ENVIRONMENTAL NOISE IMPACT STUDY

1842 KING STREET EAST
RESIDENTIAL DEVELOPMENT
CITY OF HAMILTON ON

Prepared for:

New Horizon Development Group
200-3170 Harvester Road
Burlington, ON
L7N 3W8

Prepared By:

Frank Westaway, Owner/President

REVISED JANUARY 2022
REVISED OCTOBER 2021
REVISED JULY 2021
March 2021
Our File No: 21-2129

dBA Acoustical Consultants Inc.
P.O Box 32059
1447 Upper Ottawa
Hamilton, ON
L8W 3K0

TABLE OF CONTENTS

1.0 INTRODUCTION

dBA Acoustical Consultants Inc. has conducted a noise impact study on behalf of New Horizon Development Group for the proposed residential development located at 1842 King Street East, Hamilton ON.

The purpose of the study is to determine the noise impact from vehicular traffic from King Street East, Rosedale Ave, Lawrence Rd, and the CP Railway Principal Main Line train traffic, as required for OPA/ZBA application approval.

This study will detail vehicular traffic from King Street East, Rosedale Ave, Lawrence Rd, and the CP Railway train traffic noise impact relative to the site plan and recommend noise control measures necessary (if applicable) to meet MECP Publication NPC-300 entitled "Stationary & Transportation Sources-Approval & Planning and CP Rail guidelines while satisfying the planning requirements of the City of Hamilton. Figure 1 Site Location. Vibration is not considered as the CP Railway lines are not within the 75m required setback distances. A site visit has confirmed that there are no stationary noise sources in the area that will have an acoustical impact on the proposed development.

2.0 SITE DESCRIPTION

The proposed development is the old Brock University property located at 1842 King Street East, Hamilton. The proposed development property facades are located approximately 20m south of King Street East and approximately 20m north of Lawrence Rd, and approximately 260m west is Kenilworth Ave S., approximately 40m east of Rosedale Ave, and approximately 110m north of the CP Rail Hamilton Principal Main Line. Rosedale Ave traffic data is not considered in this report due to low traffic volumes, low speed limits, distance separation, and shielding from existing residential dwellings.

The CP Rail line is located south of the proposed development and is a single track that runs east and west of the site development. This track is a through track for CP Rail freight trains only.

Proposed for the site are (4) four 12 storey buildings, BLDGS A, B, C, & D. Building "A" consisting of 316 apartment style units. Building "B" consisting of 352 apartment style units. Building "C" consisting of 275 apartment style units. Building "D" consisting of 326 apartment style units. Also proposed for the site development are (4) Blocks of four storey stacked townhouses totaling 80 residential units.

For all buildings and stacked townhouses combined totals 1351 residential units. Buildings A, B, C, D have proposed 2nd & 7th floor terraces and 11th floor large outdoor amenity areas. The proposed development property is situated in an area of existing commercial/residential apartment buildings, 2 storey dwellings and 3 storey commercial properties. The proposed Buildings A, B, C, & D will be equipped with a rooftop mechanical penthouse completely enclosed for all HVAC and other mechanical apparatus.

The CP rail line is a Principle Main Line consisting of one track located 110 metres from the south property line of the proposed development with several building shielding the train activities. Site Plan is illustrated in Figure 2.

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 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. The MECP and CP also publishes specific requirements for land use development next to their principle main line tracks (attached in Appendix "A").

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 Sound Levels Limits		
Indoor Location	Leq (dBA)	
	Road	Rail
Living/Dining 7:00 – 23:00	45	40
Bedroom 23:00 - 07:00	40	35

The values in Table 3 take into account the low frequency characteristic of train noise, important for designing acoustically better architectural components.

3.2 ROAD NOISE

Predicted road traffic noise levels were calculated for King Street East and Lawrence Rd, the major road noise sources in the site area. Road traffic volumes (2019) for King Street East and (2009) for Lawrence Rd were sourced 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"). Traffic data is summarized in Table 4.

The daytime/nighttime volume ratio relative to King Street East and Lawrence Rd 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 King Street East was figured at 2.0% over 12 years. The percentage of annual growth for Lawrence Rd was figured at 2.0% over 22 years. 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 King Street East and Lawrence Rd. Table 5 summarizes the "free field" traffic noise prediction results of King Street East and Lawrence Rd and modeled at fifteen (15) receptor locations representative of 1st, 6th, 7th and 12th floors at the building facades, terraces, and amenity areas throughout the proposed development as well as the townhouses.

TABLE 4 – Future Road Traffic Volumes			
King Street East	AADT 31143 Vehicles		
	Cars	Medium Trucks	Heavy Trucks
Day	26908	561	561
Night	2990	62	62
Lawrence Rd	AADT 13330 Vehicles		
	Cars	Medium Trucks	Heavy Trucks
Day	11517	240	240
Night	1280	27	27
Kenilworth Ave S	AADT 22042 Vehicles		
	Cars	Medium Trucks	Heavy Trucks
Day	19243	397	198
Night	2138	44	22

Kenilworth Ave S. is a two-lane roadway with an elevation difference below the grade elevation of the proposed site of approximately 5m. There are also several homes and commercial businesses that separate the Kenilworth Ave S., road traffic. The posted speed limit in the site area for Kenilworth Ave S., is 40 km/hr and is not a designated truck route.

The following Table 5 summarizes the "Free Field" Kenilworth Ave S. traffic noise prediction results, modeled at 2 receptor locations represents the façades of specific units within the proposed development for Building "A" first and top floor residential units.

In calculating the Kenilworth traffic noise level, we did not apply the elevation distance of 5m and calculated the Kenilworth traffic noise level at grade. With the elevation difference and the shielding of the concrete bridge the traffic noise level will not have an acoustical noise impact on any of the proposed residential units as confirmed in the predicted free field noise levels noted in Table 5 below. The noise levels predicted are considered very conservative and the worst-case scenario.

It is note in Table 5 that the overall traffic noise level calculated at Building A is more than 10 dba than the combined noise level King Street, Lawrence Rd, and CP Rail. Therefore, Kenilworth Ave S. traffic noise has no acoustical impact on the proposed site due to distance separation, 10+ below the traffic noise from other noise impacted roadways, low speed limit, and shielding abutting the Kenilworth Ave S. road traffic. See Appendix "A" Stamson Calculation.

TABLE 5- Predicted Traffic Noise Levels-Free Field (Kenilworth Ave S)		
Location	L_{eq} (dBA)	
	07:00 - 23:00	23:00 - 07:00
R1- 1st Floor Residential North Façade (2m)	31	35
R2- 38th Floor Residential North Façade (38m)	41	44

The following Table 5A summarizes the "free field" King Street East and Lawrence Rd traffic noise prediction results, modeled at 11 receptor locations represents the façades of specific units within the proposed development.

TABLE 5A- Predicted Traffic Noise Levels-Free Field		
Location	L_{eq} (dBA)	
	07:00 - 23:00	23:00 - 07:00
R1- 1st Floor Residential North Façade (2m)	65	58
R2- 6th Floor Residential North Façade (20m)	67	60
R3- 12th Floor Residential North Façade (38m)	67	61
R4- 1st Floor Residential West & East Façade (2m)	59	53
R5- 6th Floor Residential West & East Façade (20m)	62	55
R6- 12th Floor Residential West & East Façade (38m)	63	56

R7- 1st Floor Residential Stacked Towns (2m)	52	45
R8- 4th Floor Residential Stacked Towns (12m)	55	48
R9- 1st Floor Residential South Facade(2m)	61	55
R10- 6th Floor Residential South Façade (20m)	63	57
R11- 12th Floor Residential South Façade (38m)	64	57

3.3 RAIL NOISE

Train traffic data which was used to carry out prediction calculations is using the MECP "Stamson, Version 5.4" computer program. CP train traffic data is summarized in Table 6. It should be noted that CP Rail no longer provides any train traffic data (email attached in Appendix "A") therefore, on-site train counts and verification at the CP Rail Kinnard Yard (March 2021) was utilized for this noise study.

TABLE 6–CP Train Traffic Data	
Type	Freight
Number of Trains 07:00 - 23:00 23:00 - 07:00	4 3
Number of Cars per Train	144
Number of Locomotives per Train	4
Maximum Train Speed	80 km

CP Rail calculations were performed for both daytime and nighttime at receiver locations relative to the south façade of the proposed buildings B & D. An annual growth factor of 2.5% per annum was projected over 10 years.

