ENVIRONMENTAL NOISE IMPACT STUDY

29-STOREY MIXED-USE RESIDENTIAL BUILDING
LOCATED AT
1029-1033 WATERDOWN ROAD
PART OF LOT 1
REGISTERED PLAN 20M-507
& PART OF LOT6, CONCESSION 1
TOWNSHIP OF EAST FLAMBOROUGH
CITY OF BURLINGTON
REGIONAL MUNICIPALITY OF HALTON

Prepared for:

Infinity Development Group
2275 Upper Middle Road East
Oakville, ON
L6H 0C3

Prepared By:



_____

Frank Westaway, Owner/President
Qualified Acoustical Consultant



Our File: 21-1029

November 2021

dBA ACOUSTICAL CONSULTANTS INC.
P.O. Box 32059
1447 Upper Ottawa St
Hamilton ON
L8W 3K0

TABLE OF CONTENTS

1.0 INTRODUCTION..... Page 3
2.0 SITE DESCRIPTION..... Page 3
3.0 NOISE IMPACT ASSESSMENT..... Page 3
3.1 Noise Criteria…..... Page 3
3.2 Road Noise…..... Page 4
4.0 RECOMMENDATIONS-NOISE CONTROL..... Page 8
4.1 Outdoor Living Areas..... Page 8
4.2 Indoor Noise Levels..... Page 8
4.3 Ventilation/Warning Clause Requirements……..... Page 10
5.0 WARNING CLAUSES…….. Page 10
6.0 STATIONARY SOURCES……..... Page 10
6.1 Regulatory Context ……..……. Page 10
6.2 King Paving & Construction ……..….. Page 11
6.3 Bulkwood Products ……..…… Page 11
7.0 NOISE MONITORING LEVELS..... Page 11
8.0 SUMMARY OF RECOMMENDATIONS..... Page 12
9.0 CONCLUSIONS..... Page 13

FIGURE 1 - Site Location
FIGURE 2 - Site Plan
FIGURE 3 - Receptor Locations
FIGURE 4 – Noise Barrier Location

APPENDIX “A”
City of Burlington AADT
Stamson Calculating Road
Renderings of Building
Building Stats
Site Development Stats
Building Elevations
Building Plans

APPENDIX “B”
Noise Monitoring Results
Noise Monitoring Location
STC Wall Example

1.0 INTRODUCTION

dBA Acoustical Consultants Inc. has prepared an environmental noise impact study on behalf of Infinity Development Group, 2275 Upper Middle Road East, Oakville ON, for the proposed 29-Storey Mixed-Use building, located at 1029-1033 Waterdown Road, Burlington, ON. Proposed are 282 residential units and 326 vehicle parking spaces within a 5-storey podium and 2 levels of underground parking. Commercial spaces are proposed at grade level.

The purpose of the noise study is to determine the noise impact for OPA/ZBA approval from Plains Road East and Waterdown Road vehicular traffic. This study will detail noise impacts at the proposed development and recommend noise control measures necessary (if applicable) to meet (Ministry of Environment, Conservation & Parks) MECP Publication NPC-300, Stationary and Transportation Sources-Approval and Planning guidelines, while satisfying the planning requirements of the City of Burlington. Area Stationary noise sources are considered later in this report. Key Plan is attached as Figure 1.

Vibration was not considered in this report as there are CN/CP and GO Rail lines, and a CN Layover Yard are located north more than 500m. There is no heavy industry in the immediate area. Aircraft is not considered as the development is located outside the area of influence for aircraft noise NEF 25.

2.0 SITE DESCRIPTION

Proposed is a 29-Storey Mixed-Use building, with 282 residential units and 326 vehicle parking spaces within a 5-storey podium and 2 levels of underground parking. Commercial spaces are proposed at grade level. The rooftop mechanical area consists of a generator, 2 RTU, 1 MUA and 2 cooling towers. These units are shielded and the 2 cooling towers have an open roof area. See Appendix “B”

The site property is located on the east side of Waterdown Road at approximately 20m and approximately 130m from Plains Road East. To the north approximately 700m is Hwy 403. Hwy 403 will not have an acoustical impact on the proposed 29-storey building due to separation distance and Stamson traffic noise calculation over 500m are not considered by MECP noise criteria.

CBM King Paving Yard is located approximately 198m northwest of the proposed development. Bulkwood Products Inc. to the northwest is within the same area as CBM Paving. To the west of the proposed development is a Burlington Fire Department Station 3.

The CN/GO (Aldershot GO Station) is located approximately 520m north of the proposed development and the layover yard is located slightly further to the east of the Aldershot Go Station. While CN normally recommends a setback of 1000m from a rail yard to a residential development, this is considered a special case as there are already substantial existing residential developments, including 101 Masonry Court, to the south of the rail right-of-way and rail yard.

3.0 NOISE IMPACT ASSESSMENT

3.1 NOISE CRITERIA

The Ministry of Environment (MECP) specifies limits for road noise relative to new residential developments. The MECP Publication NPC-300, Stationary & Transportation Sources-Approval & Planning guidelines, 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
07:00 – 23:00 (16 hr.)	55 Plane of Window
23:00 – 07:00 (8 hr.)	50 Plane of Bedroom window

Where noise levels estimated in the Outdoor Living Area (OLA) and at an upper storey window 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	Barrier or Warning Clause Type “A”
07:00 - 23:00 Daytime (OLA)	> 60	Barrier & Warning Clause Type “B”
07:00 - 23:00 Daytime (POW)	>55	Provision for A/C, Warning Clause “C”
07:00 - 23:00 Daytime (POW)	>65	Central A/C, Warning Clause “D”
07:00 - 23:00 Daytime (POW)	>65	Building Component Specification
23:00 - 07:00 Nighttime (POW)	> 50	Provision for A/C and Warning Clause Type “C”
23:00 - 07:00 Nighttime (POW)	> 55 > 60	Building Component Specification A/C and Warning Clause Type “D”

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

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

3.2 ROAD NOISE

Road traffic noise levels were calculated for Plains Road East and Waterdown Road relative to the proposed development. The traffic volumes 2016/2017 AADT was sourced from the City of Burlington Traffic Department website. See Appendix “A”. The traffic data was used to carry out prediction calculations using the MECP “Stamson - Version 5.04” computer program reflective of the worst-case scenario.

Waterdown Road is a 4-lane roadway with a center turning lane, which runs north-south relative to the proposed site with a posted speed limit of 50 km/hr. Plains Road East, is a 4-lane roadway with turning lanes located approximately 130m to the south, running east-west relative to the proposed site with a posted speed limit of 60 km/hr.

The daytime/nighttime volume ratio relative to both roadways is typically calculated using a 90/10 split as required by the MECP. The percentage of annual traffic growth for both roadways, was figured at 2.0% to the forecasted year of 2031. Truck volumes were factored at 2% medium and 2% heavy of the total vehicle volumes for both roadways.

Table 4 summarizes future traffic volumes and represents the "free field" traffic noise prediction results, modeled at specified receptor floor locations representative of building facades throughout the proposed development (See Figure 3 Receptor Locations).

TABLE 4 – Future Road Traffic Volumes			
Waterdown Road	AADT 18716 Vehicles		
	Cars	Medium Trucks	Heavy Trucks
Day	16494	344	344
Night	1833	38	38
TABLE 4 – Future Road Traffic Volumes			
Plains Road East	AADT 27328 Vehicles		
	Cars	Medium Trucks	Heavy Trucks
Day	23611	492	492
Night	2623	55	55

Free field predicted Waterdown Road traffic noise levels at the west building facades and are summarized in Table 5A.

TABLE 5A- Predicted Traffic Noise Levels-Free Field

Waterdown Road	L_{eq} (dBA)	
	07:00 - 23:00	23:00 - 07:00
R1 West Façade 5th Floor	65 (21.5m)	59 (21.5m)
R2 West Façade 5th Floor Amenity Areas	50 (21.5m)	N/A
R3 West Façade 15th Floor	65 (53.5m)	59 (53.5m)
R4 West Façade 29th Floor	65 (98.5m)	59 (98.5m)
R5 South Façade 5th Floor	62 (21.5m)	56 (21.5m)
R6 South Façade 5th Floor Amenity Areas	49 (21.5m)	N/A
R7 South Façade 29th Floor	62 (98.5m)	56 (98.5m)
R8 East Façade 5th Floor	55 (21,5.5m)	49 (21.5.5m)
R9 East Façade 5th Floor Amenity Areas	39 (21.5m)	N/A
R10 East Façade 29th Floor	55 (98.5m)	49 (98.5m)
R11 North Façade 5th Floor	59 (21.5m)	53 (21.5m)
R12 North Façade 5th Floor Amenity Areas	46 (21.5m)	N/A
R13 North Façade 29th Floor	60 (98.5m)	54 (98.5m)

Free field predicted Plains Road East traffic noise levels at the west building facades and are summarized in Table 5B.

TABLE 5B- Predicted Traffic Noise Levels-Free Field		
Plains Road East	L_{eq} (dBA)	
	07:00 - 23:00	23:00 - 07:00
R1 West Façade 5th Floor	56 (21.5m)	50 (21.5m)
R2 West Façade 5th Floor Amenity Areas	47 (21.5m)	N/A
R3 West Façade 15th Floor	57 (53.5m)	51 (53.5m)
R4 West Façade 29th Floor	57 (98.5m)	51 (98.5m)
R5 South Façade 5th Floor	59 (21.5m)	53 (21.5m)
R6 South Façade 5th Floor Amenity Areas	47 (21.5m)	N/A
R7 South Façade 29th Floor	60 (98.5m)	54 (98.5m)
R8 East Façade 5th Floor	56 (21.5m)	49 (21.5m)
R9 East Façade 5th Floor Amenity Areas	47 (21.5m)	N/A
R10 East Façade 29th Floor	57 (98.5m)	50 (98.5m)
R11 North Façade 5th Floor	53 (21.5m)	46 (21.5m)
R12 North Façade 5th Floor Amenity Areas	41 (21.5m)	N/A
R13 North Façade 29th Floor	54 (98.5m)	47 (98.5m)

Free field predicted Waterdown Road & Plains Road East traffic noise levels COMBINED at the west building facades and are summarized in Table 5C.

TABLE 5C- Predicted Traffic Noise Levels-Free Field		
COMBINED Waterdown Road & Plains Road East	L_{eq} (dBA)	
	07:00 - 23:00	23:00 - 07:00
R1 West Façade 5th Floor	66 (21.5m)	59 (21.5m)
R2 West Façade 5th Floor Amenity Areas	51 (21.5m)	N/A
R3 West Façade 15th Floor	66 (53.5m)	59 (53.5m)
R4 West Façade 29th Floor	66 (98.5m)	59 (98.5m)
R5 South Façade 5th Floor	64 (21.5m)	57 (21.5m)
R6 South Façade 5th Floor Amenity Areas	51 (21.5m)	N/A
R7 South Façade 29th Floor	64 (98.5m)	58 (98.5m)
R8 East Façade 5th Floor	59 (21.5m)	52 (21.5m)
R9 East Façade 5th Floor Amenity Areas	47 (21.5m)	N/A
R10 East Façade 29th Floor	59 (98.5m)	53 (98.5m)
R11 North Façade 5th Floor	60 (21.5m)	54 (21.5m)
R12 North Façade 5th Floor Amenity Areas	47 (21.5m)	N/A
R13 North Façade 29th Floor	61 (98.5m)	55 (98.5m)

4.0 RECOMMENDATIONS - NOISE CONTROL

4.1 OUTDOOR LIVING AREAS

Calculated combined road noise levels exceed the 55 dBA criteria outlined in Table 1 for outdoor amenity spaces located on the 5th floor for all facades. The OLA will have a typical 0.91m (3ft) guardrail at building edge that is considered a safety guardrail requirement. The safety guardrail will provide adequate noise attenuation for the amenity spaces (OLA's). Standard balconies for all units are considered, however; a balcony is not considered an outdoor amenity space as the balconies do not exceed 4 metres in depth. These standard balconies with also have installed safety guardrails that will reduce the balcony noise levels further.

In compliance with MECP guidelines, a noise barrier must have a minimum surface density of 20kg/m^2 and be designed and constructed without cracks or gaps. Any gaps under the noise barrier that are necessary for drainage purposes must be minimized (2") and localized and must not deteriorate acoustical performance.

4.2 INDOOR NOISE LEVELS

Predicted noise levels for nighttime exceed noise limits noted in Table 3. Predicted noise levels at the outside facade were used to determine the appropriate building components to satisfy MECP indoor sound level limits. The building components are specified using the STC method.

All Windows must be acoustically tested. Building design specifications were not made available at report time and the STC (Sound Transmission Class) method are summarized in Table 6 with minimum window door and wall construction specified for all units throughout the development.

The STC was calculated for each room type, based on typical window to floor ratios of 20% for bedrooms and 30% for living areas. A maximum of two components were factored per room. Receptor locations are labelled on Figure 3.

TABLE 6 – Recommended Wall and Window Construction

LOCATION	STC Value to be Used	Wall Construction	Patio Doors Examples
West Building Façade All Floors	Acoustically Tested		Acoustically Tested
Bedroom	34	EW3	34
Living room	34	EW3	34
South Building Façade All Floors	Acoustically Tested		Acoustically Tested
Bedroom	34	EW3	34
Living room	34	EW3	34
East Building Façade All Floors	Acoustically Tested		Acoustically Tested
Bedroom	32	EW3	32
Living room	32	EW3	32
North Building Façade All Floors	Acoustically Tested		Acoustically Tested
Bedroom	32	EW3	32
Living room	32	EW3	32

Specific building components (walls, windows etc.) must be designed and constructed to achieve indoor sound levels within the noise criteria. Predicted noise levels at the outside facade of specific dwellings were used to determine the appropriate building components to satisfy MECP indoor sound level limits.

The building components were specified using the STC (Sound Transmission Class) method. Proposed may be concrete exterior walls that exceeds the EW3 wall components.

4.3 VENTILATION / WARNING CLAUSES

In addition to the inclusion of the specified minimum building components, all units as noted in following Table 7 will require central air conditioning with Type "A" & "D" warning clauses. Central air is considered throughout the building. It is recommended that the appropriate warning clauses be inserted into all Offers and Agreements of Purchase and Sale or Lease. See the following for specific warning clause wording:

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

5.0 WARNING CLAUSES

TYPE A:

"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 MECP noise criteria."

TYPE D:

"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 MECP noise criteria."

The heating and cooling system is proposed on the rooftop and located within a contained mechanical room and not exposed to the outdoor elements; therefore, no noise will emanate from the enclosed room that will disturb any area residences. The two cooling towers are also located on the rooftop, have proposed shielding with open air exposure, due to the height (100m), separation distance from residential properties and noise mitigation measures to be implemented must achieve MECP Publications NPC-300 noise criteria.

6.0 STATIONARY SOURCES

6.1 REGULATORY CONTEXT

The MECP Publication NPC-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 residential development are indicative of a "Class 1 Area" as defined in MECP Publication NPC-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 8.

No restrictions apply to stationary sources if the one-hour equivalent sound exposure (Leq) is lower than the levels in the following Table 8.

Although road traffic background noise may result in higher noise levels than the following Table 8 Minimum Sound Level Limits, Table 8 is used to achieve compliance with MECP Publication NPC-300, Stationary & Transportation Sources-Approval & Planning guidelines.

