ENVIRONMENTAL NOISE IMPACT STUDY

"WALDEMAR"
418 & 422 GUELPH LINE
GUELPH LINE & NEW STREET
CITY OF BURLINGTON
MUNICIPALITY OF HALTON REGION

Prepared for:

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REVISED DECEMBER 2019

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1.0 INTRODUCTION

dBA Acoustical Consulting Inc. has been retained to conduct a noise impact study on behalf of Waldemar Limited Partnership for the proposed "Waldemar" residential development located 418 & 422 Guelph Line, Burlington, ON.

The purpose of the study is to determine the noise impact from Guelph Line and New Street vehicular traffic, second floor parking area, and the stationary noise from the Used Tire Inc., commercial business that may impact the proposed residential building, as required for site plan approval for the City of Burlington. The proposed residential development is a 13 storey residential building with the first floor and second floor being utilized for parking and the remaining floors consisting of 170 residential units.

This study will detail noise impact relative to the site plan and recommend noise control measures necessary (if applicable) to meet MOE Publication NPC-300 entitled "Stationary & Transportation Sources-Approval & Planning guidelines while satisfying the planning requirements of the City of Burlington. Vibration is not considered as there are no heavy industry or railway lines within the required setback distances. There are no CN/CP Rail within the setback requirements therefore rail is not a concern with noise. Aircraft is not a concern as the development is located outside the NEF 25 contour of the any area Airports.

2.0 SITE DESCRIPTION

The proposed residential development property is located on the south side of New Street and the west side of Guelph Line, Burlington, ON.

New Street is a 4-lane roadway with a center turning lane and a posted speed of 50 km/hr located north of the proposed development. Guelph Line is located east of the proposed development, consisting of 4-lanes with a center turn and a posted speed of 50 km/hr. Site Location attached as Figure 1. Proposed rooftop mechanical equipment (HVAC, Cooling Towers) will be in the enclosed mechanical building.

Located north of the proposed property are 1½ storey light commercial buildings. To the east of the proposed site are 1-2 storey commercial properties and immediately to the west of the site is a 4 storey apartment complex. To the south of the site are 1-2 storey commercial properties and a 5 storey apartment building. All commercial and apartment buildings are equipped with small HVAC units, however due to shielding from the existing buildings and distance separation from the proposed building, the HVAC units do not have an acoustical impact on the proposed development.

3.0 NOISE IMPACT ASSESSMENT

3.1 NOISE CRITERIA

The Ministry of Environment (MOE) specifies limits for road noise relative to new residential developments. The MOE Publication NPC-300 entitled "Stationary & Transportation Sources-Approval & Planning, specifies the criteria, summarized as follows:

TABLE1- Road Traffic Sound Levels Limits

Time Period	Leq (dBA)
07:00 – 23:00 (16 hr.)	55 Outdoor Living area
	55 Plane of Window
23:00 – 07:00 (8 hr.)	50 Plane of Bedroom window

Where noise levels estimated at the Plane of the Window (POW) are equal to or less than the values listed in Table 1, no noise control measures are required. Where noise levels exceed Table 1 values, the following action is required:

TABLE 2 –Noise Control Requirements		
Time Period	**Noise Level Leq (dBA)**	**Action Required**
07:00 - 23:00 Daytime (OLA)	55 to 60	**Warning Clause Type "A"**
	> 60	Barrier & Warning Clause Type "B"
07:00 – 23:00 Daytime (POW)	>55	Provision for A/C, Warning Clause "C"
	>65	**Central A/C, Warning Clause "D"**
	>65	**Building Component Specification**
23:00 to 07:00 Nighttime (POW)	> 50	Provision for A/C and Warning Clause Type "C"
	> 60	Building Component Specification
	> 60	Central Air and Warning Clause Type "D"

Where nighttime noise levels exceed 60 dBA, building components must be designed to meet Table 3 indoor sound level limits.

TABLE 3 - Indoor Road Sound Levels Limits	
Indoor Location	**Leq (dBA)**
	Road
Living/Dining/Bedroom 7:00 – 23:00	45
Living/Dining/Bedroom 23:00 - 07:00	40

3.2 ROAD NOISE

Predicted road traffic noise levels were calculated for New Street and Guelph Line, the main road noise sources in the proposed site area. The 2017 AADT road traffic volumes for New Street and Guelph Line were sourced from the City of Burlington AADT Map. See Appendix "A"

The MOE computer program STAMSON version 5.04 was used to carry out prediction calculations (See Appendix "A"). Traffic data is summarized in Table 4. The daytime/nighttime volume ratios relative to New Street and Guelph Line is calculated using a 90/10 split and a 16/8 hr assessment required by the MOE.

The percentage of annual growth for Guelph Line was figured at 2.0% over 12 years. The AADT (Annual Average Daily Traffic) volumes used are reflective of the worst-case scenario. Truck volumes were factored at 1.5% medium and 1.5% heavy of the total vehicle volumes for the roadway segment. Calculated noise levels were modeled at 12 receptor locations representative of the Plain of the Window (POW) of the building facade for specific residential units. Area roadways have no acoustical impact on the proposed site due to low speed and traffic volumes

The percentage of annual growth for New Street was figured at 2.0% over 12 years. The AADT (Annual Average Daily Traffic) volumes used are reflective of the worst-case scenario. Truck volumes were factored at 2.0% medium and 2.0% heavy of the total vehicle volumes for the roadway segment. Calculated noise levels were modeled at 5 receptor locations representative of the Plain of the Window (POW) of the building facade for specific residential units. (See Figure 3 Receptor Locations).

TABLE 4 – Future Road Traffic Volumes			
New Street	**AADT 11625 Vehicles**		
	Cars	**Medium Trucks**	**Heavy Trucks**
Day	10148	157	157
Night	1128	17	17
Guelph Line	**AADT 18993 Vehicles**		
	Cars	**Medium Trucks**	**Heavy Trucks**
Day	16581	256	256
Night	1842	28	28

The following Table 5 represents the free field noise levels of road traffic from Guelph Line.

TABLE 5 – Predicted Future Traffic Noise (dBA) – Guelph Line		
Location	**07:00 – 23:00**	**23:00 – 07:00**
R1- East Façade (3rd Floor)	65.0 dba (9.5m)	59.0 dba (9.5m)
R2- East Façade (Top Floor)	65.0 dba (29m)	59.0 dba (29m)
R3- Northwest Façade (3rd Floor)	56.0 dba (9.5m)	50 dba (9.5m)
R4- Northwest Façade (Top Floor)	57.0 dba (29m)	51.0 dba (29m)
R5- Amenity Space (3rd Floor) Free Field	49.0 dba (9.5m)	43.0 dba (9.5m)

The following Table 5A represents the free field noise levels of road traffic from New Street.

TABLE 5A – Predicted Combined Future Traffic Noise (dBA) – New Street		
Location	**07:00 – 23:00**	**23:00 – 07:00**
R1- East Façade (3rd Floor)	51.0 dba (9.5m)	45.0 dba (9.5m)
R2- East Façade (Top Floor)	55.0 dba (29m)	49.0 dba (29m)
R3- Northwest Façade (3rd Floor)	51.0 dba (9.5m)	44.0 dba (9.5m)
R4- Northwest Façade (Top Floor)	58.0 dba (29m)	52.0 dba (29m)
R5- Amenity Space (3rd Floor) Free Field	55.0 dba (9.5m)	48.0 dba (9.5m)

The following Table 5B represents the free field noise levels of combined road traffic from both roadways.