The equivalent combined free field sound levels (L_{eq}) due to train and road noise were calculated for locations for specific building facades which are representative of worst-case free field noise impact and are summarized in Table 7.

TABLE 7- Predicted CP Rail Traffic Noise Levels-Free Field		
CP Rail Buildings B & D & Stacked Townhouses	L_{eq} (dBA)	
	07:00 - 23:00	23:00 - 07:00
R7- 1st Floor Residential Stacked Towns (2m)	41	42
R8- 4th Floor Residential Stacked Towns (12m)	44	45
R9- 1st Floor Residential South Façade (2m)	51	53
R11- 12th Floor Residential South Façade (38m)	62	64

The following Table 8 indicate the combined results of the Rail & Road noise levels calculated at the north façades of buildings B & D. CP Rail has no noise impact on R1-R6 due to rail noise calculated less than 10 dba for daytime and nighttime.

TABLE 8– Predicted Combined Free Field Future Train & Road Traffic Noise (dBA)		
Location	07:00 – 23:00	23:00 – 07:00
R1- 1st Floor Residential North Façade (2m)	65	58
R2- 6th Floor Residential North Façade (20m)	67	60
R3- 12th Floor Residential North Façade (38m)	67	61
R4- 1st Floor Residential West & East Façade (2m)	59	53
R5- 6th Floor Residential West & East Façade (20m)	62	55
R6- 12th Floor Residential West & East Façade (38m)	63	56
R7- 1st Floor Residential Stacked Towns (2m)	53	46
R8- 4th Floor Residential Stacked Towns (12m)	56	50
R9- 1st Floor Residential North Façade (2m)	61	57
R11- 12th Floor Residential North Façade (38m)	66	65
R12 – 12th Floor North Amenity (Buildings A & C) (38m)	52	N/A
R13 - 12th Floor South Amenity (Buildings B & D) (38m)	50	N/A
R14 – 7th Floor North Terraces (Buildings A & C) (23m)	52	N/A
R15 – 7th Floor South Terraces (Building B & D) (23m)	48	N/A

4.0 RECOMMENDATIONS - NOISE CONTROL

4.1 OUTDOOR LIVING AREAS

Calculated road noise levels exceed the 55 dBA daytime criteria outlined in Table 1. The draft plan includes outdoor living areas for the proposed development. The 2nd, 7th, & 11th floor terraces all exceed the 4m definition of an outdoor amenity area and therefore requires a 0.91m (3ft) safety railing or equivalent.

In compliance with MOE guidelines, the noise barrier must have a minimum surface density of 20 kg/m^2 and be designed and constructed with no cracks or gaps. Any gap under the noise barrier that is necessary for drainage purposes must be minimized and must not distract from the acoustical performance.

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 as an example in Table 9 following with minimum window door and wall construction specified for all residential units throughout the proposed development.

The STC example 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. Specific building component requirements noted in Table 9 for all specified units will satisfy the MECP criterion for noise control relative to indoor living space. Assessment was conservative from a noise impact perspective with worst-case design options modeled to satisfy MECP requirements for indoor sound levels.

Whereas the highest noise level is 67 dBA for the north façades. An estimated STC-32 rating is required for the north building residential units. It is recommended that all windows throughout the complete development for buildings A, B, C & D require an STC-32 rating. This will ensure that all the same window STC values will be installed without error and is cost efficient for the client.

TABLE 9 – Draft Door and Window Construction Requirements

LOCATION	STC Rating Acoustically Tested	Door Construction	Walls
Buildings A, B, C & D All Floors All Units	Example		Example
Bedroom	32	N/A	EW2
Living room	32	N/A	EW2
Stacked Towns All Floors All Units	Example		
Bedroom	28	N/A	OBC
Living room	28	N/A	OBC

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

5.0 VENTILATION / WARNING CLAUSES

Ventilation and warning clause requirements for all buildings and stacked townhouses are presented in Table 10 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.

TABLE 10- Ventilation and Warning Clause Requirements

LOCATION	VENTILATION	WARNING CLAUSE
Buildings A, B, C & D All Units	Central Air	Type "D"
All Stacked Towns	Provisions for Central Air	Type "C"

TYPE C: (All Stacked Townhouses)

> "This dwelling unit had been fitted with a forced air heating system and the ducting, etc. was sized to accommodate central air conditioning. Installation of central air conditioning by the occupant will allow windows and exterior doors to remain closed, thereby ensuring that the indoor sound levels are within the Municipality's and the Ministry of the Environment' noise criteria.
>
> (Note: The location and installation of the outdoor air conditioning device should be done so as to comply with noise criteria of MECP Publication NPC-216, Residential Air Conditioning Devices and thus minimize the noise impacts both on and in the immediate vicinity of the subject property.)"

TYPE D: (Buildings A, B, C, & 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 Ministry of the Environment's noise criteria."

CPR also requires the following clause be included:

> *"Warning: Canadian Pacific Railway Company and/or its assigns, or successors in interest have a rights-of-way within 300m from the land the subject hereof. There may be alterations to, or expansions of, the railway facilities on such rights-of-way in the future including the possibility that CP Rail or any railway entering into an agreement to sure the right-of-way or their assigns or successors as aforesaid may expand its operations, which expansion may affect the living environment of the residents in the vicinity, notwithstanding the inclusion of any noise and vibration attenuating measures in the design of the development and individual dwelling(s). CPR will not be responsible for any complaints or claims arising from use of such facilities and/or operations on, over or under the aforesaid rights-of-way."*

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)
- Provisions for Central Air Conditioning for all townhouse units. (Section 5.0)
- Central Air Conditioners for specific Buildings A, B, C, & D. (Section 5.0)
- Specific Windows & Walls required (STC) as noted in Section 4.
- Confirmation from window company that STC-32 & STC-28 have been acoustically tested.
- 2^{nd}, 7^{th}, & 11^{th} floor terraces all require a 0.91m (3ft) safety railing or equivalent. (Section 4.1)
- 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 revised a noise impact study on behalf of New Horizon Development Group for the proposed residential development located at 1842 King Street East, Hamilton, ON.

This study determined that the noise impact from vehicular traffic from King Street East and Lawrence Rd, and the CP Railway Principal Main Line train traffic, as required for OPA/ZBA application approval.

This study detailed vehicular traffic from King Street East, Lawrence Rd, and the CP Railway train traffic noise impact relative to the site plan and recommended noise control measures necessary to meet MECP Publication NPC-300 entitled "Stationary & Transportation Sources-Approval & Planning and CP Rail guidelines while satisfying the planning requirements of the City of Hamilton. Vibration is not considered as the CP Railway lines are outside the 75m required setback distances.

