ENVIRONMENTAL NOISE IMPACT STUDY

"284 – 292 PLAINS ROAD EAST DEVELOPMENT"
PART OF LOT 4
BROKEN FRONT CONCESSION
(FORMERLY IN THE TOWNSHIP
OF EAST FLAMBOROUGH)
CITY OF BURLINGTON ON
REGIONAL MUNICIPALITY OF HALTON

Prepared for:

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Our File No: 20-2080

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1.0 INTRODUCTION

dBA Acoustical Consultants Inc. has been retained to provide a noise impact study for the proposed "284 – 292 Plains Road East being Part of Lot 4, Broken Front Concession City of Burlington, Regional Municipality of Halton. See Figure 1 Site Location.

The purpose of the study is to determine the noise impact from Plains Rd West Burlington On and area stationary source noises that may be deemed to have an impact on the proposed site and are addressed in this report. Proposed for the development is a 6-storey residential apartment building with a rooftop amenity area. See Figure 2 Site Plan.

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 was not considered in this report as there are no CN/CP Rail lines or heavy industry in the immediate area. Aircraft noise was not considered in this report as the development is located outside the 25 NEF 2010 contour

2.0 SITE DESCRIPTION

The proposed 6 storey (24m) residential apartment building, totalling 117 units, is in a commercial/residential zoned RM1. The proposed 6 storey residential building has an enclosed rooftop mechanical penthouse room, a rear yard ground floor outdoor amenity area, rooftop amenity area, 2 floors ground parking, and parking intake and exhaust units. Noise levels to addressed before final building permit is issued for the intake and exhaust unit(s).

To the south of the proposed development site are 1 & 1.5 storey residential homes, to the east and west are commercial properties, to the north approximately 20m to the is Plains Rd East. To the north approximately 590m is the CN/Go rail lines. Separating the development site and the CN and GO rail line is a school, church and two large commercial buildings on Gallagher Road. This large building abuts the rail tracks and provides ample shielding from rail noise. Plains Road is approximately 25m north of the proposed development.

Also separating the CN & Go rail line are several residential streets with 1.5 & 2 storey homes. Due to the distance separation and extensive shielding from existing residential and commercial buildings the CN & GO rail lines with not have an impact on the proposed development. Stamson rail calculations do not support noise calculations in exceedance of 500m. This development is well beyond 500m and road noise from Plains Road East is the predominant noise source. An example of a Stamson calculation for CN GO rail is attached at 500m free field at the top floor of R2 confirming train traffic has no acoustical noise impact at 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 300, Stationary & Transportation Sources-Approval & Planning, specifies the criteria, summarized as follows:

TABLE 1 - Road Traffic Sound Levels Limits	
Time Period	L_{eq} (dBA)
07:00 – 23:00 (16 hr.)	55 Outdoor Living Area (OLA)
23:00 – 07:00 (8 hr.)	50 Plane of Bedroom Window (POW)

Where noise levels estimated in the (OLA) and at the first-floor 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 7:00 – 23:00	45
Bedroom 23:00 - 07:00	40

3.2 ROAD NOISE

Predicted road traffic noise levels were calculated for Plains Rd East, the major road noise source in the site area. Road traffic volumes were sourced from the *City of Burlington Traffic Engineering Website,* relative to the roadway. 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 ratio relative for Plains Rd East roadway is calculated using a 90/10 split and a 16/8-hour assessment as required by the MOE. The maximum posted speeds for all vehicles are 50 km/hr on Plains Rd East with a School Zone speed limit of 40 km/hr. The School Zone speed limit is enforced during specific time of the school days. For the report we have used the speed limit of 50km/hr during the day and nighttime hours. The percentage of annual growth was figured at 2.0% over 23 years in keeping with the Regional Municipality of Halton traffic forecast requirements. The AADT (Annual Average Daily Traffic) 2017 volumes were used for Plains Rd East, reflective of the worst-case scenario.

Truck volumes were factored at 3% medium and 3% heavy of the total vehicle volumes for Plains Rd East. Table 5 summarizes the "free field" traffic noise prediction results, modeled at specific locations of the proposed building. (See Figure 3 Receptor Location).

TABLE 4 – Future Road Traffic Volumes			
Plains Rd East	AADT 33489 Vehicles		
	Cars	Medium Trucks	Heavy Trucks
Day	28331	904	904
Night	3148	100	100

Table 5 summarizes the "free field" traffic noise prediction results, modeled at 6 receptor locations representative of the front and east and west building facades for the site development (See Figure 3 Receptor Locations).

TABLE 5 – Predicted Future Traffic Noise (dBA)		
Location	07:00 – 23:00	23:00 – 07:00
R1- North Building Façade - Facing Plains Rd	65(1)	58(1)
R2- North Building Façade - Facing Plains Rd	65(2)	59(2)
R3- Building Façade - East & West Facades	60(1)	53(1)
R4- Building Façade - East & West Facades	61(2)	54(2)
R5- Building Façade - Midway East & West Facades	56(1)	49(1)
R6 Building Façade - Midway East & West Facades	57(2)	51(2)
Rooftop Amenity Area –.46m Safety Glass Railing	532)	N/A

(1) 2.0m receiver height *(2) 24.0m receiver height*

4.0 RECOMMENDATIONS - NOISE CONTROL

4.1 OUTDOOR LIVING AREAS

Calculated road noise levels exceed the 55 dBA daytime criteria outlined in Table 1. The small ground floor amenity area south of the proposed development is completely shielded by the proposed building structure and other existing commercial buildings, therefore mitigation measures for the rear yard amenity space is not required. The draft plan for the proposed development includes a 6th floor rooftop amenity area. Mitigation to reduce outdoor noise levels is required. A 0.91m (3.0 ft) safety glass railing or equivalent, or extension of the parapet wall would suffice. See Figure 4. For the 4th floor south area, it appears that this area exceeds the 4m depth requirement and is therefore defined as an (terrace) outdoor amenity area.

R6 is considered a midway point of the building and therefore the noise levels are acceptable as the terrace area will require safety railing which will further reduce the overall noise levels as well as further distance from the midway traffic noise calculation. The proposed draft plan considers balconies for units throughout the apartment building. The balconies are less than 4m in depth and therefore are not considered an amenity space as defined by the MOE noise guidelines therefore mitigation measures are not required.

In addition to any recommended physical controls, specifically worded warning clauses are mandatory. It is recommended that a Type "A" "B" & "C" Warning Clauses will suffice for all apartment units. Whereas, all occupants have access to the rooftop amenity area, it is recommended all units have Warning Clause "B" in addition to any other Warning Clauses.
Although the noise levels require provisions for central air conditioning, it is proposed that the building will be equipped with heating and air conditioning units within the enclosed mechanical room located on the rooftop.

4.2 INDOOR NOISE LEVELS

Calculated road noise levels at the Plane of Window (POW) exceed the 50 dBA criteria outlined in Table 1 for indoor space for second floor residential units. Specific building components (walls, windows, doors etc.) are required and confirmed using the STC (Sound Transmission Class) methods.

Building design specifications were not made available at report time and STC (Sound Transmission Class) are summarized in Table 6 following with minimum window door and wall construction specified for specific receptor locations.