TABLE 5B – Predicted Combined Future Traffic Noise (dBA)		
Location	**07:00 – 23:00**	**23:00 – 07:00**
R1- East Façade (3rd Floor)	65.0 dba (9.5m)	59.0 dba (9.5m)
R2- East Façade (Top Floor)	66.0 dba (29m)	59.0 dba (29m)
R3- Northwest Façade (3rd Floor)	57.0 dba (9.5m)	51.0 dba (9.5m)
R4- Northwest Façade (Top Floor)	61.0 dba (29m)	54.0 dba (29m)
R5- Amenity Space (3rd Floor) Free Field	56.0 dba (9.5m)	49.0 dba (9.5m)

The following Table 5C represents the mitigated noise levels for the 3rd floor amenity space with a 1.83m Guard Rail Safety Glass.

TABLE 5C – Predicted Combined Future Traffic Noise (dBA)		
Location	**07:00 – 23:00**	**23:00 – 07:00**
R6- Amenity Space 1.83m Guard Rail Glass	51.0 dba (9.5m)	N/A

4.0 RECOMMENDATIONS - NOISE CONTROL

4.1 OUTDOOR LIVING AREAS

Calculated road noise levels for the proposed development exceed the 55 dBA daytime criteria outlined in Table 1. Building designs were made available at the time of this report. Proposed for each residential unit are standard size balconies. There are also large indoor amenity spaces that require no noise mitigation measures other than window requirements as noted in the following Table 6. Balconies less than 4m in depth are not considered OLA's (Outdoor Living Areas) and as such, no mitigation will be required. Although the rooftop terrace is not considered an Outdoor Amenity Space (OLA) sound levels due to increasing QEW road traffic will on occasions interfere with some activities of the dwelling occupants as the sound levels exceed the Municipality's and the Ministry of the Environment's noise criteria

The proposed 3rd floor amenity space or outdoor terrace is greater than 4m with a partial block wall surrounding the amenity space. On the east of the proposed building are enclosed indoor amenity rooms that provide ample noise mitigation due to the depth and height of the portion of the east façade. A proposed 3rd floor solid block wall faces New Street and returns along the south portion of the outdoor amenity area**,** which provides ample shielding from traffic noise. In addition, the height and density of the proposed block wall exceeds the MOE definition of a 20kg² noise barrier. The spacing between the solid block walls and the area for the required guard rail safety glass will further reduce the noise levels from all area traffic. Further noise mitigation measures are not required for the indoor amenity space. See Appendix "A" for building designs.

It is noted that the overall noise level for the outdoor amenity space is 56.0 dba. MOE and the City of Burlington require noise calculations to confirm what is required to further mitigate the noise levels to 55 dba as noted in Table 3. The exceedance of 1dba is considered very marginal and not audible. Further mitigation will be provided, as the Ontario Building Code (OBC) requires a minimum height of 1.83m guard rail safety glass or equivalent. Since the guard rail safety glass or equivalent will be provided, it is recommended that in lieu of the noise barrier a Type "A" Warning Clause be considered. This is allowed by the MOE and noted in Table 3.

4.2 INDOOR NOISE LEVELS

Calculated nighttime road noise levels at the Plane of Window (POW) exceed the 50 dBA criteria outlined in Table 1 for indoor space for any residential units for R1-R4. Specific building components (walls, windows, doors etc.) are required and confirmed using the STC (Sound Transmission Class) method. Building design specifications were not made available at report time and STC calculations (Sound Transmission Class) method are summarized in Table 6 following.

TABLE 6 – Recommended Door and Window Construction			
LOCATION	**STC To Be Used**	**Wall**	**Door Construction**
All Windows – Bedroom /Living Rooms	32	EW-2	D3

5.0 VENTILATION / WARNING CLAUSES

Ventilation and Warning Clause requirements are required for this project as noted in Table 7 following.

TABLE 7 - Ventilation and Warning Clause Requirements		
LOCATION	**VENTILATION**	**WARNING CLAUSE**
All Units	Central Air Conditioning	Type "A" & "D"

TYPE A: (Recommended)

"Purchasers/tenants are advised that sound levels due to increasing road traffic may occasionally interfere with some activities of the dwelling occupants as the sound levels exceed the Municipality's and the Ministry of the Environment's noise criteria."

TYPE D: (Recommended)

"This dwelling unit has been supplied with a central air conditioning system which will allow windows and exterior doors to remain closed, thereby ensuring that the indoor sound levels are within the Municipality's and the Ministry of the Environment's noise criteria."

6.0 STATIONARY SOURCES (USED TIRE INC. & ROOFTOP HVAC UNITS)

6.1 USED TIRE INC. (UTI)

A Sound Pro DL sound level meter was utilized for noise monitoring. The sound level meter was calibrated before and after noise monitoring. The sound level meter was situated on a tripod with a windscreen attached to the microphone. The sound level meter captured noise levels during daytime hours from 10:00am – 4:00pm.

The Used Tire Inc. located at commercial building immediately abuts the west portion of the proposed development. The building is a single storey block building with a tire repair shop and office within the building. The daily hours of operations of the business are Monday to Friday 9:00am-6:00pm Saturday 9:00am-4:00pm and Sunday closed. The tire business only provides service for tire repairs and changes. The business has several pieces of equipment utilized during repair and changes. In speaking to the owner of the business they have opened a second location and may consider closing the Guelph Line business in the future.

Noise monitoring was conducted on December 4th between 10:00am and 4:00pm and the results of all the stationary noise sources within the business operated during the tire repair operation. The tire repair equipment (impact gun, various smaller tire equipment) was monitored over an hourly period. All the tire repair equipment utilized only are operated for a very short time period.

Discussions with the owner indicated that the bay doors are always closed during tire operations as there are a couple of closer commercial business nearby. This was confirmed during noise monitoring. The results of the highest noise level recorded during any one hour was 53 dba at 8m from the front of the tire repair business. It was noted that the area traffic noise was the predominant noise source. See Appendix "A" for noise monitoring results.

6.2 SECOND FLOOR PARKING AREA.

The second floor parking area must be constructed with a minimum 1.5m safety concrete barrier so vehicles are contained in the parking area. The minimum height of the safety concrete barrier is high enough to deflect any engine noise from the vehicles and vehicle noise emanating from the parking lot will not impact any nearest residential properties.

6.3 VENTING/EXHAUST UNITS

Relating to all venting/exhaust units must be located away from any residential properties and if required equipped with acoustical shrouding to mitigate any noise from the intake of exhaust units.

7.0 SUMMARY OF RECOMMENDATIONS

The following noise control measures are required to satisfy the indoor and outdoor noise level criterion:

- Central Air Conditioning for all residential units as recommended in Table 7.
- Wall construction as recommended in Table 6.
- Registered Warning Clauses on title Type "A" & "D" (All Condo Units)
- 1.83m Guard Rail Safety Glass/or Glass/Parapet Wall combination abutting New Street as recommended in Table 5C.
- It is recommended that a qualified acoustical consultant certify that the required noise control measures have been incorporated into the builder's plans prior to issuance of a building permit.
- It is recommended that a qualified acoustical consultant certify that the required control measures have been properly installed prior to an occupancy permit.

8.0 CONCLUSIONS

dBA Acoustical Consulting Inc. has been retained to conduct a noise impact study on behalf of Waldemar Limited Partnership for the proposed "Waldemar" residential development located 418 & 422 Guelph Line, Burlington, ON.

The study determined the noise impact from Guelph Line and New Street vehicular traffic that impacted the proposed residential building as required for site plan approval for the City of Burlington.

This study detailed noise impact relative to the site plan and recommend noise control measures necessary to meet MOE Publication NPC-300 entitled "Stationary & Transportation Sources-Approval & Planning guidelines while satisfying the planning requirements of the City of Burlington. Vibration is not considered as there are no heavy industry or railway lines within the required setback distances. There are no CN/CP Rail within the setback requirements therefore rail is not a concern with noise. Aircraft is not a concern as the development is located outside the NEF 25 contour of the any area Airports.