FIGURE 1
SITE LOCATION

FIGURE 2
SITE PLAN

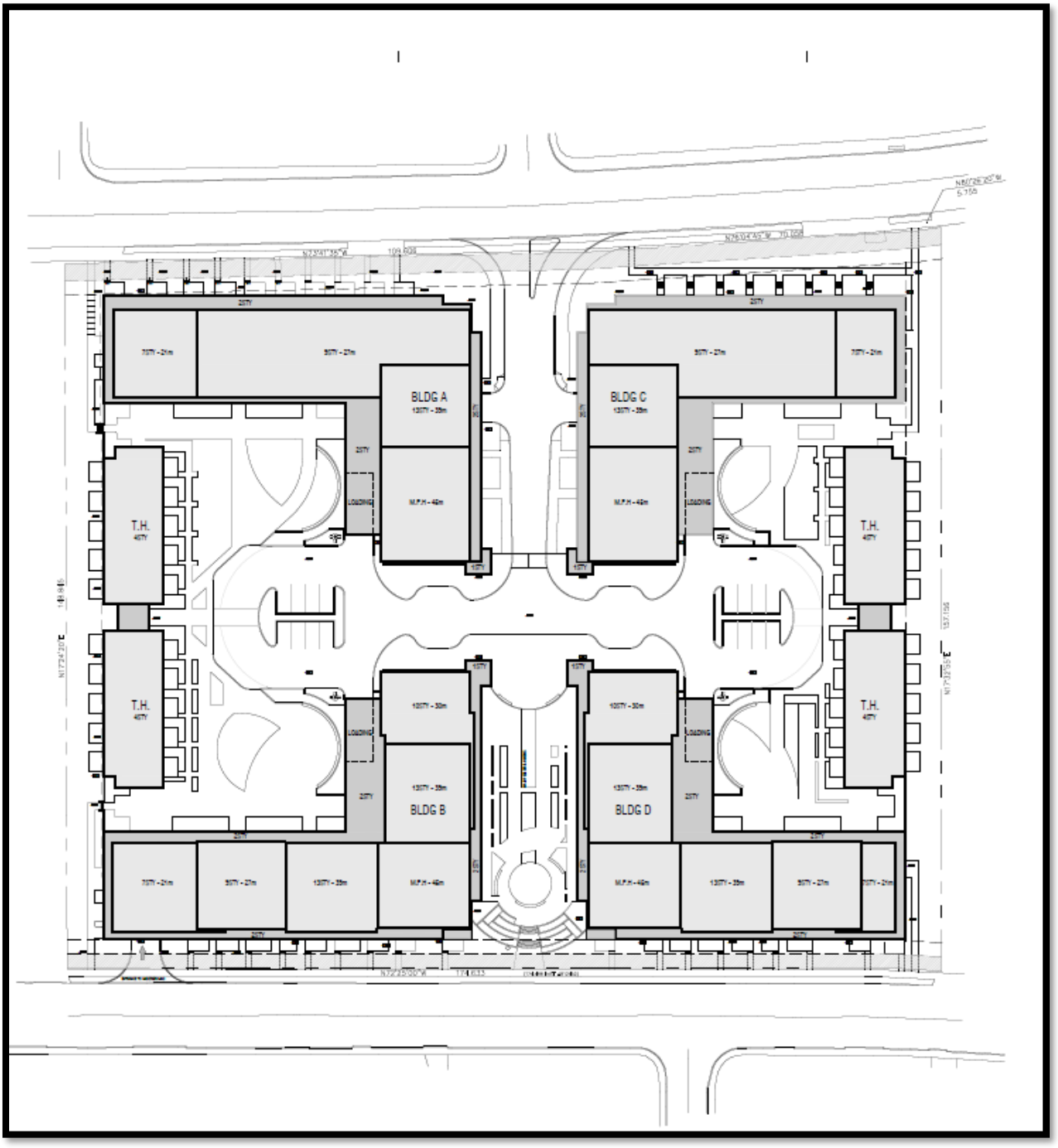
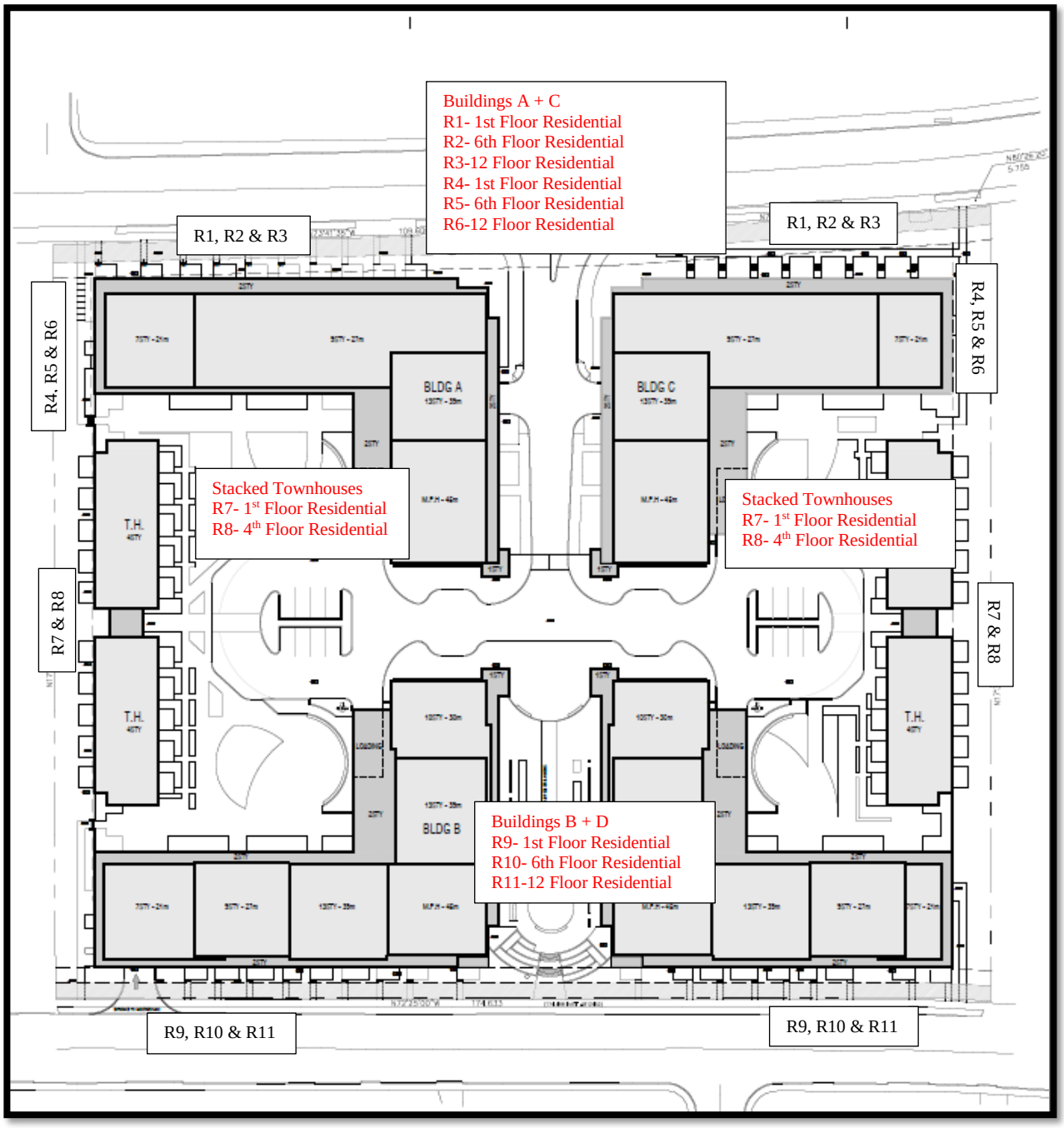
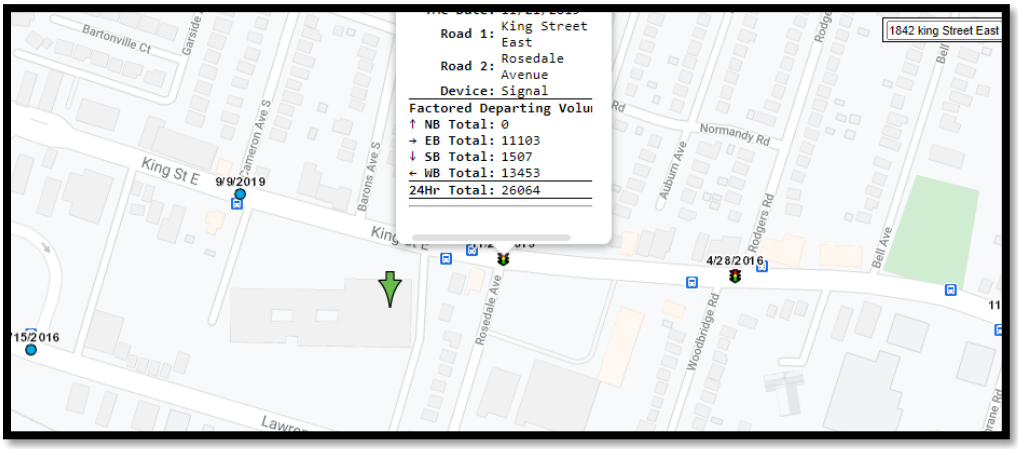
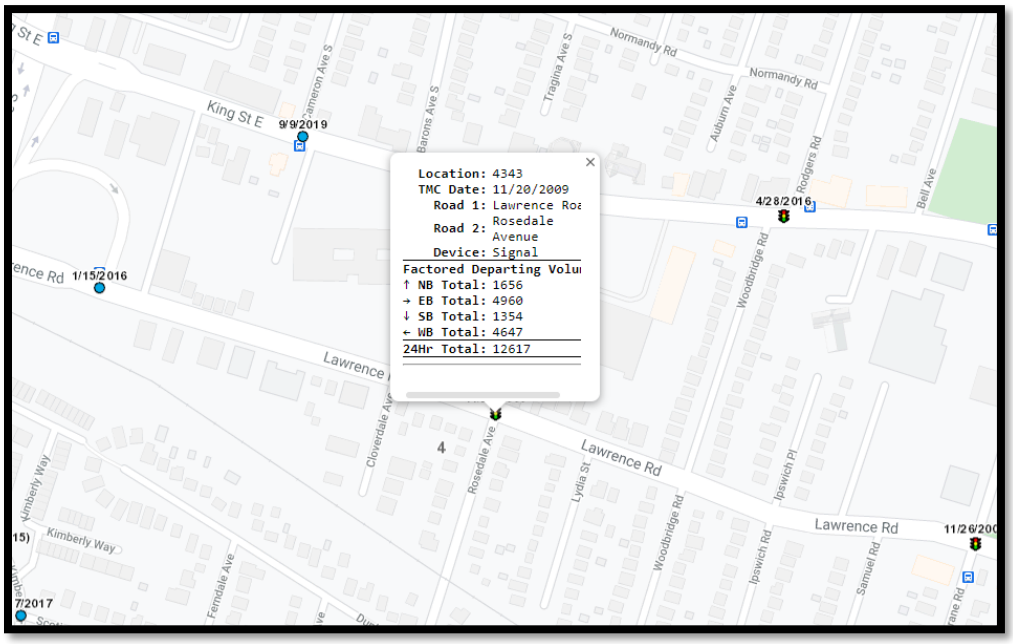


