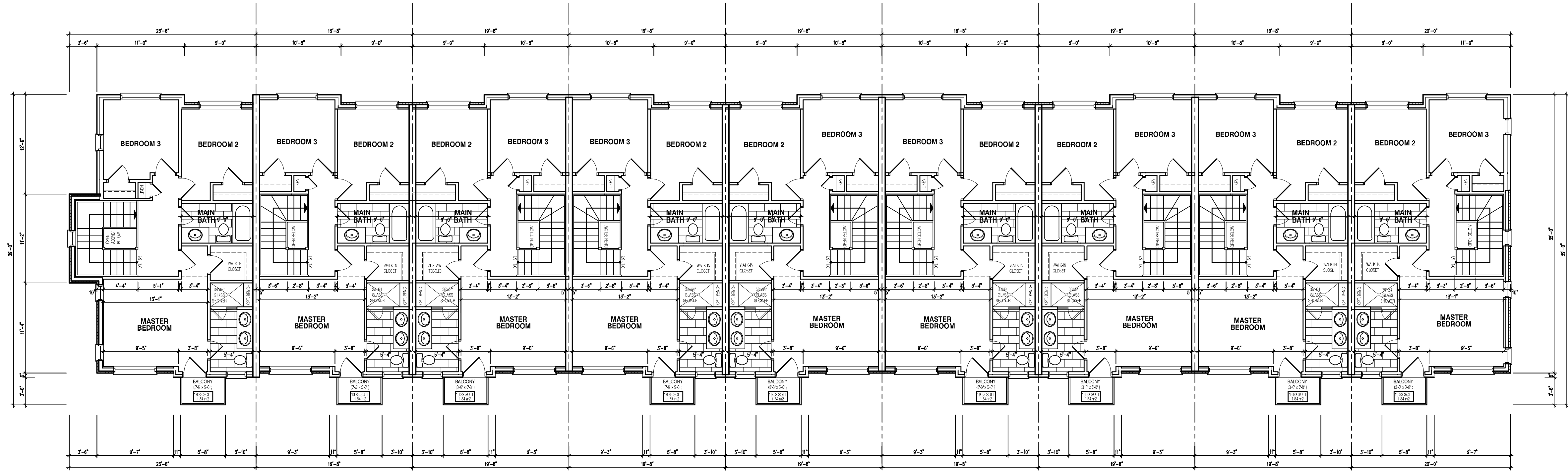
SCALE: 1/8"=1'-0"