FIGURE 1
KEY PLAN

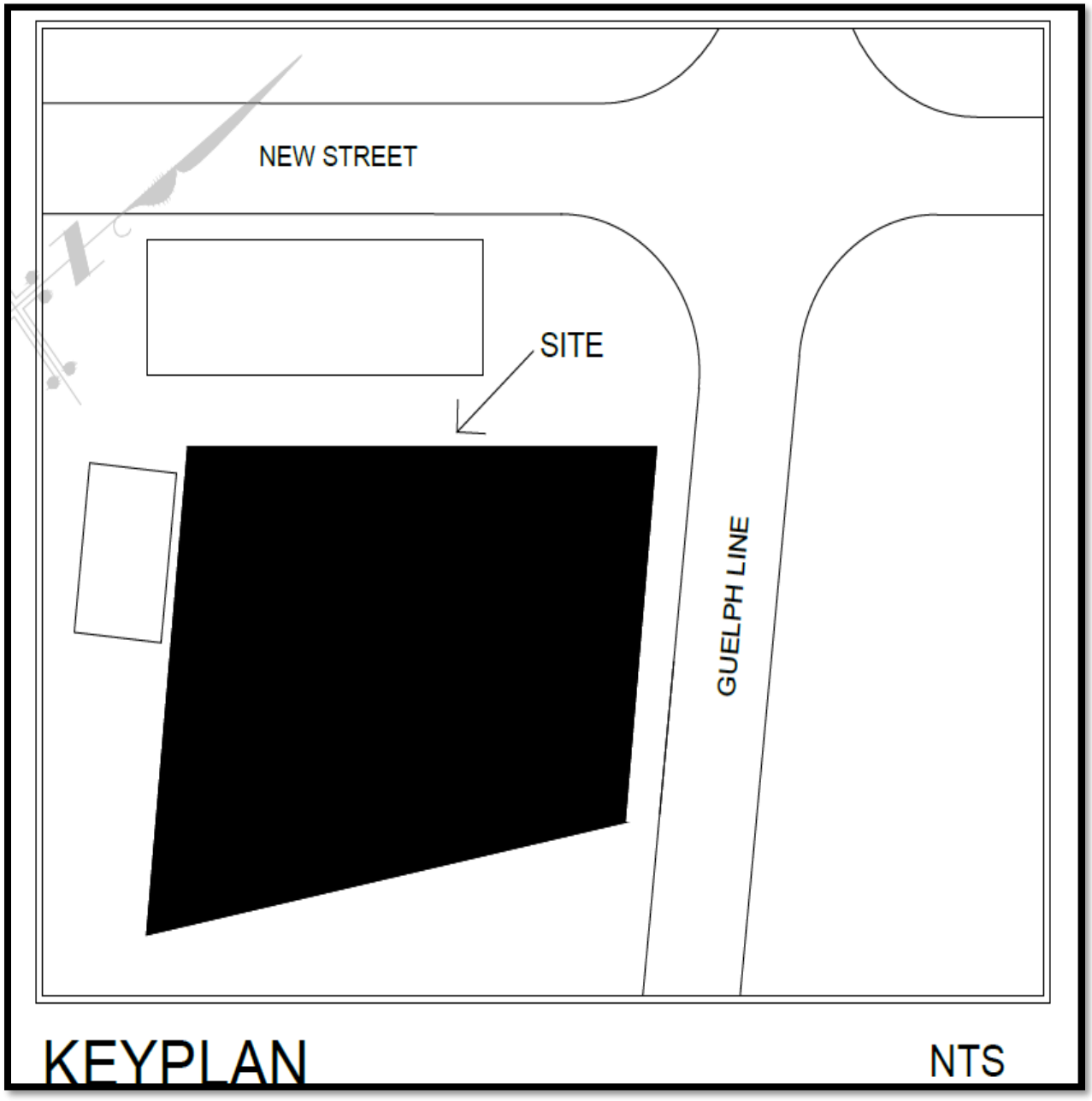


FIGURE 2
SITE PLAN

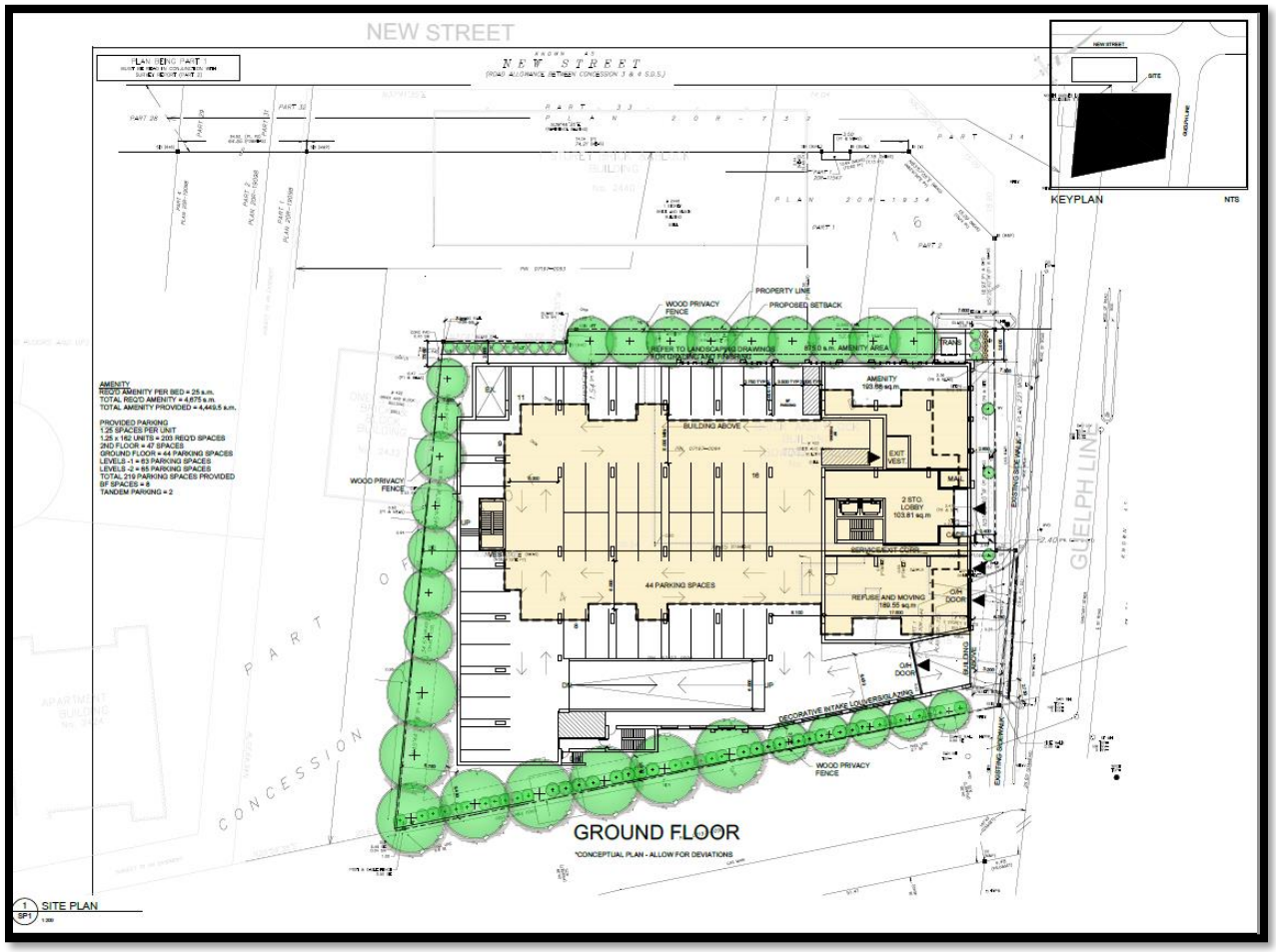


FIGURE 3
