NOISE & VIBRATION IMPACT STUDY

VALVASORI PROPERTIES
10 STOREY APARTMENT BUILDING
LOCATED AT
1177-1187 WEST 5TH STREET
HAMILTON, ON

Prepared for:

1333664 Ontario Inc
c/o Urban Solutions
3 Studebaker Place, Unit 1
Hamilton, ON
L8L 0C8

Prepared By:

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Our File No: 22-2254

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1.0 INTRODUCTION

dBA Acoustical Consultants Inc. has been retained to provide a noise and vibration impact study on behalf of 133664 Ontario Inc., for the proposed "1177-1187 West 5TH Street", residential apartment building Hamilton, ON. Proposed for the site development is 10-storey residential apartment building totaling 215 residential units.

The purpose of this study will detail, for OPA/ZBA approval, vehicular traffic noise from West 5th Street, Upper James Street, And Rymal Road West. Area stationary noise sources relative to the site plan are considered and recommend noise control measures necessary (if applicable) to meet (Ministry of Environment, Conversation, and Parks), MECP Publication NPC-300 entitled "Stationary & Transportation Sources-Approval & Planning guidelines while satisfying the planning requirements of the City of Hamilton. Figure 1 Site Location.

2.0 SITE DESCRIPTION

Proposed for the site is a 10-storey building totaling 215 residential units, Proposed for the rooftop is an enclosed mechanical room with HVAC units and other equipment. The proposed development property is situated in an area of existing commercial/residential properties.

The proposed development west building façade is located approximately 26m east of West 5th Street, approximately 300m east of the east building façade is Upper James Street, and approximately 295m south of the south apartment building façade is Rymal Road West. Both Upper James Street and Rymal Road West are shielded by existing large commercial and residential properties. To the west of the proposed site development are 2-3-storey residential properties. To the north are 2-storey townhouses, and to the east is a large commercial parking area for small vehicles only.

Further to the east of the proposed site development is a large commercial 2-storey building (Mandarin Restaurant, Winners, Mark's, and Dollarama) with rooftop HVAC units and bay doors to facilitate transport truck deliveries. Due to the distance separation and shielding from existing townhouses the rooftop HVAC units and transport truck noise has no acoustical impact on the proposed development as the background noise level exceeds any stationary noise sources in the immediate area and confirmed by several site visits. The rear yards of the townhouses abutting the commercial building has a 2.43 noise barrier and provides ample shielding from transport truck movements.

To the immediate south of the proposed development is a small commercial building with rooftop HVAC units. The business's located within the commercial buildings are Goodness Life Fitness, JYSK, First Ontario Credit Union & Canada Computers etc. In review of the rooftop HVAC units (See attached rooftop HVAC units) they have installed acoustical shrouds and vents that are for noise mitigation measures. A recent site visit determined that the rooftop HVAC units have no acoustical impact on the proposed development for any apartment floors as well the traffic noise levels are greater than any sound level produced by the HVAC units.

JYSK has a loading bay door for one transport truck that comes approximately one a week. Noise level for the transport truck is considered well below the background noise level and the bay area is shielded by an extension of a wall that shield any transport truck noise. Site Plan is illustrated in Figure 2.

3.0 NOISE IMPACT ASSESSMENT

3.1 NOISE CRITERIA

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

TABLE1- Road Traffic Sound Levels Limits	
Time Period	Leq (dBA)
07:00 – 23:00 (16 hr.)	55 Outdoor Living area
	55 Plane of Window
23:00 – 07:00 (8 hr.)	50 Plane of Bedroom window

Where noise levels estimated at windows 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)	56 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 & Rail 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

Predicted road traffic noise levels were calculated for West 5th Street, Upper James Street, and Rymal Road West, the major road noise sources in the site area. Road traffic volumes (2018/2019) were sourced accordingly relative from the City of Hamilton Transportation Management System. The MECP computer program STAMSON version 5.04 was used to carry out prediction calculations (See Appendix "A").

The daytime/nighttime volume ratio relative to West 5th Street, Upper James Street, and Rymal Road West is typically calculated using a 90/10 split as required by the MECP. The maximum posted speeds for all vehicles are 50 km/hr. The percentage of annual growth for all roads was figured at 2% till the year 2032. The AADT (Annual Average Daily Traffic) volumes were used reflective of the worst-case scenario.

Truck volumes were factored at 2% medium and 2% heavy of the total vehicle volumes for West 5th Street and Rymal Road West. Truck volumes were factored at 2% medium and 4% heavy of the total vehicle volumes for Upper James Street.

It should be noted that traffic noise for the north and east façade of is considered lower due to the angle of which road traffic is received, however as noted below we have calculated the combined road traffic noise levels at the highest dBA for the most west exposed exterior wall to calculate the exterior walls and windows for the north and east facade. This will ensure that all windows on all floors throughout the building will have the highest STC rating for indoor noise levels and exceed the Indoor Road Sound Level Limits noted in Table 3 above.

TABLE 4 – Future Road Traffic Volumes (2032)

West 5th	AADT 15259 Vehicles		
	Cars	Medium Trucks	Heavy Trucks
Day	13184	275	275
Night	1465	31	31
Upper James Street	AADT 31757 Vehicles		
	Cars	Medium Trucks	Heavy Trucks
Day	26866	572	572
Night	2985	64	64
Rymal Road West	AADT 13911 Vehicles		
	Cars	Medium Trucks	Heavy Trucks
Day	12019	250	250
Night	1335	28	28

It should be noted that the highest noise level has been considered for west exterior windows and walls. This will ensure full compliance with MEPC indoor noise levels for all floors and building facades (north, south, and east) residential units has been achieved, as well, it is also cost effective for all windows being installed having the highest STC rating to eliminate noise complaints from the owners/renters of the residential units.

The following Table 5A summarizes the "free field" West 5th Street traffic noise prediction results, modeled at 6 receptor locations which represents the west and south apartment building façades of specific floors within the proposed development.

TABLE 5A- Predicted Traffic Noise Levels-Free Field (West 5th)		
Façade Locations	L_{eq} (dBA)	
	07:00 - 23:00	23:00 - 07:00
R1– 1st Floor Residential West Façade (2m)	63	57
R2 – 7th Floor Residential West Façade (20m)	63	57
R3 – 10th Floor Residential West Façade (30)	63	57
R4 – 1st Floor Residential South Façade (2m)	54	47
R5 – 15th Floor Residential South Façade (20m)	57	51
R6 – 30th Floor Residential South Façade (30m)	58	52

The following Table 5B summarizes the "free field" Upper James Street traffic noise prediction results, modeled at 6 receptor locations represents the west and south apartment building façades of specific floors within the proposed development.

TABLE 5B- Predicted Traffic Noise Levels-Free Field (Upper James Street)		
Location	L_{eq} (dBA)	
	07:00 - 23:00	23:00 - 07:00
R1– 1st Floor Residential West Façade (2m)	38	32
R2 – 7th Floor Residential West Façade (20m)	45	39
R3 – 10th Floor Residential West Façade (30)	47	40
R4 – 1st Floor Residential South Façade (2m)	38	32
R5 – 15th Floor Residential South Façade (20m)	45	39
R6 – 30th Floor Residential South Façade (30m)	57	51

The following Table 5C summarizes the "free field" Rymal Road West traffic noise prediction results, modeled at 6 receptor locations represents the west and south façades of specific floors within the proposed development.

TABLE 5C- Predicted Traffic Noise Levels-Free Field (Rymal Road West)		
Location	L_{eq} (dBA)	
	07:00 - 23:00	23:00 - 07:00
R1– 1st Floor Residential West Façade (2m)	37	31
R2 – 7th Floor Residential West Façade (20m)	44	38
R3 – 10th Floor Residential West Façade (30)	46	38
R4 – 1st Floor Residential South Façade (2m)	42	36
R5 – 15th Floor Residential South Façade (20m)	50	44
R6 – 30th Floor Residential South Façade (30m)	52	45

The following Table 5D summarizes the "Combined free field" for all three-road traffic noise prediction results, modeled at 6 receptor locations represents the west and south façades of specific floors within the proposed development.

TABLE 5D- Combined Traffic Noise Levels-Free Field (All Roads)

Location Building's "A" & "B"	L_{eq} (dBA)	
	07:00 - 23:00	23:00 - 07:00
R1– 1st Floor Residential West Façade (2m)	63	57
R2 – 7th Floor Residential West Façade (20m)	63	57
R3 – 10th Floor Residential West Façade (30)	63	57
R4 – 1st Floor Residential South Façade (2m)	54	48
R5 – 15th Floor Residential South Façade (20m)	58	52
R6 – 30th Floor Residential South Façade (30m)	61	55

3.3 VIBRATION

There are no area stationary noise or vibration sources in the general area that will impact the proposed site development.

4.0 RECOMMENDATIONS - NOISE CONTROL

4.1 OUTDOOR LIVING AREAS

Calculated road noise levels exceed dBA daytime criteria outlined in Table 1. The draft plan does include outdoor living areas for the proposed development. Standard balcony areas are proposed for this development and are less than 4m in depth; therefore, noise mitigations are not required for the balconies.

4.2 INDOOR NOISE LEVELS

Calculated road noise levels at the Plane of Window (POW) exceed the noise criteria outlined in Table 1 for indoor space for residential units. Building design specifications were not made available at report time and STC calculations (Sound Transmission Class) method are summarized in Table 6 following with minimum window door and wall construction specified for all residential units throughout the proposed development.

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 60%. A maximum of two components were factored per room.

Road STC values were calculated as per MECP guidelines, and the assessment was conservative from a noise impact perspective with worst-case design options modeled to satisfy MECP requirements for indoor sound levels. Recommendations assume windows are well-fitted, weather-stripped units that can be opened.

TABLE 6 –Window, Door, & Wall Construction Example Requirements			
LOCATIONS	Example STC Acoustically Tested	Example STC Patio Door	Exterior Walls Example
All Floors All Units	Example		
Bedroom	32	32	STC-40
Living room	32	32	STC-40

5.0 VENTILATION / WARNING CLAUSES

Ventilation and warning clause requirements for all the residential apartment units are presented in Table 7 following. It is recommended that the appropriate warning clauses be inserted into all Offers and Agreements of Purchase and Sale or Lease and Registered on Title. Specific building component requirements noted in Table 7 for all apartment units will satisfy the MECP criterion for noise control relative to indoor living space.

TABLE 7- Ventilation and Warning Clause Requirements		
LOCATION	VENTILATION	WARNING CLAUSE
R1- All Residential Units	Central Air Conditioning	Type “B” & “D”

The following warning clause must be used in combination:

TYPE B:

> “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.”

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.”

6.0 SUMMARY OF RECOMMENDATIONS

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

- Warning Clauses inserted into all Offers and Agreements of Purchase and Sale or Lease for all units. (Section 5.0)
- Central Air Conditioning for all residential units. (Section 5.0)
- Appropriate STC values required for all exterior windows, walls, and patio doors.
- A letter from the Window Installation Company confirming the appropriate STC values have been achieved and an Acoustical Certificate from the Qualified Acoustical Consultant be issued prior to issuance of the building plans.

- 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.

7.0 CONCLUSIONS

dBA Acoustical Consultants Inc. has provided a noise and vibration impact study on behalf of 133664 Ontario Inc., for the proposed "1177-1187 West 5TH Street", residential apartment building Hamilton, ON. Proposed for the site development is 10-storey residential apartment building totaling 215 residential units.

The purpose of this study detailed, for OPA/ZBA approval, vehicular traffic noise from West 5th Street, Upper James Street, and Rymal Road West as well area stationary noise sources relative to the site plan recommend noise control measures necessary to meet MECP Publication NPC-300 entitled "Stationary & Transportation Sources-Approval & Planning guidelines while satisfying the planning requirements of the City of Hamilton.