17-18 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 9

TH-1  
Interior Unit  
LOT 8

TH-1  
Interior Unit  
LOT 7

TH-1  
Interior Unit  
LOT 6

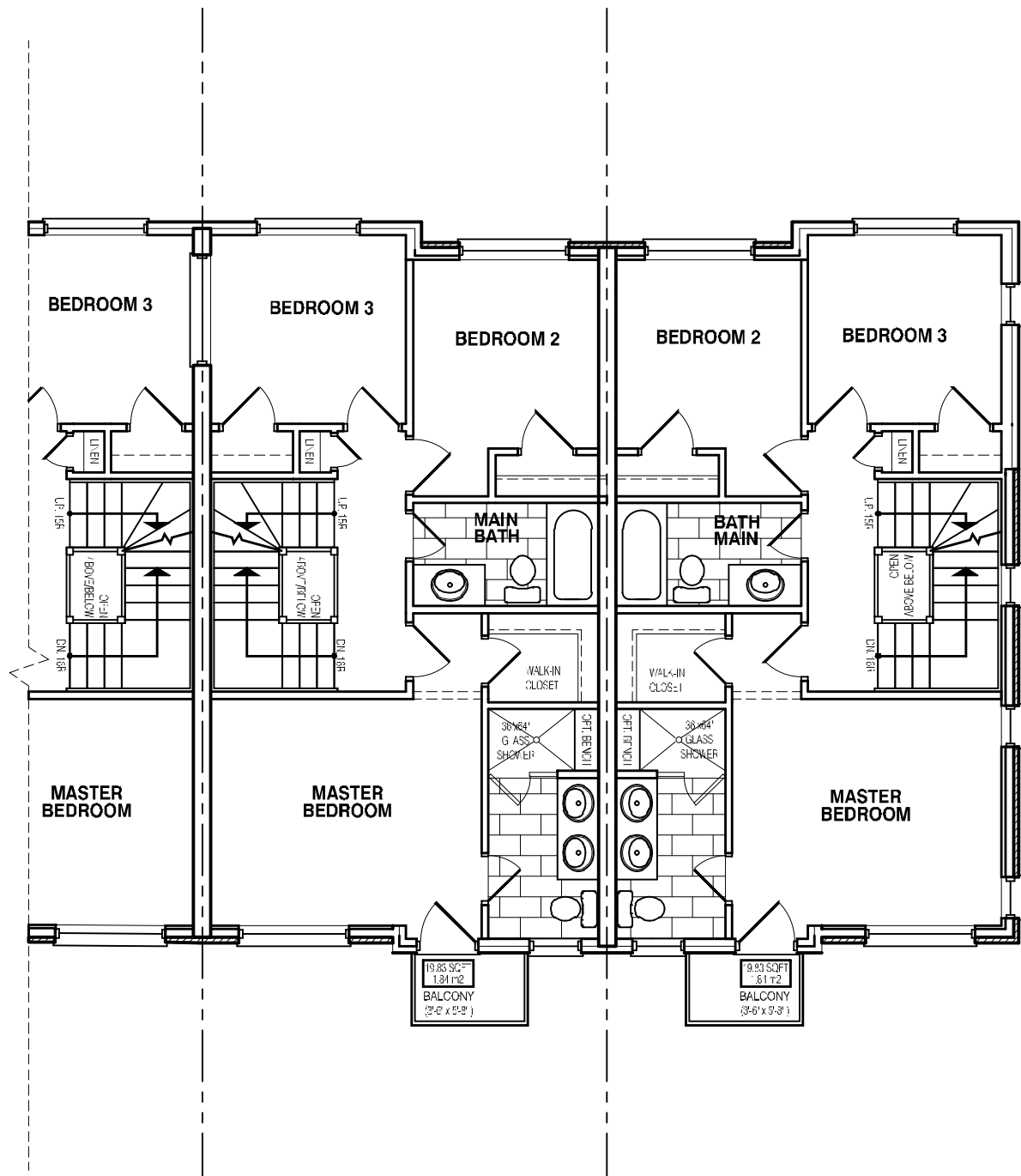
TH-1  
Interior Unit  
LOT 5

TH-1  
Interior Unit  
LOT 4

TH-1  
Interior Unit  
LOT 3

TH-1  
Interior Unit  
LOT 2

TH-2  
End Unit  
LOT 1

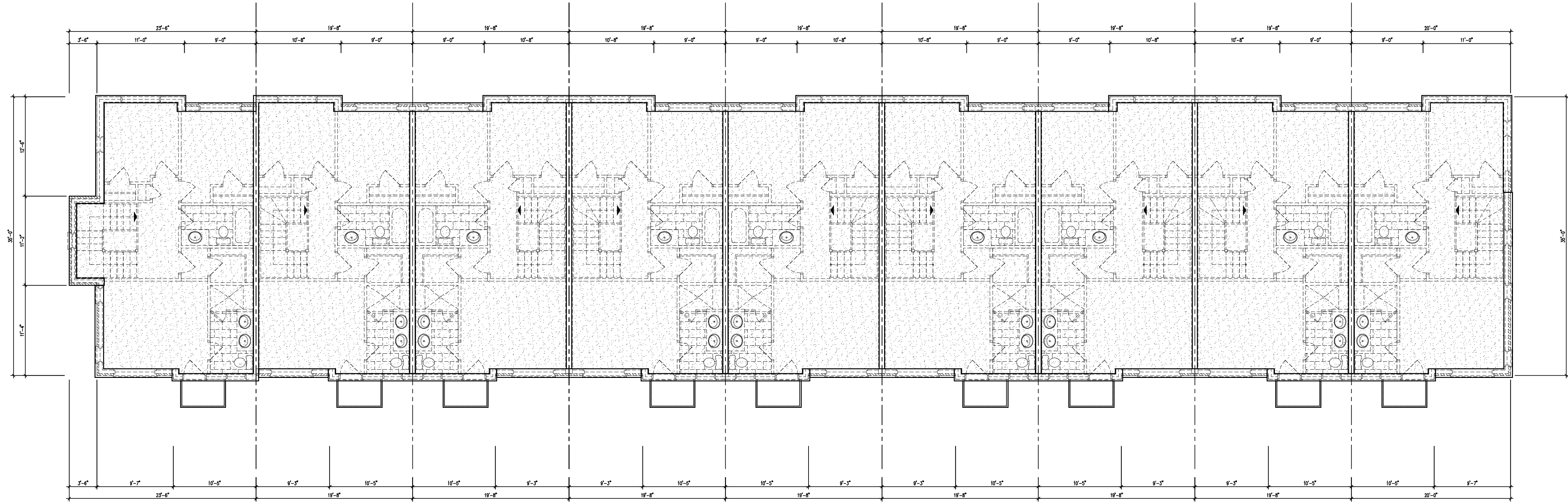


TH-1  
Interior Unit  
LOT 3

TH-1  
Interior Unit  
LOT 2

TH-2  
End Unit  
LOT 1

OPT. 3RD FLOOR - TO TERRACE



TH-3  
Corner Unit  
LOT 9

TH-1  
Interior Unit  
LOT 8

TH-1  
Interior Unit  
LOT 7

TH-1  
Interior 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

THESE PLANS AND SPECIFICATIONS ARE PRELIMINARY AND NOT TO BE USED FOR CONSTRUCTION. ANY CHANGES TO THE PLANS MUST BE APPROVED BY THE ARCHITECT. THE ARCHITECT IS NOT RESPONSIBLE FOR THE ACCURACY OF THE INFORMATION PROVIDED HEREIN. THE ARCHITECT IS NOT RESPONSIBLE FOR THE ACCURACY OF THE INFORMATION PROVIDED HEREIN. THE ARCHITECT IS NOT RESPONSIBLE FOR THE ACCURACY OF THE INFORMATION PROVIDED HEREIN.

| NO. | DATE     | WORK DESCRIPTION |
|-----|----------|------------------|
| 1   | 18.10.22 | DESIGN FOR TOWN  |
| 2   | 18.10.22 | DESIGN FOR TOWN  |
| 3   | 18.10.22 | DESIGN FOR TOWN  |
| 4   | 18.10.22 | DESIGN FOR TOWN  |
| 5   | 18.10.22 | DESIGN FOR TOWN  |
| 6   | 18.10.22 | DESIGN FOR TOWN  |
| 7   | 18.10.22 | DESIGN FOR TOWN  |
| 8   | 18.10.22 | DESIGN FOR TOWN  |
| 9   | 18.10.22 | DESIGN FOR TOWN  |
| 10  | 18.10.22 | DESIGN FOR TOWN  |

**jardin**  
DESIGN GROUP INC  
601 BRIMLEY AVE. SUITE 301  
VICTORIA, BC V8N 1C1  
TEL: 250-663-3377 FAX: 250-663-3713  
EMAIL: INFO@JARDINDG.COM

The undersigned has reviewed and taken responsibility for the design and has the qualifications and meets the requirements set out in the Ontario Building Code to be a designer.

QUALIFICATION INFORMATION  
Required unless design is exempt under Division C, Subsection 3.2.5 of the building code.

Walter Botter 27033  
REGISTERED ARCHITECT  
Required unless design is exempt under Division C, Subsection 3.2.4 of the building code.

jardin design group inc. 27763  
PROFESSIONAL DESIGNER

3RD FLOOR & ROOF PLAN

WESTON CONSULTING  
7170 GORE ROAD (MISSISSAUGA)

**BILD**

| NO. | DATE     | WORK DESCRIPTION |
|-----|----------|------------------|
| 1   | 18.10.22 | DESIGN FOR TOWN  |
| 2   | 18.10.22 | DESIGN FOR TOWN  |
| 3   | 18.10.22 | DESIGN FOR TOWN  |
| 4   | 18.10.22 | DESIGN FOR TOWN  |
| 5   | 18.10.22 | DESIGN FOR TOWN  |
| 6   | 18.10.22 | DESIGN FOR TOWN  |
| 7   | 18.10.22 | DESIGN FOR TOWN  |
| 8   | 18.10.22 | DESIGN FOR TOWN  |
| 9   | 18.10.22 | DESIGN FOR TOWN  |
| 10  | 18.10.22 | DESIGN FOR TOWN  |

TH-3  
Corner Unit  
LOT 9

TH-1  
Interior Unit  
LOT 8

TH-1  
Interior Unit  
LOT 7

TH-1  
Interior 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

Architectural floor plan of a 10-unit townhome development. The plan shows a long, narrow building divided into ten units. Units 1-9 are labeled 'TH-1 Interior Unit' and Unit 10 is labeled 'TH-2 End Unit'. The plan includes detailed room layouts, including bedrooms, bathrooms, and living areas, with dimensions provided for each unit and overall building measurements.

| RECORD OF THE MEETING TO BE HELD ON |               |                                    |
|-------------------------------------|---------------|------------------------------------|
| 10                                  |               |                                    |
| 9                                   |               |                                    |
| 8                                   |               |                                    |
| 7                                   |               |                                    |
| 6                                   |               |                                    |
| 5                                   |               |                                    |
| 4                                   |               |                                    |
| 3                                   |               |                                    |
| 2                                   | FEB. 10 2005  | ISSUED FOR REVIEW                  |
| 1                                   | SEPT. 3, 2005 | ISSUED FOR PRE-APPLICATION MEETING |
| No.                                 | DATE          | WORK DESCRIPTION                   |

**jardin**  
DESIGN GROUP INC  
84 JARDIN DR, SUITE 3A  
VAUGHAN ONT, L4K 3P3  
TEL: 905 660-3377 FAX: 905 660-3713

The undersigned has reviewed and takes responsibility for this design and has the qualifications and meets the requirements set out in the Ontario Building Code to be a designer.