RECEPTOR LOCATIONS

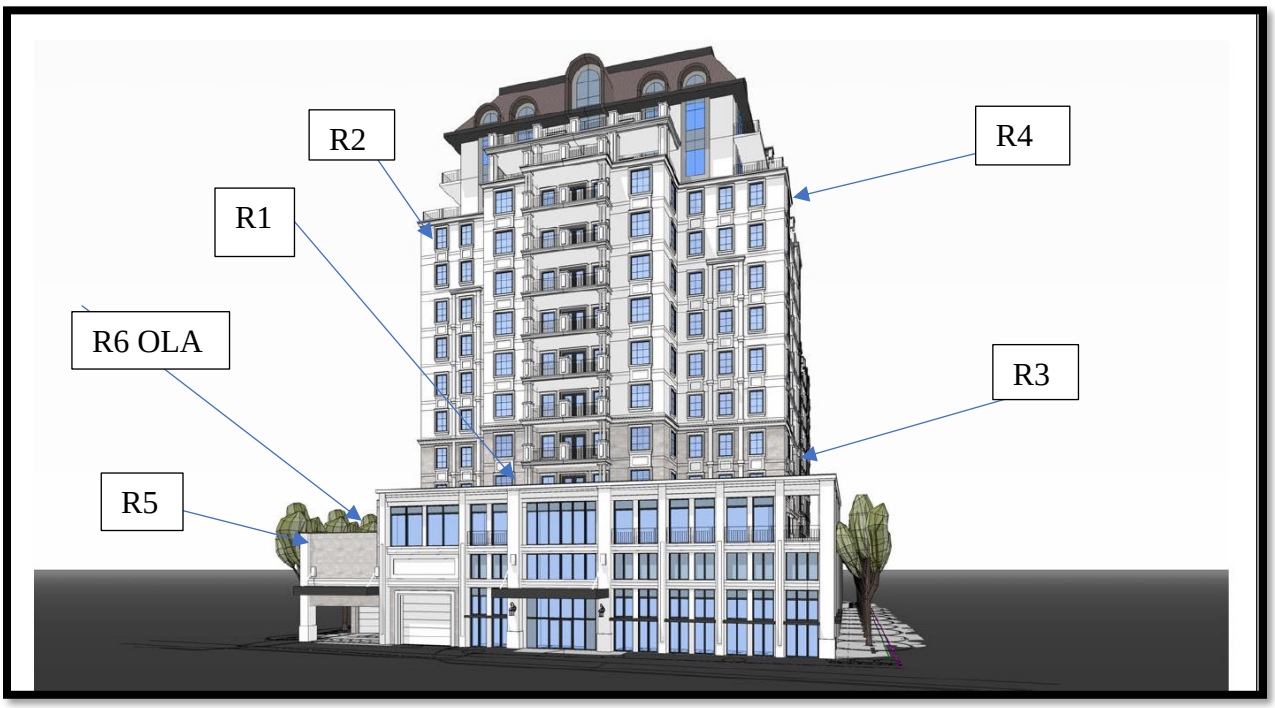
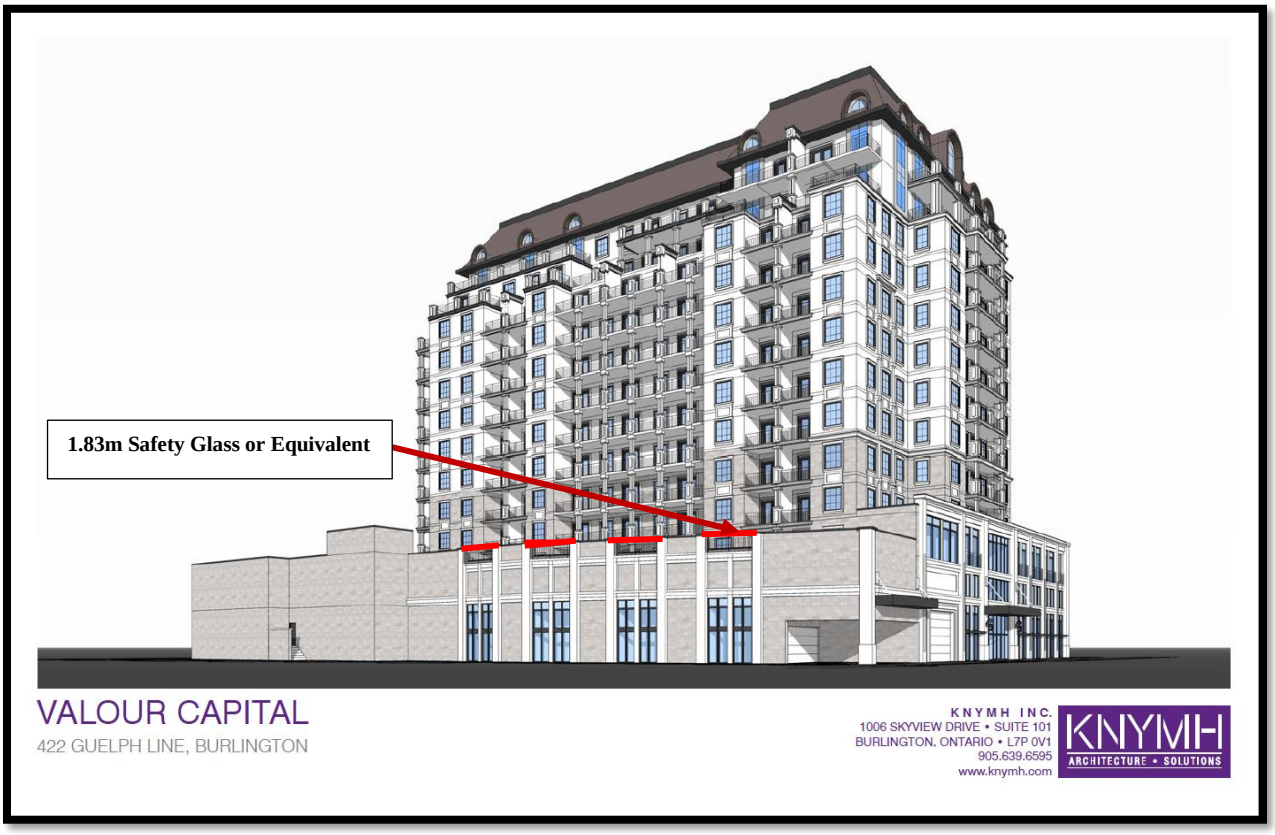
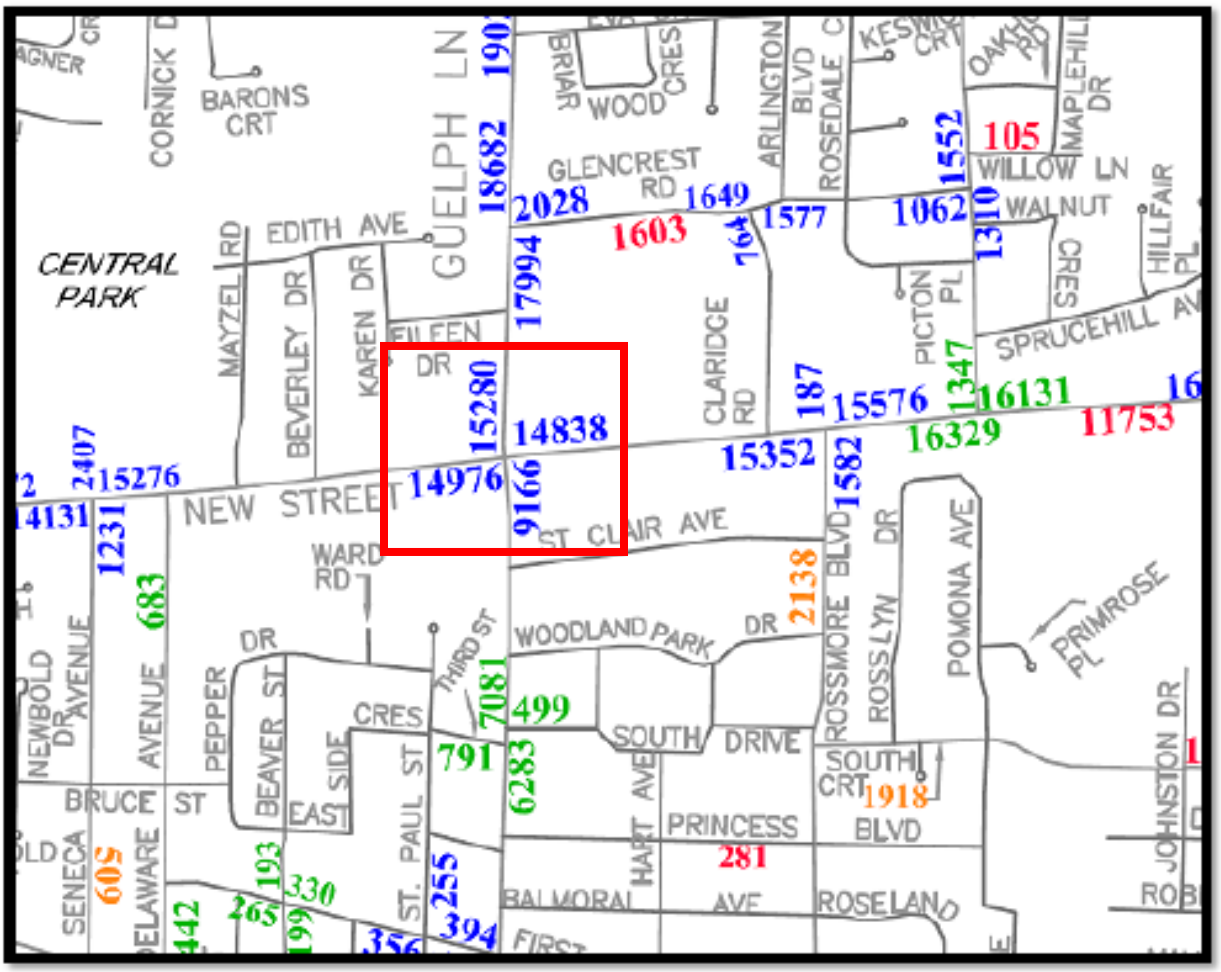