FIGURE 1
SITE LOCATION

FIGURE 2
SITE PLAN

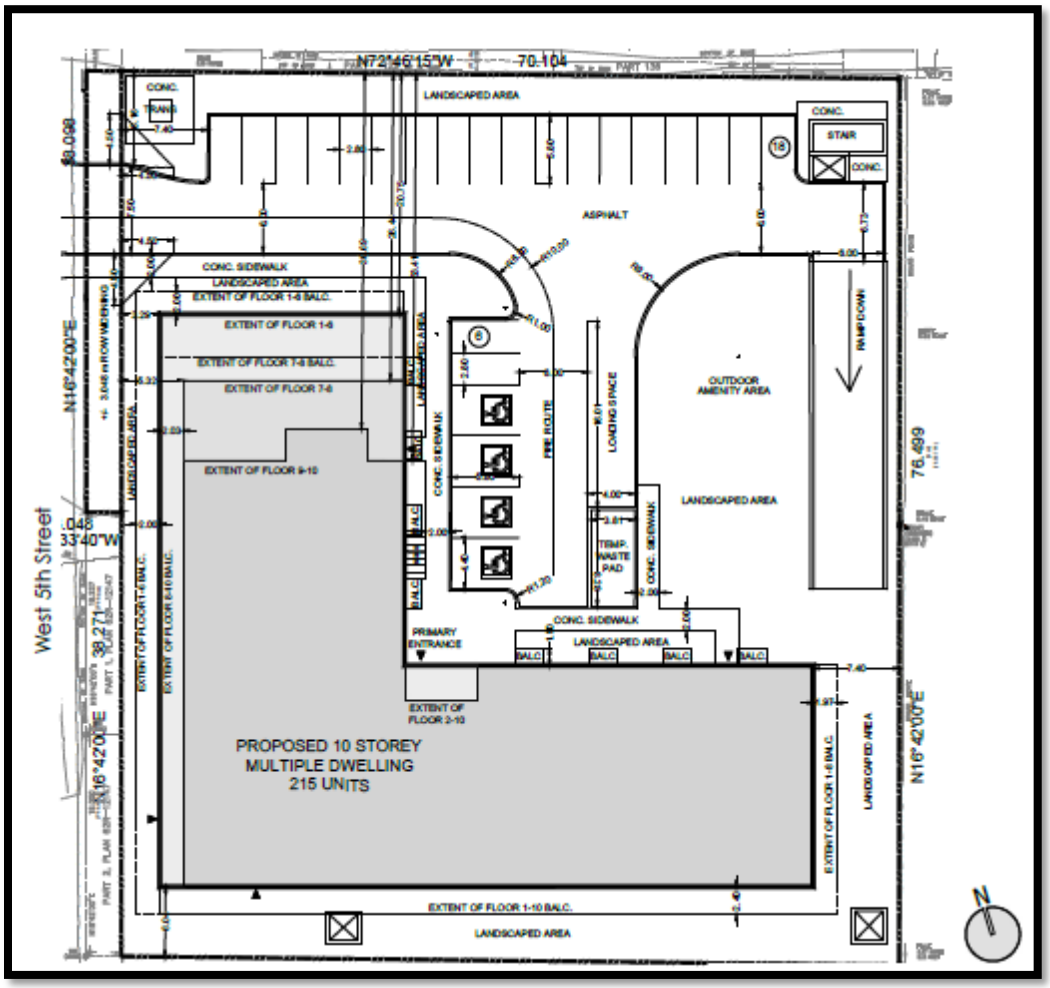
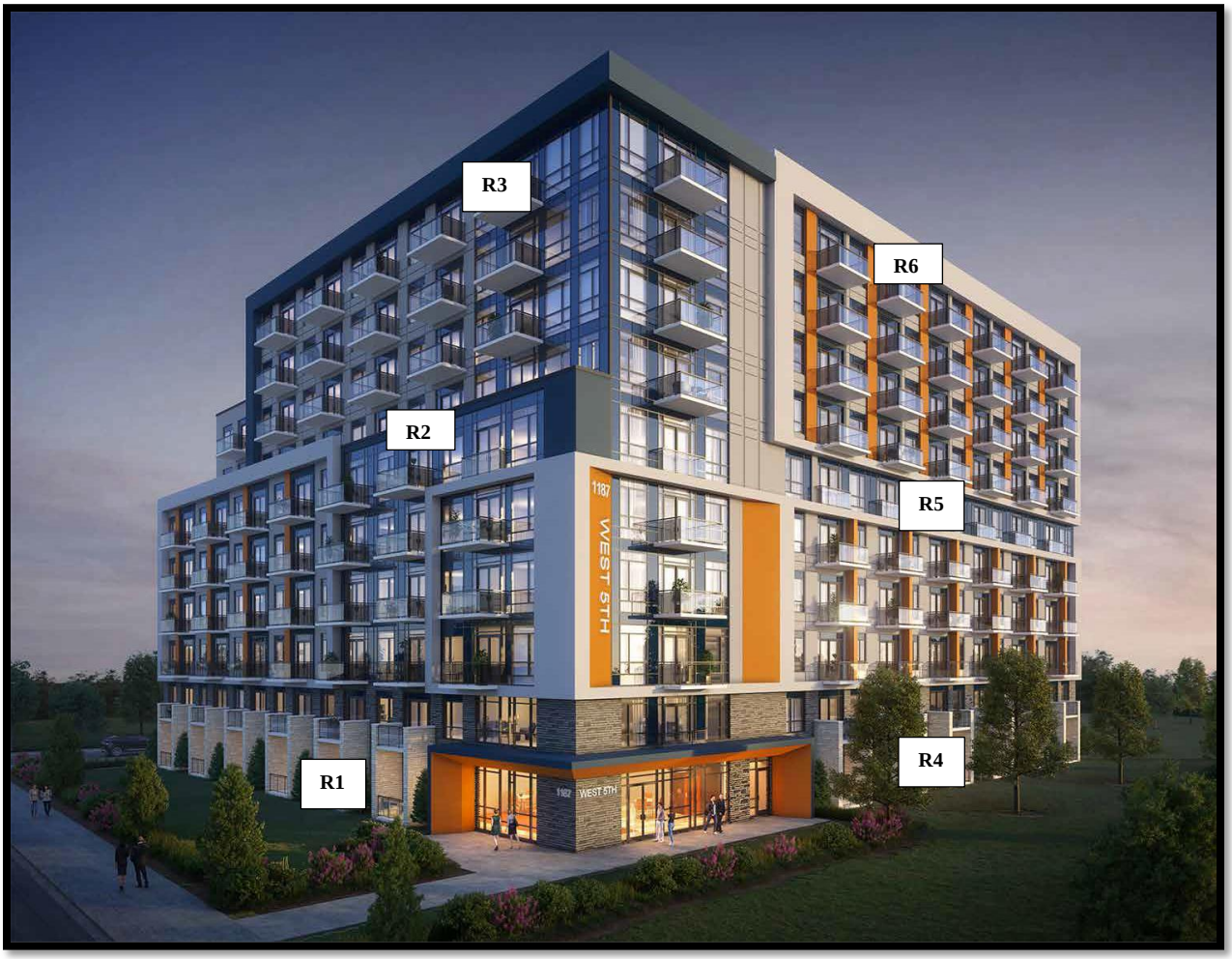
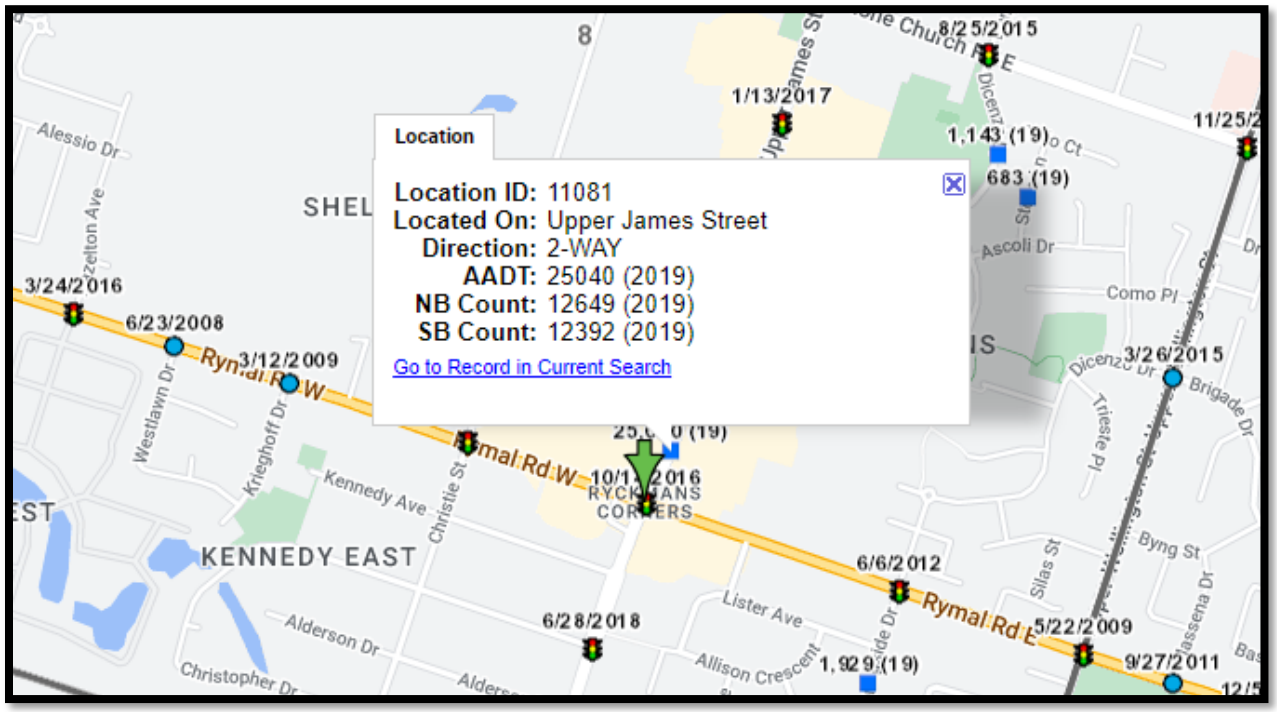