**QUALIFICATION INFORMATION**  
Required unless design is exempt under Division C, Subsection 3.2.5 of the building code

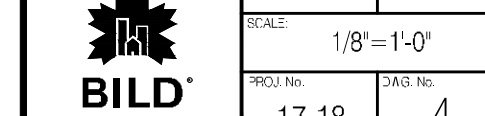
Waiter Botter 210

|                                                                                          |                          |  |
|------------------------------------------------------------------------------------------|--------------------------|--|
| 2004 FIVE-STAR                                                                           | REGISTRATION INFORMATION |  |
| Required unless design is exempt under Division C, Subsection 3.2.4 of the building code |                          |  |
| jardin design group inc.                                                                 | 277                      |  |

TERRACE FLOOR &amp; ROOF PLANS

WESTON CONSULTING  
7170 GORE ROAD (MISSISSAUGA)

|                                                                                       |           |             |
|---------------------------------------------------------------------------------------|-----------|-------------|
|  | TYPE<br>T | AREA<br>--- |
|---------------------------------------------------------------------------------------|-----------|-------------|



GOREWAY DRIVE & ETUDE DRIVE  
MISSISSAUGA  
6.0m 3 STOREY STREET FACING TOWNHOUSE

BLOCK 1  
PRELIMINARY  
NOT TO BE USED FOR CONSTRUCTION



FRONT ELEVATION A  
BLOCK 1



REAR ELEVATION A  
BLOCK 1

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| NO. | DATE       | WORK DESCRIPTION   |
|-----|------------|--------------------|
| 1   | 2024-01-10 | PRELIMINARY DESIGN |
| 2   | 2024-01-10 | PRELIMINARY DESIGN |
| 3   | 2024-01-10 | PRELIMINARY DESIGN |
| 4   | 2024-01-10 | PRELIMINARY DESIGN |
| 5   | 2024-01-10 | PRELIMINARY DESIGN |
| 6   | 2024-01-10 | PRELIMINARY DESIGN |
| 7   | 2024-01-10 | PRELIMINARY DESIGN |
| 8   | 2024-01-10 | PRELIMINARY DESIGN |
| 9   | 2024-01-10 | PRELIMINARY DESIGN |
| 10  | 2024-01-10 | PRELIMINARY DESIGN |

**jardin**  
DESIGN GROUP INC.  
401 BRIMLEY AVE. SUITE 200  
MISSISSAUGA, ONT. L4X 1L3  
TEL: 905-663-3377 FAX: 905-663-3713  
EMAIL: INFO@JARDINDSG.COM

The undersigned has reviewed and taken responsibility for the design and has the qualifications and meets the requirements set out in the Ontario Building Code to be a designer.

QUALIFICATION INFORMATION:  
Required unless design is exempt under Division C, Subsection 3.2.3 of the building code.

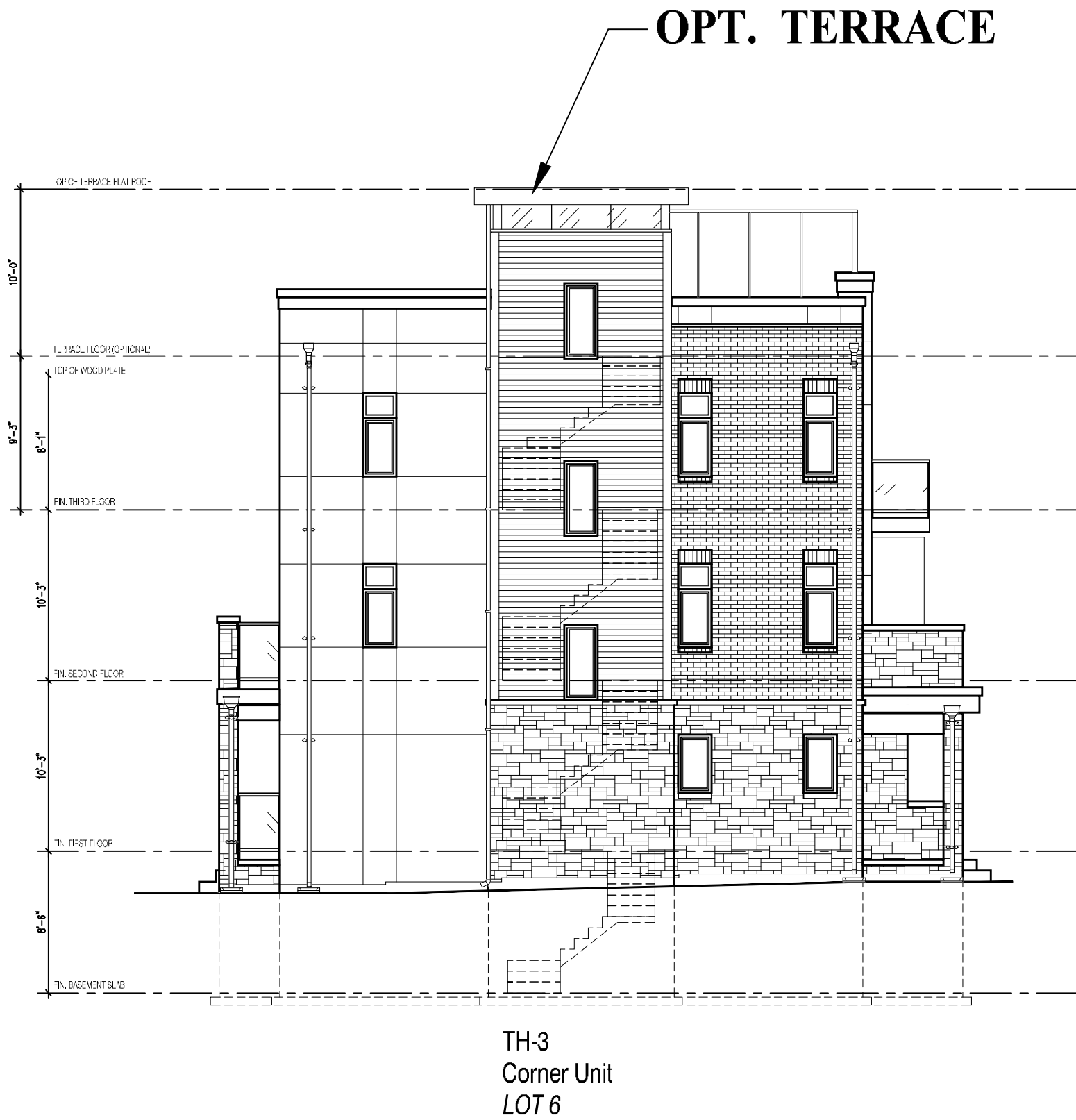
Walter Botter 21033  
NAME REGISTRATION INFORMATION  
Required unless design is exempt under Division C, Subsection 3.2.4 of the building code.  
jardin design group inc. 27763  
FIRM NAME REG.