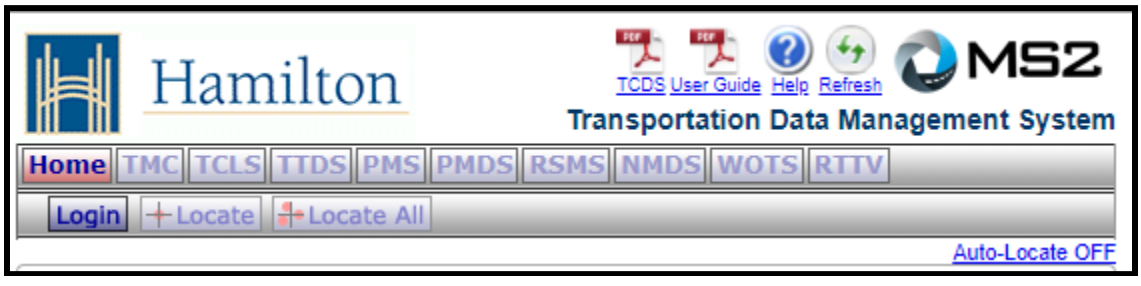
FIGURE 3
RECEPTOR LOCATIONS



CITY OF HAMILTON
2009 & 2019 AADT TRAFFIC
King Street East & Lawrence Rd







CP RAIL EMAIL

Good Morning Frank, Wed 2020-12-16 12:50 PM

Per our phone call conversation this morning, please note that CP Real Estate has changed its position regarding the sharing of train information and will no longer provide Rail Data information.

We appreciate that this is a change to what was previously provided by our group.

CP freight trains operate 24/7 and scheduled/volumes are subject to change.

The attached link provides some basic information related to train information for any given corridor.

https://www.cpr.ca/en/community/living-near-the-railway

To be clear, CP is not in favour of residential uses adjacent to its rail facilities and/or operations.

Recommend a clause be inserted in all offers of purchase and sale or lease and in the title deed or lease of each dwelling within 300m of the railway right of way, warning prospective purchasers or tenants of the existence of the Railway's operating right-of-way; the possibility of alterations including the possibility that the Railway may expand its operations, which expansion may affect the living environment of the residents notwithstanding the inclusion of noise and vibration attenuating measures in the design of the subdivision and the individual units, and that the Railway will not be responsible for complaints or claims arising from the use of its facilities and/or operations.

Sincerely,

Frank Gulas
Manager Real Estate –
Ontario & Manitoba
O 403-319-3436
F 403-319-3727
7550 Ogden Dale Road SE
Calgary AB T2C 4X9

STAMSON SUMMARY SHEETS

```
STAMSON 5.04        SUMMARY REPORT        Date: 26-07-2021 16:19:37
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: r1keni.te            Time Period: Day/Night 16/8 hours
Description: R1 Block A Kenilworth Ave S Free Field First Floor
                     TOTAL Leq FROM ALL SOURCES                    (DAY): 31.45
                                                                   (NIGHT): 35.05

Road data, segment # 1: Kenilworth S (day/night)
-----------------------------------------------
Car traffic volume  : 19243/2138  veh/TimePeriod  *
Medium truck volume :   397/44    veh/TimePeriod  *
Heavy truck volume  :   198/22    veh/TimePeriod  *
Posted speed limit  :    40 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):  17380
    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     :   1.00
    Day (16 hrs) % of Total Volume     :  90.00

Data for Segment # 1: Kenilworth S (day/night)
-----------------------------------------------
Angle1   Angle2           : -90.00 deg   90.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  : 260.00 / 260.00 m
Receiver height           :   2.00 / 2.00   m
Topography                :      1       (Flat/gentle slope; no barrier)

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

                    !  source  !   Road   !  Total
                    !  height  !   Leq    !   Leq
                    !   (m)    !  (dBA)   !  (dBA)
--------------------+---------+---------+---------
 1.Kenilworth S     !     1.00 !    31.45 !    31.45
--------------------+---------+---------+---------
                      Total                 31.45 dBA

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

                    !  source  !   Road   !  Total
                    !  height  !   Leq    !   Leq
                    !   (m)    !  (dBA)   !  (dBA)
--------------------+---------+---------+---------
 1.Kenilworth S     !     1.00 !    35.05 !    35.05
--------------------+---------+---------+---------
                      Total                 35.05 dBA
```

```
STAMSON 5.04        SUMMARY REPORT        Date: 26-07-2021 16:22:53
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: r2keni.te            Time Period: Day/Night 16/8 hours
Description: R2 Block A Kenilworth Ave S Free Field Top Floor
                              TOTAL Leq FROM ALL SOURCES                    (DAY): 41.48
                                                                            (NIGHT): 44.49
Road data, segment # 1: Kenilworth S (day/night)
-----------------------------------------------
Car traffic volume  : 19243/2138  veh/TimePeriod  *
Medium truck volume :   397/44    veh/TimePeriod  *
Heavy truck volume  :   198/22    veh/TimePeriod  *
Posted speed limit  :    40 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):  17380
    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     :   1.00
    Day (16 hrs) % of Total Volume     :  90.00

Data for Segment # 1: Kenilworth S (day/night)
-----------------------------------------------
Angle1   Angle2           : -90.00 deg   90.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  : 260.00 / 260.00 m
Receiver height           :  39.00 / 39.00  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.Kenilworth S     !     1.00 !    41.48 !    41.48
--------------------+---------+---------+---------
                      Total                 41.48 dBA

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

                    !  source  !   Road   !  Total
                    !  height  !   Leq    !   Leq
                    !   (m)    !  (dBA)   !  (dBA)
--------------------+---------+---------+---------
 1.Kenilworth S     !     1.00 !    44.49 !    44.49
--------------------+---------+---------+---------
                      Total                 44.49 dBA
```

```
STAMSON 5.04        SUMMARY REPORT        Date: 23-03-2021 12:13:21
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: R1Law.te             Time Period: Day/Night 16/8 hours
Description: R1- 1st Floor North Facade Buildings A & C
                      TOTAL Leq FROM ALL SOURCES                    (DAY): 65.02
                                                                    (NIGHT): 58.48
Road data, segment # 1: King St East (day/night)
-----------------------------------------------
Car traffic volume  : 26908/2990  veh/TimePeriod  *
Medium truck volume :   561/62    veh/TimePeriod  *
Heavy truck volume  :   561/62    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):  24556
    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     :   2.00
    Day (16 hrs) % of Total Volume     :  90.00

Data for Segment # 1: King St East (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           :   2.00 / 2.00   m
Topography                :      1       (Flat/gentle slope; no barrier)

Road data, segment # 2: Lawrence Rd (day/night)
-----------------------------------------------
Car traffic volume  : 11517/1280  veh/TimePeriod  *
Medium truck volume :   240/27    veh/TimePeriod  *
Heavy truck volume  :   240/27    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):   9607
    Percentage of Annual Growth        :   1.50
    Number of Years of Growth          :  22.00
    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: Lawrence Rd (day/night)
-----------------------------------------------
Angle1   Angle2           :  -0.00 deg   20.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  : 153.00 / 153.00 m
Receiver height           :   2.00 / 2.00   m
Topography                :      1       (Flat/gentle slope; no barrier)
```