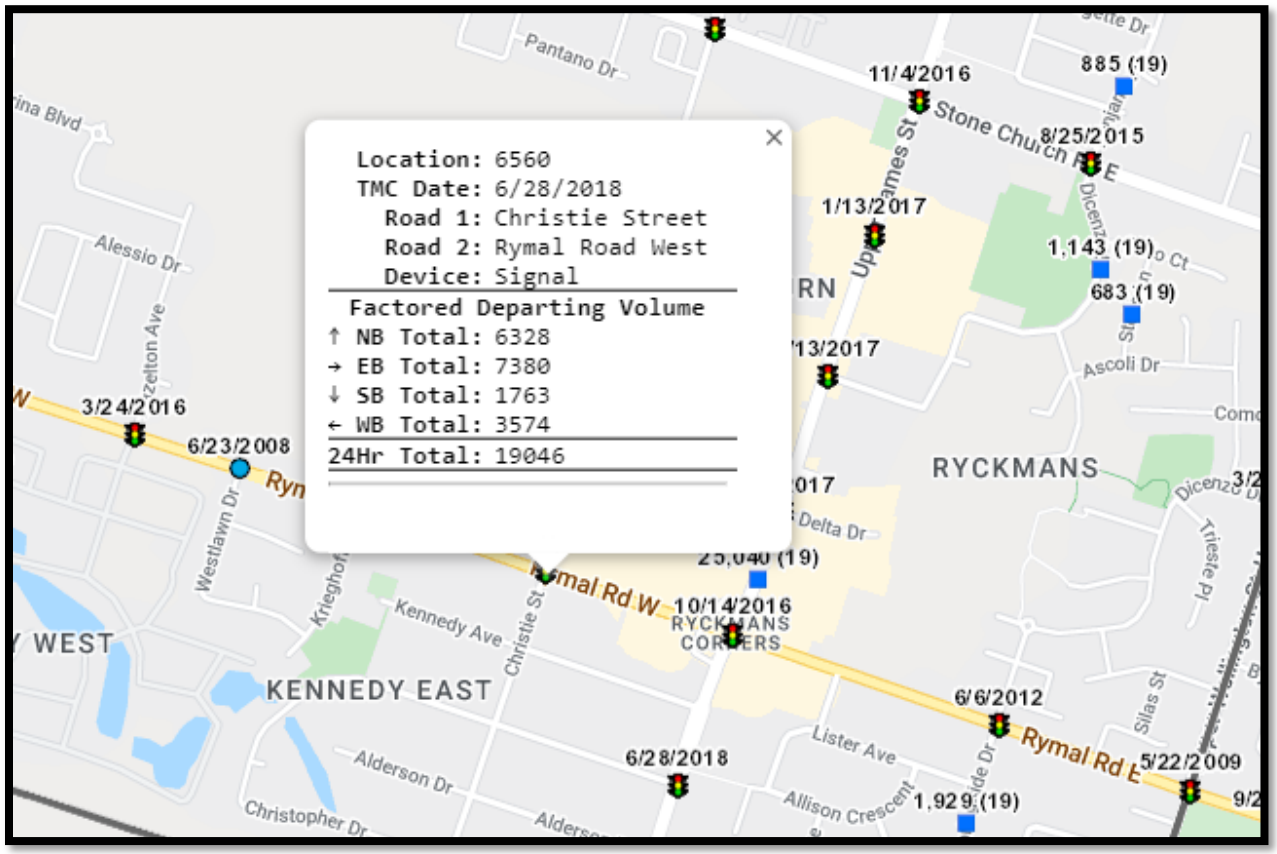
FIGURE 3
RECEPTOR LOCATIONS

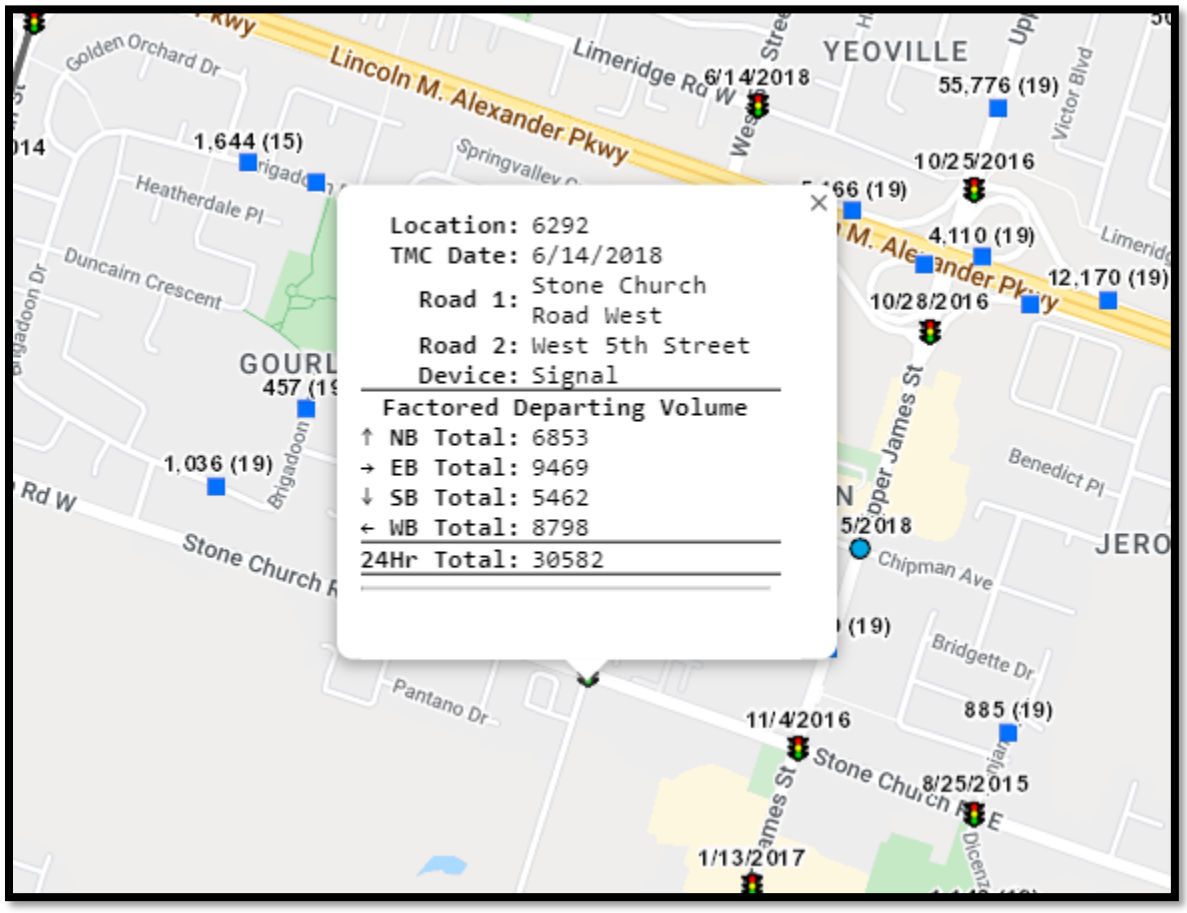


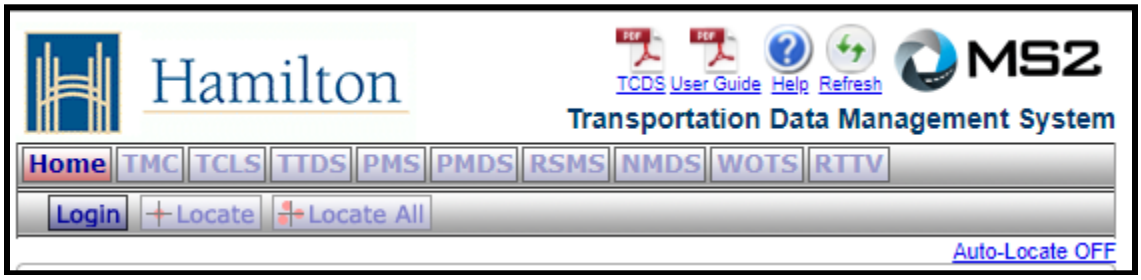
APPENDIX "A"

CITY OF HAMILTON
2018/2019 AADT TRAFFIC






Lincoln M. Alexander Pkwy
Limeridge Rd W
YEOVILLE
6/14/2018
55,776 (19)
1,644 (15)
10/25/2016
4,110 (19)
12,170 (19)
10/28/2016
Golden Orchard Dr
Heatherdale Pl
Duncairn Crescent
Springvalley
Victor Blvd
Benedict Pl
Chipman Ave
Bridgette Dr
Pantano Dr
Stone Church Rd W
Stone Church Rd E
Brigadoon Dr
Upper James St
1,036 (19)
885 (19)
11/4/2016
8/25/2015
1/13/2017
JERO
Location: 6292
TMC Date: 6/14/2018
Road 1: Stone Church Road West
Road 2: West 5th Street
Device: Signal
Factored Departing Volume
↑ NB Total: 6853
→ EB Total: 9469
↓ SB Total: 5462
← WB Total: 8798
24Hr Total: 30582


Hamilton
TCDS
User Guide
Help
Refresh
MS2
Transportation Data Management System
Home
TMC
TCLS
TTDS
PMS
PMDS
RSMS
NMDS
WOTS
RTTV
Login
Locate
Locate All
Auto-Locate OFF

STAMPSON SUMMARY SHEETS

```
STAMSON 5.04        SUMMARY REPORT        Date: 08-06-2022 12:09:39
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: R1West5.te           Time Period: Day/Night 16/8 hours
Description: R1 West 5th Street West Facade 1st Floor
                     TOTAL Leq FROM ALL SOURCES                  (DAY): 63.07
                                                                (NIGHT): 56.58
Road data, segment # 1: West 5th (day/night)
----------------------------------------------
Car traffic volume  : 13184/1465  veh/TimePeriod  *
Medium truck volume :   275/31    veh/TimePeriod  *
Heavy truck volume  :   275/31    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):  11796
    Percentage of Annual Growth        :   2.00
    Number of Years of Growth          :  13.00
    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: West 5th (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  :  26.00 / 26.00  m
Receiver height           :   2.00 / 2.00   m
Topography                :      1       (Flat/gentle slope; no barrier)

Road data, segment # 2: Upper James (day/night)
-----------------------------------------------
Car traffic volume  : 26866/2985  veh/TimePeriod  *
Medium truck volume :   572/64    veh/TimePeriod  *
Heavy truck volume  :  1143/127   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):  25040
    Percentage of Annual Growth        :   2.00
    Number of Years of Growth          :  12.00
    Medium Truck % of Total Volume     :   2.00
    Heavy Truck  % of Total Volume     :   4.00
    Day (16 hrs) % of Total Volume     :  90.00

Data for Segment # 2: Upper James (day/night)
----------------------------------------------
Angle1   Angle2           : -15.00 deg   90.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  : 295.00 / 295.00 m
Receiver height           :   2.00 / 2.00   m
Topography                :      1       (Flat/gentle slope; no barrier)

Road data, segment # 3: Rymal Rd (day/night)
----------------------------------------------
Car traffic volume  : 12019/1335  veh/TimePeriod  *
Medium truck volume :   250/28    veh/TimePeriod  *
Heavy truck volume  :   250/28    veh/TimePeriod  *
Posted speed limit  :    50 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)
```

```
* Refers to calculated road volumes based on the following input:

    24 hr Traffic Volume (AADT or SADT):  10754
    Percentage of Annual Growth        :   2.00
    Number of Years of Growth          :  13.00
    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 # 3: Rymal Rd (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  : 300.00 / 300.00 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.West 5th         !     1.19 !    63.04 !    63.04
 2.Upper James      !     1.41 !    38.21 !    38.21
 3.Rymal Rd         !     1.19 !    37.17 !    37.17
--------------------+---------+---------+---------
                      Total                 63.07 dBA

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

                    !  source  !   Road   !  Total
                    !  height  !   Leq    !   Leq
                    !    (m)   !  (dBA)   !  (dBA)
--------------------+---------+---------+---------
 1.West 5th         !     1.19 !    56.55 !    56.55
 2.Upper James      !     1.41 !    31.68 !    31.68
 3.Rymal Rd         !     1.19 !    30.66 !    30.66
--------------------+---------+---------+---------
                      Total                 56.58 dBA
```

```
STAMSON 5.04        SUMMARY REPORT        Date: 08-06-2022 12:15:45
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: r2west5.te           Time Period: Day/Night 16/8 hours
Description: R2 West 5th Street West Facade 7th Floor
                            TOTAL Leq FROM ALL SOURCES                    (DAY): 63.17
                                                                          (NIGHT): 56.68
Road data, segment # 1: West 5th (day/night)
----------------------------------------------
Car traffic volume  : 13184/1465  veh/TimePeriod  *
Medium truck volume :   275/31    veh/TimePeriod  *
Heavy truck volume  :   275/31    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):  11796
    Percentage of Annual Growth        :   2.00
    Number of Years of Growth          :  13.00
    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: West 5th (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  :  26.00 / 26.00  m
Receiver height           :  20.00 / 2.00   m
Topography                :      1       (Flat/gentle slope; no barrier)

Road data, segment # 2: Upper James (day/night)
-----------------------------------------------
Car traffic volume  : 26866/2985  veh/TimePeriod  *
Medium truck volume :   572/64    veh/TimePeriod  *
Heavy truck volume  :  1143/127   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):  25040
    Percentage of Annual Growth        :   2.00
    Number of Years of Growth          :  12.00
    Medium Truck % of Total Volume     :   2.00
    Heavy Truck  % of Total Volume     :   4.00
    Day (16 hrs) % of Total Volume     :  90.00

Data for Segment # 2: Upper James (day/night)
----------------------------------------------
Angle1   Angle2           : -15.00 deg   0.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  : 295.00 / 295.00 m
Receiver height           :  20.00 / 20.00  m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00
```

```
Road data, segment # 3: Rymal Rd (day/night)
-------------------------------------------
Car traffic volume  : 12019/1335  veh/TimePeriod  *
Medium truck volume :   250/28    veh/TimePeriod  *
Heavy truck volume  :   250/28    veh/TimePeriod  *
Posted speed limit  :    50 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

* Refers to calculated road volumes based on the following input:

    24 hr Traffic Volume (AADT or SADT):  10754
    Percentage of Annual Growth        :   2.00
    Number of Years of Growth          :  13.00
    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 # 3: Rymal Rd (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  : 300.00 / 300.00 m
Receiver height           :  20.00 / 20.00  m
Topography                :      1       (Flat/gentle slope; no barrier)

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

                    !  source  !   Road   !  Total
                    !  height  !   Leq    !   Leq
                    !    (m)   !  (dBA)   !  (dBA)
--------------------+---------+---------+---------
 1.West 5th         !     1.19 !    63.04 !    63.04
 2.Upper James      !     1.41 !    45.22 !    45.22
 3.Rymal Rd         !     1.19 !    44.45 !    44.45
--------------------+---------+---------+---------
                      Total                 63.17 dBA


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

                    !  source  !   Road   !  Total
                    !  height  !   Leq    !   Leq
                    !    (m)   !  (dBA)   !  (dBA)
--------------------+---------+---------+---------
 1.West 5th         !     1.19 !    56.55 !    56.55
 2.Upper James      !     1.41 !    38.69 !    38.69
 3.Rymal Rd         !     1.19 !    37.94 !    37.94
--------------------+---------+---------+---------
                      Total                 56.68 dBA
```

```
STAMSON 5.04        SUMMARY REPORT        Date: 08-06-2022 12:23:28
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: r3west5.te           Time Period: Day/Night 16/8 hours
Description: R3- 10th floor West Facade
                     TOTAL Leq FROM ALL SOURCES                    (DAY): 63.22
                                                                   (NIGHT): 56.73
Road data, segment # 1: West 5th (day/night)
-----------------------------------------------
Car traffic volume  : 13184/1465  veh/TimePeriod  *
Medium truck volume :   275/31    veh/TimePeriod  *
Heavy truck volume  :   275/31    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):  11796
    Percentage of Annual Growth        :   2.00
    Number of Years of Growth          :  13.00
    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: West 5th (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  :  26.00 / 26.00  m
Receiver height           :  30.00 / 30.00  m
Topography                :      1       (Flat/gentle slope; no barrier)

Road data, segment # 2: Upper James (day/night)
-----------------------------------------------
Car traffic volume  : 26866/2985  veh/TimePeriod  *
Medium truck volume :   572/64    veh/TimePeriod  *
Heavy truck volume  :  1143/127   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):  25040
    Percentage of Annual Growth        :   2.00
    Number of Years of Growth          :  12.00
    Medium Truck % of Total Volume     :   2.00
    Heavy Truck  % of Total Volume     :   4.00
    Day (16 hrs) % of Total Volume     :  90.00

Data for Segment # 2: Upper James (day/night)
-------------------------------------------
Angle1   Angle2           : -15.00 deg   0.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  : 295.00 / 295.00 m
Receiver height           :  30.00 / 30.00  m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00
```

```
Road data, segment # 3: Rymal Rd (day/night)
-------------------------------------------
Car traffic volume  : 12019/1335  veh/TimePeriod  *
Medium truck volume :   250/28    veh/TimePeriod  *
Heavy truck volume  :   250/28    veh/TimePeriod  *
Posted speed limit  :    50 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

* Refers to calculated road volumes based on the following input:

    24 hr Traffic Volume (AADT or SADT):  10754
    Percentage of Annual Growth        :   2.00
    Number of Years of Growth          :  13.00
    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 # 3: Rymal Rd (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  : 300.00 / 300.00 m
Receiver height           :  30.00 / 30.00  m
Topography                :      1       (Flat/gentle slope; no barrier)

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

                    !  source  !   Road   !  Total
                    !  height  !   Leq    !   Leq
                    !   (m)    !  (dBA)   !  (dBA)
--------------------+---------+---------+---------
 1.West 5th         !     1.19 !    63.04 !    63.04
 2.Upper James      !     1.41 !    46.62 !    46.62
 3.Rymal Rd         !     1.19 !    45.99 !    45.99
--------------------+---------+---------+---------
                      Total                  63.22 dBA

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

                    !  source  !   Road   !  Total
                    !  height  !   Leq    !   Leq
                    !   (m)    !  (dBA)   !  (dBA)
--------------------+---------+---------+---------
 1.West 5th         !     1.19 !    56.55 !    56.55
 2.Upper James      !     1.41 !    40.09 !    40.09
 3.Rymal Rd         !     1.19 !    39.48 !    39.48
--------------------+---------+---------+---------
                      Total                  56.73 dBA
```

```
STAMSON 5.04        SUMMARY REPORT        Date: 08-06-2022 12:27:19
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: r4west5.te           Time Period: Day/Night 16/8 hours
Description: R4- 7th floor South Facade
                     TOTAL Leq FROM ALL SOURCES                  (DAY): 54.31
                                                                (NIGHT): 47.81
Road data, segment # 1: West 5th (day/night)
----------------------------------------------
Car traffic volume  : 13184/1465  veh/TimePeriod  *
Medium truck volume :   275/31    veh/TimePeriod  *
Heavy truck volume  :   275/31    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):  11796
    Percentage of Annual Growth        :   2.00
    Number of Years of Growth          :  13.00
    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: West 5th (day/night)
----------------------------------------------
Angle1   Angle2           : -90.00 deg   0.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  :  40.00 / 40.00  m
Receiver height           :   2.00 / 2.00   m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00

Road data, segment # 2: Upper James (day/night)
----------------------------------------------
Car traffic volume  : 26866/2985  veh/TimePeriod  *
Medium truck volume :   572/64    veh/TimePeriod  *
Heavy truck volume  :  1143/127   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):  25040
    Percentage of Annual Growth        :   2.00
    Number of Years of Growth          :  12.00
    Medium Truck % of Total Volume     :   2.00
    Heavy Truck  % of Total Volume     :   4.00
    Day (16 hrs) % of Total Volume     :  90.00

Data for Segment # 2: Upper James (day/night)
----------------------------------------------
Angle1   Angle2           : -15.00 deg   90.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  : 295.00 / 295.00 m
Receiver height           :   2.00 / 2.00   m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00
```

```
Road data, segment # 3: Rymal Rd (day/night)
---------------------------------------------
Car traffic volume  : 12019/1335  veh/TimePeriod  *
Medium truck volume :   250/28    veh/TimePeriod  *
Heavy truck volume  :   250/28    veh/TimePeriod  *
Posted speed limit  :    50 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

* Refers to calculated road volumes based on the following input:

    24 hr Traffic Volume (AADT or SADT):  10754
    Percentage of Annual Growth        :   2.00
    Number of Years of Growth          :  13.00
    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 # 3: Rymal Rd (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  : 300.00 / 300.00 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.West 5th         !     1.19 !    53.93 !    53.93
 2.Upper James      !     1.41 !    38.21 !    38.21
 3.Rymal Rd         !     1.19 !    42.05 !    42.05
--------------------+---------+---------+---------
                      Total                 54.31 dBA

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

                    !  source  !   Road   !  Total
                    !  height  !   Leq    !   Leq
                    !   (m)    !  (dBA)   !  (dBA)
--------------------+---------+---------+---------
 1.West 5th         !     1.19 !    47.43 !    47.43
 2.Upper James      !     1.41 !    31.68 !    31.68
 3.Rymal Rd         !     1.19 !    35.54 !    35.54
--------------------+---------+---------+---------
                      Total                 47.81 dBA
```

```
STAMSON 5.04        SUMMARY REPORT        Date: 08-06-2022 12:32:26
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: r5west5.te           Time Period: Day/Night 16/8 hours
Description: R5- 7th floor South Facade
                             TOTAL Leq FROM ALL SOURCES           (DAY): 58.33
                                                                  (NIGHT): 51.84
Road data, segment # 1: West 5th (day/night)
----------------------------------------------
Car traffic volume  : 13184/1465  veh/TimePeriod  *
Medium truck volume :   275/31    veh/TimePeriod  *
Heavy truck volume  :   275/31    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):  11796
    Percentage of Annual Growth        :   2.00
    Number of Years of Growth          :  13.00
    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: West 5th (day/night)
----------------------------------------------
Angle1   Angle2           : -90.00 deg   0.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  :  40.00 / 40.00  m
Receiver height           :  20.00 / 20.00  m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00

Road data, segment # 2: Upper James (day/night)
----------------------------------------------
Car traffic volume  : 26866/2985  veh/TimePeriod  *
Medium truck volume :   572/64    veh/TimePeriod  *
Heavy truck volume  :  1143/127   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):  25040
    Percentage of Annual Growth        :   2.00
    Number of Years of Growth          :  12.00
    Medium Truck % of Total Volume     :   2.00
    Heavy Truck  % of Total Volume     :   4.00
    Day (16 hrs) % of Total Volume     :  90.00

Data for Segment # 2: Upper James (day/night)
----------------------------------------------
Angle1   Angle2           : -15.00 deg   90.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  : 295.00 / 295.00 m
Receiver height           :  20.00 / 20.00  m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00
```