**SIDE ELEVATIONS**  
WESTON CONSULTING  
7170 GORE ROAD (MISSISSAUGA)

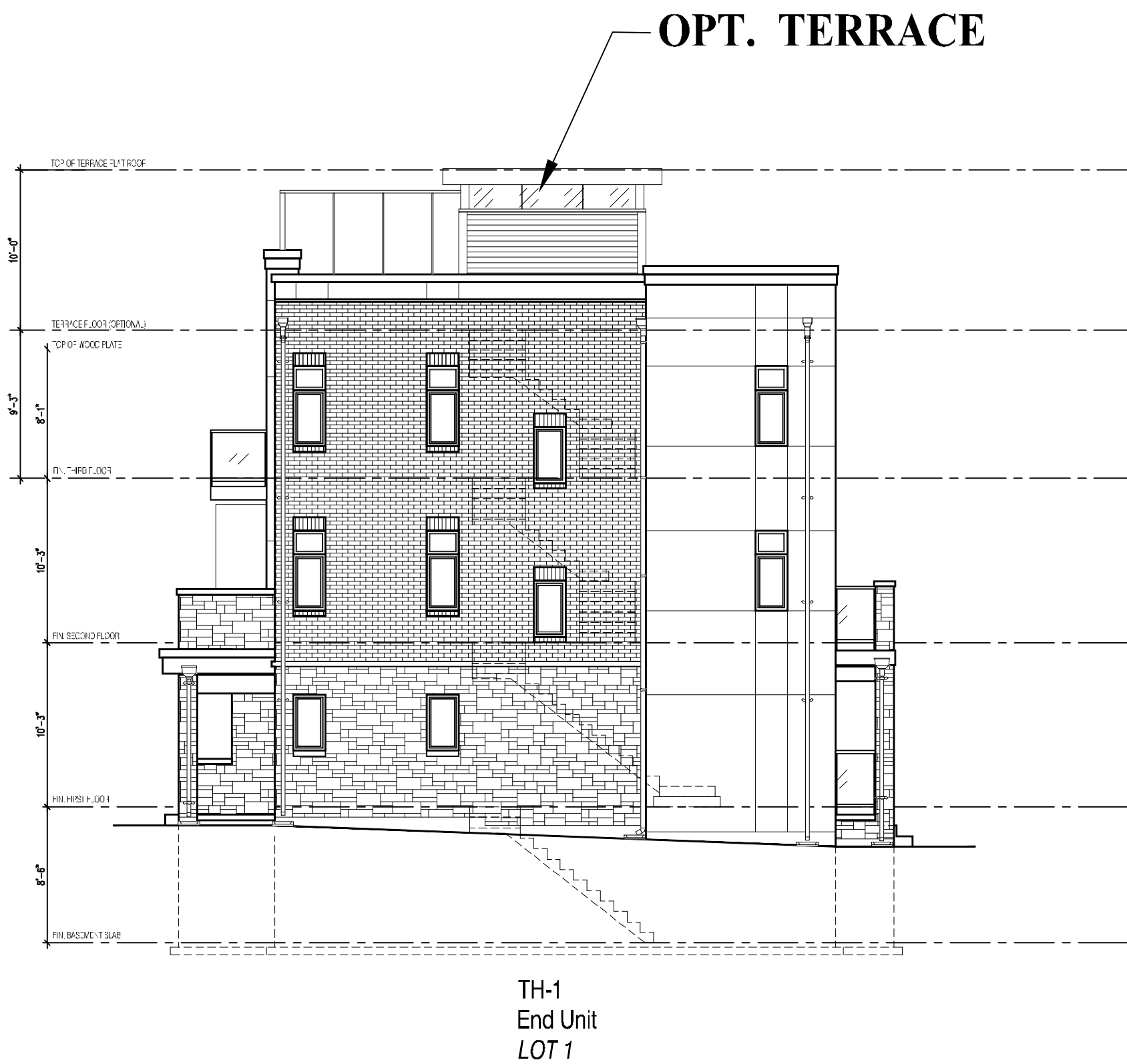
| NO. | DATE       | WORK DESCRIPTION   |
|-----|------------|--------------------|
| 1   | 2024-01-10 | PRELIMINARY DESIGN |
| 2   | 2024-01-10 | PRELIMINARY DESIGN |
| 3   | 2024-01-10 | PRELIMINARY DESIGN |
| 4   | 2024-01-10 | PRELIMINARY DESIGN |
| 5   | 2024-01-10 | PRELIMINARY DESIGN |
| 6   | 2024-01-10 | PRELIMINARY DESIGN |
| 7   | 2024-01-10 | PRELIMINARY DESIGN |
| 8   | 2024-01-10 | PRELIMINARY DESIGN |
| 9   | 2024-01-10 | PRELIMINARY DESIGN |
| 10  | 2024-01-10 | PRELIMINARY DESIGN |

**BILD**  
17-18 5

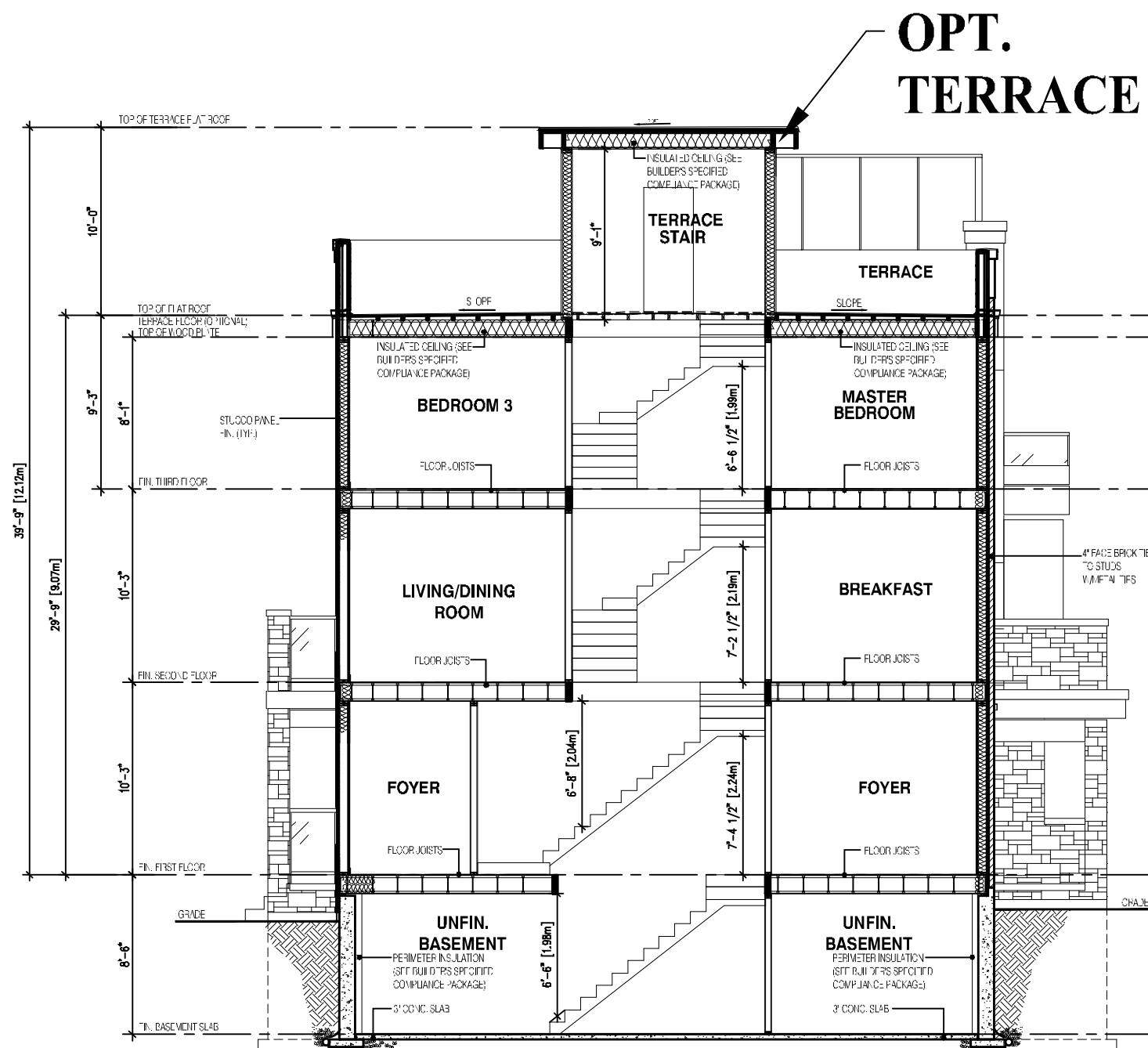
GOREWAY DRIVE & ETUDE DRIVE  
MISSISSAUGA  
6.0m 3 STOREY STREET FACING TOWNHOUSE