The STC was calculated for each room type, based on typical window to floor ratios of 20% for bedrooms and 30% for living room areas. Wall to floor ratio was factored at 80%. A maximum of two components were factored per room.

TABLE 6 – Recommended Door and Window Construction

LOCATION	STC - To Be Used	Wall /Doors
All Units North, East & West Facade	Example	
Bedroom	30	OBC
Living room	30	OBC
South Façade		
Bedroom	OBC	OBC
Living room	OBC	OBC

** Double pane windows - first number denotes glass thickness, followed by spacing, and thickness of second pane, OBC denotes minimum requirements of the Ontario Building Code will suffice. Recommendations assume windows are well-fitted, weather-stripped units that can be opened.*

5.0 VENTILATION / WARNING CLAUSES

Ventilation and warning clause requirements for the development is required. Minimum building component requirements of the Ontario Building Code for the development & will satisfy the MOE criterion for noise control relative to indoor living space.

The following warning clause may be used in combination:

TYPE A: (All Units)

> "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 B: (All Units)

"Purchasers/tenants are advised that despite the inclusion of noise control features in the development and within the buildings units, sound levels due to increasing road traffic may 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."

TABLE 7 - Ventilation and Warning Clause Requirements		
LOCATION	VENTILATION	WARNING CLAUSE
All Floors	Central Air Conditioning	Type "A" and Type "B"

6.0 STATIONARY SOURCES (EXHAUST & INTAKE UNITS)

6.1 REGULATORY CONTEXT (RESIDENTIAL)

The MOE Publication-300, Stationary & Transportation Sources-Approval & Planning guidelines defines a point of reception/receptor as *"any point on the premises of a person where the sound or vibration originating from other than those premises are received."*

The point of reception may be located on any of the following, or zoned for future use, premises including but not limited to the following: residential homes, hospitals, nursing/retirement homes, etc.

The areas surrounding the proposed commercial development are indicative of a "Class 1 Area" as defined in MOE Publication 300, Stationary & Transportation Sources-Approval & Planning guidelines. The applicable sound limits are the higher of:

- The existing ambient sound level; or
- The minimum values of Table 6.1.

No restrictions apply to stationary sources if the one-hour equivalent sound exposure (Leq) is lower than the levels in the following Table 6.1.

The parking exhaust is located on the northeast portion of the proposed development. The location of the parking exhaust and intake units generate approximately 62 dBA at 2m from the source and operates only when required to exhaust fumes from the underground parking areas. The sound emanates upwards and quickly dissipates. The two units themselves must be acoustically equipped and the sound is typically from the air exhaust and not the unit noise themselves.

The traffic background noise results in higher noise levels than the following Table 6.1 Therefore it is anticipated that the parking exhaust unit will be in compliance with MOE Publication-300, Stationary & Transportation Sources-Approval & Planning guidelines. Calculating the noise levels from either the intake or exhaust units to the nearest residential property is 25m. Calculation is as 2 ÷ 20 = (log x 20) = - 22dba (62dba-22dba) = 40 dBA. This noise level is free field and shielding from fences, ground absorption, size of units is not included in the noise calculations. Noise data was obtained and referenced from dBA library.

TABLE 6.1 Minimum Sound Levels Limits (Class 1Area)	
Time Period	**L_{eq} (dBA)**
07:00 - 19:00	**50**
19:00 - 23:00	**50**
23:00 – 07:00	**45**

7.0 SUMMARY OF RECOMMENDATIONS

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

- All residential units require Type "A" and "C" Warning Clauses as recommended in Table 7.
- Window, Door, and Wall construction as recommended in Table 6.
- Rooftop amenity area 0.91m (3.0ft) Safety Glass Railing or equivalent, or extension of the parapet walls.
- Qualified Acoustical Consultant certifies that the required noise control measures have been incorporated into the builder's plans prior to issuance of a building permit.
- Prior to issuance of an occupancy permit or equivalent, it is recommended the Qualified Acoustical Consultant certify that the approved noise control measures have been professionally installed.
- Noise levels to addressed before final building permit is issued for the intake and exhaust unit(s).

8.0 CONCLUSIONS

dBA Acoustical Consultants Inc. has provided a noise impact study for the proposed "284 – 292 Plains Road East being Part of Lot 4, Broken Front Concession City of Burlington, Regional Municipality of Halton.

The study determined the noise impact from Plains Rd West Burlington On and area stationary source noises that may be deemed to have an impact on the proposed site and are addressed in this report. Proposed for the development is a 6-storey residential apartment building with a rooftop amenity area.

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 was not considered in this report as there are no CN/CP Rail lines or heavy industry in the immediate area. Aircraft noise was not considered in this report as the development is located outside the 25 NEF 2010 contour