Result summary (day)

	source height (m)	Road Leq (dBA)	Total Leq (dBA)
1.King St East	1.19	65.01	65.01
2.Lawrence Rd	1.19	38.55	38.55
Total			65.02 dBA

Result summary (night)

	source height (m)	Road Leq (dBA)	Total Leq (dBA)
1.King St East	1.19	58.47	58.47
2.Larence Rd	1.19	32.06	32.06
Total			58.48 dBA

```
STAMSON 5.04        SUMMARY REPORT        Date: 23-03-2021 12:51:18
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: r2law.te             Time Period: Day/Night 16/8 hours
Description: R2- 6th Floor North Facade Buildings A & C
                      TOTAL Leq FROM ALL SOURCES                    (DAY): 66.83
                                                                    (NIGHT): 60.29
Road data, segment # 1: King St East (day/night)
-----------------------------------------------
Car traffic volume  : 26908/2990  veh/TimePeriod  *
Medium truck volume :   561/62    veh/TimePeriod  *
Heavy truck volume  :   561/62    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):  24556
    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     :   2.00
    Day (16 hrs) % of Total Volume     :  90.00

Data for Segment # 1: King St East (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           :  20.00 / 20.00  m
Topography                :      1       (Flat/gentle slope; no barrier)

Road data, segment # 2: Lawrence (day/night)
-------------------------------------------
Car traffic volume  : 11517/1280  veh/TimePeriod  *
Medium truck volume :   240/27    veh/TimePeriod  *
Heavy truck volume  :   240/27    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):   9607
    Percentage of Annual Growth        :   1.50
    Number of Years of Growth          :  22.00
    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: Lawrence (day/night)
-------------------------------------------
Angle1   Angle2           :  -0.00 deg   20.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  : 153.00 / 153.00 m
Receiver height           :  20.00 / 20.00  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.King St East	1.19	66.81	66.81
2.Lawrence	1.19	44.05	44.05
Total			66.83 dBA

Result summary (night)

	source height (m)	Road Leq (dBA)	Total Leq (dBA)
1.King St East	1.19	60.27	60.27
2.Lawrence	1.19	37.55	37.55
Total			60.29 dBA

```
STAMSON 5.04        SUMMARY REPORT        Date: 23-03-2021 13:09:54
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: r3law.te             Time Period: Day/Night 16/8 hours
Description: R3- 11th Floor North Facade Buildings A & C
               TOTAL Leq FROM ALL SOURCES                    (DAY): 67.31
                                                            (NIGHT): 60.76
Road data, segment # 1: King St East (day/night)
-----------------------------------------------
Car traffic volume  : 26908/2990  veh/TimePeriod  *
Medium truck volume :   561/62    veh/TimePeriod  *
Heavy truck volume  :   561/62    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):  24556
    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     :   2.00
    Day (16 hrs) % of Total Volume     :  90.00

Data for Segment # 1: King St East (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           :  38.00 / 38.00  m
Topography                :      1       (Flat/gentle slope; no barrier)

Road data, segment # 2: Lawrence (day/night)
-------------------------------------------
Car traffic volume  : 11517/1280  veh/TimePeriod  *
Medium truck volume :   240/27    veh/TimePeriod  *
Heavy truck volume  :   240/27    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):   9607
    Percentage of Annual Growth        :   1.50
    Number of Years of Growth          :  22.00
    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: Lawrence (day/night)
-------------------------------------------
Angle1   Angle2           :  -0.00 deg   20.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  : 153.00 / 153.00 m
Receiver height           :  38.00 / 38.00  m
Topography                :      1       (Flat/gentle slope; no barrier)
```

Result summary (day)

	source height (m)	Road Leq (dBA)	Total Leq (dBA)
1.King St East	1.19	67.28	67.28
2.Lawrence	1.19	45.21	45.21
Total			67.31 dBA

Result summary (night)

	source height (m)	Road Leq (dBA)	Total Leq (dBA)
1.King St East	1.19	60.73	60.73
2.Lawrence	1.19	38.71	38.71
Total			60.76 dBA

```
STAMSON 5.04        SUMMARY REPORT        Date: 23-03-2021 13:52:28
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: r4law.te             Time Period: Day/Night 16/8 hours
Description: R4- 1st Floor East & West Facade Buildings A & C
                      TOTAL Leq FROM ALL SOURCES                    (DAY): 59.14
                                                                    (NIGHT): 52.59
Road data, segment # 1: King St East (day/night)
-----------------------------------------------
Car traffic volume  : 26908/2990  veh/TimePeriod  *
Medium truck volume :   561/62    veh/TimePeriod  *
Heavy truck volume  :   561/62    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):  24556
    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     :   2.00
    Day (16 hrs) % of Total Volume     :  90.00

Data for Segment # 1: King St East (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  :  30.00 / 30.00  m
Receiver height           :   2.00 / 2.00   m
Topography                :      1       (Flat/gentle slope; no barrier)

Road data, segment # 2: Lawrence (day/night)
-------------------------------------------
Car traffic volume  : 11517/1280  veh/TimePeriod  *
Medium truck volume :   240/27    veh/TimePeriod  *
Heavy truck volume  :   240/27    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):   9607
    Percentage of Annual Growth        :   1.50
    Number of Years of Growth          :  22.00
    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: Lawrence (day/night)
-------------------------------------------
Angle1   Angle2           :  -0.00 deg   20.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  : 153.00 / 153.00 m
Receiver height           :   2.00 / 2.00   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.King St East	1.19	59.09	59.09
2.Lawrence	1.19	39.45	39.45
Total			59.14 dBA

Result summary (night)

	source height (m)	Road Leq (dBA)	Total Leq (dBA)
1.King St East	1.19	52.54	52.54
2.Lawrence	1.19	32.96	32.96
Total			52.59 dBA

```
STAMSON 5.04        SUMMARY REPORT        Date: 23-03-2021 14:03:02
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: r5law.te             Time Period: Day/Night 16/8 hours
Description: R5- 6th Floor East & West Facade Buildings A & C
                              TOTAL Leq FROM ALL SOURCES                    (DAY): 61.92
                                                                            (NIGHT): 55.37
Road data, segment # 1: King St East (day/night)
-----------------------------------------------
Car traffic volume  : 26908/2990  veh/TimePeriod  *
Medium truck volume :   561/62    veh/TimePeriod  *
Heavy truck volume  :   561/62    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):  24556
    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     :   2.00
    Day (16 hrs) % of Total Volume     :  90.00

Data for Segment # 1: King St East (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  :  30.00 / 30.00  m
Receiver height           :  20.00 / 20.00  m
Topography                :      1       (Flat/gentle slope; no barrier)

Road data, segment # 2: Lawrence (day/night)
-------------------------------------------
Car traffic volume  : 11517/1280  veh/TimePeriod  *
Medium truck volume :   240/27    veh/TimePeriod  *
Heavy truck volume  :   240/27    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):   9607
    Percentage of Annual Growth        :   1.50
    Number of Years of Growth          :  22.00
    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: Lawrence (day/night)
-------------------------------------------
Angle1   Angle2           :  -0.00 deg   20.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  : 153.00 / 153.00 m
Receiver height           :  20.00 / 20.00  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.King St East	1.19	61.84	61.84
2.Lawrence	1.19	44.65	44.65
Total			61.92 dBA

Result summary (night)

	source height (m)	Road Leq (dBA)	Total Leq (dBA)
1.King St East	1.19	55.29	55.29
2.Lawrence	1.19	38.16	38.16
Total			55.37 dBA

```
STAMSON 5.04        SUMMARY REPORT        Date: 23-03-2021 14:15:19
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: r6law.te             Time Period: Day/Night 16/8 hours
Description: R6- 12th Floor East & West Facade Buildings A & C
                              TOTAL Leq FROM ALL SOURCES                    (DAY): 62.60
                                                                            (NIGHT): 56.05
Road data, segment # 1: King St East (day/night)
-----------------------------------------------
Car traffic volume  : 26908/2990  veh/TimePeriod  *
Medium truck volume :   561/62    veh/TimePeriod  *
Heavy truck volume  :   561/62    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):  24556
    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     :   2.00
    Day (16 hrs) % of Total Volume     :  90.00

Data for Segment # 1: King St East (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  :  30.00 / 30.00  m
Receiver height           :  38.00 / 38.00  m
Topography                :      1       (Flat/gentle slope; no barrier)