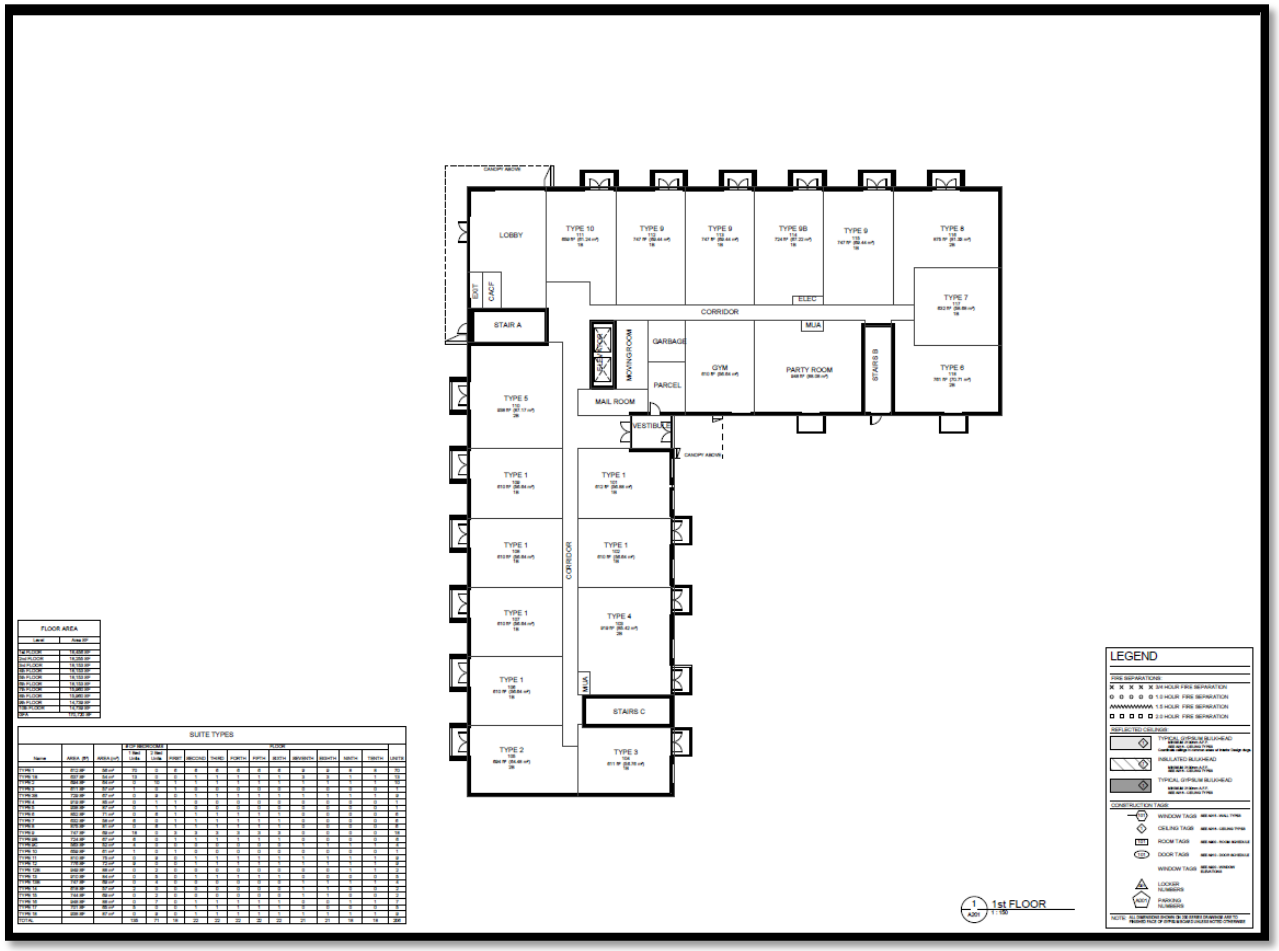
```
Road data, segment # 3: Rymal Rd (day/night)
----------------------------------------
Car traffic volume  : 12019/1335  veh/TimePeriod  *
Medium truck volume :   250/28    veh/TimePeriod  *
Heavy truck volume  :   250/28    veh/TimePeriod  *
Posted speed limit  :    50 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

* Refers to calculated road volumes based on the following input:

    24 hr Traffic Volume (AADT or SADT):  10754
    Percentage of Annual Growth        :   2.00
    Number of Years of Growth          :  13.00
    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 # 3: Rymal Rd (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  : 300.00 / 300.00 m
Receiver height           :  20.00 / 20.00  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.West 5th         !     1.19 !    57.35 !    57.35
 2.Upper James      !     1.41 !    45.22 !    45.22
 3.Rymal Rd         !     1.19 !    50.20 !    50.20
--------------------+---------+---------+---------
                      Total                58.33 dBA
Result summary (night)
----------------------

                    !  source  !   Road   !  Total
                    !  height  !   Leq    !   Leq
                    !   (m)    !  (dBA)   !  (dBA)
--------------------+---------+---------+---------
 1.West 5th         !     1.19 !    50.86 !    50.86
 2.Upper James      !     1.41 !    38.69 !    38.69
 3.Rymal Rd         !     1.19 !    43.69 !    43.69
--------------------+---------+---------+---------
                      Total                51.84 dBA
```

```
STAMSON 5.04        SUMMARY REPORT        Date: 08-06-2022 12:37:56
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: r6West5.te           Time Period: Day/Night 16/8 hours
Description: R6- 10th floor South Facade Rooftop
                     TOTAL Leq FROM ALL SOURCES                    (DAY): 61.35
                                                                   (NIGHT): 54.84
Road data, segment # 1: West 5th (day/night)
----------------------------------------------
Car traffic volume  : 13184/1465  veh/TimePeriod  *
Medium truck volume :   275/31    veh/TimePeriod  *
Heavy truck volume  :   275/31    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):  11796
    Percentage of Annual Growth        :   2.00
    Number of Years of Growth          :  13.00
    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: West 5th (day/night)
----------------------------------------------
Angle1   Angle2           : -90.00 deg   0.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  :  40.00 / 40.00  m
Receiver height           :  30.00 / 30.00  m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00

Road data, segment # 2: Upper James (day/night)
----------------------------------------------
Car traffic volume  : 26866/2985  veh/TimePeriod  *
Medium truck volume :   572/64    veh/TimePeriod  *
Heavy truck volume  :  1143/127   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):  25040
    Percentage of Annual Growth        :   2.00
    Number of Years of Growth          :  12.00
    Medium Truck % of Total Volume     :   2.00
    Heavy Truck  % of Total Volume     :   4.00
    Day (16 hrs) % of Total Volume     :  90.00

Data for Segment # 2: Upper James (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  : 295.00 / 295.00 m
Receiver height           :  30.00 / 30.00  m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00
```

```
Road data, segment # 3: Rymal Rd (day/night)
---------------------------------------------
Car traffic volume  : 12019/1335  veh/TimePeriod  *
Medium truck volume :   250/28    veh/TimePeriod  *
Heavy truck volume  :   250/28    veh/TimePeriod  *
Posted speed limit  :    50 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

* Refers to calculated road volumes based on the following input:

    24 hr Traffic Volume (AADT or SADT):  10754
    Percentage of Annual Growth         :   2.00
    Number of Years of Growth           :  13.00
    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 # 3: Rymal Rd (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  : 300.00 / 300.00 m
Receiver height           :  30.00 / 30.00  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.West 5th         !     1.19 !    58.16 !    58.16
 2.Upper James      !     1.41 !    57.41 !    57.41
 3.Rymal Rd         !     1.19 !    52.01 !    52.01
--------------------+---------+---------+---------
                      Total                 61.35 dBA

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

                    !  source  !   Road   !  Total
                    !  height  !   Leq    !   Leq
                    !   (m)    !  (dBA)   !  (dBA)
--------------------+---------+---------+---------
 1.West 5th         !     1.19 !    51.67 !    51.67
 2.Upper James      !     1.41 !    50.88 !    50.88
 3.Rymal Rd         !     1.19 !    45.50 !    45.50
--------------------+---------+---------+---------
                      Total                 54.84 dBA
```