SIDE ELEVATION A  
BLOCK 1



SIDE ELEVATION A  
BLOCK 1



BLOCK 1

THESE DRAWINGS HAVE BEEN PREPARED IN ACCORDANCE WITH THE REQUIREMENTS OF THE BUILDING ACT AND THE BUILDING CODE OF ONTARIO. THE DESIGNER ACCEPTS RESPONSIBILITY FOR THE DESIGN AND CONSTRUCTION OF THE BUILDING. THE CLIENT ACCEPTS RESPONSIBILITY FOR THE ACCURACY OF THE INFORMATION PROVIDED TO THE DESIGNER. THE DESIGNER DOES NOT ACCEPT RESPONSIBILITY FOR THE ACCURACY OF THE INFORMATION PROVIDED TO THE CLIENT. THE DESIGNER DOES NOT ACCEPT RESPONSIBILITY FOR THE ACCURACY OF THE INFORMATION PROVIDED TO THE CLIENT.

|     |             |                      |
|-----|-------------|----------------------|
| 10  |             |                      |
| 9   |             |                      |
| 8   |             |                      |
| 7   |             |                      |
| 6   |             |                      |
| 5   |             |                      |
| 4   |             |                      |
| 3   |             |                      |
| 2   | FEB 10 2022 | DESIGN FOR TOWNHOUSE |
| 1   | SEPT 3 2022 | DESIGN FOR TOWNHOUSE |
| NO. | DATE        | WORK DESCRIPTION     |

**jardin**  
DESIGN GROUP INC.  
601 BRIMLEY AVE. SUITE 201  
VILLAGE OF YORK, ONT. M2H 3P3  
TEL: 905-663-3377 FAX: 905-663-3713  
EMAIL: INFO@JARDINDSG.COM

The undersigned has reviewed and taken responsibility for the design and has the qualifications and needs the requirements set out in the Ontario Building Code to be a designer.

Required unless design is exempt under Division C, Subsection 1.2.2. of the building code.

Walter Botter 21031  
NAME REGISTRATION INFORMATION  
Required unless design is exempt under Division C, Subsection 1.2.4 of the building code.  
Jardin design group inc. 27763  
FIRM NAME

SIDE ELEVATIONS  
WESTON CONSULTING  
7170 GORE ROAD (MISSISSAUGA)

**BILD**  
17-18 6

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

Filename: a.te      Time Period: Day/Night 16/8 hours  
Description: Block 1, Daytime and Nighttime, 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 : 22.00 / 22.00 m  
Receiver height : 7.70 / 7.70 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



ACOUSTICS



NOISE



VIBRATION

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 : 31.00 / 31.00 m  
Receiver height : 7.70 / 7.70 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 + 63.32 + 0.00) = 63.32 dBA

| Angle1 | Angle2 | Alpha | RefLeq | P.Adj | D.Adj | F.Adj | W.Adj | H.Adj | B.Adj | SubLeq |
|--------|--------|-------|--------|-------|-------|-------|-------|-------|-------|--------|
| -90    | 90     | 0.49  | 66.94  | 0.00  | -2.47 | -1.15 | 0.00  | 0.00  | 0.00  | 63.32  |

-----

Segment Leq : 63.32 dBA

Results segment # 2: Goreway N (day)

-----  
Source height = 1.08 m

ROAD (0.00 + 61.11 + 0.00) = 61.11 dBA

| Angle1 | Angle2 | Alpha | RefLeq | P.Adj | D.Adj | F.Adj | W.Adj | H.Adj | B.Adj | SubLeq |
|--------|--------|-------|--------|-------|-------|-------|-------|-------|-------|--------|
| -90    | 90     | 0.49  | 66.94  | 0.00  | -4.69 | -1.15 | 0.00  | 0.00  | 0.00  | 61.11  |

-----

Segment Leq : 61.11 dBA

Total Leq All Segments: 65.36 dBA

Results segment # 1: Goreway S (night)

-----  
Source height = 1.08 m

ROAD (0.00 + 56.81 + 0.00) = 56.81 dBA

| Angle1 | Angle2 | Alpha | RefLeq | P.Adj | D.Adj | F.Adj | W.Adj | H.Adj | B.Adj | SubLeq |
|--------|--------|-------|--------|-------|-------|-------|-------|-------|-------|--------|
| -90    | 90     | 0.49  | 60.44  | 0.00  | -2.47 | -1.15 | 0.00  | 0.00  | 0.00  | 56.81  |

-----



ACOUSTICS



NOISE



VIBRATION

Segment Leq : 56.81 dBA

Results segment # 2: Goreway N (night)

-----

Source height = 1.08 m

ROAD (0.00 + 54.60 + 0.00) = 54.60 dBA

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

|       |    |      |       |      |       |       |      |      |      |       |
|-------|----|------|-------|------|-------|-------|------|------|------|-------|
| ----- |    |      |       |      |       |       |      |      |      |       |
| -90   | 90 | 0.49 | 60.44 | 0.00 | -4.69 | -1.15 | 0.00 | 0.00 | 0.00 | 54.60 |
| ----- |    |      |       |      |       |       |      |      |      |       |

Segment Leq : 54.60 dBA

Total Leq All Segments: 58.85 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 65.36  
(NIGHT): 58.85



ACOUSTICS



NOISE



VIBRATION

Filename: a4.te      Time Period: 16 hours  
Description: Block 1 Rooftop OLA, Daytime, Location [A]

Road data, segment # 1: Goreway S

-----  
Car traffic volume : 15278 veh/TimePeriod \*  
Medium truck volume : 260 veh/TimePeriod \*  
Heavy truck volume : 213 veh/TimePeriod \*  
Posted speed limit : 60 km/h  
Road gradient : 0 %  
Road pavement : 1 (Typical asphalt or concrete)

Data for Segment # 1: Goreway S

-----  
Angle1 Angle2 : -90.00 deg 90.00 deg  
Wood depth : 0 (No woods.)  
No of house rows : 0  
Surface : 1 (Absorptive ground surface)  
Receiver source distance : 25.00 m  
Receiver height : 1.50 m  
Topography : 4 (Elevated; with barrier)  
Barrier angle1 : -90.00 deg Angle2 : 90.00 deg  
Barrier height : 1.07 m  
Elevation : 9.75 m  
Barrier receiver distance : 3.00 m  
Source elevation : 0.00 m  
Receiver elevation : 9.75 m  
Barrier elevation : 9.75 m  
Reference angle : 0.00  
Road data, segment # 2: Goreway N

-----  
Car traffic volume : 15278 veh/TimePeriod \*  
Medium truck volume : 260 veh/TimePeriod \*  
Heavy truck volume : 213 veh/TimePeriod \*  
Posted speed limit : 60 km/h  
Road gradient : 0 %  
Road pavement : 1 (Typical asphalt or concrete)

Data for Segment # 2: Goreway N

-----  
Angle1 Angle2 : -90.00 deg 90.00 deg  
Wood depth : 0 (No woods.)  
No of house rows : 0  
Surface : 1 (Absorptive ground surface)  
Receiver source distance : 34.00 m  
Receiver height : 1.50 m  
Topography : 4 (Elevated; with barrier)



ACOUSTICS



NOISE



VIBRATION

Barrier angle1 : -90.00 deg Angle2 : 90.00 deg  
 Barrier height : 1.07 m  
 Elevation : 9.75 m  
 Barrier receiver distance : 3.00 m  
 Source elevation : 0.00 m  
 Receiver elevation : 9.75 m  
 Barrier elevation : 9.75 m  
 Reference angle : 0.00

Results segment # 1: Goreway S

Source height = 1.08 m

Barrier height for grazing incidence

| Source<br>Height (m) | Receiver<br>Height (m) | Barrier<br>Height (m) | Elevation of<br>Barrier Top (m) |
|----------------------|------------------------|-----------------------|---------------------------------|
| 1.08                 | 1.50                   | 0.28                  | 10.03                           |