Road data, segment # 2: Lawrence (day/night)
-------------------------------------------
Car traffic volume  : 11517/1280  veh/TimePeriod  *
Medium truck volume :   240/27    veh/TimePeriod  *
Heavy truck volume  :   240/27    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):   9607
    Percentage of Annual Growth        :   1.50
    Number of Years of Growth          :  22.00
    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: Lawrence (day/night)
-------------------------------------------
Angle1   Angle2           :  -0.00 deg   20.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  : 153.00 / 153.00 m
Receiver height           :  38.00 / 38.00  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.King St East	1.19	62.51	62.51
2.Lawrence	1.19	45.76	45.76
Total			62.60 dBA

Result summary (night)

	source height (m)	Road Leq (dBA)	Total Leq (dBA)
1.King St East	1.19	55.96	55.96
2.Lawrence	1.19	39.26	39.26
Total			56.05 dBA

```
STAMSON 5.04        SUMMARY REPORT        Date: 23-03-2021 14:15:19
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: r7law.te             Time Period: Day/Night 16/8 hours
Description: R7- 1st Floor East & West Facade Stacked Towns
                      TOTAL Leq FROM ALL SOURCES                  (DAY): 51.73
                                                                  (NIGHT): 45.19
Road data, segment # 1: King St East (day/night)
-----------------------------------------------
Car traffic volume  : 26908/2990  veh/TimePeriod  *
Medium truck volume :   561/62    veh/TimePeriod  *
Heavy truck volume  :   561/62    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):  24556
    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     :   2.00
    Day (16 hrs) % of Total Volume     :  90.00

Data for Segment # 1: King St East (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  :  90.00 / 90.00  m
Receiver height           :   2.00 / 2.00   m
Topography                :      1       (Flat/gentle slope; no barrier)
Road data, segment # 2: Lawrence (day/night)
-----------------------------------------------
Car traffic volume  : 11517/1280  veh/TimePeriod  *
Medium truck volume :   240/27    veh/TimePeriod  *
Heavy truck volume  :   240/27    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):   9607
    Percentage of Annual Growth        :   1.50
    Number of Years of Growth          :  22.00
    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: Lawrence (day/night)
-----------------------------------------------
Angle1   Angle2           :  -0.00 deg   20.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  :  90.00 / 90.00  m
Receiver height           :   2.00 / 2.00   m
Topography                :      1       (Flat/gentle slope; no barrier)
```

Result summary (day)

	source height (m)	Road Leq (dBA)	Total Leq (dBA)
1.King St East	1.19	51.20	51.20
2.Lawrence	1.19	42.37	42.37
Total			51.73 dBA

Result summary (night)

	source height (m)	Road Leq (dBA)	Total Leq (dBA)
1.King St East	1.19	44.65	44.65
2.Lawrence	1.19	35.87	35.87
Total			45.19 dBA

```
STAMSON 5.04        SUMMARY REPORT        Date: 23-03-2021 15:22:48
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: r8law.te             Time Period: Day/Night 16/8 hours
Description: R8- 4th Floor East & West Facade Stacked Towns
                              TOTAL Leq FROM ALL SOURCES                    (DAY): 54.57
                                                                            (NIGHT): 48.02

Road data, segment # 1: King St East (day/night)
-----------------------------------------------
Car traffic volume  : 26908/2990  veh/TimePeriod  *
Medium truck volume :   561/62    veh/TimePeriod  *
Heavy truck volume  :   561/62    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):  24556
    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     :   2.00
    Day (16 hrs) % of Total Volume     :  90.00

Data for Segment # 1: King St East (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  :  90.00 / 90.00  m
Receiver height           :  12.00 / 12.00  m
Topography                :      1       (Flat/gentle slope; no barrier)

Road data, segment # 2: Lawrence (day/night)
-------------------------------------------
Car traffic volume  : 11517/1280  veh/TimePeriod  *
Medium truck volume :   240/27    veh/TimePeriod  *
Heavy truck volume  :   240/27    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):   9607
    Percentage of Annual Growth        :   1.50
    Number of Years of Growth          :  22.00
    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: Lawrence (day/night)
-------------------------------------------
Angle1   Angle2           :  -0.00 deg   20.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  :  90.00 / 90.00  m
Receiver height           :  12.00 / 12.00  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.King St East	1.19	54.09	54.09
2.Lawrence	1.19	44.73	44.73
Total			54.57 dBA

Result summary (night)

	source height (m)	Road Leq (dBA)	Total Leq (dBA)
1.King St East	1.19	47.54	47.54
2.Lawrence	1.19	38.23	38.23
Total			48.02 dBA

```
STAMSON 5.04        SUMMARY REPORT        Date: 23-03-2021 15:48:15
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: r9law.te             Time Period: Day/Night 16/8 hours
Description: R9- 1st Floor Facing Lawrence Rd Blocks B & D
                      TOTAL Leq FROM ALL SOURCES                    (DAY): 61.40
                                                                    (NIGHT): 54.89
Road data, segment # 1: King St East (day/night)
-----------------------------------------------
Car traffic volume  : 26908/2990  veh/TimePeriod  *
Medium truck volume :   561/62    veh/TimePeriod  *
Heavy truck volume  :   561/62    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):  24556
    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     :   2.00
    Day (16 hrs) % of Total Volume     :  90.00

Data for Segment # 1: King St East (day/night)
-----------------------------------------------
Angle1   Angle2           :  -0.00 deg   20.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  : 135.00 / 135.00 m
Receiver height           :   2.00 / 2.00   m
Topography                :      1       (Flat/gentle slope; no barrier)

Road data, segment # 2: Lawrence (day/night)
-------------------------------------------
Car traffic volume  : 11517/1280  veh/TimePeriod  *
Medium truck volume :   240/27    veh/TimePeriod  *
Heavy truck volume  :   240/27    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):   9607
    Percentage of Annual Growth        :   1.50
    Number of Years of Growth          :  22.00
    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: Lawrence (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           :   2.00 / 2.00   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.King St East	1.19	43.14	43.14
2.Lawrence	1.19	61.33	61.33
Total			61.40 dBA

Result summary (night)

	source height (m)	Road Leq (dBA)	Total Leq (dBA)
1.King St East	1.19	36.59	36.59
2.Lawrence	1.19	54.83	54.83
Total			54.89 dBA

```
STAMSON 5.04        SUMMARY REPORT        Date: 23-03-2021 15:58:24
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: r10law.te            Time Period: Day/Night 16/8 hours
Description: 10- 6th Floor Facing Lawrence Rd Blocks B & D
                      TOTAL Leq FROM ALL SOURCES                  (DAY): 63.27
                                                                  (NIGHT): 56.77
Road data, segment # 1: King St East (day/night)
-----------------------------------------------
Car traffic volume  : 26908/2990  veh/TimePeriod  *
Medium truck volume :   561/62    veh/TimePeriod  *
Heavy truck volume  :   561/62    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):  24556
    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     :   2.00
    Day (16 hrs) % of Total Volume     :  90.00

Data for Segment # 1: King St East (day/night)
-----------------------------------------------
Angle1   Angle2           :  -0.00 deg   20.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  : 135.00 / 135.00 m
Receiver height           :  20.00 / 20.00  m
Topography                :      1       (Flat/gentle slope; no barrier)

Road data, segment # 2: Lawrence (day/night)
-------------------------------------------
Car traffic volume  : 11517/1280  veh/TimePeriod  *
Medium truck volume :   240/27    veh/TimePeriod  *
Heavy truck volume  :   240/27    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):   9607
    Percentage of Annual Growth        :   1.50
    Number of Years of Growth          :  22.00
    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: Lawrence (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           :  20.00 / 20.00  m
Topography                :      1       (Flat/gentle slope; no barrier)
```

Result summary (day)

	source height (m)	Road Leq (dBA)	Total Leq (dBA)
1.King St East	1.19	48.34	48.34
2.Lawrence	1.19	63.13	63.13
Total			63.27 dBA