FIGURE 1
SITE LOCATION



FIGURE 2
SITE PLAN

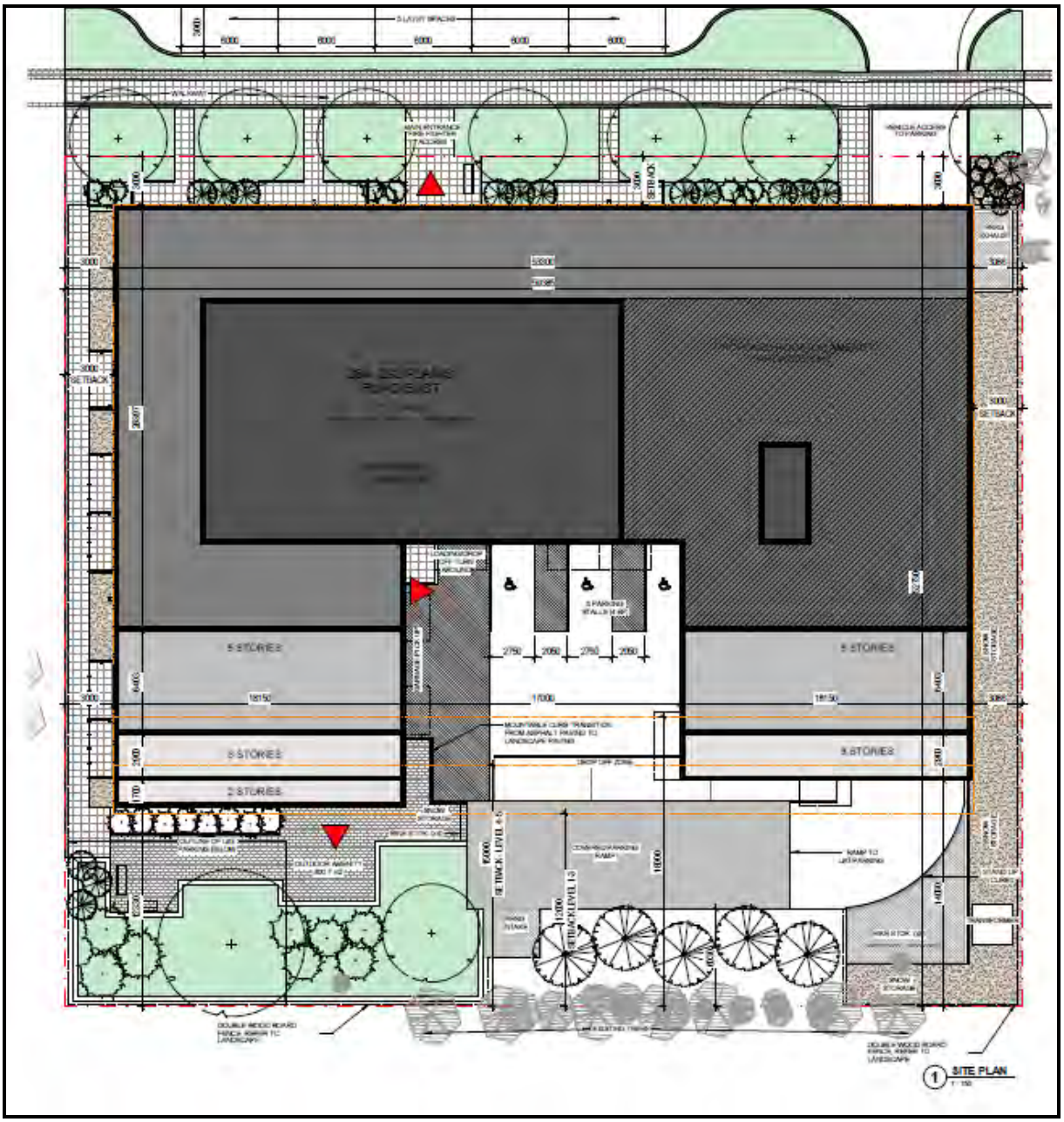
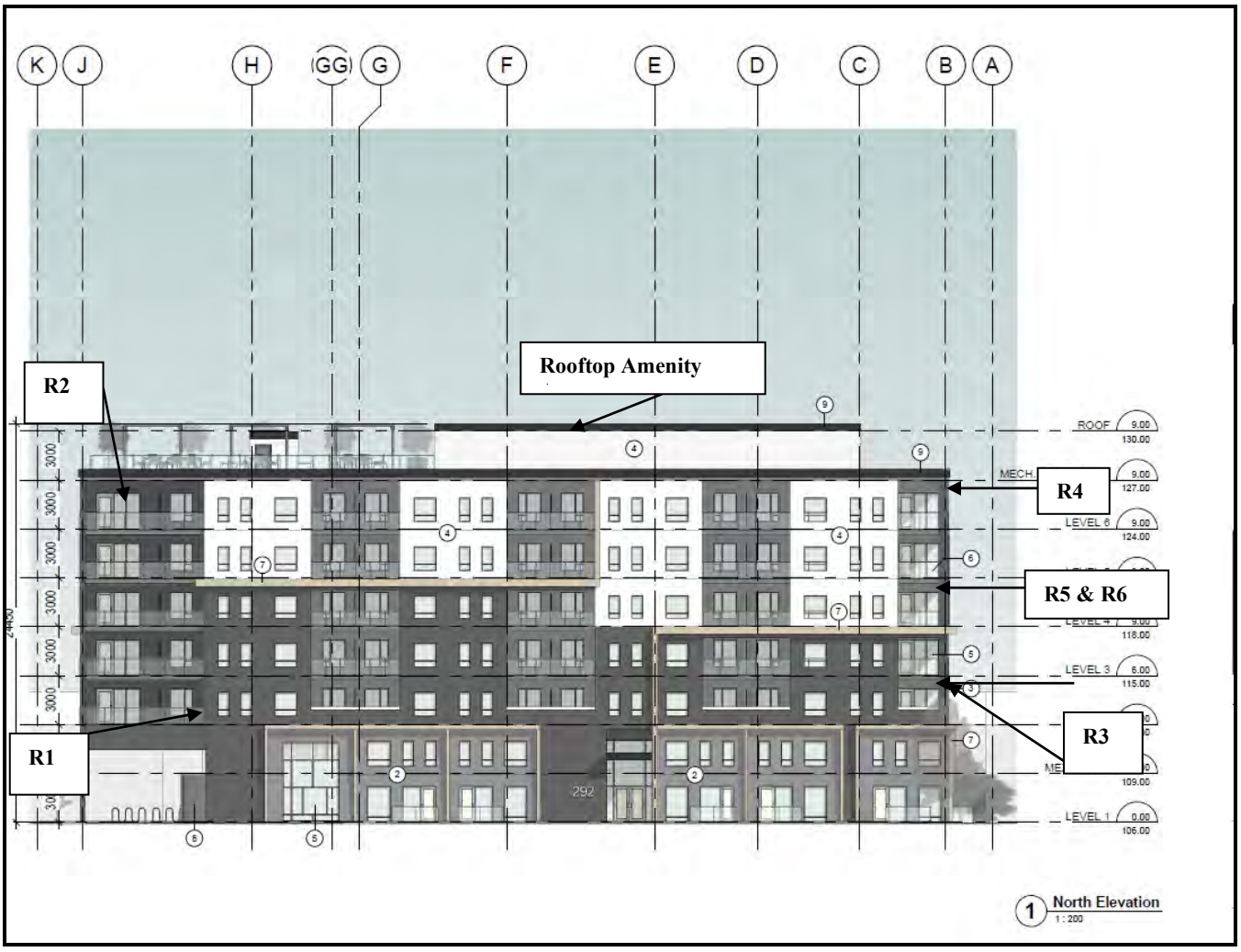