ROAD (0.00 + 55.78 + 0.00) = 55.78 dBA

| Angle1 | Angle2 | Alpha | RefLeq | P.Adj | D.Adj | F.Adj | W.Adj | H.Adj | B.Adj | SubLeq |
|--------|--------|-------|--------|-------|-------|-------|-------|-------|-------|--------|
| -90    | 90     | 0.32  | 66.94  | 0.00  | -2.92 | -0.80 | 0.00  | 0.00  | -7.44 | 55.78  |

Segment Leq : 55.78 dBA

Results segment # 2: Goreway N

Source height = 1.08 m

Barrier height for grazing incidence

| Source<br>Height (m) | Receiver<br>Height (m) | Barrier<br>Height (m) | Elevation of<br>Barrier Top (m) |
|----------------------|------------------------|-----------------------|---------------------------------|
| 1.08                 | 1.50                   | 0.60                  | 10.35                           |

ROAD (0.00 + 55.40 + 0.00) = 55.40 dBA

| Angle1 | Angle2 | Alpha | RefLeq | P.Adj | D.Adj | F.Adj | W.Adj | H.Adj | B.Adj | SubLeq |
|--------|--------|-------|--------|-------|-------|-------|-------|-------|-------|--------|
| -90    | 90     | 0.32  | 66.94  | 0.00  | -4.68 | -0.80 | 0.00  | 0.00  | -6.07 | 55.40  |

Segment Leq : 55.40 dBA

Total Leq All Segments: 58.60 dBA

TOTAL Leq FROM ALL SOURCES: 58.60



ACOUSTICS



NOISE



VIBRATION

Filename: a4f.te      Time Period: 16 hours  
Description: Block 1 Rooftop OLA, Daytime, Mitigated to 55 dBA

Road data, segment # 1: Goreway S

-----  
Car traffic volume : 15278 veh/TimePeriod \*  
Medium truck volume : 260 veh/TimePeriod \*  
Heavy truck volume : 213 veh/TimePeriod \*  
Posted speed limit : 60 km/h  
Road gradient : 0 %  
Road pavement : 1 (Typical asphalt or concrete)

Data for Segment # 1: Goreway S

-----  
Angle1 Angle2 : -90.00 deg 90.00 deg  
Wood depth : 0 (No woods.)  
No of house rows : 0  
Surface : 1 (Absorptive ground surface)  
Receiver source distance : 25.00 m  
Receiver height : 1.50 m  
Topography : 4 (Elevated; with barrier)  
Barrier angle1 : -90.00 deg Angle2 : 90.00 deg  
Barrier height : 2.00 m  
Elevation : 9.75 m  
Barrier receiver distance : 3.00 m  
Source elevation : 0.00 m  
Receiver elevation : 9.75 m  
Barrier elevation : 9.75 m  
Reference angle : 0.00

Road data, segment # 2: Goreway N

-----  
Car traffic volume : 15278 veh/TimePeriod \*  
Medium truck volume : 260 veh/TimePeriod \*  
Heavy truck volume : 213 veh/TimePeriod \*  
Posted speed limit : 60 km/h  
Road gradient : 0 %  
Road pavement : 1 (Typical asphalt or concrete)

Data for Segment # 2: Goreway N

-----  
Angle1 Angle2 : -90.00 deg 90.00 deg  
Wood depth : 0 (No woods.)  
No of house rows : 0  
Surface : 1 (Absorptive ground surface)  
Receiver source distance : 34.00 m  
Receiver height : 1.50 m  
Topography : 4 (Elevated; with barrier)



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NOISE



VIBRATION

Barrier angle1 : -90.00 deg Angle2 : 90.00 deg  
 Barrier height : 2.00 m  
 Elevation : 9.75 m  
 Barrier receiver distance : 3.00 m  
 Source elevation : 0.00 m  
 Receiver elevation : 9.75 m  
 Barrier elevation : 9.75 m  
 Reference angle : 0.00

#### Results segment # 1: Goreway S

Source height = 1.08 m

Barrier height for grazing incidence

| Source<br>Height (m) | Receiver<br>Height (m) | Barrier<br>Height (m) | Elevation of<br>Barrier Top (m) |
|----------------------|------------------------|-----------------------|---------------------------------|
| 1.08                 | 1.50                   | 0.28                  | 10.03                           |

ROAD (0.00 + 52.07 + 0.00) = 52.07 dBA

| Angle1 | Angle2 | Alpha | RefLeq | P.Adj | D.Adj | F.Adj | W.Adj | H.Adj | B.Adj  | SubLeq |
|--------|--------|-------|--------|-------|-------|-------|-------|-------|--------|--------|
| -90    | 90     | 0.26  | 66.94  | 0.00  | -2.80 | -0.68 | 0.00  | 0.00  | -11.40 | 52.07  |

Segment Leq : 52.07 dBA

#### Results segment # 2: Goreway N

Source height = 1.08 m

Barrier height for grazing incidence

| Source<br>Height (m) | Receiver<br>Height (m) | Barrier<br>Height (m) | Elevation of<br>Barrier Top (m) |
|----------------------|------------------------|-----------------------|---------------------------------|
| 1.08                 | 1.50                   | 0.60                  | 10.35                           |

ROAD (0.00 + 51.54 + 0.00) = 51.54 dBA

| Angle1 | Angle2 | Alpha | RefLeq | P.Adj | D.Adj | F.Adj | W.Adj | H.Adj | B.Adj  | SubLeq |
|--------|--------|-------|--------|-------|-------|-------|-------|-------|--------|--------|
| -90    | 90     | 0.26  | 66.94  | 0.00  | -4.48 | -0.68 | 0.00  | 0.00  | -10.25 | 51.54  |

Segment Leq : 51.54 dBA

Segment Leq : 51.54 dBA

Total Leq All Segments: 54.82 dBA

TOTAL Leq FROM ALL SOURCES: 54.82



ACOUSTICS



NOISE



VIBRATION

Filename: b.te      Time Period: Day/Night 16/8 hours  
Description: Block 2, Daytime and Nighttime, Location [B]

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 : 1 / 1  
House density : 50 %  
Surface : 1 (Absorptive ground surface)  
Receiver source distance : 49.00 / 49.00 m  
Receiver height : 7.70 / 7.70 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



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VIBRATION

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 : 1 / 1  
House density : 50 %  
Surface : 1 (Absorptive ground surface)  
Receiver source distance : 58.00 / 58.00 m  
Receiver height : 7.70 / 7.70 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 + 55.41 + 0.00) = 55.41 dBA

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

|     |    |      |       |      |       |       |      |       |      |       |
|-----|----|------|-------|------|-------|-------|------|-------|------|-------|
| -90 | 90 | 0.49 | 66.94 | 0.00 | -7.64 | -1.15 | 0.00 | -2.74 | 0.00 | 55.41 |
|-----|----|------|-------|------|-------|-------|------|-------|------|-------|

-----  
Segment Leq : 55.41 dBA

Results segment # 2: Goreway N (day)

-----  
Source height = 1.08 m

ROAD (0.00 + 54.36 + 0.00) = 54.36 dBA

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

|     |    |      |       |      |       |       |      |       |      |       |
|-----|----|------|-------|------|-------|-------|------|-------|------|-------|
| -90 | 90 | 0.49 | 66.94 | 0.00 | -8.73 | -1.15 | 0.00 | -2.71 | 0.00 | 54.36 |
|-----|----|------|-------|------|-------|-------|------|-------|------|-------|

-----  
Segment Leq : 54.36 dBA

Total Leq All Segments: 57.93 dBA

Results segment # 1: Goreway S (night)