Result summary (night)

	source height (m)	Road Leq (dBA)	Total Leq (dBA)
1.King St East	1.19	41.79	41.79
2.Lawrence	1.19	56.63	56.63
Total			56.77 dBA

```
STAMSON 5.04        SUMMARY REPORT        Date: 23-03-2021 16:07:54
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: r11law.te            Time Period: Day/Night 16/8 hours
Description: 11- 12th Floor Facing Lawrence Rd Blocks B & D
                      TOTAL Leq FROM ALL SOURCES                    (DAY): 63.75
                                                                    (NIGHT): 57.25
Road data, segment # 1: King St East (day/night)
-----------------------------------------------
Car traffic volume  : 26908/2990  veh/TimePeriod  *
Medium truck volume :   561/62    veh/TimePeriod  *
Heavy truck volume  :   561/62    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):  24556
    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     :   2.00
    Day (16 hrs) % of Total Volume     :  90.00

Data for Segment # 1: King St East (day/night)
-----------------------------------------------
Angle1   Angle2           :  -0.00 deg   20.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  : 153.00 / 153.00 m
Receiver height           :  38.00 / 38.00  m
Topography                :      1       (Flat/gentle slope; no barrier)

Road data, segment # 2: Lawrence (day/night)
-------------------------------------------
Car traffic volume  : 11517/1280  veh/TimePeriod  *
Medium truck volume :   240/27    veh/TimePeriod  *
Heavy truck volume  :   240/27    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):   9607
    Percentage of Annual Growth        :   1.50
    Number of Years of Growth          :  22.00
    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: Lawrence (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           :  38.00 / 38.00  m
Topography                :      1       (Flat/gentle slope; no barrier)
```

Result summary (day)

	source height (m)	Road Leq (dBA)	Total Leq (dBA)
1.King St East	1.19	49.44	49.44
2.Lawrence	1.19	63.59	63.59
Total			63.75 dBA

Result summary (night)

	source height (m)	Road Leq (dBA)	Total Leq (dBA)
1.King St East	1.19	42.90	42.90
2.Lawrence	1.19	57.09	57.09
Total			57.25 dBA

```
STAMSON 5.04        SUMMARY REPORT        Date: 23-03-2021 16:58:57
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: cpr7.te              Time Period: Day/Night 16/8 hours
Description: R7-CP Rail Free Field Stacked Towns 1st Floor
                     TOTAL Leq FROM ALL SOURCES                    (DAY): 40.71
                                                                   (NIGHT): 42.44
Rail data, segment # 1: Freight (day/night)
-----------------------------------------------
Train            ! Trains      ! Speed !# loc !# Cars! Eng  !Cont
Type             !             !(km/h) !/Train!/Train! type !weld
-----------------+-------------+-------+------+------+------+----
* 1. CP Rail     !   5.1/3.8   !  80.0 !  4.0 !140.0 !Diesel! Yes

* The identified number of trains have been adjusted for
  future growth using the following parameters:

Train type:         ! Unadj. ! Annual % ! Years of !
 No  Name           ! Trains ! Increase !  Growth  !
--------------------+--------+----------+----------+
  1. CP Rail        !   4.0/3.0   !    2.50  !   10.00  !

Data for Segment # 1: Freight (day/night)
-----------------------------------------
Angle1   Angle2           :  -0.00 deg   90.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      1 / 1
House density             :     25 %
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  : 145.00 / 145.00 m
Receiver height           :   2.00 / 2.00   m
Topography                :      1       (Flat/gentle slope; no barrier)

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

                    !   Loc    !  Wheel   ! Whistle  ! Whistle  !  Total
                    !   Leq    !   Leq    ! Left Leq ! Right Leq!   Leq
                    !  (dBA)   !  (dBA)   !  (dBA)   !  (dBA)   !  (dBA)
--------------------+----------+----------+----------+----------+----------
 1.Freight          !    40.00 !    32.50 !       -- !       -- !    40.71 *
--------------------+----------+----------+----------+----------+----------
                      Total                                        40.71 dBA

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

                    !   Loc    !  Wheel   ! Whistle  ! Whistle  !  Total
                    !   Leq    !   Leq    ! Left Leq ! Right Leq!   Leq
                    !  (dBA)   !  (dBA)   !  (dBA)   !  (dBA)   !  (dBA)
--------------------+----------+----------+----------+----------+----------
 1.Freight          !    41.73 !    34.24 !       -- !       -- !    42.44 *
--------------------+----------+----------+----------+----------+----------
                      Total                                        42.44 dBA
```

```
STAMSON 5.04        SUMMARY REPORT        Date: 23-03-2021 16:55:20
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: cprR8.te              Time Period: Day/Night 16/8 hours
Description: R8-CP Rail Free Field Stacked Towns 4th Floor
                     TOTAL Leq FROM ALL SOURCES                  (DAY): 43.67
                                                                (NIGHT): 45.40
Rail data, segment # 1: Freight (day/night)
-------------------------------------------
Train            ! Trains      ! Speed !# loc !# Cars! Eng  !Cont
Type             !             !(km/h) !/Train!/Train! type !weld
-----------------+-------------+-------+------+------+------+----
* 1. CP Rail     !   5.1/3.8   !  80.0 !  4.0 !140.0 !Diesel! Yes

* The identified number of trains have been adjusted for
  future growth using the following parameters:

Train type:         ! Unadj. ! Annual % ! Years of !
 No  Name           ! Trains ! Increase !  Growth  !
--------------------+--------+----------+----------+
  1. CP Rail        !   4.0/3.0   !    2.50  !   10.00  !

Data for Segment # 1: Freight (day/night)
-------------------------------------------
Angle1   Angle2           :  -0.00 deg   90.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      1 / 1
House density             :     25 %
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  : 145.00 / 145.00 m
Receiver height           :  12.00 / 12.00  m
Topography                :      1       (Flat/gentle slope; no barrier)

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

                    !   Loc    !  Wheel   ! Whistle  ! Whistle  !  Total
                    !   Leq    !   Leq    ! Left Leq ! Right Leq!   Leq
                    !  (dBA)   !  (dBA)   !  (dBA)   !  (dBA)   !  (dBA)
--------------------+----------+----------+----------+----------+----------
 1.Freight          !    42.98 !    35.34 !       -- !       -- !    43.67 *
--------------------+----------+----------+----------+----------+----------
                      Total                                        43.67 dBA
Result summary (night)
----------------------

                    !   Loc    !  Wheel   ! Whistle  ! Whistle  !  Total
                    !   Leq    !   Leq    ! Left Leq ! Right Leq!   Leq
                    !  (dBA)   !  (dBA)   !  (dBA)   !  (dBA)   !  (dBA)
--------------------+----------+----------+----------+----------+----------
 1.Freight          !    44.71 !    37.07 !       -- !       -- !    45.40 *
--------------------+----------+----------+----------+----------+----------
                      Total                                        45.40 dBA
```

```
STAMSON 5.04        SUMMARY REPORT        Date: 23-03-2021 16:42:46
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: cpr11.te             Time Period: Day/Night 16/8 hours
Description: R11 12th Floor Build B & D CP Rail
                     TOTAL Leq FROM ALL SOURCES                    (DAY): 62.21
                                                                   (NIGHT): 63.94
Rail data, segment # 1: Freight (day/night)
-------------------------------------------
Train            ! Trains      ! Speed !# loc !# Cars! Eng  !Cont
Type             !             !(km/h) !/Train!/Train! type !weld
-----------------+-------------+-------+------+------+------+----
* 1. CP Rail     !   5.1/3.8   !  80.0 !  4.0 !140.0 !Diesel! Yes

* The identified number of trains have been adjusted for
  future growth using the following parameters:

Train type:         ! Unadj. ! Annual % ! Years of !
 No  Name           ! Trains ! Increase !  Growth  !
--------------------+--------+----------+----------+
  1. CP Rail        !   4.0/3.0   !    2.50  !   10.00  !

Data for Segment # 1: Freight (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  : 110.00 / 110.00 m
Receiver height           :  38.00 / 38.00  m
Topography                :      1       (Flat/gentle slope; no barrier)
No Whistle

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

                    !   Loc    !  Wheel   ! Whistle  ! Whistle  !  Total
                    !   Leq    !   Leq    ! Left Leq ! Right Leq!   Leq
                    !  (dBA)   !  (dBA)   !  (dBA)   !  (dBA)   !  (dBA)
--------------------+----------+----------+----------+----------+----------
 1.Freight          !    61.35 !    54.75 !       -- !       -- !    62.21 *
--------------------+----------+----------+----------+----------+----------
                      Total                                        62.21 dBA

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

                    !   Loc    !  Wheel   ! Whistle  ! Whistle  !  Total
                    !   Leq    !   Leq    ! Left Leq ! Right Leq!   Leq
                    !  (dBA)   !  (dBA)   !  (dBA)   !  (dBA)   !  (dBA)
--------------------+----------+----------+----------+----------+----------
 1.Freight          !    63.08 !    56.48 !       -- !       -- !    63.94 *
--------------------+----------+----------+----------+----------+----------
                      Total                                        63.94 dBA
```