FLOOR DESIGNS

1ST FLOOR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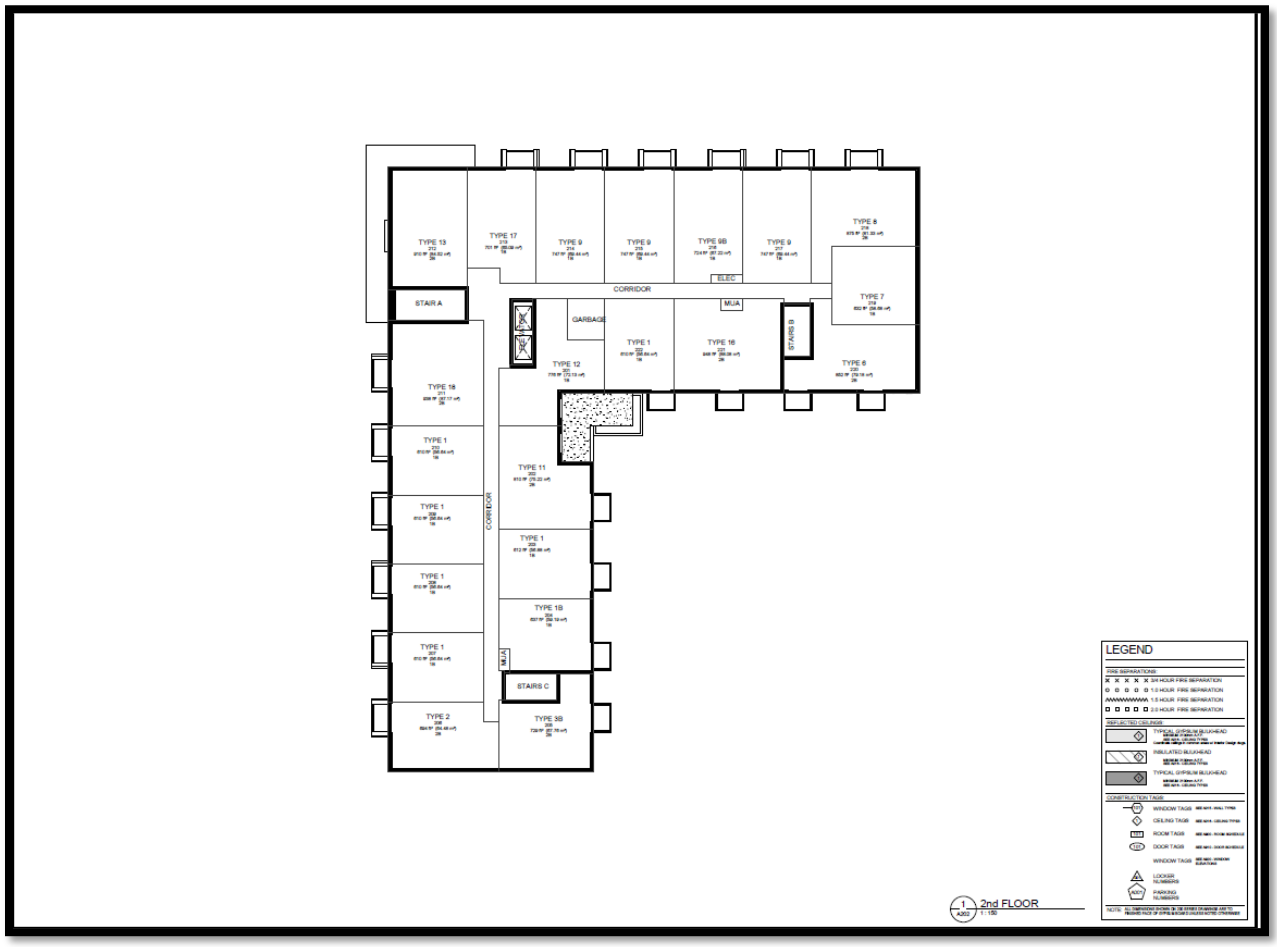
TYPE 10
TYPE 9
TYPE 9
TYPE 9B
TYPE 9
TYPE 8
TYPE 7
TYPE 6
CORRIDOR
ELEC
STAIR A
MOVING ROOM
GARBAGE
PARCEL
GYM
PARTY ROOM
STAIRS B
MUA
MAIL ROOM
VESTIBULE
TYPE 5
TYPE 1
TYPE 4
STAIRS C
TYPE 2
TYPE 3
1st FLOOR
LEGEND

2ND FLOOR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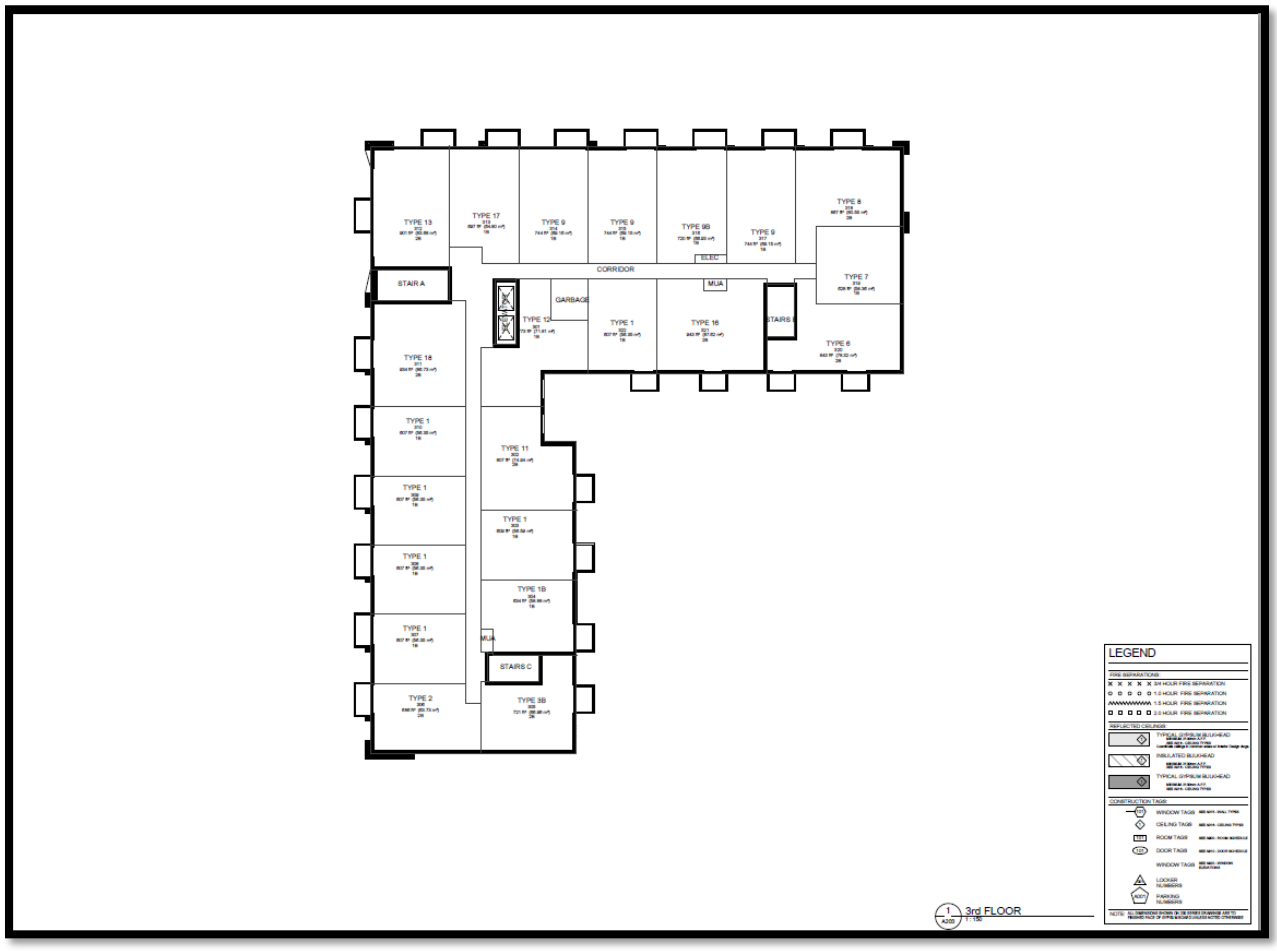
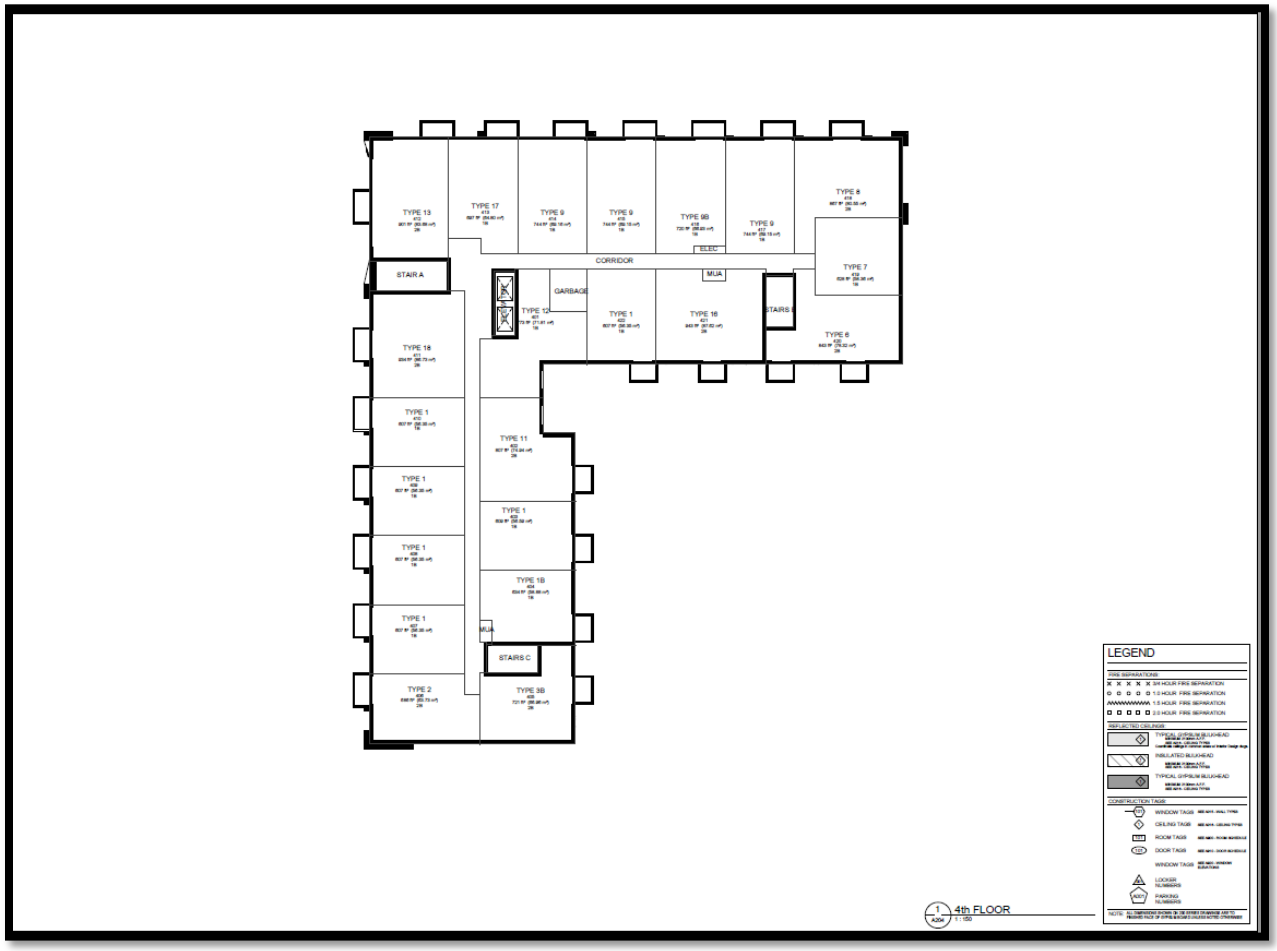
TYPE 17
TYPE 9
TYPE 9
TYPE 9B
TYPE 9
TYPE 8
TYPE 7
TYPE 6
CORRIDOR
ELEC
MUA
STAIR A
GARBAGE
TYPE 1
TYPE 16
STAIRS B
TYPE 12
TYPE 18
TYPE 1
TYPE 1
TYPE 1
TYPE 1
TYPE 11
TYPE 1
TYPE 1B
CORRIDOR
MUA
STAIRS C
TYPE 2
TYPE 3B
LEGEND
2nd FLOOR