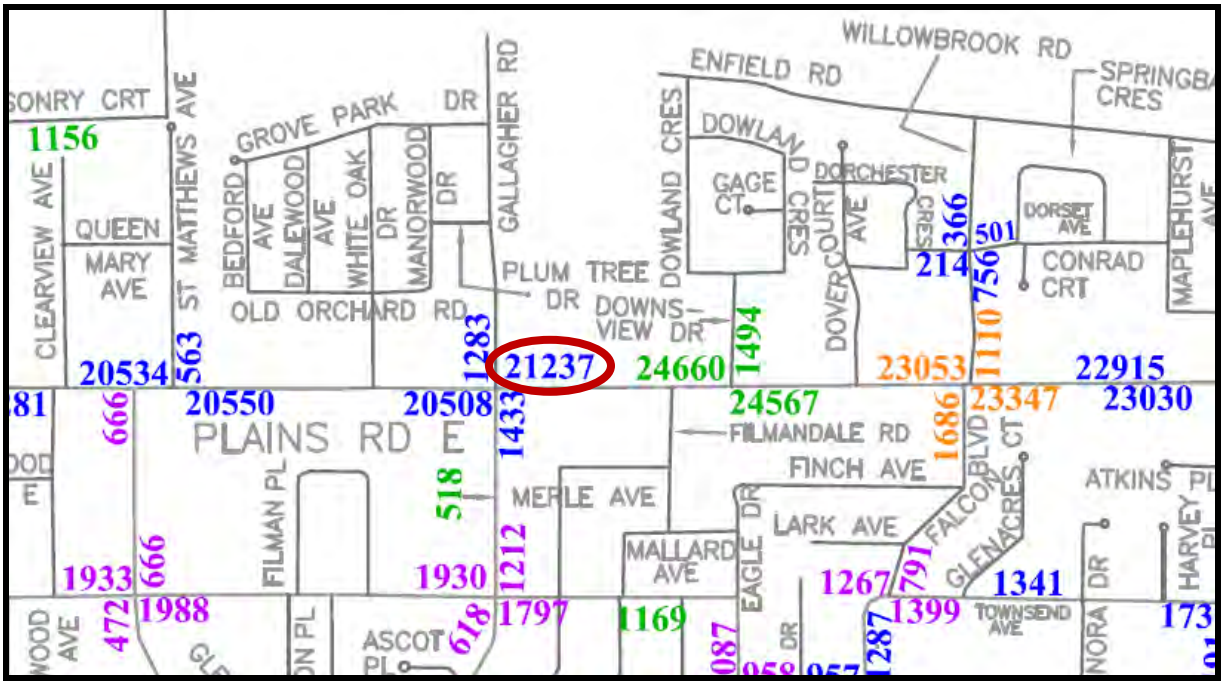
FIGURE 3
RECEPTOR LOCATIONS

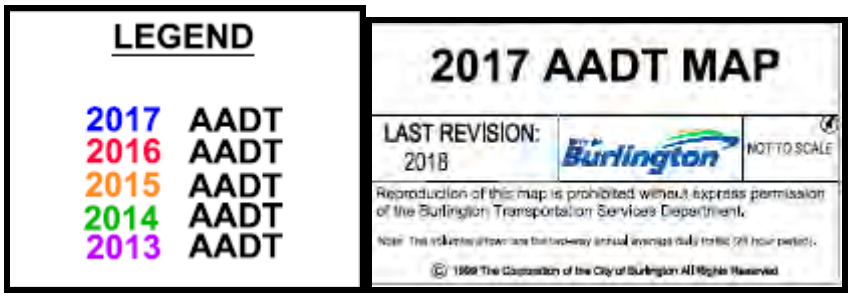


Rooftop Amenity Area Requires a 0.91m (3.0 ft) Safety Glass Railing (3ft) or Equivalent or Extension of the Exterior Parapets. If the OBC requires higher Safety Glass Railing or equivalent, then OBC requirements supersede the MOE noise requirements. The safety glass railings or the parapet exterior wall extension exceed the MOE density of a noise barrier 20kg².

APPENDIX "A"