TABLE 8 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

6.2 KING PAVING & CONSTRUCTION

King Paving & Construction is located at 1077 Howard Road, Burlington, ON and they are across Waterdown Road and approximately 200m northwest of the proposed development. Their hours of operation are Monday to Friday 7am – 6pm, April to December, closed Saturday, and Sunday. Their primary business is construction, asphalt production, granular recycling, and truck center. The primary noise sources are trucks, front end loader, grinder, and excavator. King Paving & Construction has a MECP Certificate of Approval for noise and air. As a result of an onsite visit in November 2021 we can confirm that this site will not have an adverse noise impact on the proposed site due to distance separation and the Waterdown Road traffic noise levels.

6.3 BULKWOOD PRODUCTS

Bulkwood Products is located at 1140 Waterdown Road, Burlington, ON and are approximately 480m northwest of the proposed development. Their hours of operation are Monday – Friday 7am-3:30pm, Saturday 8am – 2pm, closed Sunday. They recycle pallets, waste wood and more to reduce waste. They do not create an adverse noise impact on the proposed site. A site visit was conducted in November 2021.

7.0 NOISE MONITORING LEVELS

Noise monitoring was carried out unannounced on Monday November 15, 2021, in the general area of King Paving & Construction is located at 1077 Howard Road, Burlington, ON to confirm the noise levels emanating King Paving daily outdoor operations with their property to establish if the noise levels recorded from various equipment complied with MECP Publication NPC-300, Stationary & Transportation Sources-Approval & Planning guidelines.

Noise monitoring was conducted off the south property line approximately 10m from the operating equipment onsite vehicle movements where the traffic background noise didn't hinder the actual noise level recording. See Appendix "B" for monitoring results and noise level results calculated at the proposed 29-storey building development.

Table 6.1 – Source Summary Table

Source ID	Noise Monitoring Time	Sound Level (dBA)	Source Location [1]	Sound Characteristics[2]	Noise Control Measures[3]
Trucks, Front End Loader	1 hour	71 dba at 10m	O	S	U

1- Source Location (O-Outside; I – Inside)
2- Sound Characteristics (S – Steady; Q – Quasi-steady impulsive; I – Impulsive; B – Buzzing; T-Tonal; C – Cyclic)
3-Noise Control Measures (S -Silencer; A – Acoustic Lining/Plenum; B – Barrier/Berm/Screening; L – Lagging; E – Acoustic Enclosure; O – Other; U- Uncontrolled

Table 6.2 – Point of Reception Noise Impact Table – Daytime

Source ID	Monitoring Distance 10m	Receptor R1 – Noise Monitoring Results	
		Distance (m)	Leq Level (dBA)
Trucks, Front End Loader	68 dba	157m	47
TOTAL dBA:			44

Calculating the overall noise level predicted at the 5th floor southwest building façade of the proposed development. The distance separation is approximately 157m from King Paving property. In calculating the overall noise level of the outdoor equipment movements operating for over 1 hour we have considered the worst -case scenario for the noise to be received at the proposed 5th floor amenity areas.

The calculations for the overall noise levels are as follows:
Distance Calculations:

10m ÷ 157m = (Log X 20) = 24dba. Subtract 68dba-16-dba = 44dba. (Overall)

Although the overall noise level is calculated free field (no obstructions) the background noise level from Waterdown Road is considered greater and therefore the King Paving daily operation do not have an acoustical noise impact on the proposed site development.

8.0 SUMMARY OF RECOMMENDATIONS

The following noise control measures or equivalent are required to satisfy the indoor and outdoors noise level criterion:

- Specific acoustically tested windows for living rooms and bedrooms (Table 6).
- Central Air Conditioning - All Units (Table 7).
- Registered warning clauses on title (Section 4.3).
- EW3 or Equivalent for the entire exterior walls of the building (Table 6).
- An updated environmental noise study will be required to further address the underground parking ventilation system noise levels.

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.

Prior to issuance of an occupancy permit, it is recommended the qualified acoustical consultant certify that the approved noise control measures have been properly installed.

9.0 CONCLUSIONS

dBA Acoustical Consultants Inc. has provided an environmental noise impact study on behalf of Infinity Development Group, 2275 Upper Middle Road East, Oakville ON, for the proposed 29-Storey Mixed-Use building, located at 1029-1033 Waterdown Road, Burlington, ON. Proposed are 282 residential units and 326 vehicle parking spaces within a 5-storey podium and 2 levels of underground parking. Commercial spaces are proposed at grade level.

The noise study determined the noise impact for OPA/ZBA approval from Plains Road East and Waterdown Road vehicular traffic. This study detailed noise impacts at the proposed development and recommended noise control measures necessary to meet MECP Publication NPC-300, Stationary and Transportation Sources-Approval and Planning guidelines, while satisfying the planning requirements of the City of Burlington.

Vibration was not considered in this report as there are CN/CP and GO Rail lines, and a CN Layover Yard are located north more than 500m. There is no heavy industry in the immediate area. Aircraft is not considered as the development is located outside the area of influence for aircraft noise NEF 25.

FIGURE 1
SITE LOCATION

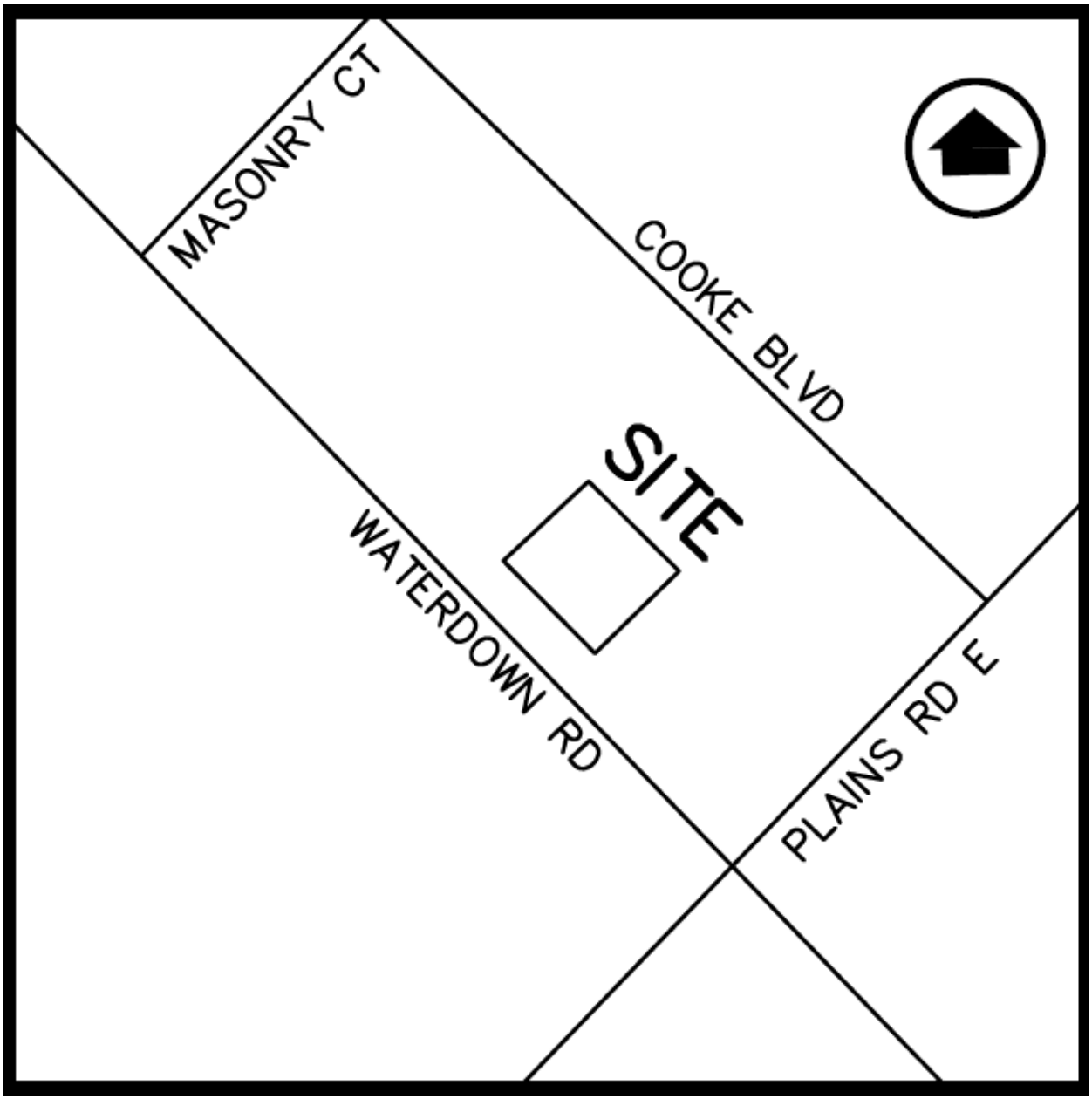


FIGURE 2
SITE PLAN

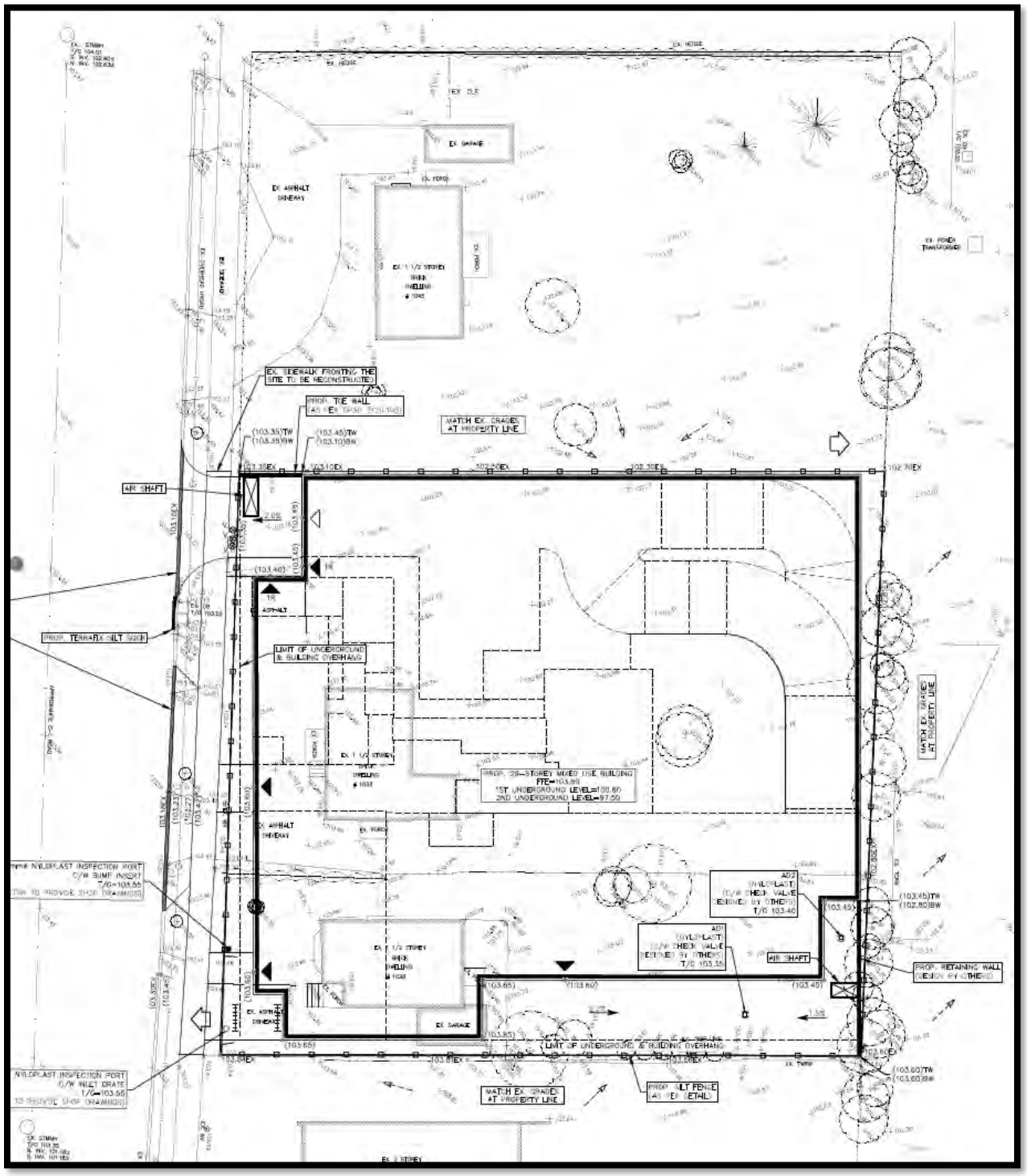


FIGURE 3
RECEPTOR LOCATIONS



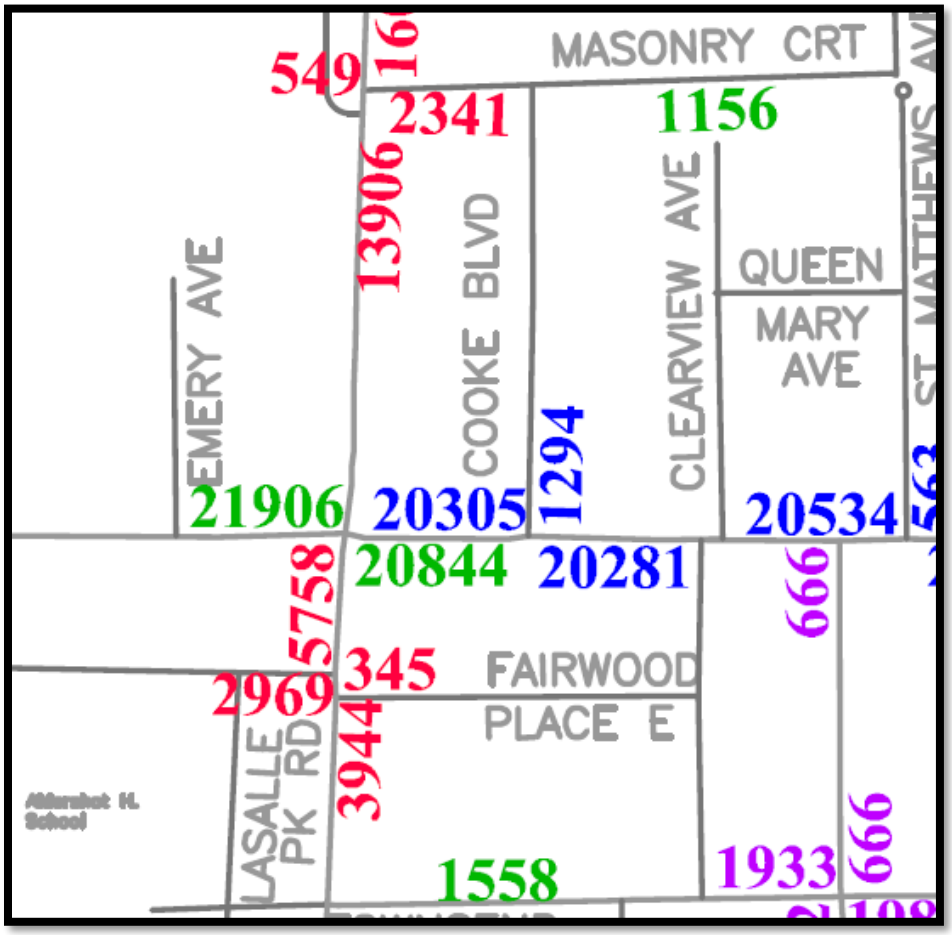
R1 West Façade 5th Floor	R7 South Façade 29th Floor
R2 West Façade 5th Floor Amenity Areas	R8 East Façade 5th Floor
R3 West Façade 15th Floor	R9 East Façade 5th Floor Amenity Areas
R4 West Façade 29th Floor	R10 East Façade 29th Floor
R5 South Façade 5th Floor	R11 North Façade 5th Floor
R6 South Façade 5th Floor Amenity Areas	R12 North Façade 5th Floor Amenity Areas
R7 South Façade 29th Floor	R13 North Façade 29th Floor