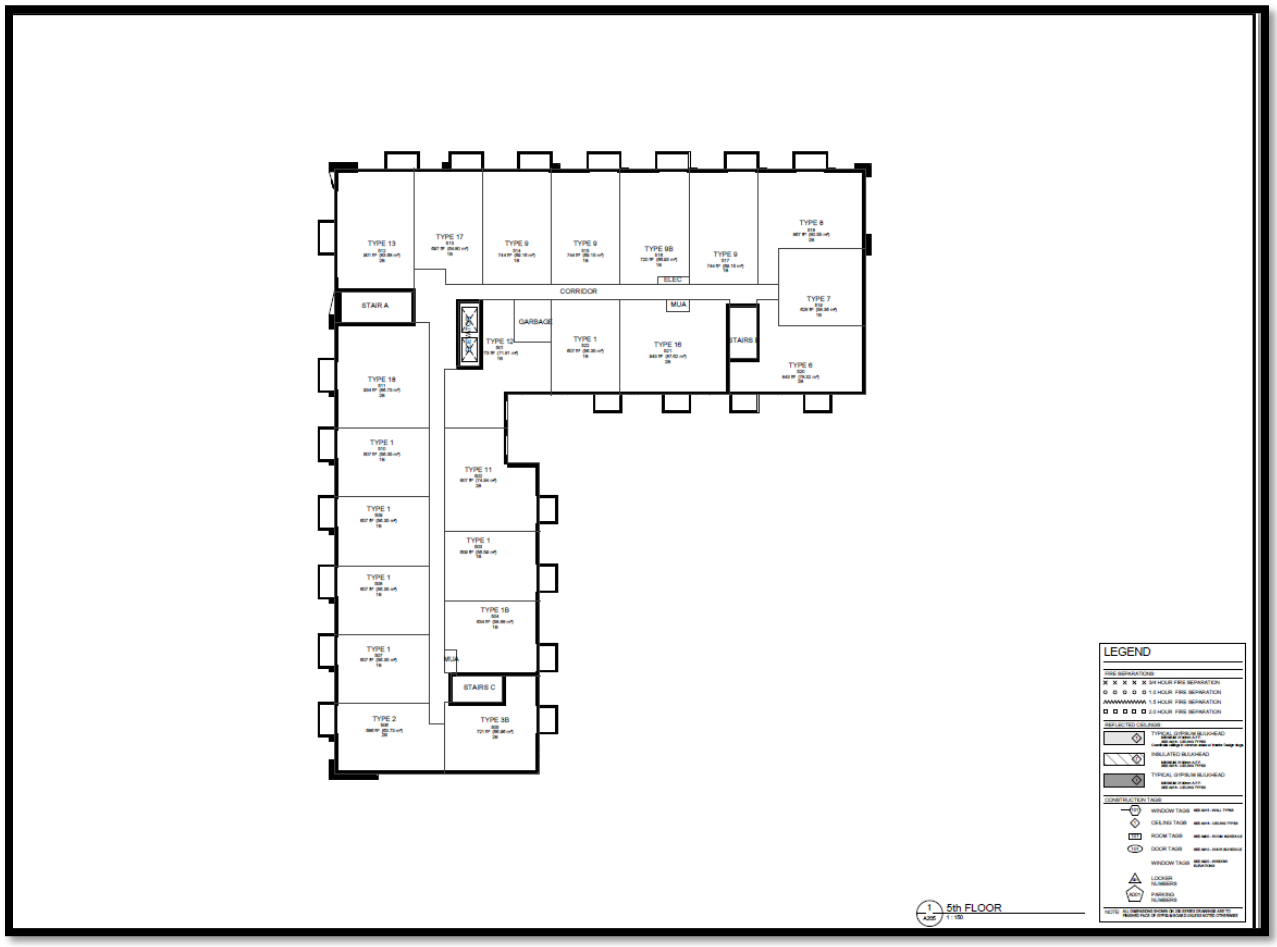
3RD FLOOR


TYPE 13
TYPE 17
TYPE 9
TYPE 9
TYPE 9B
TYPE 9
TYPE 8
CORRIDOR
ELEC
MUA
STAIR A
GARBAGE
TYPE 12
TYPE 1
TYPE 16
STAIR B
TYPE 7
TYPE 6
TYPE 18
TYPE 1
TYPE 11
TYPE 1
TYPE 1
TYPE 1
TYPE 1B
TYPE 1
MUA
STAIRS C
TYPE 2
TYPE 3B
LEGEND
3rd FLOOR

4TH FLOOR


TYPE 13
TYPE 17
TYPE 9
TYPE 9
TYPE 9B
TYPE 9
TYPE 8
TYPE 7
TYPE 6
CORRIDOR
STAIR A
GARBAGE
MUA
TYPE 12
TYPE 1
TYPE 16
STAIR B
TYPE 18
TYPE 1
TYPE 11
TYPE 1
TYPE 1
TYPE 1
TYPE 1B
TYPE 1
MUA
STAIR C
TYPE 2
TYPE 3B
LEGEND
4th FLOOR

5TH FLOOR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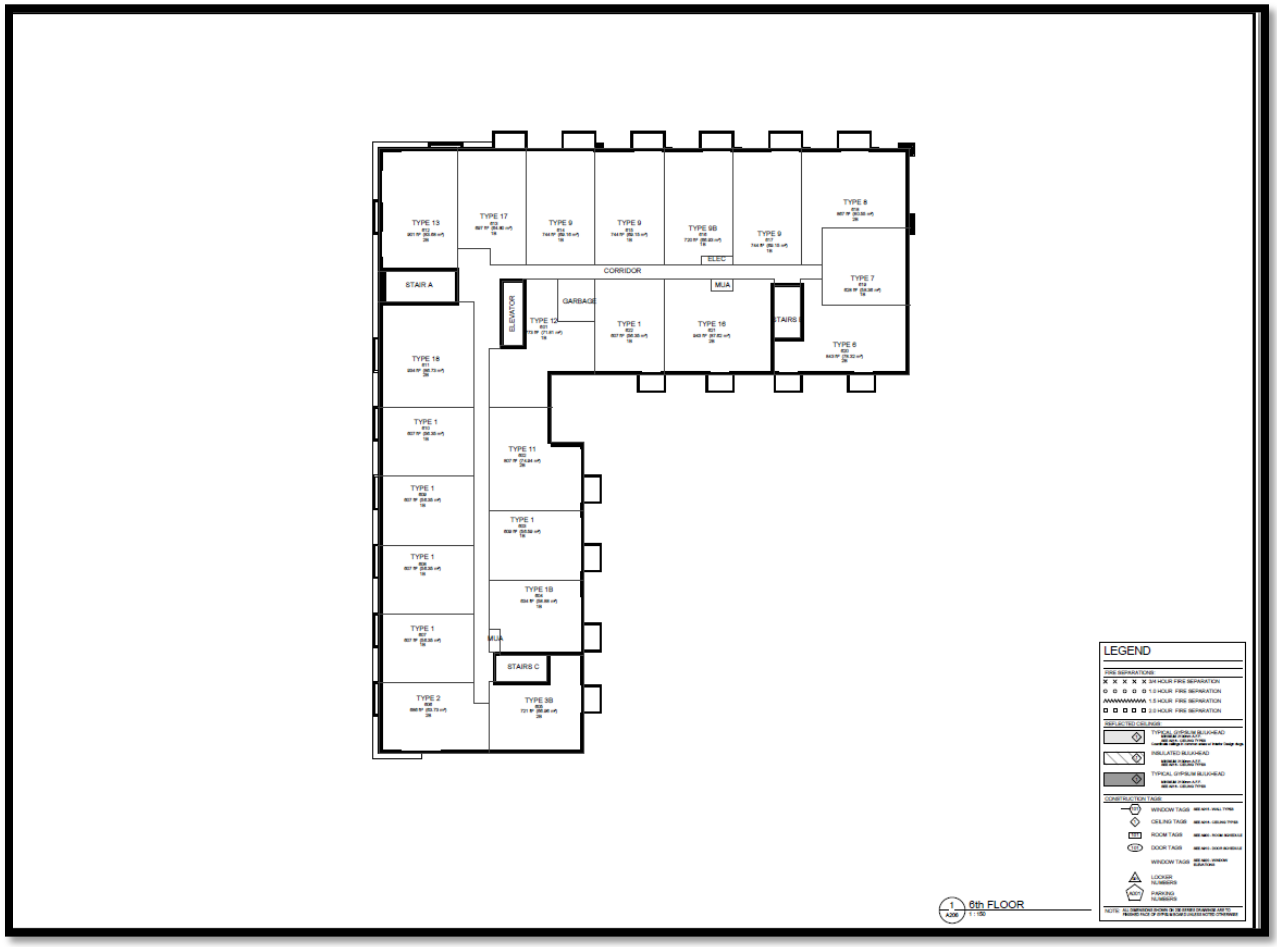
TYPE 17
TYPE 9
TYPE 9
TYPE 9B
TYPE 9
TYPE 8
TYPE 7
TYPE 6
ELEC
CORRIDOR
MUA
STAIR A
GARBAGE
TYPE 12
TYPE 1
TYPE 16
STAIRS B
TYPE 18
TYPE 1
TYPE 1
TYPE 1
TYPE 1
TYPE 11
TYPE 1
TYPE 1B
MUA
STAIRS C
TYPE 2
TYPE 3B
LEGEND
5th FLOOR
1 : 150