-----  
Source height = 1.08 m

ROAD (0.00 + 48.91 + 0.00) = 48.91 dBA

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



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NOISE



VIBRATION

-90 90 0.49 60.44 0.00 -7.64 -1.15 0.00 -2.74 0.00 48.91

---

Segment Leq : 48.91 dBA

Results segment # 2: Goreway N (night)

---

Source height = 1.08 m

ROAD (0.00 + 47.85 + 0.00) = 47.85 dBA

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

---

-90 90 0.49 60.44 0.00 -8.73 -1.15 0.00 -2.71 0.00 47.85

---

Segment Leq : 47.85 dBA

Total Leq All Segments: 51.42 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 57.93  
(NIGHT): 51.42



ACOUSTICS



NOISE



VIBRATION

Filename: b4.te      Time Period: 16 hours  
Description: Block 2 Rooftop OLA, Daytime, Location [B]

Road data, segment # 1: Goreway S

-----  
Car traffic volume : 15278 veh/TimePeriod \*  
Medium truck volume : 260 veh/TimePeriod \*  
Heavy truck volume : 213 veh/TimePeriod \*  
Posted speed limit : 60 km/h  
Road gradient : 0 %  
Road pavement : 1 (Typical asphalt or concrete)

Data for Segment # 1: Goreway S

-----  
Angle1 Angle2 : -90.00 deg 90.00 deg  
Wood depth : 0 (No woods.)  
No of house rows : 0  
Surface : 1 (Absorptive ground surface)  
Receiver source distance : 52.00 m  
Receiver height : 1.50 m  
Topography : 4 (Elevated; with barrier)  
Barrier angle1 : -90.00 deg Angle2 : 90.00 deg  
Barrier height : 1.07 m  
Elevation : 9.75 m  
Barrier receiver distance : 3.00 m  
Source elevation : 0.00 m  
Receiver elevation : 9.75 m  
Barrier elevation : 9.75 m  
Reference angle : 0.00

Road data, segment # 2: Goreway N

-----  
Car traffic volume : 15278 veh/TimePeriod \*  
Medium truck volume : 260 veh/TimePeriod \*  
Heavy truck volume : 213 veh/TimePeriod \*  
Posted speed limit : 60 km/h  
Road gradient : 0 %  
Road pavement : 1 (Typical asphalt or concrete)

Data for Segment # 2: Goreway N

-----  
Angle1 Angle2 : -90.00 deg 90.00 deg  
Wood depth : 0 (No woods.)  
No of house rows : 0  
Surface : 1 (Absorptive ground surface)  
Receiver source distance : 61.00 m  
Receiver height : 1.50 m  
Topography : 4 (Elevated; with barrier)



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NOISE



VIBRATION

Barrier angle1 : -90.00 deg Angle2 : 90.00 deg  
 Barrier height : 1.07 m  
 Elevation : 9.75 m  
 Barrier receiver distance : 3.00 m  
 Source elevation : 0.00 m  
 Receiver elevation : 9.75 m  
 Barrier elevation : 9.75 m  
 Reference angle : 0.00

#### Results segment # 1: Goreway S

Source height = 1.08 m

Barrier height for grazing incidence

| Source<br>Height (m) | Receiver<br>Height (m) | Barrier<br>Height (m) | Elevation of<br>Barrier Top (m) |
|----------------------|------------------------|-----------------------|---------------------------------|
| 1.08 !               | 1.50 !                 | 0.91 !                | 10.66                           |

ROAD (0.00 + 53.90 + 0.00) = 53.90 dBA

| Angle1 | Angle2 | Alpha | RefLeq | P.Adj | D.Adj | F.Adj | W.Adj | H.Adj | B.Adj | SubLeq |
|--------|--------|-------|--------|-------|-------|-------|-------|-------|-------|--------|
| -90    | 90     | 0.32  | 66.94  | 0.00  | -7.10 | -0.80 | 0.00  | 0.00  | -5.14 | 53.90  |

Segment Leq : 53.90 dBA

#### Results segment # 2: Goreway N

Source height = 1.08 m

Barrier height for grazing incidence

| Source<br>Height (m) | Receiver<br>Height (m) | Barrier<br>Height (m) | Elevation of<br>Barrier Top (m) |
|----------------------|------------------------|-----------------------|---------------------------------|
| 1.08 !               | 1.50 !                 | 1.00 !                | 10.75                           |

ROAD (0.00 + 53.10 + 0.00) = 53.10 dBA

| Angle1 | Angle2 | Alpha | RefLeq | P.Adj | D.Adj | F.Adj | W.Adj | H.Adj | B.Adj | SubLeq |
|--------|--------|-------|--------|-------|-------|-------|-------|-------|-------|--------|
| -90    | 90     | 0.32  | 66.94  | 0.00  | -8.02 | -0.80 | 0.00  | 0.00  | -5.03 | 53.10  |

Segment Leq : 53.10 dBA

Total Leq All Segments: 56.53 dBA

TOTAL Leq FROM ALL SOURCES: 56.53



ACOUSTICS



NOISE



VIBRATION

Filename: c.te      Time Period: Day/Night 16/8 hours  
Description: Block 3, Daytime and Nighttime, Location [C]

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 : 1 / 1  
House density : 50 %  
Surface : 1 (Absorptive ground surface)  
Receiver source distance : 54.00 / 54.00 m  
Receiver height : 7.70 / 7.70 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



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NOISE



VIBRATION

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 : 1 / 1  
House density : 50 %  
Surface : 1 (Absorptive ground surface)  
Receiver source distance : 63.00 / 63.00 m  
Receiver height : 7.70 / 7.70 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 + 54.80 + 0.00) = 54.80 dBA

| Angle1 | Angle2 | Alpha | RefLeq | P.Adj | D.Adj | F.Adj | W.Adj | H.Adj | B.Adj | SubLeq |
|--------|--------|-------|--------|-------|-------|-------|-------|-------|-------|--------|
| -90    | 90     | 0.49  | 66.94  | 0.00  | -8.27 | -1.15 | 0.00  | -2.72 | 0.00  | 54.80  |

-----  
Segment Leq : 54.80 dBA

Results segment # 2: Goreway N (day)

-----  
Source height = 1.08 m

ROAD (0.00 + 53.83 + 0.00) = 53.83 dBA

| Angle1 | Angle2 | Alpha | RefLeq | P.Adj | D.Adj | F.Adj | W.Adj | H.Adj | B.Adj | SubLeq |
|--------|--------|-------|--------|-------|-------|-------|-------|-------|-------|--------|
| -90    | 90     | 0.49  | 66.94  | 0.00  | -9.27 | -1.15 | 0.00  | -2.69 | 0.00  | 53.83  |

-----  
Segment Leq : 53.83 dBA

Total Leq All Segments: 57.35 dBA

Results segment # 1: Goreway S (night)

-----  
Source height = 1.08 m

ROAD (0.00 + 48.30 + 0.00) = 48.30 dBA

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



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NOISE



VIBRATION

-90 90 0.49 60.44 0.00 -8.27 -1.15 0.00 -2.72 0.00 48.30

---

Segment Leq : 48.30 dBA

Results segment # 2: Goreway N (night)

---

Source height = 1.08 m

ROAD (0.00 + 47.33 + 0.00) = 47.33 dBA

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

---

-90 90 0.49 60.44 0.00 -9.26 -1.15 0.00 -2.69 0.00 47.33

---

Segment Leq : 47.33 dBA

Total Leq All Segments: 50.85 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 57.35  
(NIGHT): 50.85