FIGURE 4
NOISE BARRIER LOCATION



APPENDIX "A"

CITY OF BURLINGTON
AADT TRAFFIC
2016 WATERDOWN ROAD (RED)
2017 PLAINS ROAD EAST (BLUE)



LEGEND

2017 AADT
2016 AADT
2015 AADT
2014 AADT
2013 AADT

STAMPSON CALCULATIONS

```
STAMSON 5.04        SUMMARY REPORT        Date: 18-11-2021 17:10:55
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: R1Water.te          Time Period: Day/Night 16/8 hours
Description: R1-West Façade 5th Floor Residential
                        TOTAL Leq FROM ALL SOURCES          (DAY): 65.69
                                                            (NIGHT): 59.15
Road data, segment # 1: Waterdown Rd (day/night)
-----------------------------------------------
Car traffic volume  : 16494/1833  veh/TimePeriod  *
Medium truck volume :   344/38    veh/TimePeriod  *
Heavy truck volume  :   344/38    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):  13906
    Percentage of Annual Growth        :   2.00
    Number of Years of Growth          :  16.00
    Medium Truck % of Total Volume     :   2.00
    Heavy Truck  % of Total Volume     :   2.00
    Day (16 hrs) % of Total Volume     :  90.00

Data for Segment # 1: Waterdown Rd (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  :  20.00 / 20.00  m
Receiver height           :  21.50 / 21.50  m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00

Road data, segment # 2: Plains Rd E (day/night)
-----------------------------------------------
Car traffic volume  : 23611/2623  veh/TimePeriod  *
Medium truck volume :   492/55    veh/TimePeriod  *
Heavy truck volume  :   492/55    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):  20305
    Percentage of Annual Growth        :   2.00
    Number of Years of Growth          :  15.00
    Medium Truck % of Total Volume     :   2.00
    Heavy Truck  % of Total Volume     :   2.00
    Day (16 hrs) % of Total Volume     :  90.00
```

```
Data for Segment # 2: 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                   :      1       (Absorptive ground surface)
Receiver source distance  : 132.00 / 132.00 m
Receiver height           :  21.50 / 21.50  m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00
```

Result summary (day)

	source height (m)	Road Leq (dBA)	Total Leq (dBA)
1.Waterdown Rd	1.19	65.15	65.15
2.Plains Rd E	1.19	56.33	56.33
Total			65.69 dBA

Result summary (night)

	source height (m)	Road Leq (dBA)	Total Leq (dBA)
1.Waterdown Rd	1.19	58.61	58.61
2.Plains Rd E	1.19	49.81	49.81
Total			59.15 dBA

```
STAMSON 5.04          SUMMARY REPORT          Date: 18-11-2021 17:12:12
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: r2Water.te              Time Period: Day/Night 16/8 hours
Description: R2 West Façade 5th Floor Amenity Area
                        TOTAL Leq FROM ALL SOURCES     (DAY): 51.49(Amenity)
                                                       (NIGHT): 40.09

Road data, segment # 1: Waterdown Rd (day/night)
-----------------------------------------------
Car traffic volume  : 16494/1833  veh/TimePeriod  *
Medium truck volume :   344/38    veh/TimePeriod  *
Heavy truck volume  :   344/38    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):  13906
    Percentage of Annual Growth        :   2.00
    Number of Years of Growth          :  16.00
    Medium Truck % of Total Volume     :   2.00
    Heavy Truck  % of Total Volume     :   2.00
    Day (16 hrs) % of Total Volume     :  90.00

Data for Segment # 1: Waterdown Rd (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  :  20.00 / 20.00  m
Receiver height           :  21.50 / 15.00  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 / 10.00  m
Source elevation          :   0.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :  21.50 m
Reference angle           :   0.00

Road data, segment # 2: Plains Rd E (day/night)
-----------------------------------------------
Car traffic volume  : 23611/2623  veh/TimePeriod  *
Medium truck volume :   492/55    veh/TimePeriod  *
Heavy truck volume  :   492/55    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):  20305
    Percentage of Annual Growth        :   2.00
    Number of Years of Growth          :  15.00
    Medium Truck % of Total Volume     :   2.00
    Heavy Truck  % of Total Volume     :   2.00
    Day (16 hrs) % of Total Volume     :  90.00

Data for Segment # 2: 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                   :      1       (Absorptive ground surface)
Receiver source distance  : 132.00 m
Receiver height           :  21.50 m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            :  -0.00 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         :  21.50 m
Reference angle           :   0.00

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

                    !  source  !   Road   !  Total
                    !  height  !   Leq    !   Leq
                    !   (m)    !  (dBA)   !  (dBA)
--------------------+---------+---------+---------
 1.Waterdown Rd     !     1.19 !    49.61 !    49.61
 2.Plains Rd E      !     1.19 !    46.94 !    46.94
--------------------+---------+---------+---------
                      Total                 51.49 dBA
```

```
STAMSON 5.04        SUMMARY REPORT        Date: 18-11-2021 17:12:50
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: r3Water.te            Time Period: Day/Night 16/8 hours
Description: R3 West Façade 15th Floor
                        TOTAL Leq FROM ALL SOURCES    (DAY): 65.79
                                                      (NIGHT): 59.26

Road data, segment # 1: Waterdown Rd (day/night)
-----------------------------------------------
Car traffic volume  : 16494/1833  veh/TimePeriod  *
Medium truck volume :   344/38    veh/TimePeriod  *
Heavy truck volume  :   344/38    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):  13906
    Percentage of Annual Growth        :   2.00
    Number of Years of Growth          :  16.00
    Medium Truck % of Total Volume     :   2.00
    Heavy Truck  % of Total Volume     :   2.00
    Day (16 hrs) % of Total Volume     :  90.00

Data for Segment # 1: Waterdown Rd (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  :  20.00 / 20.00  m
Receiver height           :  53.50 / 53.50  m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00


Road data, segment # 2: Plains Rd E (day/night)
-----------------------------------------------
Car traffic volume  : 23611/2623  veh/TimePeriod  *
Medium truck volume :   492/55    veh/TimePeriod  *
Heavy truck volume  :   492/55    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):  20305
    Percentage of Annual Growth        :   2.00
    Number of Years of Growth          :  15.00
    Medium Truck % of Total Volume     :   2.00
    Heavy Truck  % of Total Volume     :   2.00
    Day (16 hrs) % of Total Volume     :  90.00
```

```
Data for Segment # 2: 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                   :      1       (Absorptive ground surface)
Receiver source distance  : 132.00 / 132.00 m
Receiver height           :  53.50 / 53.50  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.Waterdown Rd     !     1.19 !    65.15 !    65.15
 2.Plains Rd E      !     1.19 !    57.18 !    57.18
--------------------+---------+---------+---------
                      Total                  65.79 dBA

Result summary (night)
----------------------

                    !  source  !   Road   !  Total
                    !  height  !   Leq    !   Leq
                    !   (m)    !  (dBA)   !  (dBA)
--------------------+---------+---------+---------
 1.Waterdown Rd     !     1.19 !    58.61 !    58.61
 2.Plains Rd E      !     1.19 !    50.67 !    50.67
--------------------+---------+---------+---------
                      Total                  59.26 dBA
```

```
STAMSON 5.04        SUMMARY REPORT        Date: 18-11-2021 17:13:20
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: r4water.te           Time Period: Day/Night 16/8 hours
Description: R4 West Façade 29th Floor Residential
                TOTAL Leq FROM ALL SOURCES       (DAY): 65.79
                                                 (NIGHT): 59.26
Road data, segment # 1: Waterdown Rd (day/night)
-----------------------------------------------
Car traffic volume  : 16494/1833  veh/TimePeriod  *
Medium truck volume :   344/38    veh/TimePeriod  *
Heavy truck volume  :   344/38    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):  13906
    Percentage of Annual Growth        :   2.00
    Number of Years of Growth          :  16.00
    Medium Truck % of Total Volume     :   2.00
    Heavy Truck  % of Total Volume     :   2.00
    Day (16 hrs) % of Total Volume     :  90.00

Data for Segment # 1: Waterdown Rd (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  :  20.00 / 20.00  m
Receiver height           :  98.00 / 98.50  m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00

Road data, segment # 2: Plains Rd E (day/night)
-----------------------------------------------
Car traffic volume  : 23611/2623  veh/TimePeriod  *
Medium truck volume :   492/55    veh/TimePeriod  *
Heavy truck volume  :   492/55    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):  20305
    Percentage of Annual Growth        :   2.00
    Number of Years of Growth          :  15.00
    Medium Truck % of Total Volume     :   2.00
    Heavy Truck  % of Total Volume     :   2.00
    Day (16 hrs) % of Total Volume     :  90.00
```

```
Data for Segment # 2: 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                   :      1       (Absorptive ground surface)
Receiver source distance  : 132.00 / 132.00 m
Receiver height           :  98.50 / 98.50  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.Waterdown Rd     !     1.19 !    65.15 !    65.15
 2.Plains Rd E      !     1.19 !    57.18 !    57.18
--------------------+---------+---------+---------
                      Total                  65.79 dBA
Result summary (night)
----------------------

                    !  source  !   Road   !  Total
                    !  height  !   Leq    !   Leq
                    !   (m)    !  (dBA)   !  (dBA)
--------------------+---------+---------+---------
 1.Waterdown Rd     !     1.19 !    58.61 !    58.61
 2.Plains Rd E      !     1.19 !    50.67 !    50.67
--------------------+---------+---------+---------
                      Total                  59.26 dBA
```

```
STAMSON 5.04        SUMMARY REPORT        Date: 18-11-2021 17:13:49
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: r5water.te           Time Period: Day/Night 16/8 hours
Description: R5 South Façade 5th Floor Residential
                        TOTAL Leq FROM ALL SOURCES          (DAY): 63.97
                                                            (NIGHT): 57.43
Road data, segment # 1: Waterdown Rd (day/night)
-----------------------------------------------
Car traffic volume  : 16494/1833  veh/TimePeriod  *
Medium truck volume :   344/38    veh/TimePeriod  *
Heavy truck volume  :   344/38    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):  13906
    Percentage of Annual Growth        :   2.00
    Number of Years of Growth          :  16.00
    Medium Truck % of Total Volume     :   2.00
    Heavy Truck  % of Total Volume     :   2.00
    Day (16 hrs) % of Total Volume     :  90.00

Data for Segment # 1: Waterdown Rd (day/night)
-----------------------------------------------
Angle1   Angle2           : -90.00 deg   0.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  20.00 / 20.00  m
Receiver height           :  21.50 / 21.50  m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00

Road data, segment # 2: Plains Rd E (day/night)
-----------------------------------------------
Car traffic volume  : 23611/2623  veh/TimePeriod  *
Medium truck volume :   492/55    veh/TimePeriod  *
Heavy truck volume  :   492/55    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):  20305
    Percentage of Annual Growth        :   2.00
    Number of Years of Growth          :  15.00
    Medium Truck % of Total Volume     :   2.00
    Heavy Truck  % of Total Volume     :   2.00
    Day (16 hrs) % of Total Volume     :  90.00
```

```
Data for Segment # 2: 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                   :      1       (Absorptive ground surface)
Receiver source distance  : 132.00 / 132.00 m
Receiver height           :  21.50 / 21.50  m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00
```

Result summary (day)

	source height (m)	Road Leq (dBA)	Total Leq (dBA)
1.Waterdown Rd	1.19	62.14	62.14
2.Plains Rd E	1.19	59.34	59.34
Total			63.97 dBA

Result summary (night)

	source height (m)	Road Leq (dBA)	Total Leq (dBA)
1.Waterdown Rd	1.19	55.59	55.59
2.Plains Rd E	1.19	52.82	52.82
Total			57.43 dBA

```
STAMSON 5.04        SUMMARY REPORT        Date: 18-11-2021 17:18:35
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: r6water.te           Time Period: Day/Night 16/8 hours
Description: R6-South Façade 5th Floor Amenity Area
                  TOTAL Leq FROM ALL SOURCES (DAY): 51.03 (Amenity Area)

Road data, segment # 1: Waterdown Rd (day/night)
-----------------------------------------------
Car traffic volume  : 16494/1833  veh/TimePeriod  *
Medium truck volume :   344/38    veh/TimePeriod  *
Heavy truck volume  :   344/38    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):  13906
    Percentage of Annual Growth        :   2.00
    Number of Years of Growth          :  16.00
    Medium Truck % of Total Volume     :   2.00
    Heavy Truck  % of Total Volume     :   2.00
    Day (16 hrs) % of Total Volume     :  90.00

Data for Segment # 1: Waterdown Rd (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  :  20.00 / 20.00  m
Receiver height           :  21.00 / 21.50  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 / 3.00   m
Source elevation          :   0.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :  21.50 m
Reference angle           :   0.00

Road data, segment # 2: Plains Rd E (day/night)
-----------------------------------------------
Car traffic volume  : 23611/2623  veh/TimePeriod  *
Medium truck volume :   492/55    veh/TimePeriod  *
Heavy truck volume  :   492/55    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):  20305
    Percentage of Annual Growth        :   2.00
    Number of Years of Growth          :  15.00
    Medium Truck % of Total Volume     :   2.00
    Heavy Truck  % of Total Volume     :   2.00
    Day (16 hrs) % of Total Volume     :  90.00

Data for Segment # 2: 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                   :      1       (Absorptive ground surface)
Receiver source distance  : 132.00 / 132.00 m
Receiver height           :  21.50 / 21.50  m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            :  -0.00 deg   Angle2 : 90.00 deg
Barrier height            :   0.91 m
Barrier receiver distance :   3.00 / 3.00   m
Source elevation          :   0.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :  21.50 m
Reference angle           :   0.00

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

                    !  source  !   Road   !  Total
                    !  height  !   Leq    !   Leq
                    !   (m)    !  (dBA)   !  (dBA)
--------------------+---------+---------+---------
 1.Waterdown Rd     !     1.19 !    48.89 !    48.89
 2.Plains Rd E      !     1.19 !    46.94 !    46.94
--------------------+---------+---------+---------
                      Total                 51.03 dBA
```

```
STAMSON 5.04        SUMMARY REPORT        Date: 18-11-2021 03:50:20
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: r7water.te           Time Period: Day/Night 16/8 hours
Description: R7- South Facade 29th Floor Residential
                 TOTAL Leq FROM ALL SOURCES        (DAY): 64.28
                                                   (NIGHT): 57.75
Road data, segment # 1: Waterdown Rd (day/night)
-----------------------------------------------
Car traffic volume  : 16494/1833  veh/TimePeriod  *
Medium truck volume :   344/38    veh/TimePeriod  *
Heavy truck volume  :   344/38    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):  13906
    Percentage of Annual Growth        :   2.00
    Number of Years of Growth          :  16.00
    Medium Truck % of Total Volume     :   2.00
    Heavy Truck  % of Total Volume     :   2.00
    Day (16 hrs) % of Total Volume     :  90.00

Data for Segment # 1: Waterdown Rd (day/night)
-----------------------------------------------
Angle1   Angle2           : -90.00 deg   0.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  20.00 / 20.00  m
Receiver height           :  98.50 / 98.50  m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00

Road data, segment # 2: Plains Rd E (day/night)
-----------------------------------------------
Car traffic volume  : 23611/2623  veh/TimePeriod  *
Medium truck volume :   492/55    veh/TimePeriod  *
Heavy truck volume  :   492/55    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):  20305
    Percentage of Annual Growth        :   2.00
    Number of Years of Growth          :  15.00
    Medium Truck % of Total Volume     :   2.00
    Heavy Truck  % of Total Volume     :   2.00
    Day (16 hrs) % of Total Volume     :  90.00
```

```
Data for Segment # 2: 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                   :      1       (Absorptive ground surface)
Receiver source distance  : 132.00 / 132.00 m
Receiver height           :  98.50 / 98.50  m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00
```