CITY OF BURLINGTON AADT
2017 TRAFFIC DATA





STAMSON CALCULATIONS

```
STAMSON 5.04        SUMMARY REPORT        Date: 30-04-2020 10:46:50
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: plains1.te           Time Period: Day/Night 16/8 hours
Description: R1- First Floor Facing Plains Rd East
                TOTAL Leq FROM ALL SOURCES              (DAY): 65.23
                                                       (NIGHT): 57.78
Road data, segment # 1: Plains Rd E (day/night)
-----------------------------------------------
Car traffic volume  : 28331/3148  veh/TimePeriod  *
Medium truck volume :   904/100   veh/TimePeriod  *
Heavy truck volume  :   904/100   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):  21237
    Percentage of Annual Growth        :   2.00
    Number of Years of Growth          :  23.00
    Medium Truck % of Total Volume     :   3.00
    Heavy Truck  % of Total Volume     :   3.00
    Day (16 hrs) % of Total Volume     :  90.00

Data for Segment # 1: Plains Rd E (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  :  25.00 / 25.00  m
Receiver height           :   2.00 / 2.00   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.Plains Rd E      !     1.32 !    65.23 !    65.23
--------------------+---------+---------+---------
                      Total                  65.23 dBA
Result summary (night)
----------------------

                    !  source  !   Road   !  Total
                    !  height  !   Leq    !   Leq
                    !   (m)    !  (dBA)   !  (dBA)
--------------------+---------+---------+---------
 1.Plains Rd E      !     1.31 !    57.78 !    57.78
--------------------+---------+---------+---------
                      Total                  57.78 dBA
```

```
STAMSON 5.04        SUMMARY REPORT        Date: 30-04-2020 11:01:31
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: plains2.te           Time Period: Day/Night 16/8 hours
Description: R2- Top Floor Facing Plains Rd
                TOTAL Leq FROM ALL SOURCES        (DAY): 65.24
                                                  (NIGHT): 58.70
Road data, segment # 1: Plains Rd E (day/night)
-----------------------------------------------
Car traffic volume  : 28331/3148  veh/TimePeriod  *
Medium truck volume :   904/100   veh/TimePeriod  *
Heavy truck volume  :   904/100   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):  21237
    Percentage of Annual Growth        :   2.00
    Number of Years of Growth          :  23.00
    Medium Truck % of Total Volume     :   3.00
    Heavy Truck  % of Total Volume     :   3.00
    Day (16 hrs) % of Total Volume     :  90.00

Data for Segment # 1: Plains Rd E (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  :  25.00 / 25.00  m
Receiver height           :   24.00 / 24.00 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.Plains Rd E       !     1.32 !    65.24 !    65.24
--------------------+---------+---------+---------
                       Total                  65.24 dBA
Result summary (night)
----------------------

                     !  source  !   Road   !  Total
                     !  height  !   Leq    !   Leq
                     !   (m)    !  (dBA)   !  (dBA)
--------------------+---------+---------+---------
 1.Plains Rd E       !     1.31 !    58.70 !    58.70
--------------------+---------+---------+---------
                       Total                  58.70 dBA
```

```
STAMSON 5.04        SUMMARY REPORT        Date: 30-04-2020 11:13:01
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: plains3.te           Time Period: Day/Night 16/8 hours
Description: R3- East West Facades First Floor
                TOTAL Leq FROM ALL SOURCES                (DAY): 59.88
                                                          (NIGHT): 53.33
Road data, segment # 1: Plains Rd E (day/night)
-----------------------------------------------
Car traffic volume  : 28331/3148  veh/TimePeriod  *
Medium truck volume :   904/100   veh/TimePeriod  *
Heavy truck volume  :   904/100   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):  21237
    Percentage of Annual Growth        :   2.00
    Number of Years of Growth          :  23.00
    Medium Truck % of Total Volume     :   3.00
    Heavy Truck  % of Total Volume     :   3.00
    Day (16 hrs) % of Total Volume     :  90.00

Data for Segment # 1: Plains Rd E (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  :  33.00 / 33.00  m
Receiver height           :   2.00 / 2.00   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.Plains Rd E       !     1.32 !    59.88 !    59.88
--------------------+---------+---------+---------
                       Total                  59.88 dBA

Result summary (night)
----------------------
                     !  source  !   Road   !  Total
                     !  height  !   Leq    !   Leq
                     !    (m)   !  (dBA)   !  (dBA)
--------------------+---------+---------+---------
 1.Plains Rd E       !     1.31 !    53.33 !    53.33
--------------------+---------+---------+---------
                       Total                  53.33 dBA
```

```
STAMSON 5.04        SUMMARY REPORT        Date: 30-04-2020 11:17:52
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: plains4.te           Time Period: Day/Night 16/8 hours
Description: R4- East West Facades Top Floor
                          TOTAL Leq FROM ALL SOURCES   (DAY): 60.98
                                                       (NIGHT): 54.43
Road data, segment # 1: Plains Rd E (day/night)
-----------------------------------------------
Car traffic volume  : 28331/3148  veh/TimePeriod  *
Medium truck volume :   904/100   veh/TimePeriod  *
Heavy truck volume  :   904/100   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):  21237
    Percentage of Annual Growth        :   2.00
    Number of Years of Growth          :  23.00
    Medium Truck % of Total Volume     :   3.00
    Heavy Truck  % of Total Volume     :   3.00
    Day (16 hrs) % of Total Volume     :  90.00

Data for Segment # 1: Plains Rd E (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  :  33.00 / 33.00  m
Receiver height           :   24.00 /24.00  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.Plains Rd E       !     1.32 !    60.98 !    60.98
--------------------+---------+---------+---------
                       Total                  60.98 dBA
Result summary (night)
----------------------
                     !  source  !   Road   !  Total
                     !  height  !   Leq    !   Leq
                     !    (m)   !  (dBA)   !  (dBA)
--------------------+---------+---------+---------
 1.Plains Rd E       !     1.31 !    54.43 !    54.43
--------------------+---------+---------+---------
                       Total                  54.43 dBA
```

```
STAMSON 5.04        SUMMARY REPORT        Date: 30-04-2020 11:25:19
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: plains5.te           Time Period: Day/Night 16/8 hours
Description: R5- Midway East West Facades First Floor
                 TOTAL Leq FROM ALL SOURCES              (DAY): 55.59
                                                        (NIGHT): 49.05
Road data, segment # 1: Plains Rd E (day/night)
-----------------------------------------------
Car traffic volume  : 28331/3148  veh/TimePeriod  *
Medium truck volume :   904/100   veh/TimePeriod  *
Heavy truck volume  :   904/100   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):  21237
    Percentage of Annual Growth        :   2.00
    Number of Years of Growth          :  23.00
    Medium Truck % of Total Volume     :   3.00
    Heavy Truck  % of Total Volume     :   3.00
    Day (16 hrs) % of Total Volume     :  90.00

Data for Segment # 1: Plains Rd E (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  :  60.00 / 60.00  m
Receiver height           :   12.00 /12.00  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.Plains Rd E      !     1.32 !    55.59 !    55.59
--------------------+---------+---------+---------
                      Total                  55.59 dBA
Result summary (night)
----------------------
                    !  source  !   Road   !  Total
                    !  height  !   Leq    !   Leq
                    !   (m)    !  (dBA)   !  (dBA)
--------------------+---------+---------+---------
 1.Plains Rd E      !     1.31 !    49.05 !    49.05
--------------------+---------+---------+---------
                      Total                  49.05 dBA
```

```
STAMSON 5.04        SUMMARY REPORT        Date: 30-04-2020 11:25:19
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: plains5.te           Time Period: Day/Night 16/8 hours
Description: R6- Midway East West Facades First Floor
                 TOTAL Leq FROM ALL SOURCES        (DAY): 55.59
                                                   (NIGHT): 49.05
Road data, segment # 1: Plains Rd E (day/night)
-----------------------------------------------
Car traffic volume  : 28331/3148  veh/TimePeriod  *
Medium truck volume :   904/100   veh/TimePeriod  *
Heavy truck volume  :   904/100   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):  21237
    Percentage of Annual Growth        :   2.00
    Number of Years of Growth          :  23.00
    Medium Truck % of Total Volume     :   3.00
    Heavy Truck  % of Total Volume     :   3.00
    Day (16 hrs) % of Total Volume     :  90.00

Data for Segment # 1: Plains Rd E (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  :  60.00 / 60.00  m
Receiver height           :   12.00/ 12.00  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.Plains Rd E       !     1.32 !    55.59 !    55.59
--------------------+---------+---------+---------
                       Total                  55.59 dBA
Result summary (night)
----------------------
                     !  source  !   Road   !  Total
                     !  height  !   Leq    !   Leq
                     !    (m)   !  (dBA)   !  (dBA)
--------------------+---------+---------+---------
 1.Plains Rd E       !     1.31 !    49.05 !    49.05
--------------------+---------+---------+---------
                       Total                  49.05 dBA
```

```
STAMSON 5.04        SUMMARY REPORT        Date: 30-04-2020 11:54:50
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT
Filename: Terrace.te            Time Period: Day/Night 16/8 hours

Description: Rooftop Amenity Area with 0.91m Safety Glass Railing or Parapet Extension
                    TOTAL Leq FROM ALL SOURCES              (DAY): 53.48 (OLA)

Road data, segment # 1: Plains Rd E (day/night)
-----------------------------------------------
Car traffic volume  : 28331/3148  veh/TimePeriod  *
Medium truck volume :   904/100   veh/TimePeriod  *
Heavy truck volume  :   904/100   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):  21237
    Percentage of Annual Growth        :   2.00
    Number of Years of Growth          :  23.00
    Medium Truck % of Total Volume     :   3.00
    Heavy Truck  % of Total Volume     :   3.00
    Day (16 hrs) % of Total Volume     :  90.00

Data for Segment # 1: Plains Rd E (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  :  25.00 / 25.00  m
Receiver height           :  24.00 /24.00   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            :  -90.00 deg   Angle2 : 90.00 deg
Barrier height            :   0.91 m
Barrier receiver distance :   3.00 m
Source elevation          :   0.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   9.00 m
Reference angle           :   0.00

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

                    !  source  !   Road   !  Total
                    !  height  !   Leq    !   Leq
                    !   (m)    !  (dBA)   !  (dBA)
--------------------+---------+---------+---------
 1.Plains Rd E      !     1.32 !    53.48 !    53.48
--------------------+---------+---------+---------
                      Total                  53.48 dBA
```

```
STAMSON 5.04        SUMMARY REPORT        Date: 30-04-2020 21:41:54
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: Plains Rd CN/GO.te        Time Period: Day/Night 16/8 hours
Description: R2- Top Floor CN - GO Train Traffic 500m Example
                    TOTAL Leq FROM ALL SOURCES              (DAY): 54.39
                                                            (NIGHT): 54.38
Rail data, segment # 1: Way Freight (day/night)
-----------------------------------------------
Train            ! Trains      ! Speed !# loc !# Cars! Eng  !Cont
Type             !             !(km/h) !/Train!/Train! type !weld
-----------------+-------------+------+-----+-----+-----+---
  1. Way Freight !   5.1/2.5   ! 129.0 !  4.0 ! 25.0 !Diesel! Yes
Data for Segment # 1: Way Freight (day/night)
-----------------------------------------------
Angle1   Angle2           : -40.00 deg   25.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  : 500.00 / 500.00 m
Receiver height           :   24.00 / 24.00 m
Topography                :      1       (Flat/gentle slope; no barrier)
No Whistle
Reference angle           :   0.00
Rail data, segment # 2: Passenger (day/night)
-----------------------------------------------
Train            ! Trains      ! Speed !# loc !# Cars! Eng  !Cont
Type             !             !(km/h) !/Train!/Train! type !weld
-----------------+-------------+------+-----+-----+-----+---
  1. Passenger   !  11.9/5.9   ! 129.0 !  2.0 ! 10.0 !Diesel! Yes

Data for Segment # 2: Passenger (day/night)
-----------------------------------------------
Angle1   Angle2           : -40.00 deg   25.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  : 500.00 / 500.00 m
Receiver height           :   24.00 /24.00  m
Topography                :      1       (Flat/gentle slope; no barrier)
No Whistle
Reference angle           :   0.00
Rail data, segment # 3: Go Trains (day/night)
-----------------------------------------------
Train            ! Trains      ! Speed !# loc !# Cars! Eng  !Cont
Type             !             !(km/h) !/Train!/Train! type !weld
-----------------+-------------+------+-----+-----+-----+---
  1. Go Trains   !  86.1/43.0  ! 150.0 !  2.0 ! 10.0 !Diesel! Yes

Data for Segment # 3: Go Trains (day/night)
-----------------------------------------------
Angle1   Angle2           : -40.00 deg   25.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  : 500.00 / 500.00 m
Receiver height           :   24.00 /24.00  m
Topography                :      1       (Flat/gentle slope; no barrier)
No Whistle
Reference angle           :   0.00
```