ACOUSTICS



NOISE



VIBRATION

Filename: c4.te      Time Period: 16 hours  
Description: Block 3, Rooftop OLA, Location [C]

Road data, segment # 1: Goreway S

-----  
Car traffic volume : 15278 veh/TimePeriod \*  
Medium truck volume : 260 veh/TimePeriod \*  
Heavy truck volume : 213 veh/TimePeriod \*  
Posted speed limit : 60 km/h  
Road gradient : 0 %  
Road pavement : 1 (Typical asphalt or concrete)

Data for Segment # 1: Goreway S

-----  
Angle1 Angle2 : -90.00 deg 90.00 deg  
Wood depth : 0 (No woods.)  
No of house rows : 1  
House density : 50 %  
Surface : 1 (Absorptive ground surface)  
Receiver source distance : 57.00 m  
Receiver height : 1.50 m  
Topography : 4 (Elevated; with barrier)  
Barrier angle1 : -90.00 deg Angle2 : 90.00 deg  
Barrier height : 1.07 m  
Elevation : 9.75 m  
Barrier receiver distance : 3.00 m  
Source elevation : 0.00 m  
Receiver elevation : 9.75 m  
Barrier elevation : 9.75 m  
Reference angle : 0.00

Road data, segment # 2: Goreway N

-----  
Car traffic volume : 15278 veh/TimePeriod \*  
Medium truck volume : 260 veh/TimePeriod \*  
Heavy truck volume : 213 veh/TimePeriod \*  
Posted speed limit : 60 km/h  
Road gradient : 0 %  
Road pavement : 1 (Typical asphalt or concrete)

Data for Segment # 2: Goreway N

-----  
Angle1 Angle2 : -90.00 deg 90.00 deg  
Wood depth : 0 (No woods.)  
No of house rows : 1  
House density : 50 %  
Surface : 1 (Absorptive ground surface)  
Receiver source distance : 66.00 m



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NOISE



VIBRATION

Receiver height : 1.50 m  
 Topography : 4 (Elevated; with barrier)  
 Barrier angle1 : -90.00 deg Angle2 : 90.00 deg  
 Barrier height : 1.07 m  
 Elevation : 9.75 m  
 Barrier receiver distance : 3.00 m  
 Source elevation : 0.00 m  
 Receiver elevation : 9.75 m  
 Barrier elevation : 9.75 m  
 Reference angle : 0.00  
 Results segment # 1: Goreway S  
 -----

Source height = 1.08 m

Barrier height for grazing incidence

Source ! Receiver ! Barrier ! Elevation of  
 Height (m) ! Height (m) ! Height (m) ! Barrier Top (m)  
 -----+-----+-----+-----  
 1.08 ! 1.50 ! 0.96 ! 10.71

ROAD (0.00 + 53.45 + 0.00) = 53.45 dBA

| Angle1 | Angle2 | Alpha | RefLeq | P.Adj | D.Adj | F.Adj | W.Adj | H.Adj | B.Adj | SubLeq |
|--------|--------|-------|--------|-------|-------|-------|-------|-------|-------|--------|
| -90    | 90     | 0.38  | 66.94  | 0.00  | -8.00 | -0.94 | 0.00  | -2.71 | 0.00  | 55.29  |
| -90    | 90     | 0.32  | 66.94  | 0.00  | -7.63 | -0.80 | 0.00  | 0.00  | -5.06 | 53.45  |

Segment Leq : 53.45 dBA

Results segment # 2: Goreway N

Source height = 1.08 m

Barrier height for grazing incidence

Source ! Receiver ! Barrier ! Elevation of  
 Height (m) ! Height (m) ! Height (m) ! Barrier Top (m)  
 -----+-----+-----+-----  
 1.08 ! 1.50 ! 1.04 ! 10.79

ROAD (0.00 + 52.67 + 0.00) = 52.67 dBA

| Angle1 | Angle2 | Alpha | RefLeq | P.Adj | D.Adj | F.Adj | W.Adj | H.Adj | B.Adj | SubLeq |
|--------|--------|-------|--------|-------|-------|-------|-------|-------|-------|--------|
| -90    | 90     | 0.38  | 66.94  | 0.00  | -8.88 | -0.94 | 0.00  | -2.69 | 0.00  | 54.43  |
| -90    | 90     | 0.32  | 66.94  | 0.00  | -8.47 | -0.80 | 0.00  | 0.00  | -5.01 | 52.67  |

Segment Leq : 52.67 dBA



ACOUSTICS



NOISE



VIBRATION

Total Leq All Segments: 56.09 dBA

TOTAL Leq FROM ALL SOURCES:     56.09



ACOUSTICS



NOISE



VIBRATION

Filename: d.te      Time Period: 16 hours  
Description: Pred. Loc. [D], outdoor amenity area

Road data, segment # 1: Goreway S

-----  
Car traffic volume : 15278 veh/TimePeriod \*  
Medium truck volume : 260 veh/TimePeriod \*  
Heavy truck volume : 213 veh/TimePeriod \*  
Posted speed limit : 60 km/h  
Road gradient : 0 %  
Road pavement : 1 (Typical asphalt or concrete)

Data for Segment # 1: Goreway S

-----  
Angle1 Angle2 : -90.00 deg 90.00 deg  
Wood depth : 0 (No woods.)  
No of house rows : 1  
House density : 90 %  
Surface : 1 (Absorptive ground surface)  
Receiver source distance : 80.00 m  
Receiver height : 1.50 m  
Topography : 1 (Flat/gentle slope; no barrier)  
Reference angle : 0.00

Road data, segment # 2: Goreway N

-----  
Car traffic volume : 15278 veh/TimePeriod \*  
Medium truck volume : 260 veh/TimePeriod \*  
Heavy truck volume : 213 veh/TimePeriod \*  
Posted speed limit : 60 km/h  
Road gradient : 0 %  
Road pavement : 1 (Typical asphalt or concrete)

Data for Segment # 2: Goreway N

-----  
Angle1 Angle2 : -90.00 deg 90.00 deg  
Wood depth : 0 (No woods.)  
No of house rows : 1  
House density : 50 %  
Surface : 1 (Absorptive ground surface)  
Receiver source distance : 63.00 m  
Receiver height : 7.70 m  
Topography : 1 (Flat/gentle slope; no barrier)  
Reference angle : 0.00

Results segment # 1: Goreway S



ACOUSTICS



NOISE



VIBRATION

Source height = 1.08 m

ROAD (0.00 + 45.69 + 0.00) = 45.69 dBA

| Angle1 | Angle2 | Alpha | RefLeq | P.Adj | D.Adj  | F.Adj | W.Adj | H.Adj | B.Adj | SubLeq |
|--------|--------|-------|--------|-------|--------|-------|-------|-------|-------|--------|
| -90    | 90     | 0.66  | 66.94  | 0.00  | -12.07 | -1.46 | 0.00  | -7.73 | 0.00  | 45.69  |

Segment Leq : 45.69 dBA

Results segment # 2: Goreway N

Source height = 1.08 m

ROAD (0.00 + 53.83 + 0.00) = 53.83 dBA

| Angle1 | Angle2 | Alpha | RefLeq | P.Adj | D.Adj | F.Adj | W.Adj | H.Adj | B.Adj | SubLeq |
|--------|--------|-------|--------|-------|-------|-------|-------|-------|-------|--------|
| -90    | 90     | 0.49  | 66.94  | 0.00  | -9.27 | -1.15 | 0.00  | -2.69 | 0.00  | 53.83  |

Segment Leq : 53.83 dBA

Total Leq All Segments: 54.45 dBA

TOTAL Leq FROM ALL SOURCES: 54.45