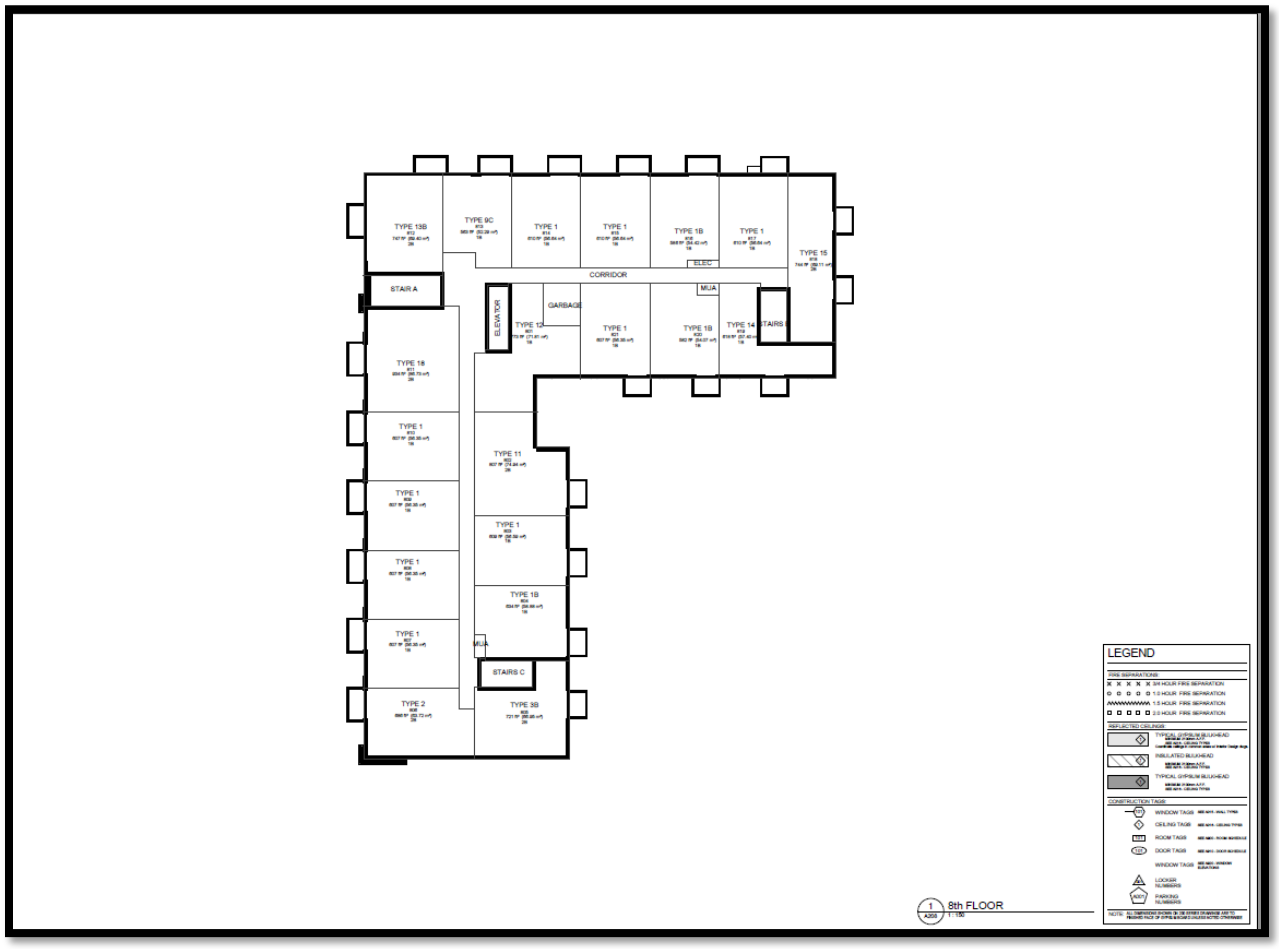
6TH FLOOR


TYPE 13
TYPE 17
TYPE 9
TYPE 9
TYPE 9B
TYPE 9
TYPE 8
TYPE 7
TYPE 6
CORRIDOR
ELEC
MUA
STAIR A
ELEVATOR
GARBAGE
TYPE 12
TYPE 1
TYPE 16
STAIRS
TYPE 18
TYPE 1
TYPE 1
TYPE 1
TYPE 1
TYPE 11
TYPE 1
TYPE 1B
MUA
STAIRS C
TYPE 2
TYPE 3B
LEGEND
6th FLOOR

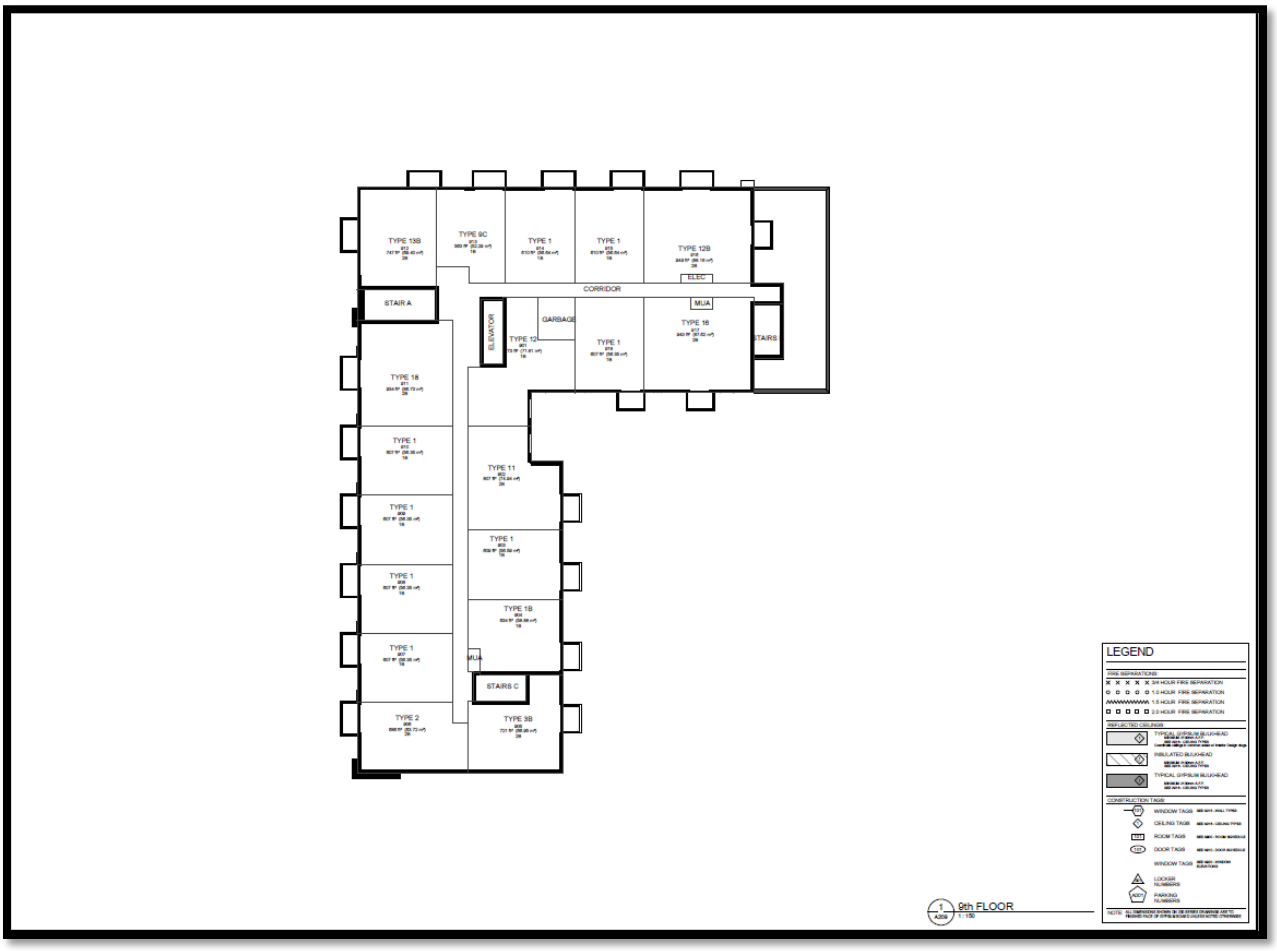
7TH FLOOR


TYPE 13B
TYPE 9C
TYPE 1
TYPE 1
TYPE 1B
TYPE 1
TYPE 15
ELEC
CORRIDOR
STAIR A
ELEVATOR
GARBAGE
MUA
TYPE 12
TYPE 1
TYPE 1B
STAIRS B
TYPE 14
TYPE 1B
TYPE 1
TYPE 11
TYPE 1
TYPE 1
TYPE 1B
TYPE 1
MUA
STAIRS C
TYPE 2
TYPE 3B
LEGEND
7th FLOOR

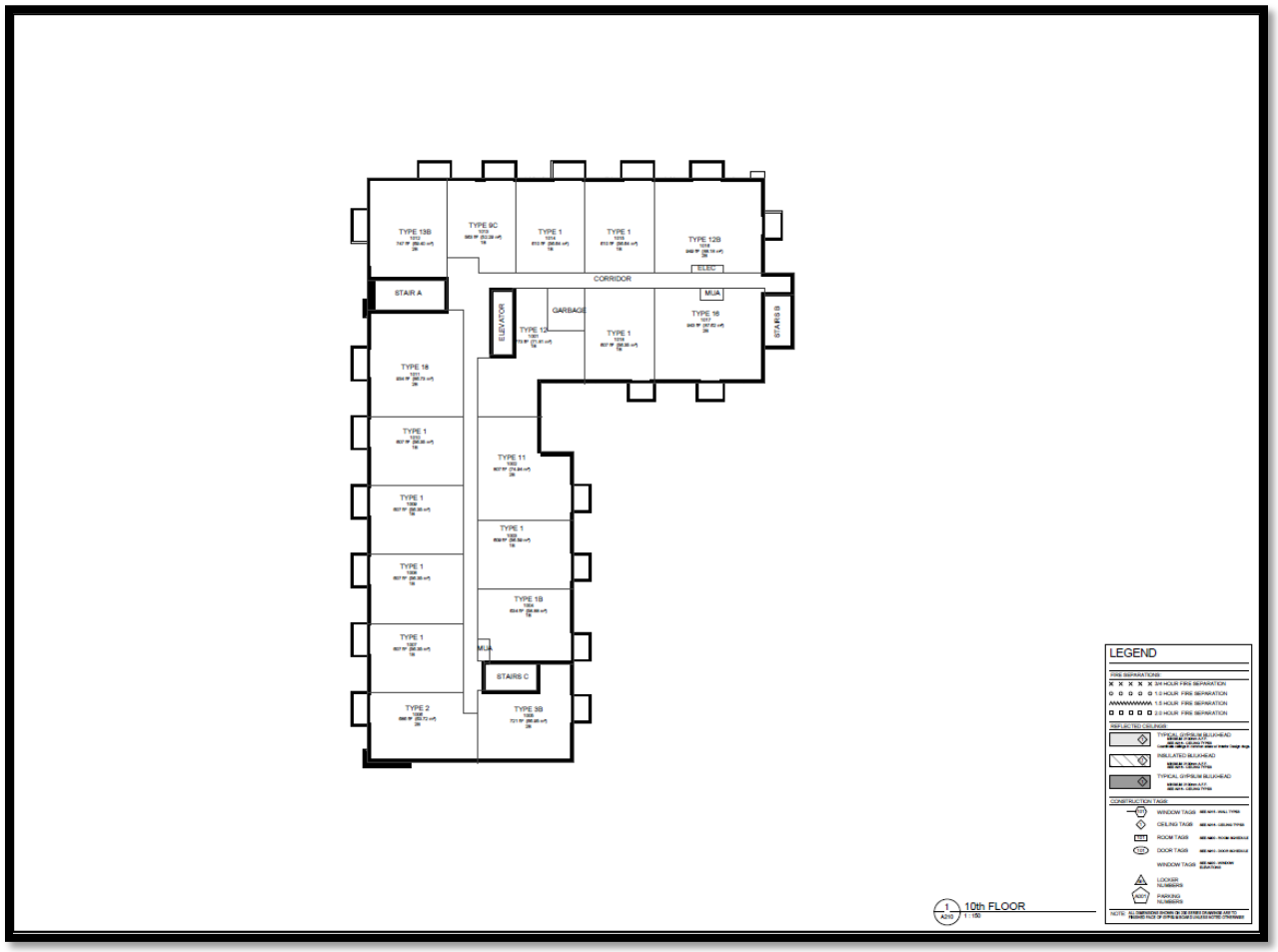
8TH FLOOR


TYPE 13B
TYPE 9C
TYPE 1
TYPE 1
TYPE 1B
TYPE 1
TYPE 1S
CORRIDOR
ELEC
MUA
STAIR A
ELEVATOR
GARBAGE
TYPE 1
TYPE 1B
TYPE 1A
STAIRS
TYPE 1B
TYPE 1
TYPE 11
TYPE 1
TYPE 1
TYPE 1B
TYPE 1
MUA
STAIRS C
TYPE 2
TYPE 3B
LEGEND
8th FLOOR