Result summary (day)

	Loc Leq (dBA)	Wheel Leq (dBA)	Whistle Left Leq (dBA)	Whistle Right Leq (dBA)	Total Leq (dBA)
1.Way Freight	43.25	32.83	--	--	43.63 *
2.Passenger	43.73	32.68	--	--	44.06 *
3.Go Trains	53.21	42.30	--	--	53.55 *
Total					54.39 dBA

Result summary (night)

	Loc Leq (dBA)	Wheel Leq (dBA)	Whistle Left Leq (dBA)	Whistle Right Leq (dBA)	Total Leq (dBA)
1.Way Freight	43.17	32.75	--	--	43.55 *
2.Passenger	43.70	32.64	--	--	44.03 *
3.Go Trains	53.21	42.30	--	--	53.55 *
Total					54.38 dBA

SITE DATA

SITE DATA

284-292 Plains Rd. E, Burlington, Ontario

DATA		REQUIRED	PROVIDED
ZONING		ZONING - MXG	
PROPERTY ZONE		RM1-346	
LOT AREA (m²)		--	3,131.4 m²
PROPOSED FLOOR AREA RATION (FAR)		--	2.96
SETBACKS	FRONT YARD (m)	3 m	3 m
	INTERIOR SIDE YARD (m) East	3 m	3 m
	INTERIOR SIDE YARD (m) West	3 m	3 m
	REAR YARD (m)	FLOORS 1-3 = 12 m	12.3 m
	REAR YARD (m)	FLOORS 4-5 = 15 m	15.1 m
	REAR YARD (m)	FLOORS 6 = 18 m	21.1 m

BUILDING DATA

DATA	REQUIRED	PROVIDED
TOTAL DENSITY (# of units) 1 BEDROOM 2 BEDROOM 2 BED TOWNHOUSES 3 BED	--	117 units 89 units 15 units 10 units 3 units
BUILDING AREA (m²)	--	1,683m² (18,116sf)
GROSS FLOOR AREA (m²) -not incl. parking	--	9,276m² (99,846sf)
GROSS CONSTRUCTION AREA (m²) -incl. parking	--	15,076m² (162,277sf)
NET LEASABLE AREA (m²)	--	7,068m² (76079sf)
NUMBER OF STOREYS	6 MAX.	6 + Mech Rooftop
BUILDING HEIGHT (m)	--	24.45 m OVERALL
AMENITY AREA (m²) (15m² for 1B unit <60m², 20m² for 1B >60m², 35m² for 2B+)	1B < 60m² = 86(15m²) = 1290 m² 1B > 60m² = 3(20m²) = 60 m² 2B = 28(35m²) = 980 m² TOTAL = 2,330 m²	= 1,846.3 m² = 15.8 m² / unit

LANDSCAPING DATA

DATA	REQUIRED	PROVIDED
LANDSCAPE AREA (percentage)	--	27.6% 866 m²
LANDSCAPE BUFFER (m)	3m (Front) 6m (Rear and sides abutting res)	-- --

VEHICLE PARKING DATA

DATA	REQUIRED (BY-LAW 2020)	REQUIRED (PARKING STRD REVIEW)	PROVIDED
RESIDENTIAL PARKING	1.25x (89) 1 BED = 112 1.5 x (25) 2 BED = 38 1.75 x (3) 3 BED = 6 0.35 x 117 = 41 VISITOR 2 MAINTENANCE	1x (89) 1 BED = 89 1.25 x (28) 2+ BED = 35 0.35 x 117 = 41 VISITOR 2 MAINTENANCE	LEVEL P2: 64 Stalls +3 Small Car LEVEL P1: 64 Stalls +3 Small Car LEVEL 1: 8 Surface + 5 Layby
B.F. PARKING		3% OF STALLS = 5	5 (includ. in above)
TOTAL	188	167	147