FIGURE 4
BARRIER LOCATION R6



APPENDIX "A"

2017 CITY OF BURLINGTON TRAFFIC DATA



2017 AADT MAP

LAST REVISION: 2018

City of Burlington

NOT TO SCALE

Reproduction of this map is prohibited without express permission of the Burlington Transportation Services Department.

Note: The volumes shown are the two-way annual average daily traffic (24 hour period).

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STAMPSON CALCULATIONS

```
STAMSON 5.04       SUMMARY REPORT        Date: 05-07-2019 14:49:03
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: r1guelph.te          Time Period: Day/Night 16/8 hours
Description: R1-First Floor Residential East Facade
                     TOTAL Leq FROM ALL SOURCES   (DAY): 65.32
                                                  (NIGHT): 58.74
Road data, segment # 1: Guelph Line (day/night)
-----------------------------------------------
Car traffic volume  : 16581/1842  veh/TimePeriod  *
Medium truck volume :   256/28    veh/TimePeriod  *
Heavy truck volume  :   256/28    veh/TimePeriod  *
Posted speed limit  :    50 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):  14976
    Percentage of Annual Growth        :   2.00
    Number of Years of Growth          :  12.00
    Medium Truck % of Total Volume     :   1.50
    Heavy Truck  % of Total Volume     :   1.50
    Day (16 hrs) % of Total Volume     :  90.00

Data for Segment # 1: Guelph Line (day/night)
-----------------------------------------------
Angle1   Angle2           : -90.00 deg   90.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  52.00 / 52.00  m
Receiver height           :   9.50 / 9.50   m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00

Road data, segment # 2: New Street (day/night)
-----------------------------------------------
Car traffic volume  : 10148/1128  veh/TimePeriod  *
Medium truck volume :   157/17    veh/TimePeriod  *
Heavy truck volume  :   157/17    veh/TimePeriod  *
Posted speed limit  :    50 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):   9166
    Percentage of Annual Growth        :   2.00
    Number of Years of Growth          :  12.00
    Medium Truck % of Total Volume     :   1.50
    Heavy Truck  % of Total Volume     :   1.50
    Day (16 hrs) % of Total Volume     :  90.00
```

```
Data for Segment # 2: New Street (day/night)
-----------------------------------------
Angle1   Angle2           :  -0.00 deg   90.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  17.00 / 17.00  m
Receiver height           :   9.50 / 9.50   m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00

Result summary (day)
--------------------
                     !  source  !   Road   !  Total
                     !  height  !   Leq    !   Leq
                     !    (m)   !  (dBA)   !  (dBA)
--------------------+---------+---------+---------
 1.Guelph Line       !     1.11 !    65.12 !    65.12
 2.New Street        !     1.11 !    51.75 !    51.75
--------------------+---------+---------+---------
                       Total                 65.32 dBA
Result summary (night)
----------------------
                     !  source  !   Road   !  Total
                     !  height  !   Leq    !   Leq
                     !    (m)   !  (dBA)   !  (dBA)
--------------------+---------+---------+---------
 1.Guelph Line       !     1.10 !    58.55 !    58.55
 2.New Street        !     1.10 !    45.16 !    45.16
--------------------+---------+---------+---------
                       Total                 58.74 dBA
```

```
STAMSON 5.04        SUMMARY REPORT        Date: 05-07-2019 14:05:05
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: r2guelph.te          Time Period: Day/Night 16/8 hours
Description: R2- East Top Floor Residential
                     TOTAL Leq FROM ALL SOURCES (DAY): 65.53
                                              (NIGHT): 58.96
Road data, segment # 1: Guelph Line (day/night)
-----------------------------------------------
Car traffic volume  : 16581/1842  veh/TimePeriod  *
Medium truck volume :   256/28    veh/TimePeriod  *
Heavy truck volume  :   256/28    veh/TimePeriod  *
Posted speed limit  :    50 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):  14976
    Percentage of Annual Growth        :   2.00
    Number of Years of Growth          :  12.00
    Medium Truck % of Total Volume     :   1.50
    Heavy Truck  % of Total Volume     :   1.50
    Day (16 hrs) % of Total Volume     :  90.00

Data for Segment # 1: Guelph Line (day/night)
-----------------------------------------------
Angle1   Angle2           : -90.00 deg   90.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  52.00 / 52.00  m
Receiver height           :  29.00 / 29.00  m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00

Road data, segment # 2: New Street (day/night)
-----------------------------------------------
Car traffic volume  : 10148/1128  veh/TimePeriod  *
Medium truck volume :   157/17    veh/TimePeriod  *
Heavy truck volume  :   157/17    veh/TimePeriod  *
Posted speed limit  :    50 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):   9166
    Percentage of Annual Growth        :   2.00
    Number of Years of Growth          :  12.00
    Medium Truck % of Total Volume     :   1.50
    Heavy Truck  % of Total Volume     :   1.50
    Day (16 hrs) % of Total Volume     :  90.00
```

```
Data for Segment # 2: New Street (day/night)
-------------------------------------------
Angle1   Angle2           :  -90.00 deg   90.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  17.00 / 17.00  m
Receiver height           :  29.00 / 29.00  m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00

Result summary (day)
--------------------
                     !  source  !   Road   !  Total
                     !  height  !   Leq    !   Leq
                     !    (m)   !  (dBA)   !  (dBA)
--------------------+---------+---------+---------
 1.Guelph Line       !     1.11 !    65.12 !    65.12
 2.New Street        !     1.11 !    55.13 !    55.13
--------------------+---------+---------+---------
                       Total                 65.53 dBA
Result summary (night)
----------------------
                     !  source  !   Road   !  Total
                     !  height  !   Leq    !   Leq
                     !    (m)   !  (dBA)   !  (dBA)
--------------------+---------+---------+---------
 1.Guelph Line       !     1.10 !    58.55 !    58.55
 2.New Street        !     1.10 !    48.54 !    48.54
--------------------+---------+---------+---------
                       Total                 58.96 dBA
```

```
STAMSON 5.04        SUMMARY REPORT        Date: 05-07-2019 14:12:06
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: r3guelph.te          Time Period: Day/Night 16/8 hours
Description: R3- Third Floor Northeast Facade
                            TOTAL Leq FROM ALL SOURCES (DAY): 57.46
                                                  (NIGHT): 50.88
Road data, segment # 1: Guelph Line (day/night)
-----------------------------------------------
Car traffic volume  : 16581/1842  veh/TimePeriod  *
Medium truck volume :   256/28    veh/TimePeriod  *
Heavy truck volume  :   256/28    veh/TimePeriod  *
Posted speed limit  :    50 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):  14976
    Percentage of Annual Growth        :   2.00
    Number of Years of Growth          :  12.00
    Medium Truck % of Total Volume     :   1.50
    Heavy Truck  % of Total Volume     :   1.50
    Day (16 hrs) % of Total Volume     :  90.00

Data for Segment # 1: Guelph Line (day/night)
-----------------------------------------------
Angle1   Angle2           :  -90.00 deg   90.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  50.00 / 50.00  m
Receiver height           :   9.50 / 9.50   m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00

Road data, segment # 2: New Street (day/night)
-----------------------------------------------
Car traffic volume  : 10148/1128  veh/TimePeriod  *
Medium truck volume :   157/17    veh/TimePeriod  *
Heavy truck volume  :   157/17    veh/TimePeriod  *
Posted speed limit  :    50 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):   9166
    Percentage of Annual Growth        :   2.00
    Number of Years of Growth          :  12.00
    Medium Truck % of Total Volume     :   1.50
    Heavy Truck  % of Total Volume     :   1.50
    Day (16 hrs) % of Total Volume     :  90.00

Data for Segment # 2: New Street (day/night)
```

```
-------------------------------------------
Angle1   Angle2           :  -90.00 deg   90.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      1       (Reflective ground surface)
Receiver source distance  :  52.00 / 52.00  m
Receiver height           :   9.50 / 9.50   m
Topography                :      2       (Flat/gentle slope; no barrier)
Reference angle           :   0.00
```