Result summary (day)

	source height (m)	Road Leq (dBA)	Total Leq (dBA)
1.Waterdown Rd	1.19	62.14	62.14
2.Plains Rd E	1.19	60.19	60.19
Total			64.28 dBA

Result summary (night)

	source height (m)	Road Leq (dBA)	Total Leq (dBA)
1.Waterdown Rd	1.19	55.59	55.59
2.Plains Rd E	1.19	53.68	53.68
Total			57.75 dBA

```
STAMSON 5.04       SUMMARY REPORT        Date: 18-11-2021 04:30:54
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: r8water.te           Time Period: Day/Night 16/8 hours
Description: R8- East Facade 5th Floor Residential
                     TOTAL Leq FROM ALL SOURCES        (DAY): 58.55
                                                       (NIGHT): 52.02
Road data, segment # 1: Waterdown Rd (day/night)
-----------------------------------------------
Car traffic volume  : 16494/1833  veh/TimePeriod  *
Medium truck volume :   344/38    veh/TimePeriod  *
Heavy truck volume  :   344/38    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):  13906
    Percentage of Annual Growth        :   2.00
    Number of Years of Growth          :  16.00
    Medium Truck % of Total Volume     :   2.00
    Heavy Truck  % of Total Volume     :   2.00
    Day (16 hrs) % of Total Volume     :  90.00

Data for Segment # 1: Waterdown Rd (day/night)
-----------------------------------------------
Angle1   Angle2           : -45.00 deg   0.00 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           :  21.50 / 21.50  m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00

Road data, segment # 2: Plains Rd E (day/night)
-----------------------------------------------
Car traffic volume  : 23611/2623  veh/TimePeriod  *
Medium truck volume :   492/55    veh/TimePeriod  *
Heavy truck volume  :   492/55    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):  20305
    Percentage of Annual Growth        :   2.00
    Number of Years of Growth          :  15.00
    Medium Truck % of Total Volume     :   2.00
    Heavy Truck  % of Total Volume     :   2.00
    Day (16 hrs) % of Total Volume     :  90.00
```

```
Data for Segment # 2: 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                   :      1       (Absorptive ground surface)
Receiver source distance  : 145.00 / 145.00 m
Receiver height           :  21.50 / 21.50  m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00
```

Result summary (day)

	source height (m)	Road Leq (dBA)	Total Leq (dBA)
1.Waterdown Rd	1.19	55.15	55.15
2.Plains Rd E	1.19	55.89	55.89
Total			58.55 dBA

Result summary (night)

	source height (m)	Road Leq (dBA)	Total Leq (dBA)
1.Waterdown Rd	1.19	48.61	48.61
2.Plains Rd E	1.19	49.38	49.38
Total			52.02 dBA

```
STAMSON 5.04        SUMMARY REPORT        Date: 18-11-2021 05:07:37
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: r9water.te           Time Period: Day/Night 16/8 hours
Description: R9- East Facade 5th Floor Residential Amenity Area
                 TOTAL Leq FROM ALL SOURCES    (DAY): 47.43 (Amenity Area)

Road data, segment # 1: Waterdown Rd (day/night)
-----------------------------------------------
Car traffic volume  : 16494/1833  veh/TimePeriod  *
Medium truck volume :   344/38    veh/TimePeriod  *
Heavy truck volume  :   344/38    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):  13906
    Percentage of Annual Growth        :   2.00
    Number of Years of Growth          :  16.00
    Medium Truck % of Total Volume     :   2.00
    Heavy Truck  % of Total Volume     :   2.00
    Day (16 hrs) % of Total Volume     :  90.00

Data for Segment # 1: Waterdown Rd (day/night)
-----------------------------------------------
Angle1   Angle2           : -45.00 deg   0.00 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           :  21.50 / 21.50  m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -45.00 deg   Angle2 : 0.00 deg
Barrier height            :   0.91 m
Barrier receiver distance :   3.00 / 3.00   m
Source elevation          :   0.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :  21.50 m
Reference angle           :   0.00

Road data, segment # 2: Plains Rd E (day/night)
-----------------------------------------------
Car traffic volume  : 23611/2623  veh/TimePeriod  *
Medium truck volume :   492/55    veh/TimePeriod  *
Heavy truck volume  :   492/55    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):  20305
    Percentage of Annual Growth        :   2.00
    Number of Years of Growth          :  15.00
    Medium Truck % of Total Volume     :   2.00
    Heavy Truck  % of Total Volume     :   2.00
    Day (16 hrs) % of Total Volume     :  90.00

Data for Segment # 2: 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                   :      1       (Absorptive ground surface)
Receiver source distance  : 145.00 / 145.00 m
Receiver height           :  21.50 / 21.50  m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            :  -0.00 deg   Angle2 : 90.00 deg
Barrier height            :   0.91 m
Barrier receiver distance :   3.00 / 3.00   m
Source elevation          :   0.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :  21.50 m
Reference angle           :   0.00

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

                    !  source  !   Road   !  Total
                    !  height  !   Leq    !   Leq
                    !   (m)    !  (dBA)   !  (dBA)
--------------------+---------+---------+---------
 1.Waterdown Rd     !     1.19 !    39.34 !    39.34
 2.Plains Rd E      !     1.19 !    46.70 !    46.70
--------------------+---------+---------+---------
                      Total                  47.43 dBA
```

```
STAMSON 5.04        SUMMARY REPORT        Date: 18-11-2021 18:01:13
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: R10Water.te           Time Period: Day/Night 16/8 hours
Description: R10 East Façade 29th Floor Residential
                        TOTAL Leq FROM ALL SOURCES          (DAY): 59.05
                                                            (NIGHT): 52.52
Road data, segment # 1: Waterdown Rd (day/night)
-----------------------------------------------
Car traffic volume  : 16494/1833  veh/TimePeriod  *
Medium truck volume :   344/38    veh/TimePeriod  *
Heavy truck volume  :   344/38    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):  13906
    Percentage of Annual Growth        :   2.00
    Number of Years of Growth          :  16.00
    Medium Truck % of Total Volume     :   2.00
    Heavy Truck  % of Total Volume     :   2.00
    Day (16 hrs) % of Total Volume     :  90.00

Data for Segment # 1: Waterdown Rd (day/night)
-----------------------------------------------
Angle1   Angle2           : -45.00 deg   0.00 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           :  98.50 / 98.50  m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00

Road data, segment # 2: Plains Rd E (day/night)
-----------------------------------------------
Car traffic volume  : 23611/2623  veh/TimePeriod  *
Medium truck volume :   492/55    veh/TimePeriod  *
Heavy truck volume  :   492/55    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):  20305
    Percentage of Annual Growth        :   2.00
    Number of Years of Growth          :  15.00
    Medium Truck % of Total Volume     :   2.00
    Heavy Truck  % of Total Volume     :   2.00
    Day (16 hrs) % of Total Volume     :  90.00
```

```
Data for Segment # 2: 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                   :      1       (Absorptive ground surface)
Receiver source distance  : 145.00 / 145.00 m
Receiver height           :  98.50 / 98.50  m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00
```

Result summary (day)

	source height (m)	Road Leq (dBA)	Total Leq (dBA)
1.Waterdown Rd	1.19	55.15	55.15
2.Plains Rd E	1.19	56.78	56.78
Total			59.05 dBA

Result summary (night)

	source height (m)	Road Leq (dBA)	Total Leq (dBA)
1.Waterdown Rd	1.19	48.61	48.61
2.Plains Rd E	1.19	50.26	50.26
Total			52.52 dBA

```
STAMSON 5.04        NORMAL REPORT        Date: 18-11-2021 05:56:45
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: r11water.te          Time Period: Day/Night 16/8 hours
Description: R11- North Facade 5th Floor Residential
                 TOTAL Leq FROM ALL SOURCES        (DAY): 61.09
                                                   (NIGHT): 54.55
Road data, segment # 1: Waterdown Rd (day/night)
-----------------------------------------------
Car traffic volume  : 16494/1833  veh/TimePeriod  *
Medium truck volume :   344/38    veh/TimePeriod  *
Heavy truck volume  :   344/38    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):  13906
    Percentage of Annual Growth        :   2.00
    Number of Years of Growth          :  16.00
    Medium Truck % of Total Volume     :   2.00
    Heavy Truck  % of Total Volume     :   2.00
    Day (16 hrs) % of Total Volume     :  90.00

Data for Segment # 1: Waterdown Rd (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  :  30.00 / 30.00  m
Receiver height           :  21.50 / 21.50  m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00

Road data, segment # 2: Plains Rd E (day/night)
-----------------------------------------------
Car traffic volume  : 23611/2623  veh/TimePeriod  *
Medium truck volume :   492/55    veh/TimePeriod  *
Heavy truck volume  :   492/55    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):  20305
    Percentage of Annual Growth        :   2.00
    Number of Years of Growth          :  15.00
    Medium Truck % of Total Volume     :   2.00
    Heavy Truck  % of Total Volume     :   2.00
    Day (16 hrs) % of Total Volume     :  90.00
```

```
Data for Segment # 2: Plains Rd E (day/night)
-----------------------------------------
Angle1   Angle2           :  -0.00 deg   45.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  : 150.00 / 150.00 m
Receiver height           :  21.50 / 21.50  m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00

Results segment # 1: Waterdown Rd (day)
---------------------------------------

Source height = 1.19 m

ROAD (0.00 + 60.38 + 0.00) = 60.38 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------
--
    -0     90   0.00  66.40   0.00  -3.01  -3.01   0.00   0.00   0.00
60.38
-------------------------------------------------------------------------
--

Segment Leq : 60.38 dBA

Results segment # 2: Plains Rd E (day)
--------------------------------------

Source height = 1.19 m

ROAD (0.00 + 52.89 + 0.00) = 52.89 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------
--
    -0     45   0.07  69.64   0.00 -10.69  -6.05   0.00   0.00   0.00
52.89
-------------------------------------------------------------------------
--

Segment Leq : 52.89 dBA

Total Leq All Segments: 61.09 dBA
```

```
Results segment # 1: Waterdown Rd (night)
------------------------------------------

Source height = 1.19 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
-------------------------------------------------------------------------
--
    -0     90   0.00  59.85   0.00  -3.01  -3.01   0.00   0.00   0.00
53.83
-------------------------------------------------------------------------
--

Segment Leq : 53.83 dBA

Results segment # 2: Plains Rd E (night)
------------------------------------------

Source height = 1.19 m

ROAD (0.00 + 46.38 + 0.00) = 46.38 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------
--
    -0     45   0.07  63.12   0.00 -10.69  -6.05   0.00   0.00   0.00
46.38
-------------------------------------------------------------------------
--

Segment Leq : 46.38 dBA

Total Leq All Segments: 54.55 dBA
```

```
STAMSON 5.04        NORMAL REPORT        Date: 18-11-2021 06:10:10
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: r12water.te          Time Period: Day/Night 16/8 hours
Description: R12- North Facade 5th Floor Residential Amenity
                 TOTAL Leq FROM ALL SOURCES              (DAY): 60.06
                                                        (NIGHT): 53.51

Road data, segment # 1: Waterdown Rd (day/night)
-----------------------------------------------
Car traffic volume  : 16494/1833  veh/TimePeriod  *
Medium truck volume :   344/38    veh/TimePeriod  *
Heavy truck volume  :   344/38    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):  13906
    Percentage of Annual Growth        :   2.00
    Number of Years of Growth          :  16.00
    Medium Truck % of Total Volume     :   2.00
    Heavy Truck  % of Total Volume     :   2.00
    Day (16 hrs) % of Total Volume     :  90.00

Data for Segment # 1: Waterdown Rd (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  :  40.00 / 40.00  m
Receiver height           :  21.50 / 21.50  m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            :  -0.00 deg   Angle2 : 90.00 deg
Barrier height            :   3.00 m
Barrier receiver distance :  10.00 / 10.00  m
Source elevation          :   0.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00

Road data, segment # 2: Plains Rd E (day/night)
-----------------------------------------------
Car traffic volume  : 23611/2623  veh/TimePeriod  *
Medium truck volume :   492/55    veh/TimePeriod  *
Heavy truck volume  :   492/55    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):  20305
    Percentage of Annual Growth        :   2.00
    Number of Years of Growth          :  15.00
    Medium Truck % of Total Volume     :   2.00
    Heavy Truck  % of Total Volume     :   2.00
    Day (16 hrs) % of Total Volume     :  90.00

Data for Segment # 2: Plains Rd E (day/night)
---------------------------------------------
Angle1   Angle2           :  -0.00 deg   45.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  : 150.00 / 150.00 m
Receiver height           :  21.50 / 21.50  m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            :  -0.00 deg   Angle2 : 45.00 deg
Barrier height            :   3.00 m
Barrier receiver distance :  10.00 / 10.00  m
Source elevation          :   0.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00

Results segment # 1: Waterdown Rd (day)
---------------------------------------

Source height = 1.19 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.19 !       21.50 !       16.42 !        16.42

ROAD (0.00 + 59.13 + 0.00) = 59.13 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------------
--
    -0     90   0.00  66.40   0.00  -4.26  -3.01   0.00   0.00  -0.01
59.12*
    -0     90   0.00  66.40   0.00  -4.26  -3.01   0.00   0.00   0.00
59.13
-------------------------------------------------------------------------------
--

Segment Leq : 59.13 dBA
```

```
Results segment # 2: Plains Rd E (day)
---------------------------------------

Source height = 1.19 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.19 !       21.50 !       20.15 !        20.15

ROAD (0.00 + 52.89 + 0.00) = 52.89 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------
--
    -0     45   0.00  69.64   0.00 -10.00  -6.02   0.00   0.00   0.00
53.62*
    -0     45   0.07  69.64   0.00 -10.69  -6.05   0.00   0.00   0.00
52.89
-------------------------------------------------------------------------
--

Segment Leq : 52.89 dBA

Total Leq All Segments: 60.06 dBA


Results segment # 1: Waterdown Rd (night)
-----------------------------------------

Source height = 1.19 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.19 !       21.50 !       16.42 !        16.42

ROAD (0.00 + 52.58 + 0.00) = 52.58 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------
--
    -0     90   0.00  59.85   0.00  -4.26  -3.01   0.00   0.00  -0.01
52.57*
    -0     90   0.00  59.85   0.00  -4.26  -3.01   0.00   0.00   0.00
52.58
-------------------------------------------------------------------------
--

Segment Leq : 52.58 dBA
```

```
STAMSON 5.04        NORMAL REPORT        Date: 18-11-2021 06:28:23
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: r13water.te          Time Period: Day/Night 16/8 hours
Description: R13- North Facade 29th Floor Residential
                 TOTAL Leq FROM ALL SOURCES              (DAY): 61.21
                                                        (NIGHT): 54.67
Road data, segment # 1: Waterdown Rd (day/night)
-----------------------------------------------
Car traffic volume  : 16494/1833  veh/TimePeriod  *
Medium truck volume :   344/38    veh/TimePeriod  *
Heavy truck volume  :   344/38    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):  13906
    Percentage of Annual Growth        :   2.00
    Number of Years of Growth          :  16.00
    Medium Truck % of Total Volume     :   2.00
    Heavy Truck  % of Total Volume     :   2.00
    Day (16 hrs) % of Total Volume     :  90.00

Data for Segment # 1: Waterdown Rd (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  :  30.00 / 30.00  m
Receiver height           :  98.50 / 98.50  m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00

Road data, segment # 2: Plains Rd E (day/night)
-----------------------------------------------
Car traffic volume  : 23611/2623  veh/TimePeriod  *
Medium truck volume :   492/55    veh/TimePeriod  *
Heavy truck volume  :   492/55    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):  20305
    Percentage of Annual Growth        :   2.00
    Number of Years of Growth          :  15.00
    Medium Truck % of Total Volume     :   2.00
    Heavy Truck  % of Total Volume     :   2.00
    Day (16 hrs) % of Total Volume     :  90.00
```

```
Data for Segment # 2: Plains Rd E (day/night)
------------------------------------------------
Angle1   Angle2           :  -0.00 deg   45.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  : 150.00 / 150.00 m
Receiver height           :  98.50 / 98.50  m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00

Results segment # 1: Waterdown Rd (day)
---------------------------------------

Source height = 1.19 m

ROAD (0.00 + 60.38 + 0.00) = 60.38 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------------
--
    -0     90   0.00  66.40   0.00  -3.01  -3.01   0.00   0.00   0.00
60.38
-------------------------------------------------------------------------------
--

Segment Leq : 60.38 dBA

Results segment # 2: Plains Rd E (day)
--------------------------------------

Source height = 1.19 m

ROAD (0.00 + 53.62 + 0.00) = 53.62 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------------
--
    -0     45   0.00  69.64   0.00 -10.00  -6.02   0.00   0.00   0.00
53.62
-------------------------------------------------------------------------------
--

Segment Leq : 53.62 dBA

Total Leq All Segments: 61.21 dBA
```

```
Results segment # 1: Waterdown Rd (night)
------------------------------------------

Source height = 1.19 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
-------------------------------------------------------------------------
--
    -0     90   0.00  59.85   0.00  -3.01  -3.01   0.00   0.00   0.00
53.83
-------------------------------------------------------------------------
--

Segment Leq : 53.83 dBA

Results segment # 2: Plains Rd E (night)
------------------------------------------

Source height = 1.19 m

ROAD (0.00 + 47.10 + 0.00) = 47.10 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj
SubLeq
-------------------------------------------------------------------------
--
    -0     45   0.00  63.12   0.00 -10.00  -6.02   0.00   0.00   0.00
47.10
-------------------------------------------------------------------------
--

Segment Leq : 47.10 dBA

Total Leq All Segments: 54.67 dBA
```