BICYCLE PARKING DATA

DATA	REQUIRED	PROVIDED
RESIDENTIAL BICYCLE PARKING	0	12
	TOTAL	12

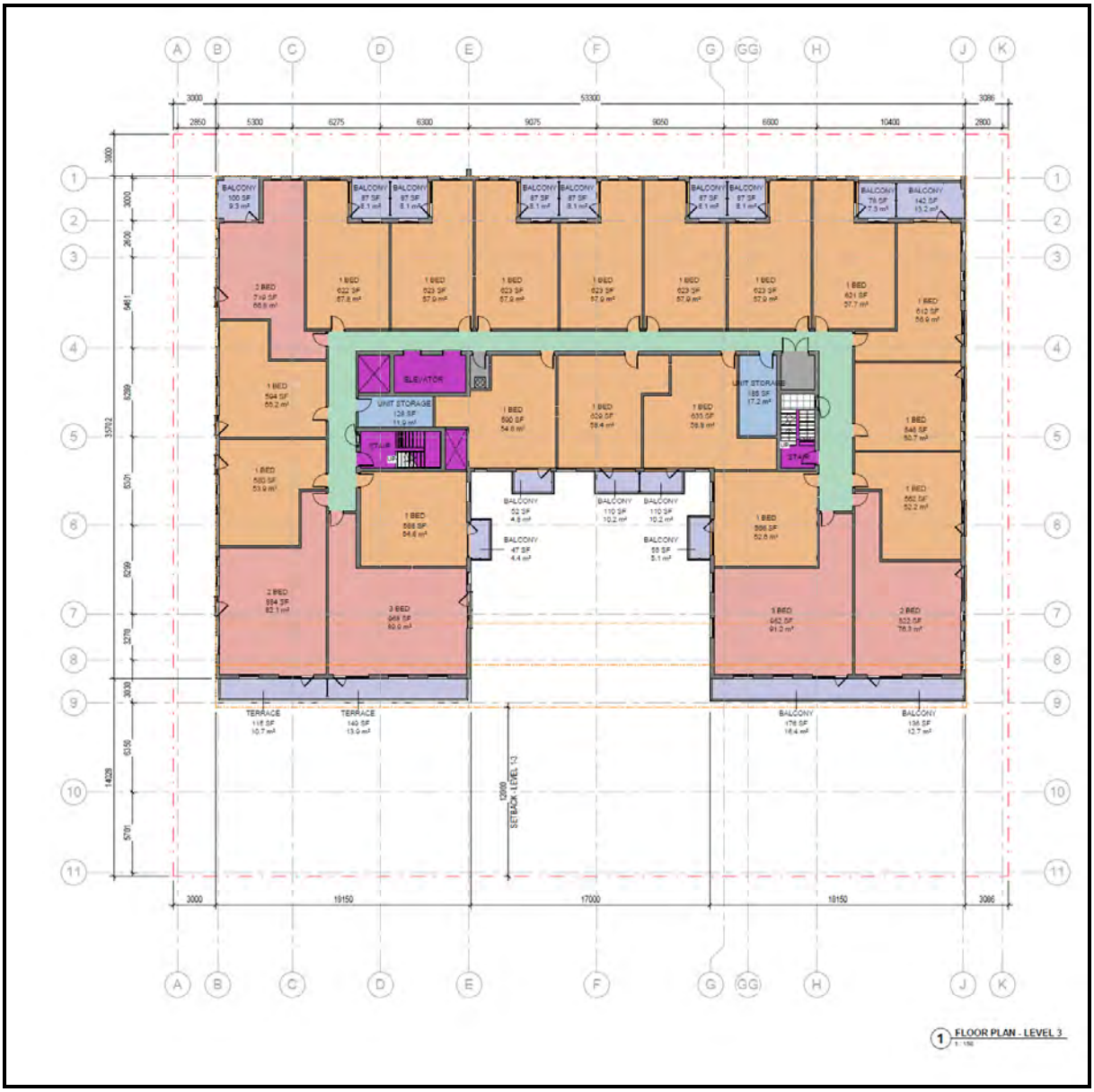
LEVEL 1


PLAINS ROAD EAST
MAIN ENTRANCE
VESTIBULE
MAIL SLOTS
SEATING AREA
AMENITY
STAIR
ELEVATOR
GARBAGE RM
MOVE-IN
BENCH
LOADING DROP OFF TURN AROUND
BUILDING OVERHANG
5 PARKING STALLS
MECH / ELEC
BIKE REPAIR RM.
MOUNTABLE CURB TRANSITION FROM ASPHALT PAVING TO LANDSCAPE PAVING
OUTDOOR AMENITY
COVERED PARKING RAMP
SETBACK LEVEL 1-3
LANDSCAPE BUFFER
STAND UP CURB
TRANSFORMER
DOUBLE WOOD BOARD FENCE, REFER TO LANDSCAPE
FLOOR PLAN - LEVEL 1

LEVEL 2



LEVEL 3


FLOOR PLAN - LEVEL 3
ELEVATOR
UNIT STORAGE
STAIR
BALCONY
TERRACE
SETBACK - LEVEL 1-3

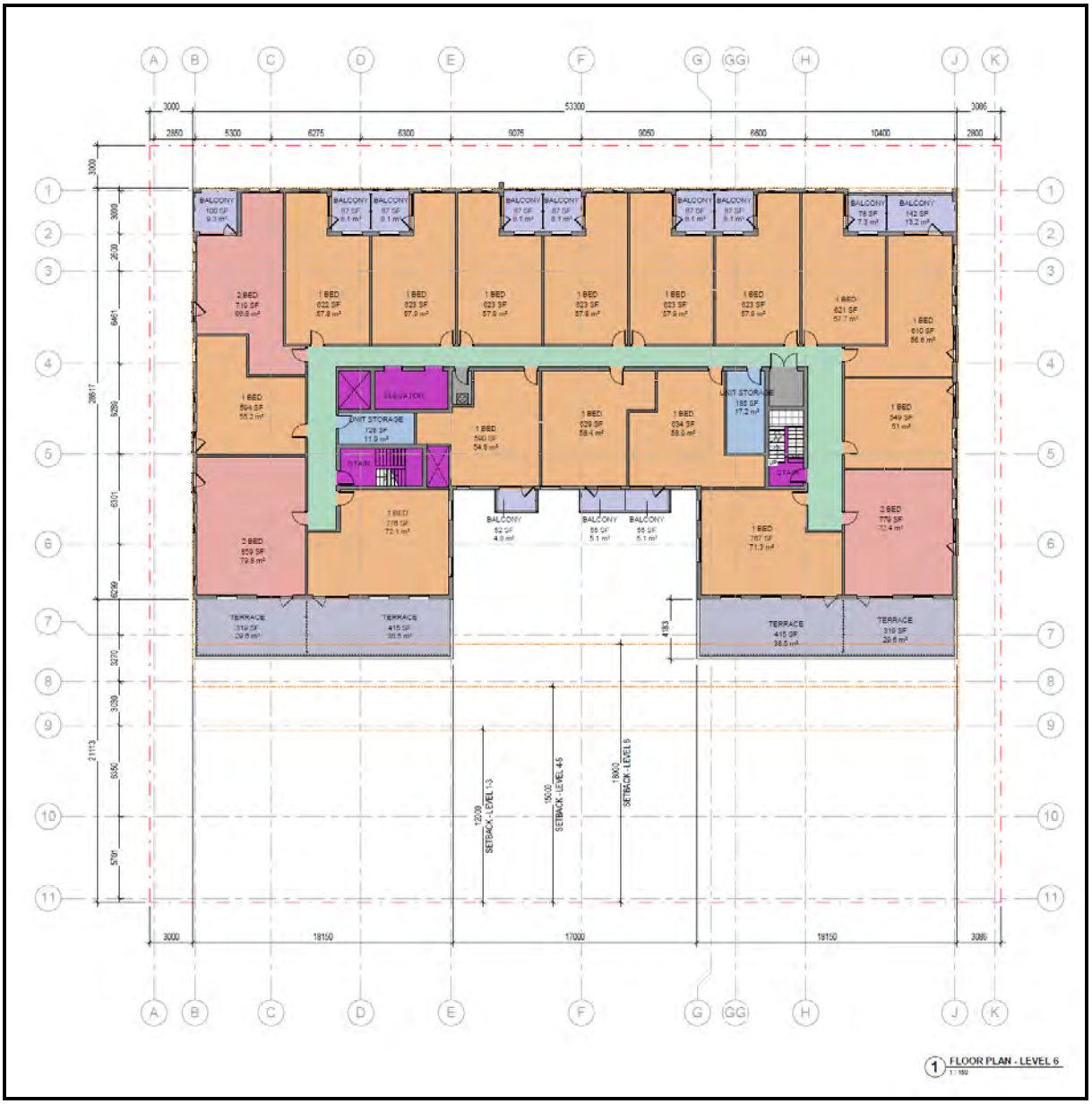
LEVEL 4


A
B
C
D
E
F
G
GG
H
J
K
1
2
3
4
5
6
7
8
9
10
11
3000
53300
3086
2850
5300
6275
6300
9075
9050
6800
10400
2800
BALCONY
ELEVATOR
UNIT STORAGE
STAIR
TERRACE
SETBACK - LEVEL 1-3
SETBACK - LEVEL 4-5
18150
17000
FLOOR PLAN - LEVEL 4