Result summary (day)

	source height (m)	Road Leq (dBA)	Total Leq (dBA)
1.Guelph Line	1.11	56.12	56.12
2.New Street	1.11	50.76	50.76
Total			57.46 dBA

Result summary (night)

	source height (m)	Road Leq (dBA)	Total Leq (dBA)
1.Guelph Line	1.10	49.55	49.55
2.New Street	1.10	44.17	44.17
Total			50.88 dBA

```
STAMSON 5.04        SUMMARY REPORT        Date: 05-07-2019 14:14:24
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: r4guelph.te          Time Period: Day/Night 16/8 hours
Description: R4- Top Floor North West Facade
                     TOTAL Leq FROM ALL SOURCES (DAY): 60.81
                                                (NIGHT): 54.23
Road data, segment # 1: Guelph Line (day/night)
-----------------------------------------------
Car traffic volume  : 16581/1842  veh/TimePeriod  *
Medium truck volume :   256/28    veh/TimePeriod  *
Heavy truck volume  :   256/28    veh/TimePeriod  *
Posted speed limit  :    50 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):  14976
    Percentage of Annual Growth        :   2.00
    Number of Years of Growth          :  12.00
    Medium Truck % of Total Volume     :   1.50
    Heavy Truck  % of Total Volume     :   1.50
    Day (16 hrs) % of Total Volume     :  90.00

Data for Segment # 1: Guelph Line (day/night)
-----------------------------------------------
Angle1   Angle2           : -90.00 deg  90.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  50.00 / 50.00  m
Receiver height           :  29.00 / 29.00  m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00

Road data, segment # 2: New Street (day/night)
-----------------------------------------------
Car traffic volume  : 10148/1128  veh/TimePeriod  *
Medium truck volume :   157/17    veh/TimePeriod  *
Heavy truck volume  :   157/17    veh/TimePeriod  *
Posted speed limit  :    50 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):   9166
    Percentage of Annual Growth        :   2.00
    Number of Years of Growth          :  12.00
    Medium Truck % of Total Volume     :   1.50
    Heavy Truck  % of Total Volume     :   1.50
    Day (16 hrs) % of Total Volume     :  90.00
```

```
Data for Segment # 2: New Street (day/night)
-----------------------------------------
Angle1   Angle2           :  -0.00 deg   90.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  52.00 / 52.00  m
Receiver height           :  29.00 / 29.00  m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00

Result summary (day)
--------------------
                     !  source  !   Road   !  Total
                     !  height  !   Leq    !   Leq
                     !    (m)   !  (dBA)   !  (dBA)
--------------------+---------+---------+---------
 1.Guelph Line       !     1.11 !    57.43 !    57.43
 2.New Street        !     1.11 !    58.14 !    58.14
--------------------+---------+---------+---------
                       Total                 60.81 dBA
Result summary (night)
----------------------
                     !  source  !   Road   !  Total
                     !  height  !   Leq    !   Leq
                     !    (m)   !  (dBA)   !  (dBA)
--------------------+---------+---------+---------
 1.Guelph Line       !     1.10 !    50.86 !    50.86
 2.New Street        !     1.10 !    51.55 !    51.55
--------------------+---------+---------+---------
                       Total                 54.23 dBA
```

```
STAMSON 5.04        SUMMARY REPORT        Date: 05-07-2019 14:12:06
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: r5guelph.te          Time Period: Day/Night 16/8 hours
Description: R5- Third Floor OLA Amenity Space Southeast
                          TOTAL Leq FROM ALL SOURCES (DAY): 56.46
                                                   (NIGHT): 49.78
Road data, segment # 1: Guelph Line (day/night)
-----------------------------------------------
Car traffic volume  : 16581/1842  veh/TimePeriod  *
Medium truck volume :   256/28    veh/TimePeriod  *
Heavy truck volume  :   256/28    veh/TimePeriod  *
Posted speed limit  :    50 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):  14976
    Percentage of Annual Growth        :   2.00
    Number of Years of Growth          :  12.00
    Medium Truck % of Total Volume     :   1.50