RENDERING OF BUILDING



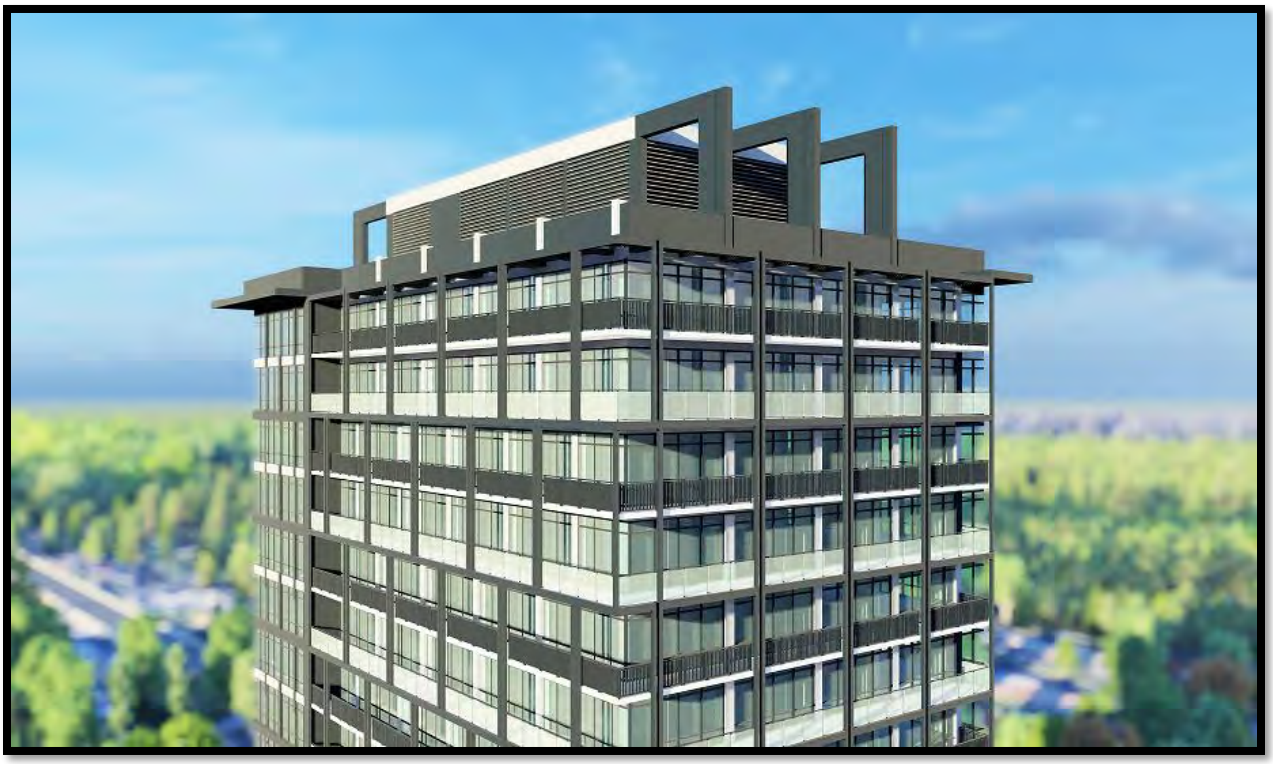






















BUILDING STATS

BUILDING STATS									
	Parking							Unit Types	
Floor Level	Count	Area BG (Sqm)	Area AG (sqm)	Retail (sqm)	Amenity (Sqm)	Floor Area (Sqm)	Total Units	1 Bed	2 Bed
29						750	6	0	6
28						750	12	10	2
27						750	12	10	2
26						750	12	10	2
25				0	0	750	12	10	2
24						750	12	10	2
23						750	12	10	2
22						750	12	10	2
21						750	12	10	2
20						750	12	10	2
19						750	12	10	2
18						750	12	10	2
17						750	12	10	2
16						750	12	10	2
15						750	12	10	2
14						750	12	10	2
13						750	12	10	2
12						750	12	10	2
11						750	12	10	2
10						750	12	10	2
9						750	12	10	2
8						750	12	10	2
7						750	12	10	2
6						1006	13	4	9
5				0	78	1006	12	4	8
4.5	41	0	1337						
4	53	0	1858			0	0	0	
3	56	0	1602			0	0	0	
2	42	0	1421			0	0	0	
1 (GRADE)	0			189	650	2177			
-2	64	2353							
-1	64	2353							
	320	4706	6218	189	728	21439	295	228	67

SITE DEVELOPMENT STATS

Site Development Stats

1029-1033 Waterdown Rd.

	ITEM	PROPOSED
1	ZONE - PROPOSED BUILDING PERMITTED USES	/
2	LOT AREA	2,614sqm (0.261 ha)
3	LOT FRONTAGE	48.67m
4	FRONT YARD SETBACK (podium)	0.0m
4.5	FRONT YARD SETBACK (tower)	3.77m
5	REAR YARD DEPTH (podium)	0m
5.5	REAR YARD DEPTH (tower)	13.55m
6	INTERIOR SIDEYARD DEPTH (podium)	0.25m (north) 1.21m (south)
6.5	INTERIOR SIDEYARD DEPTH (tower)	12.59m (north) 12.5 (south)
7	LANDSCAPE OPEN SPACE	6%
8	COVERAGE	94%
9	HEIGHT	107.08m
10	DENSITY	1130 uph (295 units)
11	RESIDENTIAL PARKING	320 spaces (1.08 per)
12	RESIDENTIAL BIKE PARKING	60 spaces (0.2 per)

VEHICLE PARKING:

RESIDENTIAL REQUIREMENTS

295 UNITS

RESIDENTIAL (1:1) = 295 REQUIRED **= 295 PROVIDED (1:1)**

VISITOR (1:0.25) = 75 REQUIRED **= 25 PROVIDED (1:0.08)**

BIKE PARKING:

RESIDENTIAL REQUIREMENTS

295 UNITS

SHORT TERM (0.05) = 15 REQUIRED = 15 PROVIDED

LONG TERM (0.5) = 150 REQUIRED = 60 PROVIDED

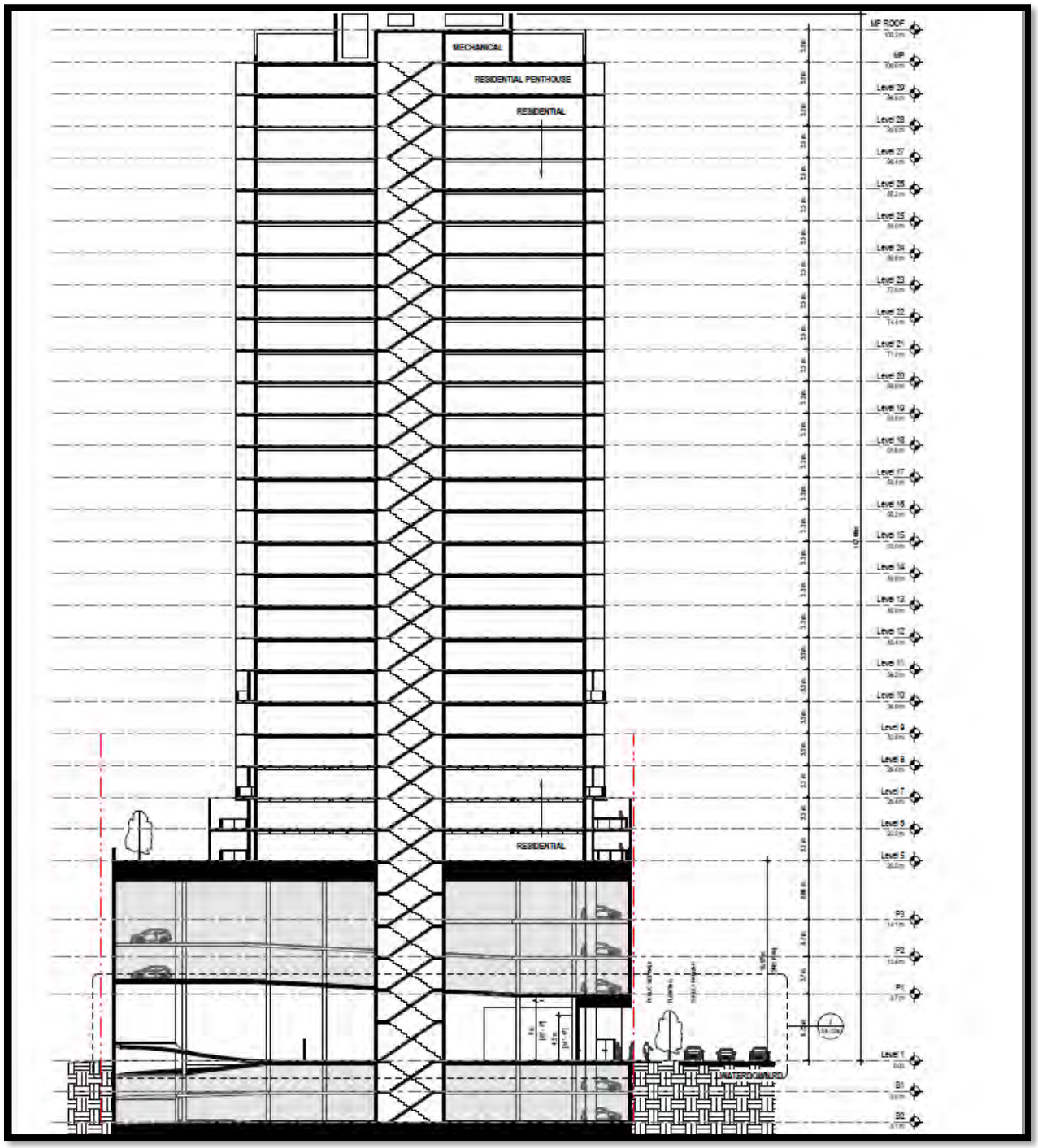
RETAIL REQUIREMENTS

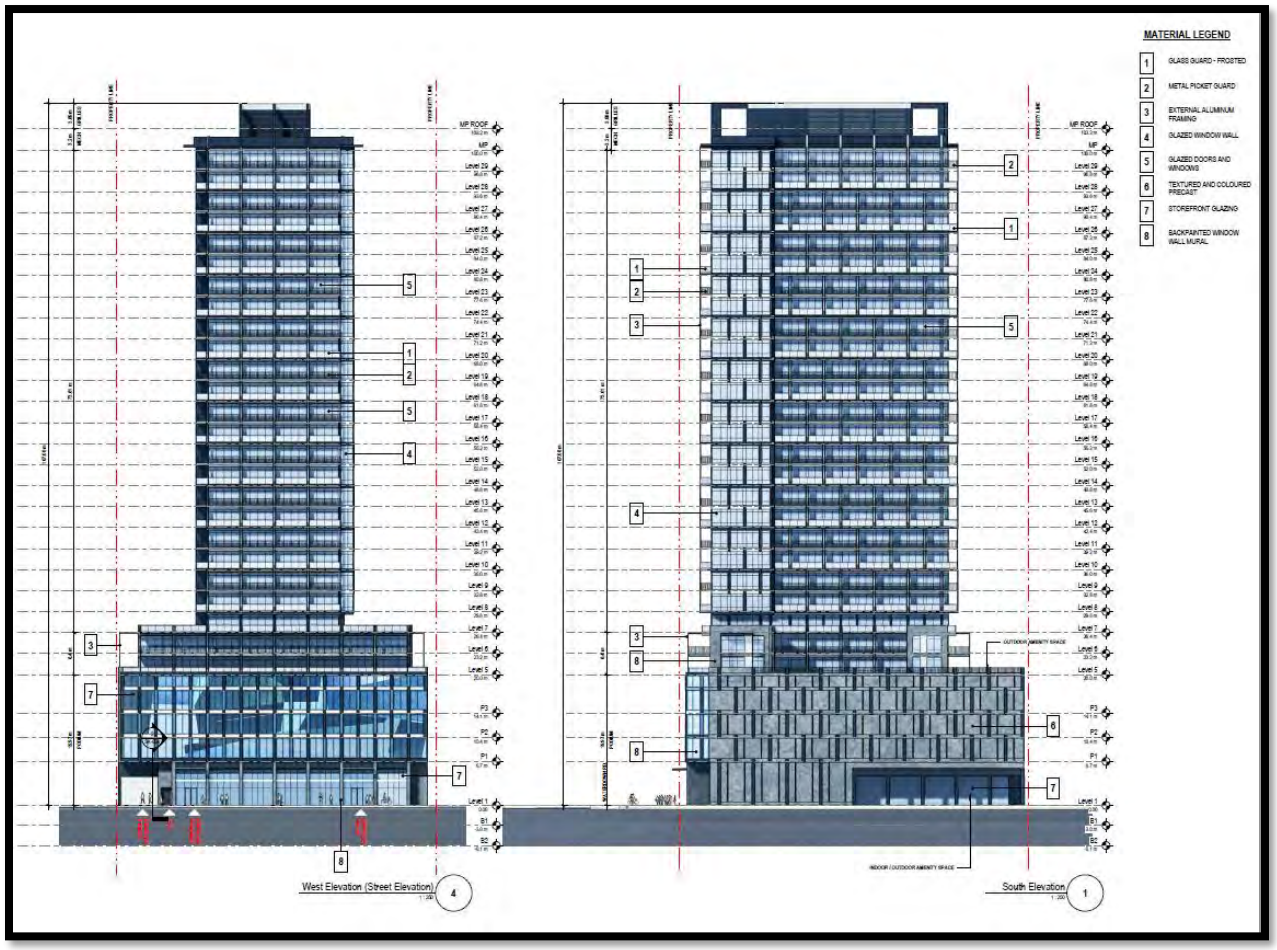
189sqm

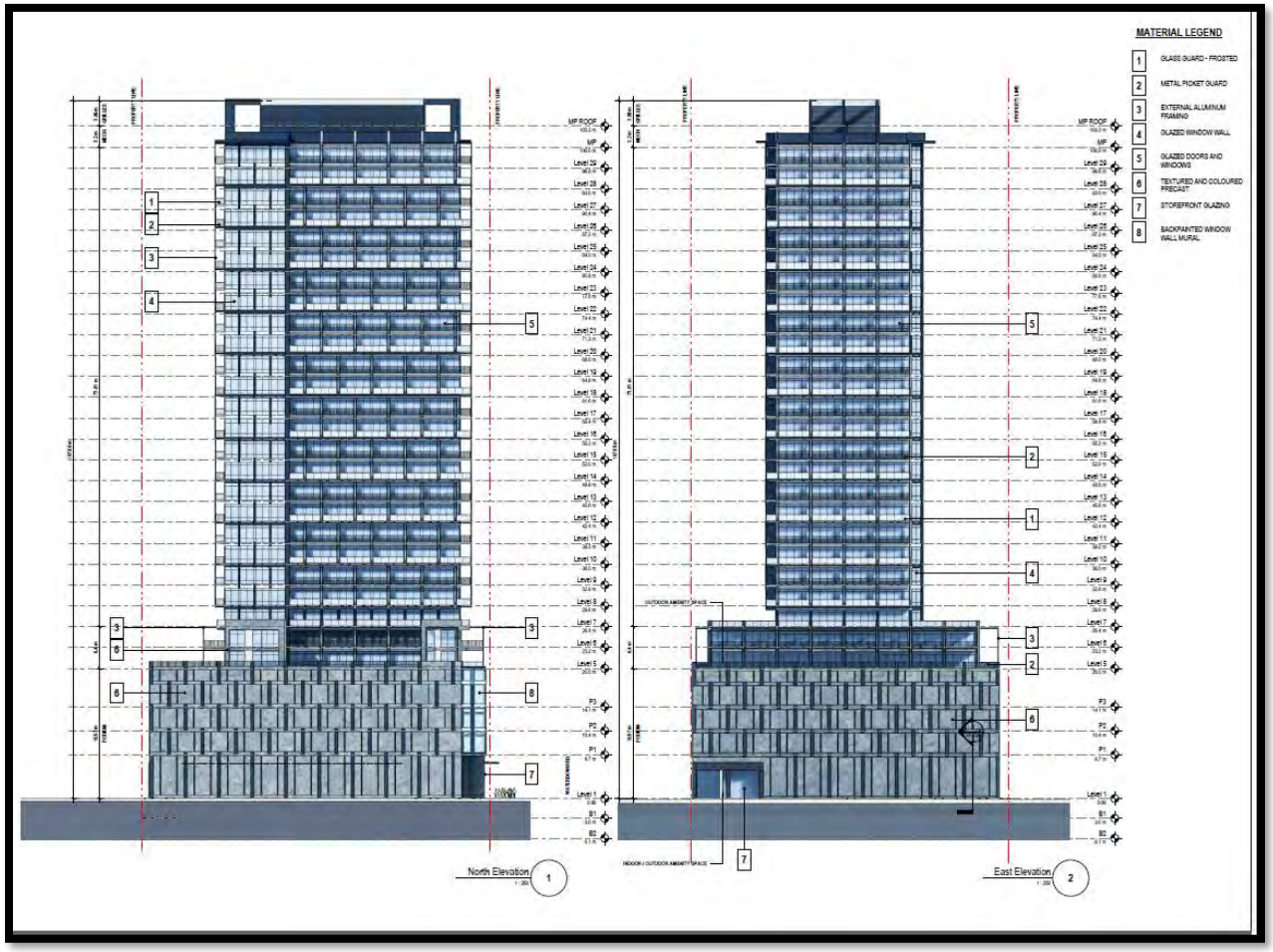
SHORT TERM (3 PLUS 1/1000sqm) = 4 REQUIRED = 4 PROVIDED

LONG TERM (2 PLUS 1/1000sqm) = 3 REQUIRED = 0 PROVIDED

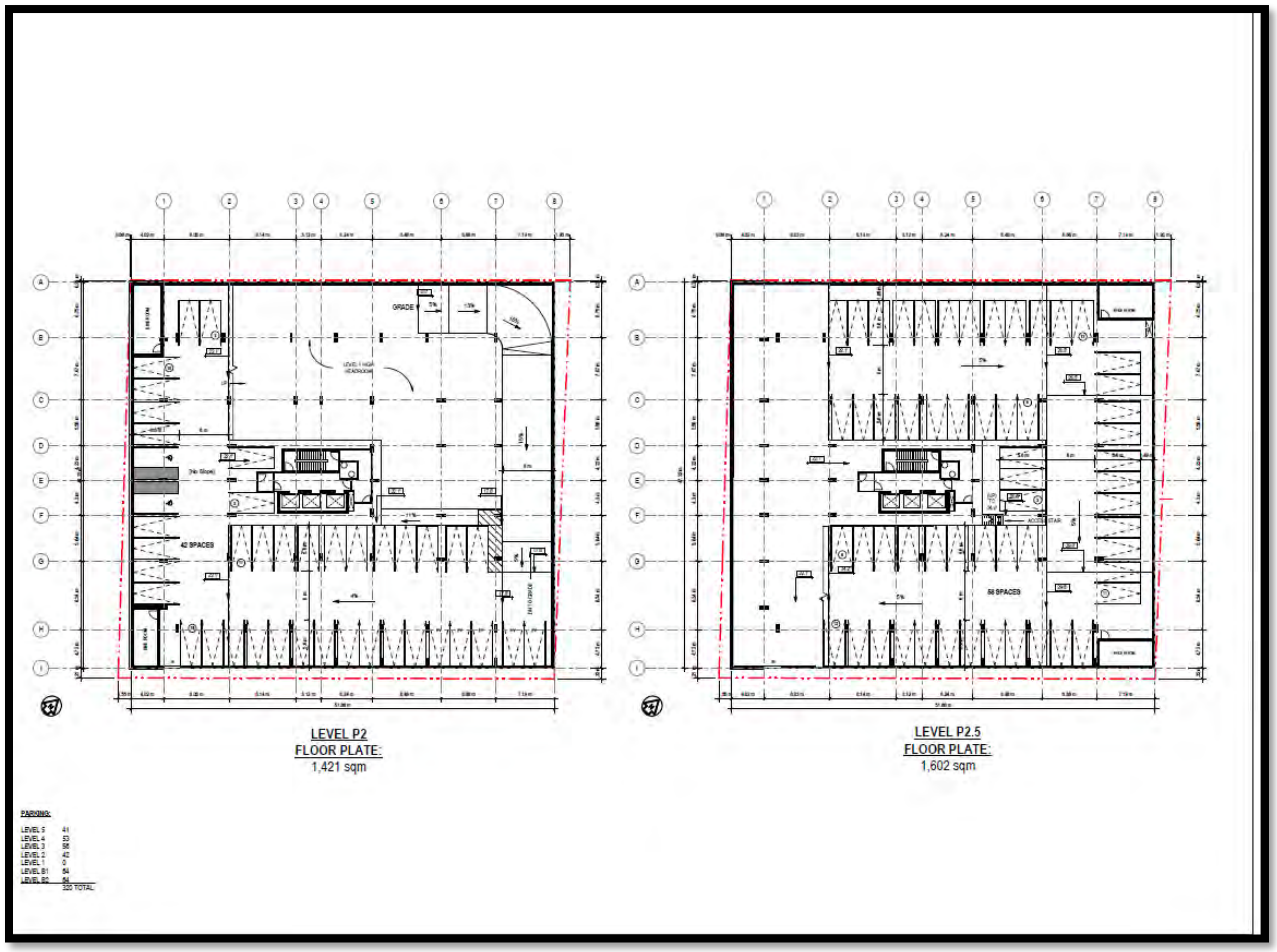
BUILDING ELEVATIONS

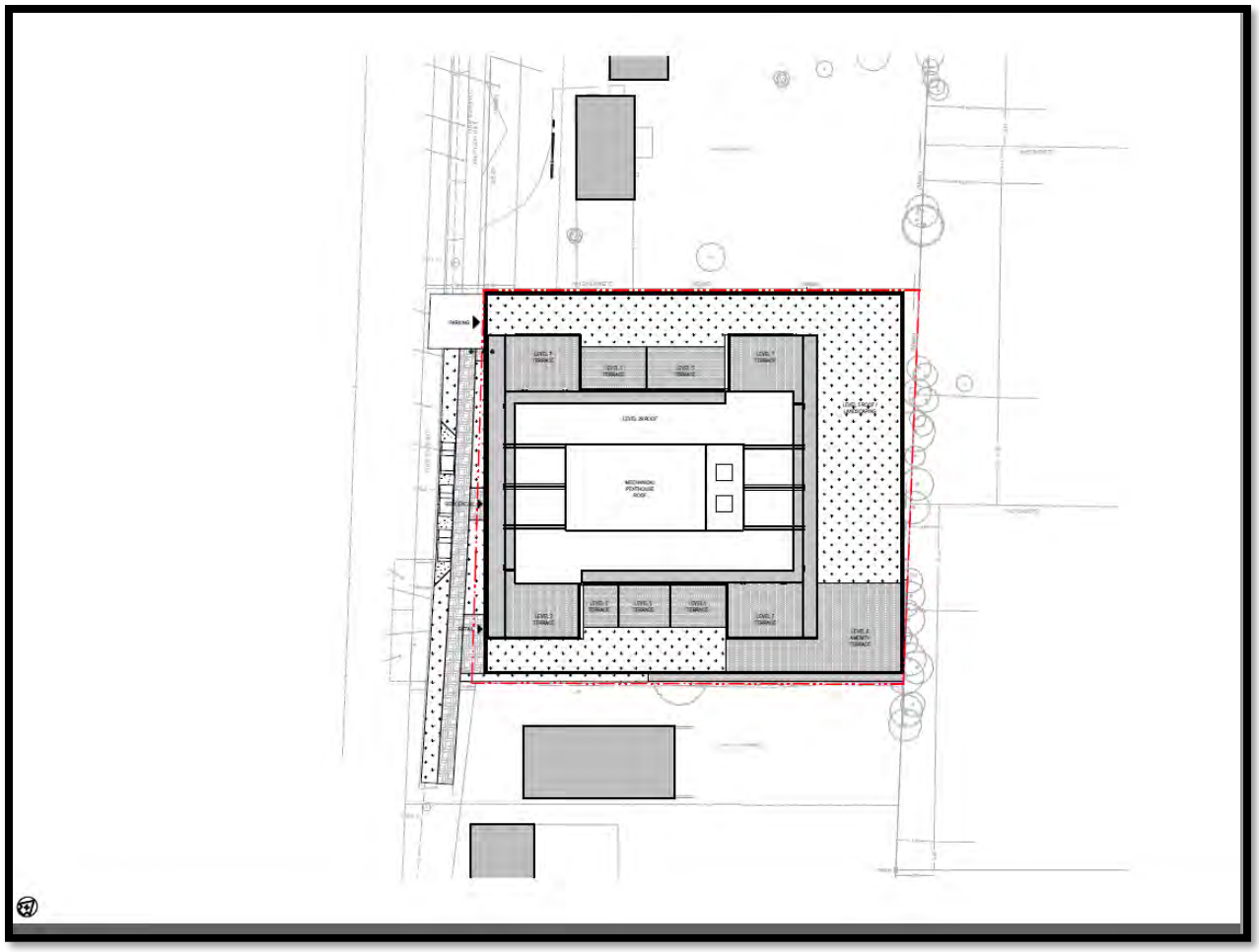


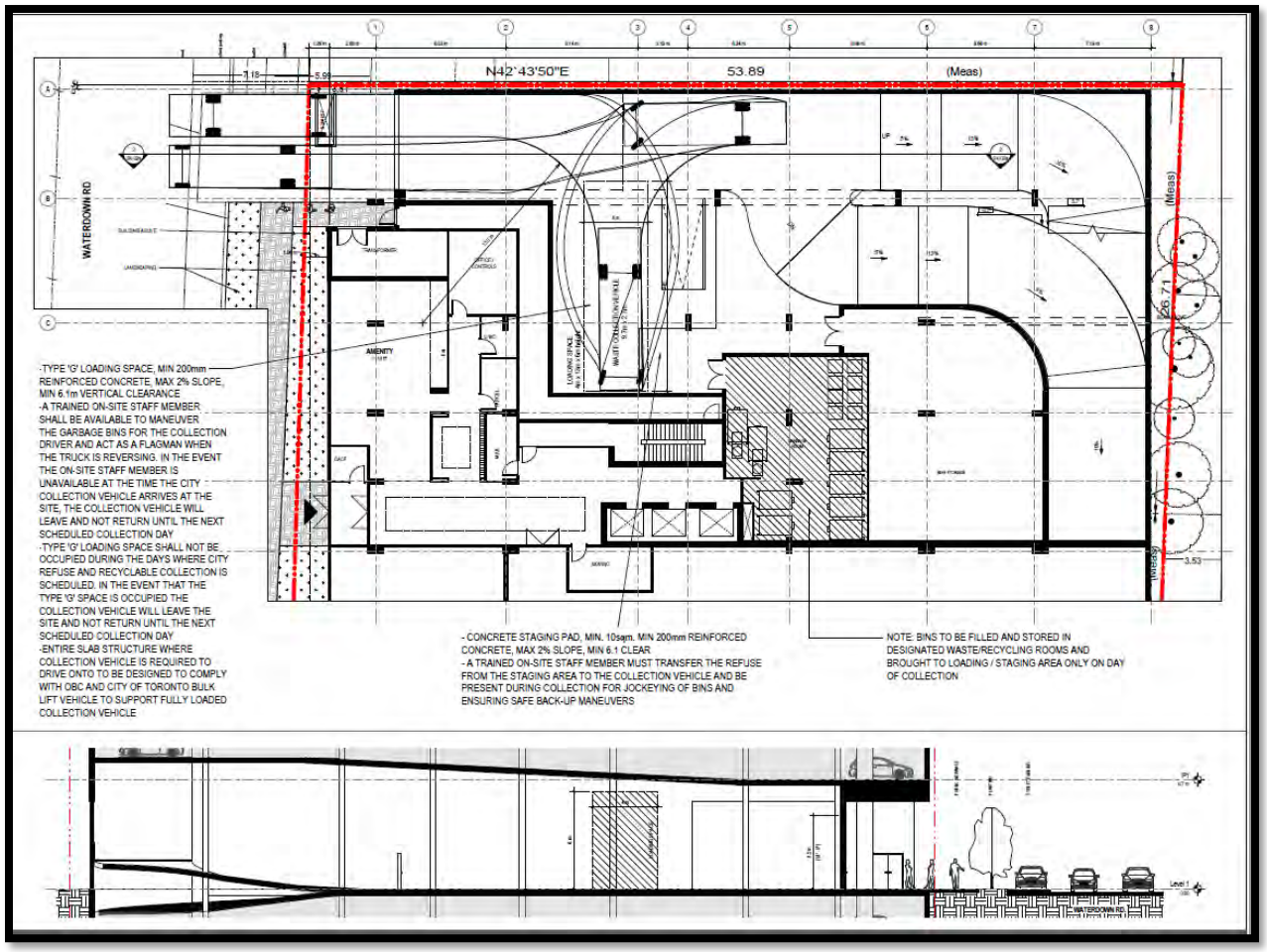

MATERIAL LEGEND
1 GLASS GUARD - FROSTED
2 METAL PICKET GUARD
3 EXTERNAL ALUMINUM FRAMING
4 GLAZED WINDOW WALL
5 GLAZED DOORS AND WINDOWS
6 TEXTURED AND COLOURED PRECAST
7 STOREFRONT GLAZING
8 BACKPAINTED WINDOW WALL MURAL
West Elevation (Street Elevation)
South Elevation