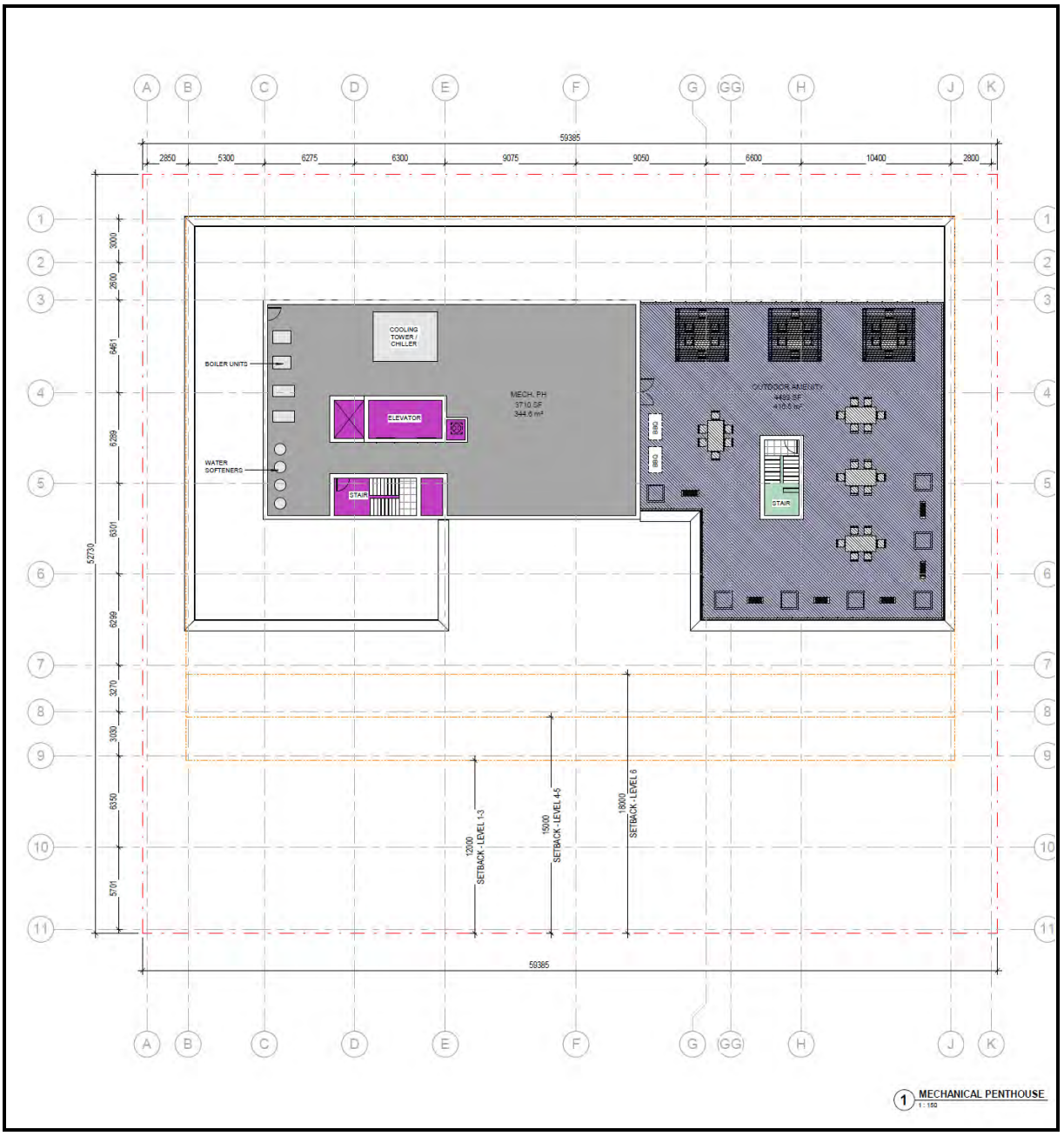
LEVEL 5



LEVEL 6



MECHANICAL PENTHOUSE

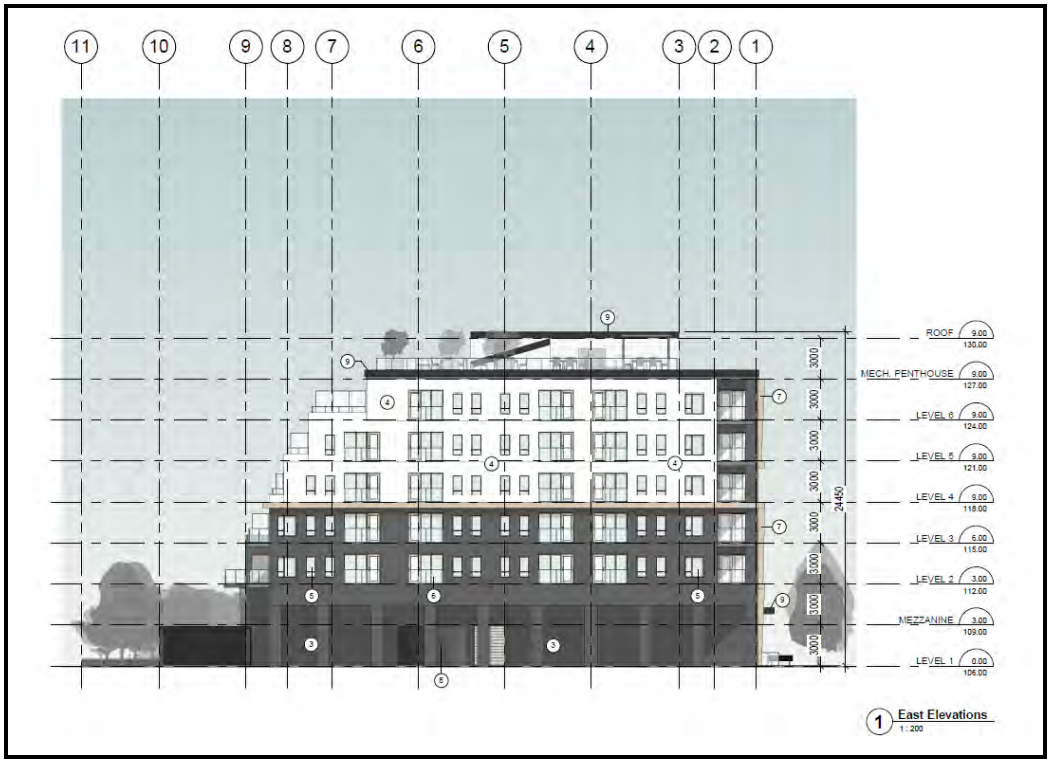


DESIGN PLANS






1
2
3
4
5
6
7
8
9
10
ROOF 9.00 130.00
MECH. PENTHOUSE 9.00 127.00
LEVEL 6 9.00 124.00
LEVEL 5 9.00 121.00
LEVEL 4 9.00 118.00
LEVEL 3 6.00 115.00
LEVEL 2 3.00 112.00
MEZZANINE 3.00 109.00
LEVEL 1 0.00 106.00
3000
24450
2 West Elevation
1 : 200


11
10
9
8
7
6
5
4
3
2
1
ROOF 9.00 130.00
MECH. PENTHOUSE 9.00 127.00
LEVEL 6 9.00 124.00
LEVEL 5 9.00 121.00
LEVEL 4 9.00 118.00
LEVEL 3 6.00 115.00
LEVEL 2 3.00 112.00
MEZZANINE 3.00 109.00
LEVEL 1 0.00 106.00
3000
24450
1 East Elevations
1 : 200