    Heavy Truck  % of Total Volume     :   1.50
    Day (16 hrs) % of Total Volume     :  90.00

Data for Segment # 1: Guelph Line (day/night)
-----------------------------------------------
Angle1   Angle2           :  -0.00 deg   90.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  90.00 / 90.00  m
Receiver height           :   9.50 / 9.50   m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00

Road data, segment # 2: New Street (day/night)
-----------------------------------------------
Car traffic volume  : 10148/1128  veh/TimePeriod  *
Medium truck volume :   157/17    veh/TimePeriod  *
Heavy truck volume  :   157/17    veh/TimePeriod  *
Posted speed limit  :    50 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):   9166
    Percentage of Annual Growth        :   2.00
    Number of Years of Growth          :  12.00
    Medium Truck % of Total Volume     :   1.50
    Heavy Truck  % of Total Volume     :   1.50
    Day (16 hrs) % of Total Volume     :  90.00
```

```
Data for Segment # 2: New Street (day/night)
-----------------------------------------
Angle1   Angle2           : -90.00 deg   90.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  52.00 / 52.00  m
Receiver height           :   9.50 / 9.50   m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00

Result summary (day)
--------------------
                     !  source  !   Road   !  Total
                     !  height  !   Leq    !   Leq
                     !    (m)   !  (dBA)   !  (dBA)
--------------------+---------+---------+---------
 1.Guelph Line       !     1.11 !    49.12 !    49.12
 2.New Street        !     1.11 !    54.76 !    54.76
--------------------+---------+---------+---------
                       Total                  56.46 dBA
Result summary (night)
----------------------
                     !  source  !   Road   !  Total
                     !  height  !   Leq    !   Leq
                     !    (m)   !  (dBA)   !  (dBA)
--------------------+---------+---------+---------
 1.Guelph Line       !     1.10 !    43.45 !    43.45
 2.New Street        !     1.10 !    48.17 !    48.17
--------------------+---------+---------+---------
                       Total                  49.78 dBA
```

```
STAMSON 5.04        SUMMARY REPORT        Date: 05-07-2019 15:14:23
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: r6guelph.te          Time Period: Day/Night 16/8 hours
Description: R6- 3rd Floor OLA Terrace Guelph line & New St
                              TOTAL Leq FROM ALL SOURCES (DAY): 51.46

Road data, segment # 1: Guelph Line (day)
-----------------------------------------------
Car traffic volume  : 16581/1842  veh/TimePeriod  *
Medium truck volume :   256/28    veh/TimePeriod  *
Heavy truck volume  :   256/28    veh/TimePeriod  *
Posted speed limit  :    50 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):  14976
    Percentage of Annual Growth        :   2.00
    Number of Years of Growth          :  12.00
    Medium Truck % of Total Volume     :   1.50
    Heavy Truck  % of Total Volume     :   1.50
    Day (16 hrs) % of Total Volume     :  90.00

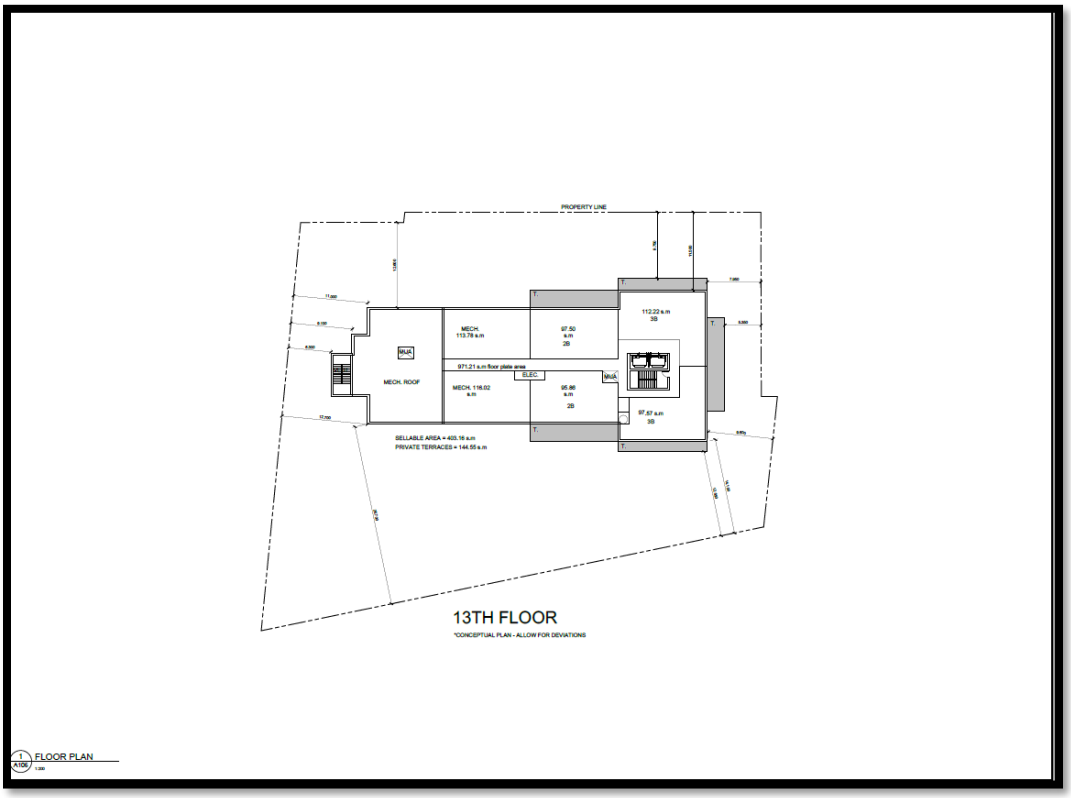
Data for Segment # 1: Guelph Line (day)
-----------------------------------------------
Angle1   Angle2           : -0.00 deg    90.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  :  90.00
Receiver height           :   9.50
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -90.00 deg   Angle2 : 90.00 deg
Barrier height            :   1.83 m
Barrier receiver distance :   3.00
Source elevation          :   0.00 m
Receiver elevation        :   9.50 m
Barrier elevation         :   9.50 m
Reference angle           :   0.00

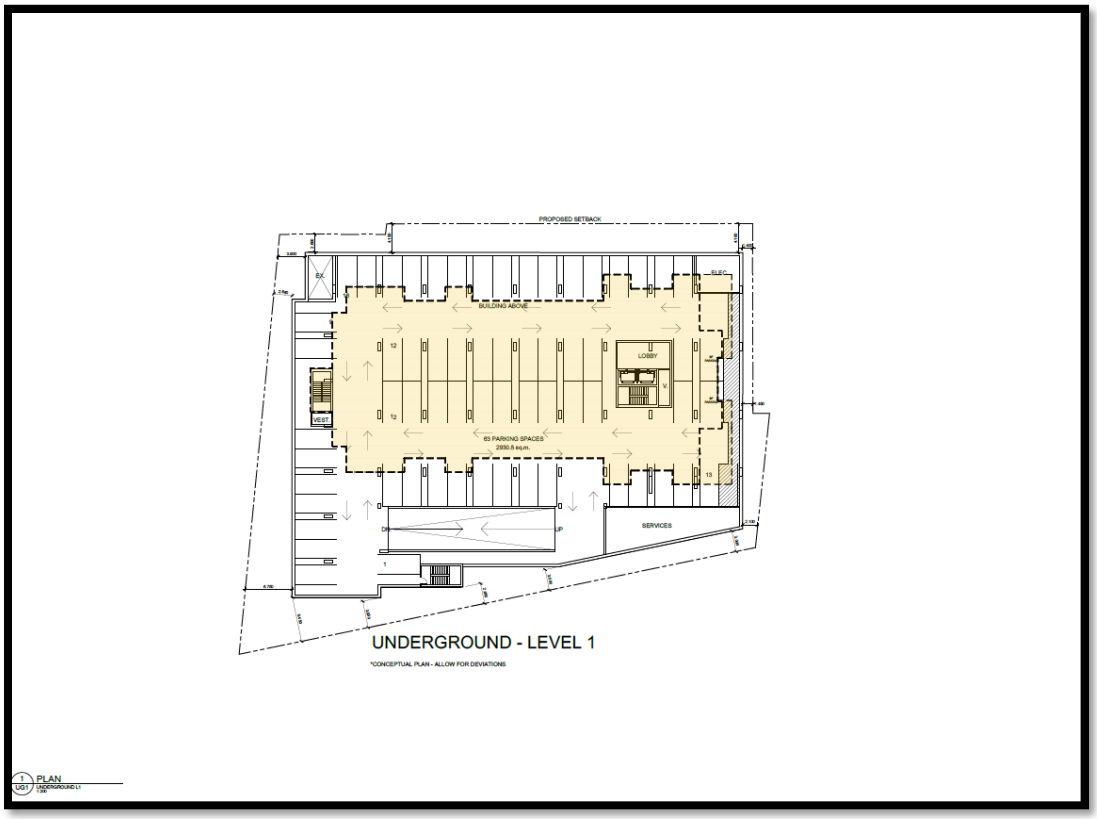
Result summary (day)
--------------------

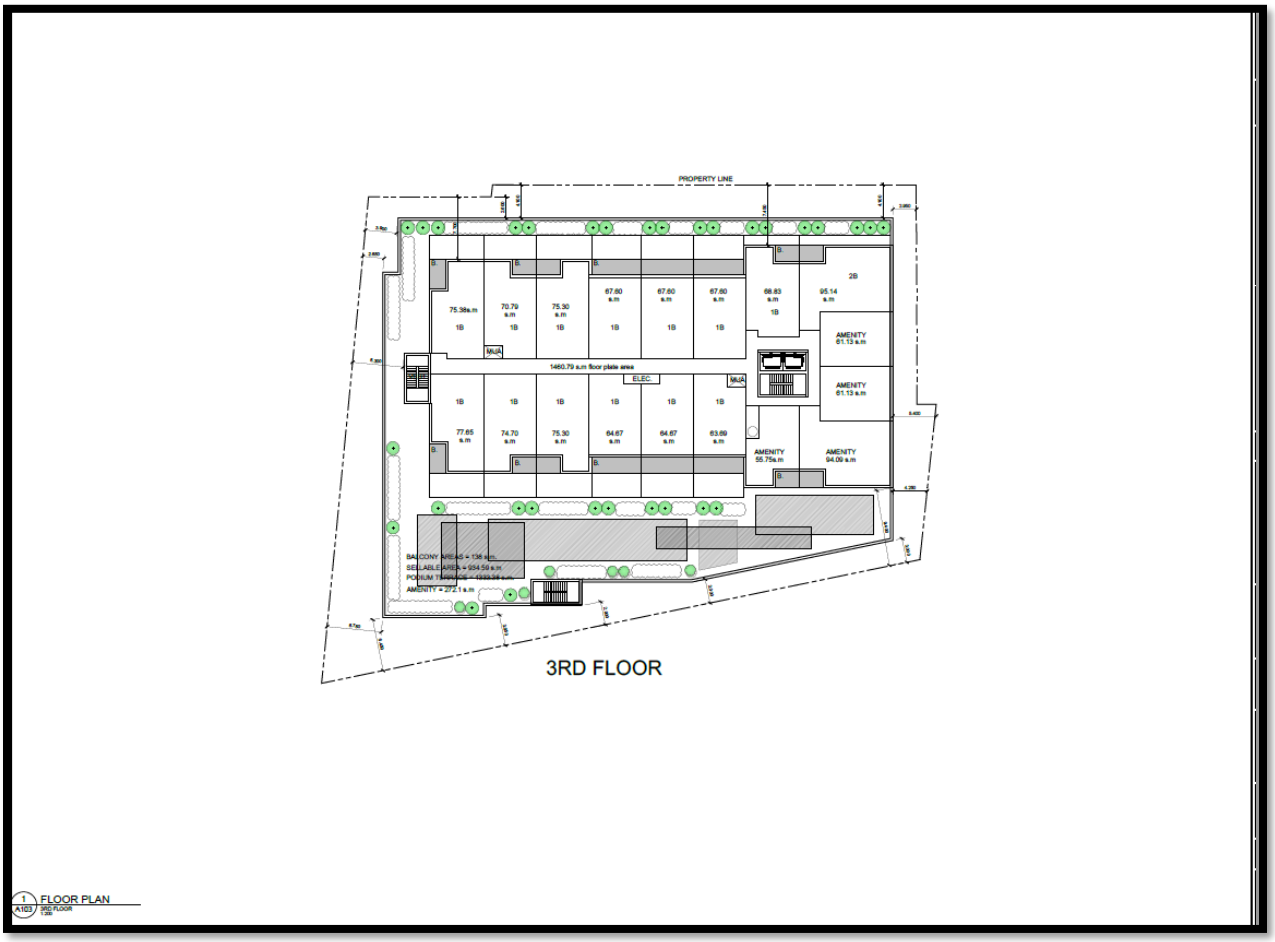
                    !  source  !   Road   !  Total
                    !  height  !   Leq    !   Leq
                    !   (m)    !  (dBA)   !  (dBA)
--------------------+---------+---------+---------
 1.Guelph Line      !     1.11 !    42.11 !    42.11
 2.New Street       !     1.11 !    50.96 !    50.96
--------------------+---------+---------+---------
                      Total                  51.46 dBA
```