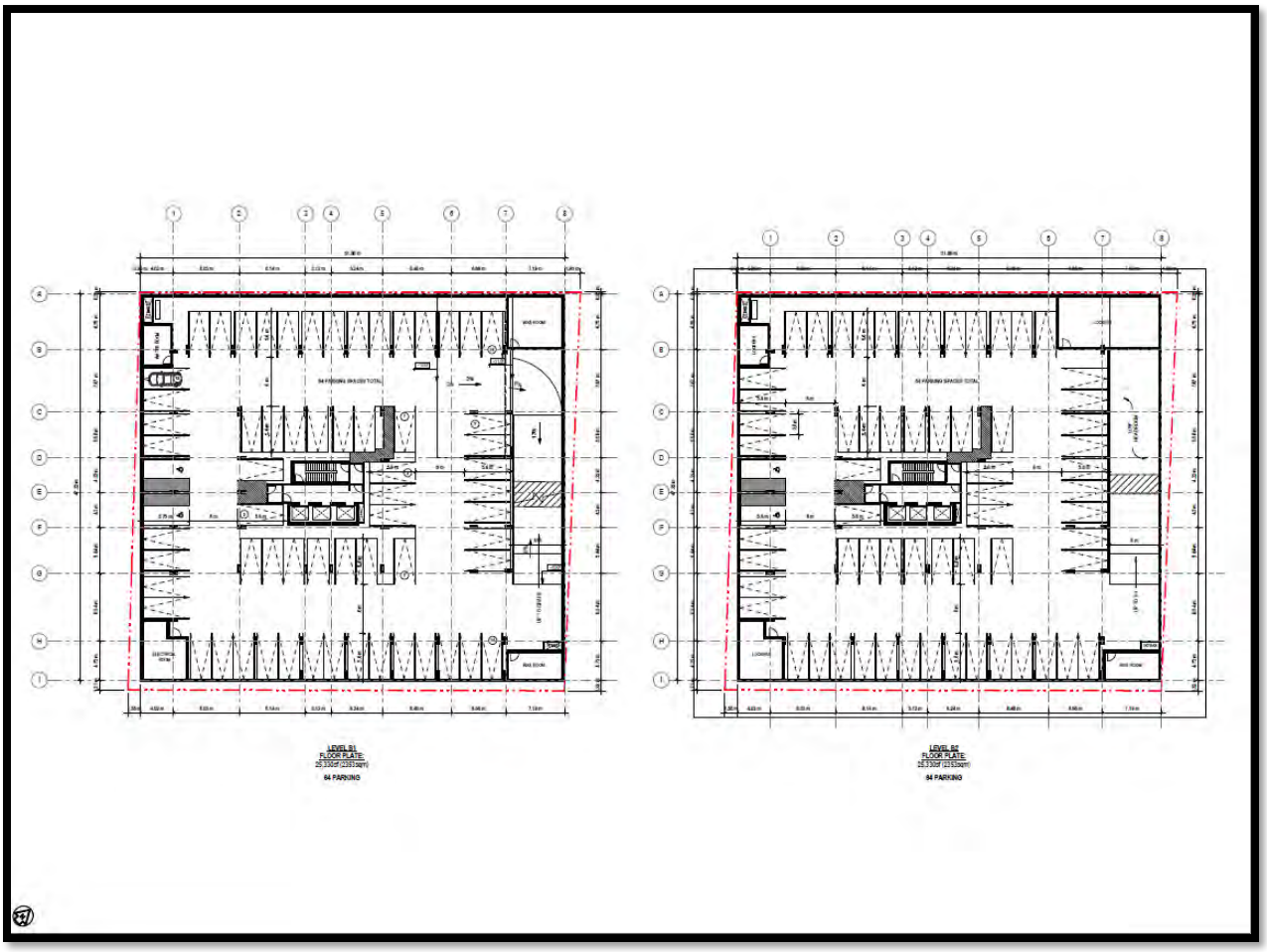

MATERIAL LEGEND
1 GLASS GUARD - FROSTED
2 METAL PICKET GUARD
3 EXTERNAL ALUMINUM FRAMING
4 GLAZED WINDOW WALL
5 GLAZED DOORS AND WINDOWS
6 TEXTURED AND COLOURED PRECAST
7 STOREFRONT GLAZING
8 BACKPAINTED WINDOW WALL MURAL
North Elevation
East Elevation

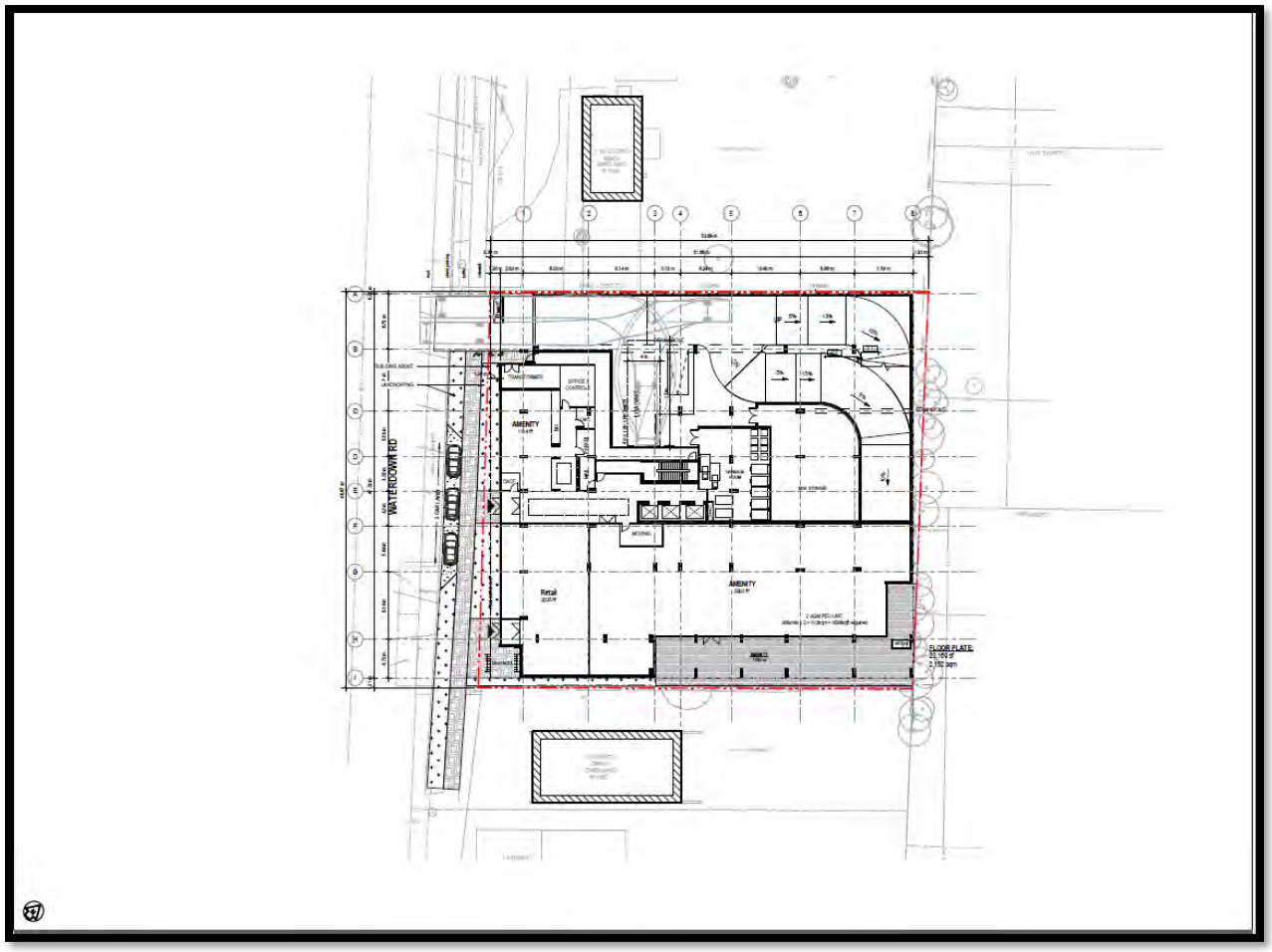
BUILDING FLOOR PLANS

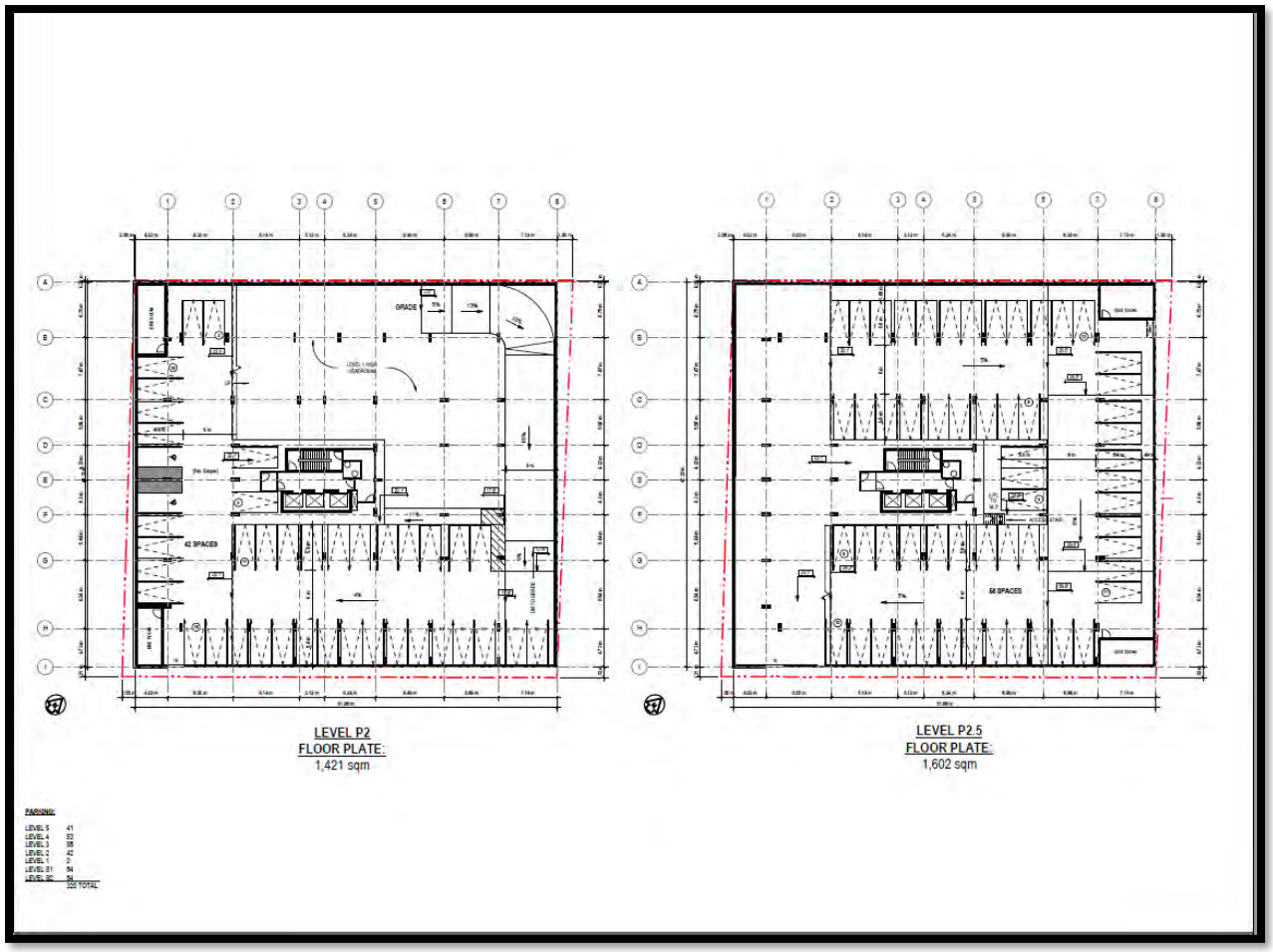

LEVEL P2
FLOOR PLATE:
1,421 sqm
LEVEL P2.5
FLOOR PLATE:
1,602 sqm
PARKING:

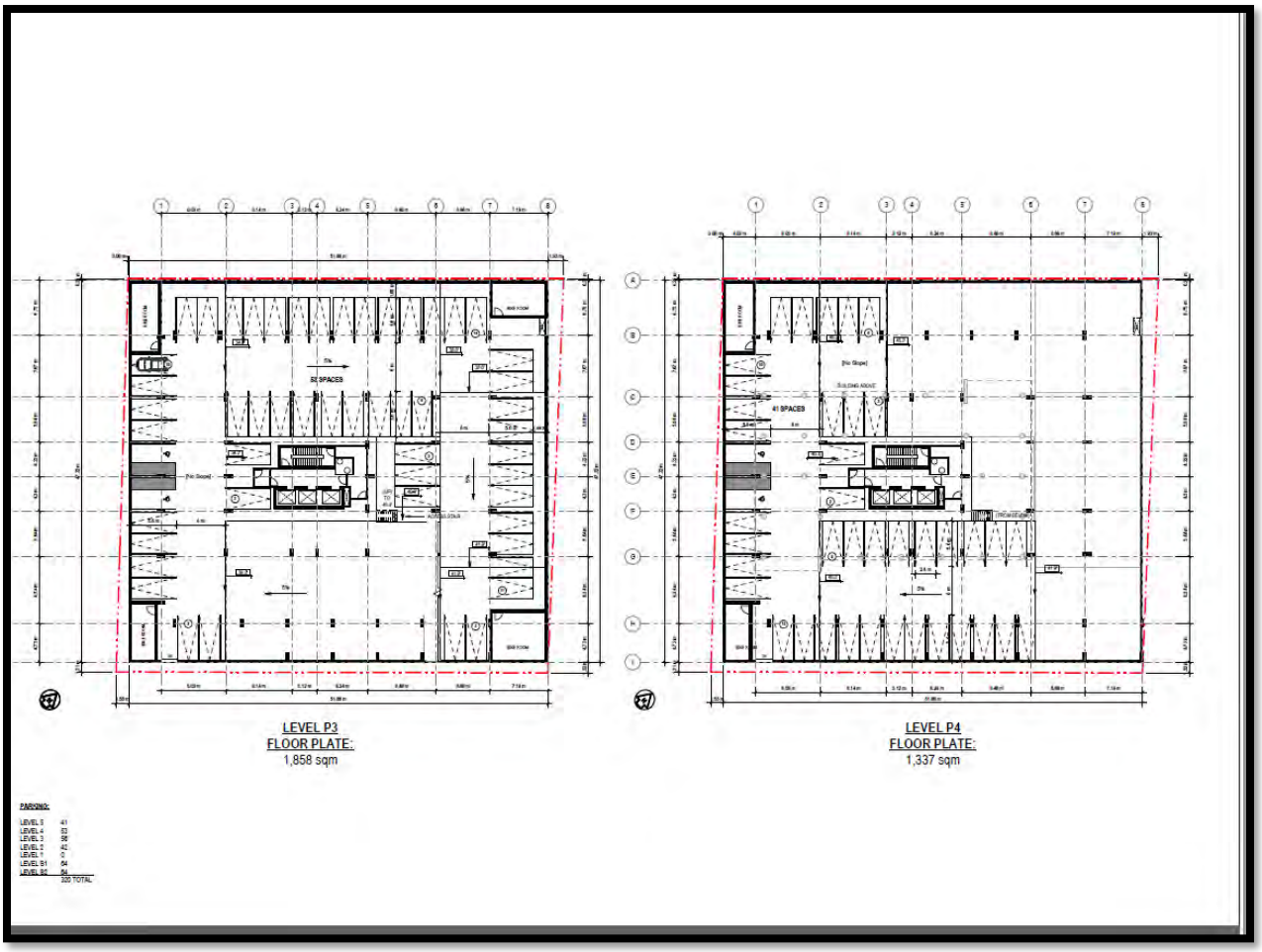


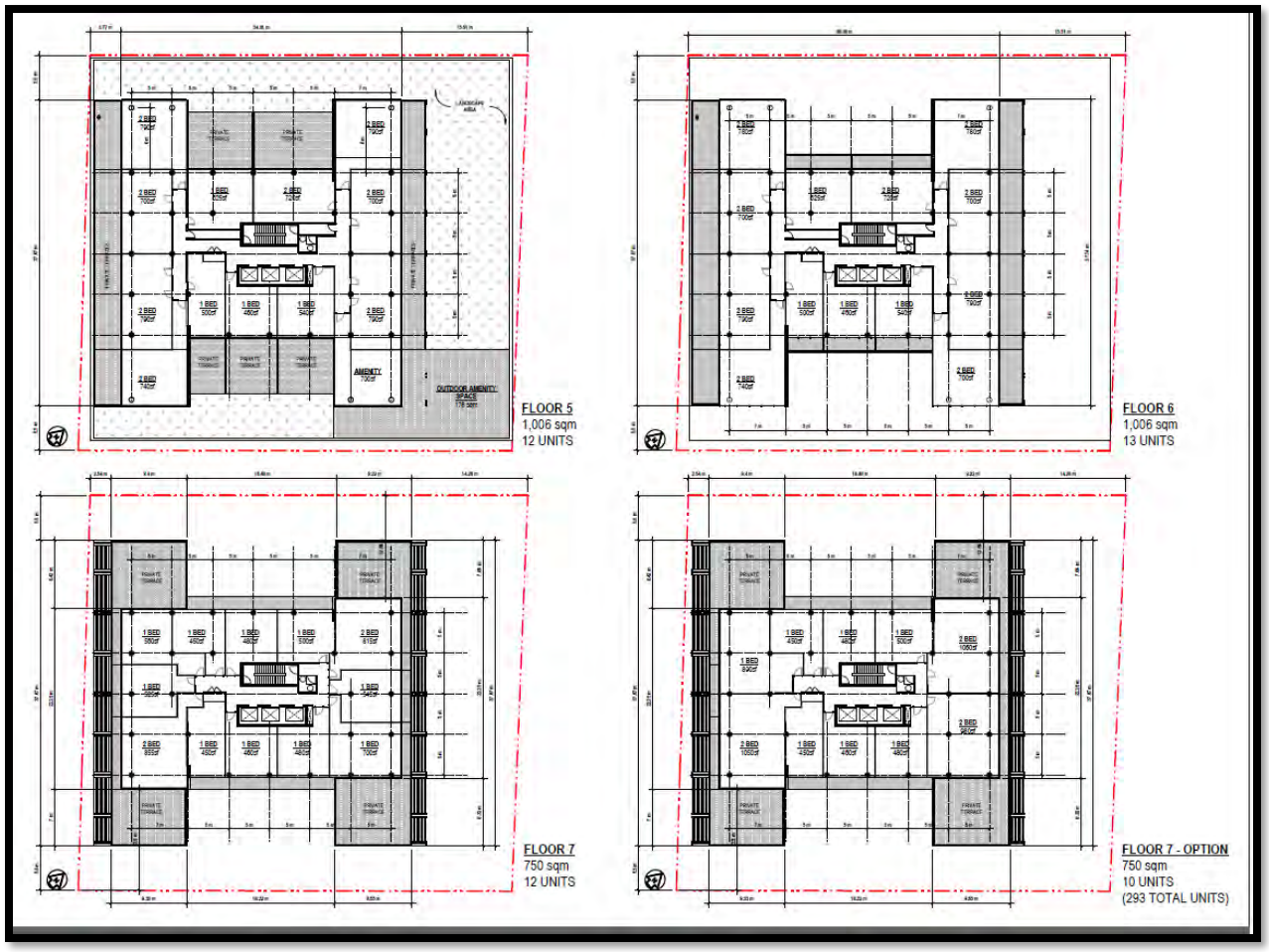

N42°43'50"E
53.89
(Meas)
WATERDOWN RD
AMENITY
-TYPE 'G' LOADING SPACE, MIN 200mm REINFORCED CONCRETE, MAX 2% SLOPE, MIN 6.1m VERTICAL CLEARANCE
-A TRAINED ON-SITE STAFF MEMBER SHALL BE AVAILABLE TO MANEUVER THE GARBAGE BINS FOR THE COLLECTION DRIVER AND ACT AS A FLAGMAN WHEN THE TRUCK IS REVERSING. IN THE EVENT THE ON-SITE STAFF MEMBER IS UNAVAILABLE AT THE TIME THE CITY COLLECTION VEHICLE ARRIVES AT THE SITE, THE COLLECTION VEHICLE WILL LEAVE AND NOT RETURN UNTIL THE NEXT SCHEDULED COLLECTION DAY
-TYPE 'G' LOADING SPACE SHALL NOT BE OCCUPIED DURING THE DAYS WHERE CITY REFUSE AND RECYCLABLE COLLECTION IS SCHEDULED. IN THE EVENT THAT THE TYPE 'G' SPACE IS OCCUPIED THE COLLECTION VEHICLE WILL LEAVE THE SITE AND NOT RETURN UNTIL THE NEXT SCHEDULED COLLECTION DAY
-ENTIRE SLAB STRUCTURE WHERE COLLECTION VEHICLE IS REQUIRED TO DRIVE ONTO TO BE DESIGNED TO COMPLY WITH OBC AND CITY OF TORONTO BULK LIFT VEHICLE TO SUPPORT FULLY LOADED COLLECTION VEHICLE
- CONCRETE STAGING PAD, MIN. 10sqm. MIN 200mm REINFORCED CONCRETE, MAX 2% SLOPE, MIN 6.1 CLEAR
- A TRAINED ON-SITE STAFF MEMBER MUST TRANSFER THE REFUSE FROM THE STAGING AREA TO THE COLLECTION VEHICLE AND BE PRESENT DURING COLLECTION FOR JOCKEYING OF BINS AND ENSURING SAFE BACK-UP MANEUVERS
NOTE: BINS TO BE FILLED AND STORED IN DESIGNATED WASTE/RECYCLING ROOMS AND BROUGHT TO LOADING / STAGING AREA ONLY ON DAY OF COLLECTION

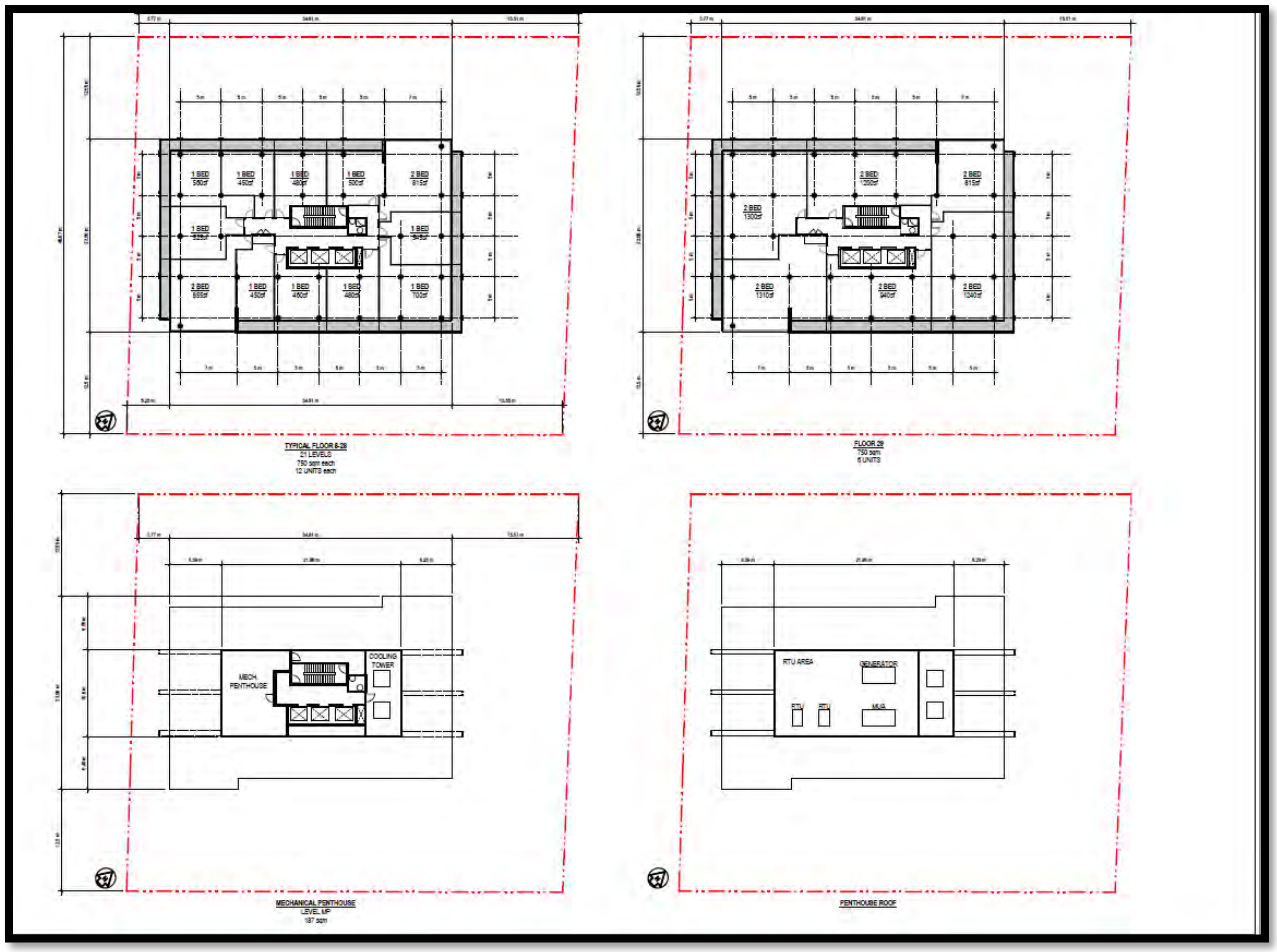



WATERDOWN RD
AMENITY
Retail
AMENITY
FLOOR PLATE:


GRADE
42 SPACES
LEVEL P2
FLOOR PLATE:
1,421 sqm
58 SPACES
LEVEL P2.5
FLOOR PLATE:
1,602 sqm
PARKING:


LEVEL P3
FLOOR PLATE:
1,858 sqm
LEVEL P4
FLOOR PLATE:
1,337 sqm
PARKING:


FLOOR 5
1,006 sqm
12 UNITS
FLOOR 6
1,006 sqm
13 UNITS
FLOOR 7
750 sqm
12 UNITS
FLOOR 7 - OPTION
750 sqm
10 UNITS
(293 TOTAL UNITS)


TYPICAL FLOOR 6-28
21 LEVELS
750 sqm each
12 UNITS each
FLOOR 29
750 SQM
6 UNITS
MECH PENTHOUSE
COOLING TOWER
MECHANICAL PENTHOUSE
LEVEL MP
187 SQM
RTU AREA
GENERATOR
PENTHOUSE ROOF

APPENDIX "B"

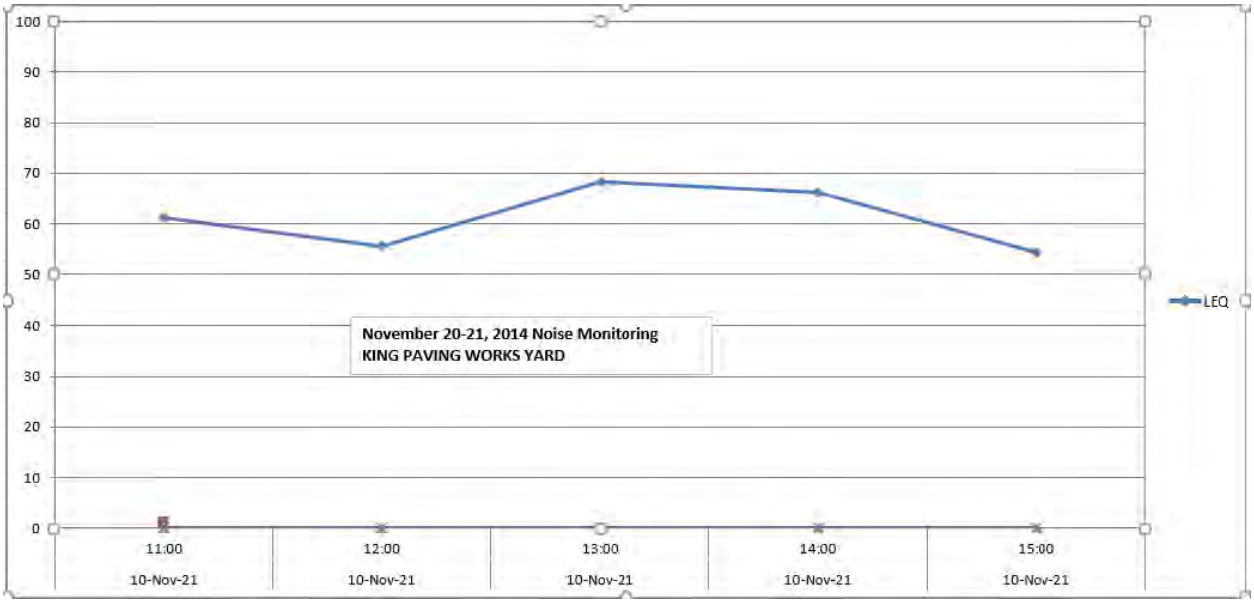
NOISE MONITORING RESULTS

NOISE MONITORING RESULTS

Date	Time	LEQ	From Monitor	Trucks/Front End Loader
10-Nov-21	11:00	61.1	25m	Various smaller equipment
10-Nov-21	12:00	55.4	Lunch	Transport Truck /Excavator
10-Nov-21	13:00	68.2	10m	Transport Truck /Excavator
10-Nov-21	14:00	66.2	15m	Transport Truck /Excavator
10-Nov-21	15:00	54.3	30m	Transport Truck /Excavator

Noise Monitoring 5m off south property line (King Paving)

NOISE MONITORING CHART



NOISE MONITORING LOCATION (157m)



EXTERIOR WALL STC RATING EXAMPLE

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.