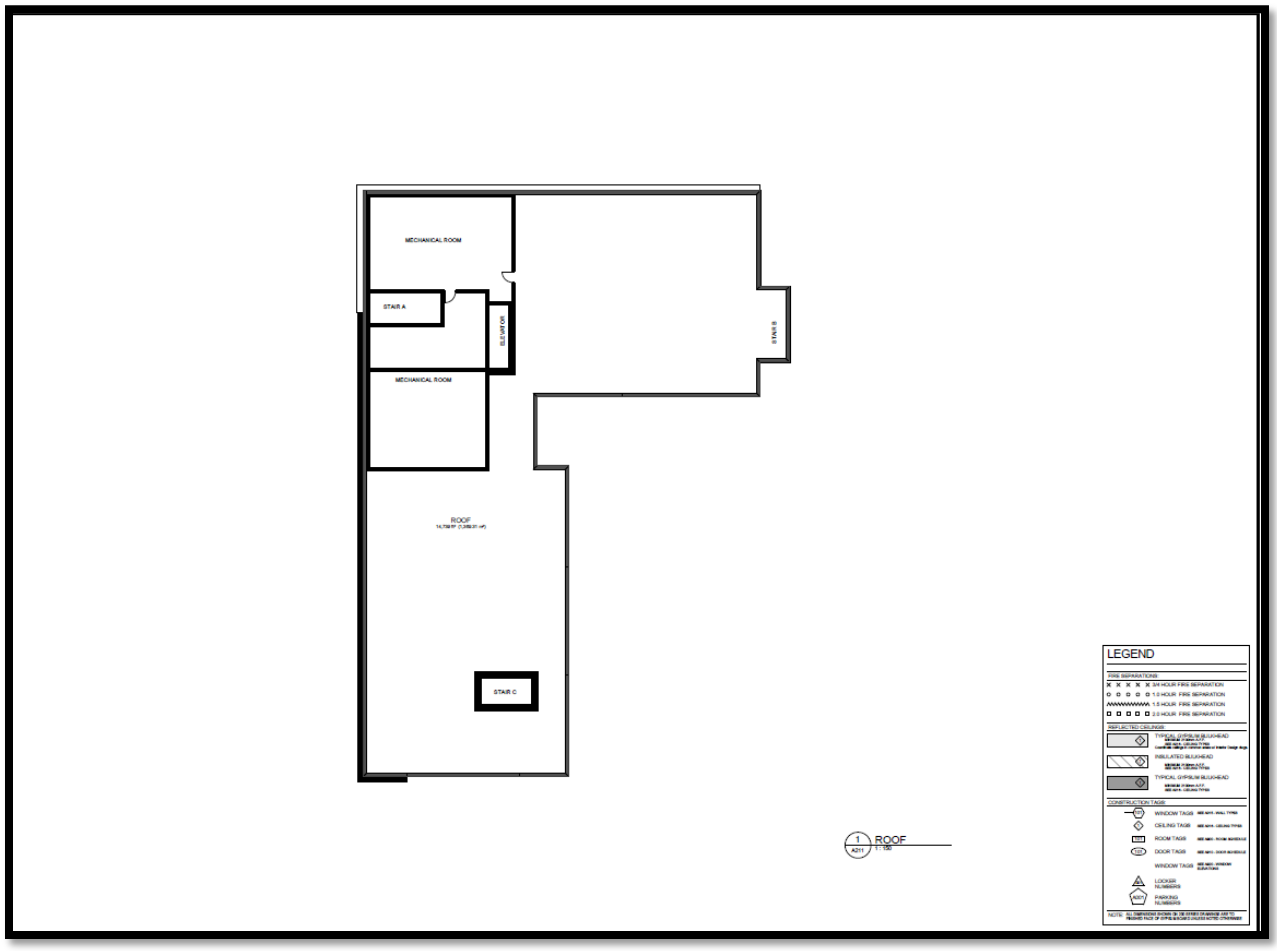
9TH FLOOR


TYPE 13B
TYPE 9C
TYPE 1
TYPE 1
TYPE 12B
ELEC
CORRIDOR
STAIR A
MUA
ELEVATOR
GARBAGE
TYPE 12
TYPE 1
TYPE 1B
STAIRS
TYPE 18
TYPE 1
TYPE 11
TYPE 1
TYPE 1
TYPE 1B
TYPE 1
MUA
STAIRS C
TYPE 2
TYPE 3B
LEGEND
WINDOW TAGS
CEILING TAGS
ROOM TAGS
DOOR TAGS
WINDOW TAGS
LOCKER NUMBERS
PARKING NUMBERS
1
A209
9th FLOOR
1:150

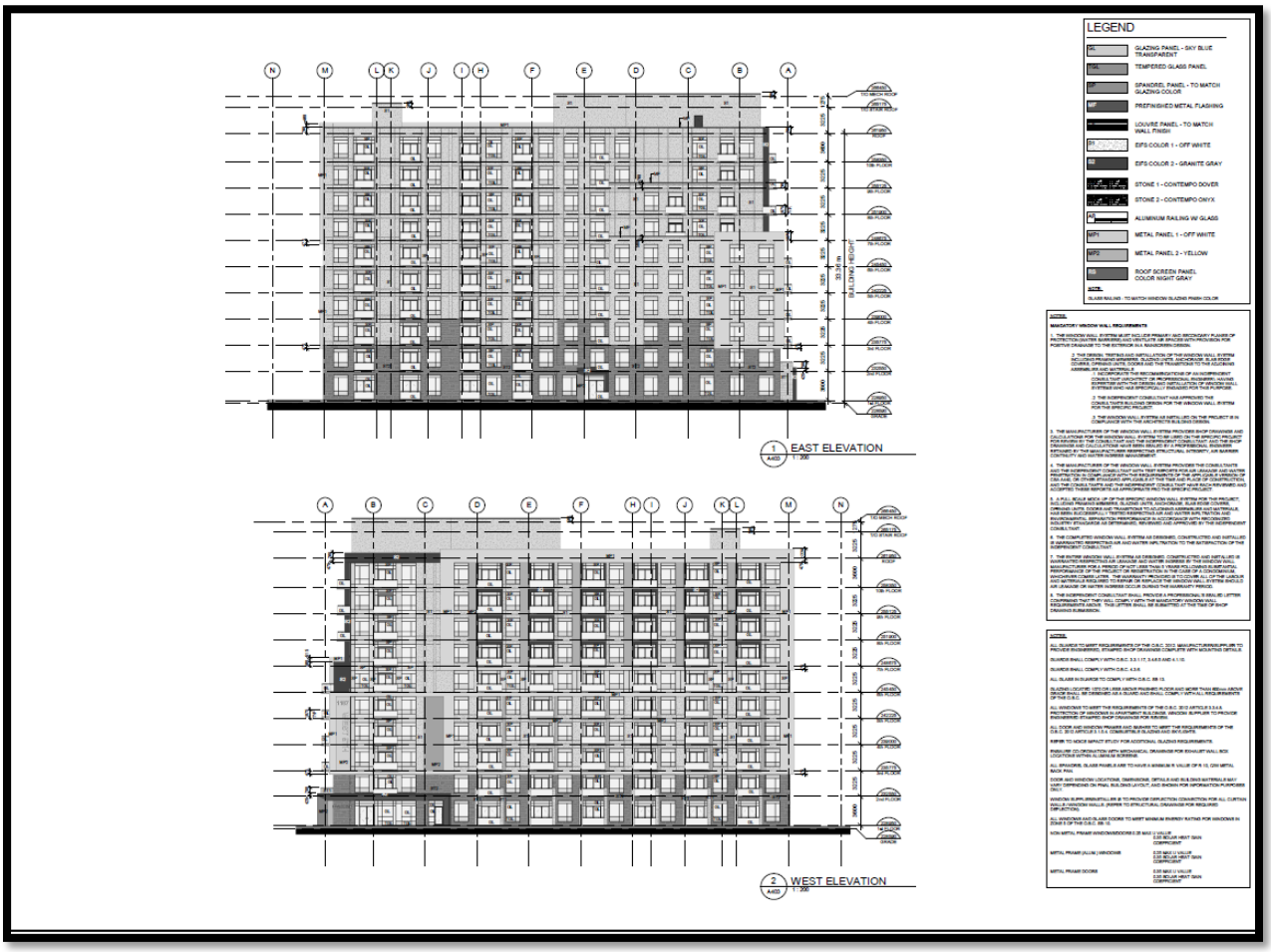
10TH FLOOR

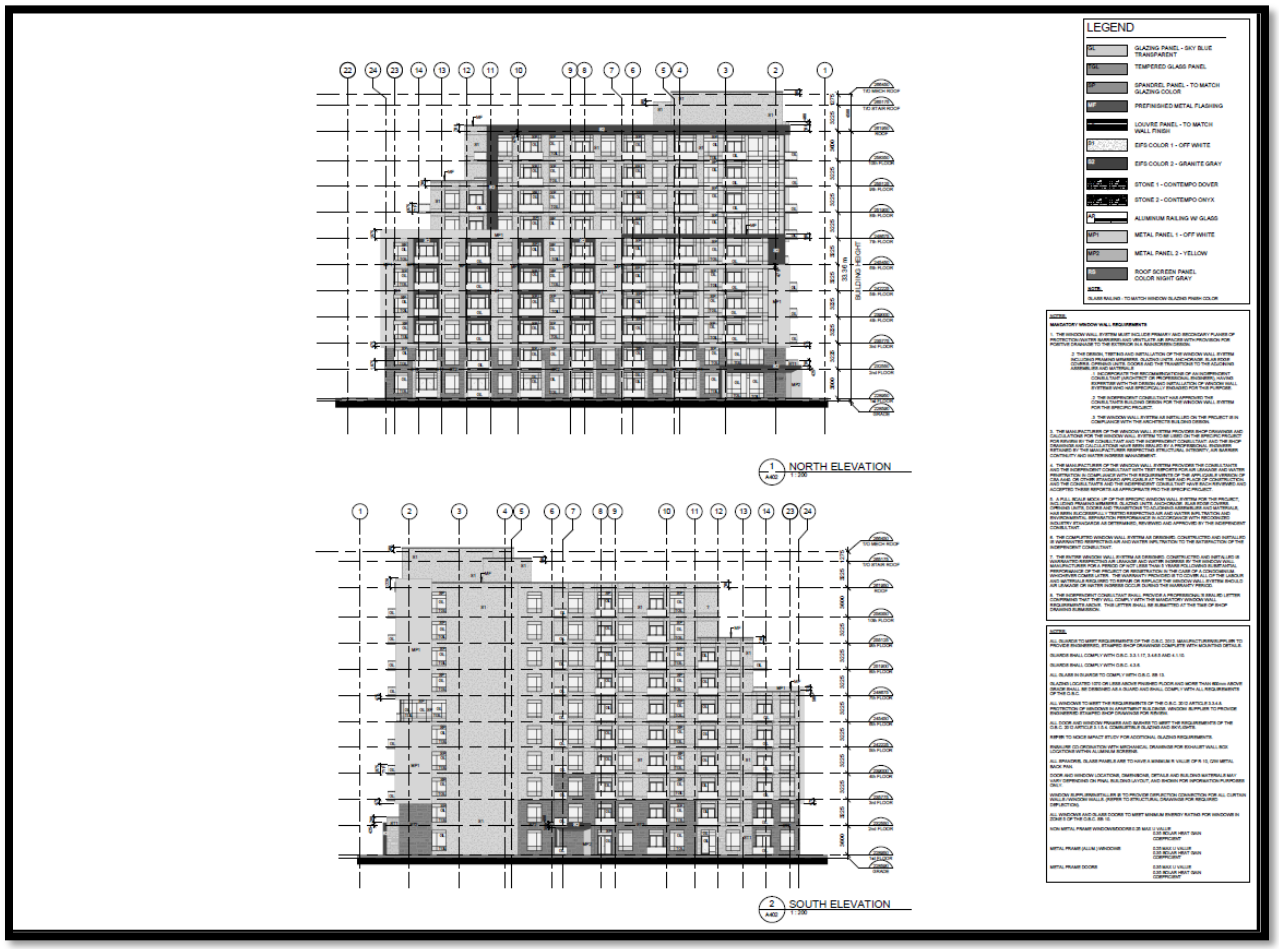

TYPE 13B
TYPE 9C
TYPE 1
TYPE 1
TYPE 12B
ELEC
CORRIDOR
STAIR A
MUA
GARBAGE
ELEVATOR
TYPE 12
TYPE 1
TYPE 16
STAIRS B
TYPE 18
TYPE 1
TYPE 11
TYPE 1
TYPE 1
TYPE 1B
TYPE 1
MUA
STAIRS C
TYPE 2
TYPE 3B
LEGEND
10th FLOOR

ROOF PLAN


MECHANICAL ROOM
STAIR A
ELEVATOR
STAIR B
MECHANICAL ROOM
ROOF
STAIR C
1
A211
ROOF
1 : 100
LEGEND

BUILDING ELEVATIONS




LEGEND
GLAZING PANEL - SKY BLUE TRANSPARENT
TEMPERED GLASS PANEL
SPANDREL PANEL - TO MATCH GLAZING COLOR
PREFINISHED METAL FLASHING
LOUVRE PANEL - TO MATCH WALL FINISH
EIFS COLOR 1 - OFF WHITE
EIFS COLOR 2 - GRANITE GRAY
STONE 1 - CONTEMPO DOVER
STONE 2 - CONTEMPO ONYX
ALUMINUM RAILING W/ GLASS
METAL PANEL 1 - OFF WHITE
METAL PANEL 2 - YELLOW
ROOF SCREEN PANEL COLOR NIGHT GRAY
GLASS RAILING - TO MATCH WINDOW GLAZING FRAME COLOR
BUILDING HEIGHT
1 NORTH ELEVATION
2 SOUTH ELEVATION

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.