BUILING DESIGNS


VALOUR CAPITAL
422 GUELPH LINE, BURLINGTON
KNYMH INC.
1006 SKYVIEW DRIVE • SUITE 101
BURLINGTON, ONTARIO • L7P 0V1
905.639.6595
www.knymh.com
KNYMH
ARCHITECTURE • SOLUTIONS


PROPERTY LINE
MECH. 113.78 s.m
97.50 s.m 2B
112.22 s.m 3B
MECH. ROOF
971.21 s.m floor plate area
ELEC.
MECH. 116.02 s.m
95.86 s.m 2B
97.67 s.m 3B
SELLABLE AREA = 403.16 s.m
PRIVATE TERRACES = 144.55 s.m
13TH FLOOR
*CONCEPTUAL PLAN - ALLOW FOR DEVIATIONS
1 FLOOR PLAN
A106


PROPOSED SETBACK
EX.
ELEC.
BUILDING ABOVE
LOBBY
MEST.
63 PARKING SPACES
2930.5 sq.m.
SERVICES
UP
UNDERGROUND - LEVEL 1
*CONCEPTUAL PLAN - ALLOW FOR DEVIATIONS
1 PLAN
UG1


PROPERTY LINE
3RD FLOOR
1 FLOOR PLAN

EXTERIOR WALL STC RATINGS

Wall Configuration	EW1	EW2	EW3	EW4	EW1R	EW2R	EW3R	EW5	EW4R	EW6	EW7 EW5R	EW8
STC Rating	**38**	**40**	**43**	**46**	**47**	**48**	**49**	**54**	**55**	**57**	**58**	**62**

Source: National Research Council, Division of Building Research

NOTES:

1 The common structure of walls EW1 to EW5 is composed of 12.7mm gypsum board, vapour barrier and 38x89 mm studs with 50 mm (or thicker) mineral wool or glass fibre batts in inter-stud cavities.

- EW1 denotes the common structure, plus sheathing, plus wood siding or metal siding and fibre backer board
- EW2 denotes the common structure, plus rigid insulation (25 to 30 mm), and wood siding or metal siding and fibre backer board.
- EW3 denotes simulated mansard with the common structure, plus sheathing, 28 X89 mm framing, sheathing and asphalt roofing material
- EW4 denotes the common structure, plus sheathing and 20 mm stucco.
- EW5 denotes the common structure, plus sheathing, 25 mm air space, 100mm brick veneer.
- EW6 denotes exterior wall composed of 12.7 mm gypsum board, rigid insulation (25 to 50 mm), 100 mm back-up block 100 mm face brick.
- EW7 denotes exterior wall composed of 12.7 mm gypsum board, rigid insulation (25 to 50 mm), 140mm back-up block, 100 mm face brick.
- EW8 denotes exterior wall composed of 12.7 mm gypsum board, rigid insulation (25 to 50 mm), 200 mm concrete.

2 R signifies the mounting of the interior gypsum board on resilient clips.

3 An exterior wall conforming to rainscreen design principles and composed of 12.7 mm gypsum board, 100 mm concrete block, rigid insulation (25 to 50 mm), 25 mm air space, and 100 mm brick veneer has the same STC as EW6.

4 An exterior wall described in EW1 with the addition of rigid insulation (25 to 50 mm) between the sheathing and the external finish has the same STC as EW2.

(UTI) USED TIRES INC.
NOISE MONITORING RESULTS

DATE	TIME	LEQ
Dec 4, 2019	10:00	**52.7**
Dec 4, 2019	11:00	**52.1**
Dec 4, 2019	12:00	**52.7**
Dec 4, 2019	13:00	**54.2**
Dec 4, 2019	14:00	**52.5**
Dec 4, 2019	15:00	**50.3**
Dec 4, 2019	16:00	**50.3**

Predominant Noise Confirmed is area Road Traffic from New Street and Guelph Line.