TERRACES

2ND FLOOR TERRACES

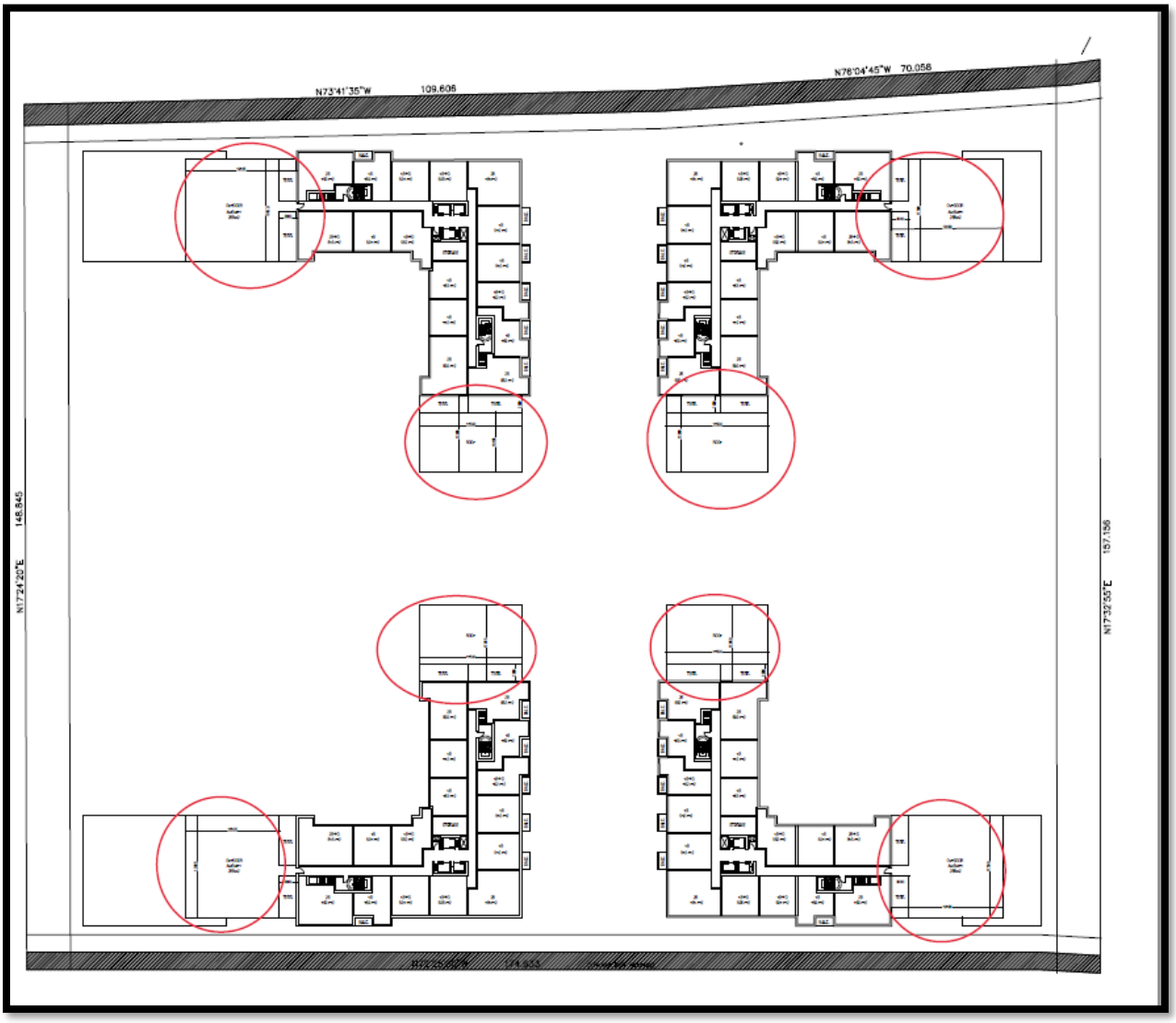
The red circles represent the small terraces for buildings A, B, C & D. These terraces are all less than 4.5m in depth and require safety guards/railings that will further reduce the noise levels at these locations.

7TH FLOOR TERRACES

The red circles represent the larger terraces for buildings A, B, C & D. These terraces all slightly exceed 4.5m in depth and require a 0.91m safety guards/railings to achieve the required noise levels at these locations. See attached Stamson calculations below.

AMENITIES

11TH FLOOR AMENITIES



The red circles represent the outdoor amenity areas for buildings A, B, C & D. These outdoor amenity areas all exceed 4.5m in depth and require a 0.91m safety guards/railings to achieve the required noise levels at these locations. See attached Stamson calculations below.

TERRACE & AMENITY
STAMSON SUMMARY SHEETS

```
STAMSON 5.04       SUMMARY REPORT        Date: 05-10-2021 04:12:27
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: R12law.te            Time Period: Day/Night 16/8 hours
Description: R12- Twelfth floor amenity area
                                   TOTAL Leq FROM ALL SOURCES                    (DAY): 51.53

Road data, segment # 1: King St E (day/night)
----------------------------------------------
Car traffic volume  : 26908/2990  veh/TimePeriod  *
Medium truck volume :   561/62    veh/TimePeriod  *
Heavy truck volume  :   561/62    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):  24556
    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     :   2.00
    Day (16 hrs) % of Total Volume     :  90.00

Data for Segment # 1: King St E (day/night)
-------------------------------------------
Angle1   Angle2           : -90.00 deg   90.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  20.00 /
Receiver height           :  38.00 /
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 /
Source elevation          :   0.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :  38.00 m
Reference angle           :   0.00

Road data, segment # 2: Lawrence (day/night)
---------------------------------------------
Car traffic volume  : 11517/1280  veh/TimePeriod  *
Medium truck volume :   240/27    veh/TimePeriod  *
Heavy truck volume  :   240/27    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):   9607
    Percentage of Annual Growth        :   1.50
    Number of Years of Growth          :  22.00
    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: Lawrence (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  : 153.00 /
```

```
Receiver height           :  38.00 /
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 /
Source elevation          :   0.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :  38.00 m
Reference angle           :   0.00
```

Result summary (day)

	source height (m)	Road Leq (dBA)	Total Leq (dBA)
1.King St E	1.19	50.74	50.74
2.Lawrence	1.19	43.75	43.75
Total			51.53 dBA

```
STAMSON 5.04       SUMMARY REPORT        Date: 05-10-2021 04:39:31
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: r13law.te            Time Period: Day/Night 16/8 hours
Description: R13- Twelfth floor amenity area Build B & D
                     TOTAL Leq FROM ALL SOURCES                  (DAY): 50.26

Road data, segment # 1: King St E (day/night)
-----------------------------------------------
Car traffic volume  : 26908/2990  veh/TimePeriod  *
Medium truck volume :   561/62    veh/TimePeriod  *
Heavy truck volume  :   561/62    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):  24556
    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     :   2.00
    Day (16 hrs) % of Total Volume     :  90.00

Data for Segment # 1: King St E (day/night)
-----------------------------------------------
Angle1   Angle2           : -90.00 deg   90.00 deg
Wood depth                :      0       (No woods.)
No of houserows          :      0 / 0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  : 153.00 /
Receiver height           :  38.00 /
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 /
Source elevation          :   0.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :  38.00 m
Reference angle           :   0.00

Road data, segment # 2: Lawrence (day/night)
-----------------------------------------------
Car traffic volume  : 11517/1280  veh/TimePeriod  *
Medium truck volume :   240/27    veh/TimePeriod  *
Heavy truck volume  :   240/27    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):   9607
    Percentage of Annual Growth        :   1.50
    Number of Years of Growth          :  22.00
    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: Lawrence (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 /
Receiver height           :  38.00 /
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 /
Source elevation          :   0.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :  38.00 m
Reference angle           :   0.00

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

                    !  source  !   Road   !  Total
                    !  height  !   Leq    !   Leq
                    !   (m)    !  (dBA)   !  (dBA)
--------------------+---------+---------+---------
 1.King St E        !     1.19 !    47.44 !    47.44
 2.Lawrence         !     1.19 !    47.06 !    47.06
--------------------+---------+---------+---------
                      Total                 50.26 dBA
```

```
STAMSON 5.04        SUMMARY REPORT        Date: 05-10-2021 06:11:33
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: r14law.te            Time Period: Day/Night 16/8 hours
Description: R14- 7th Terraces 7th floor Building A & C
                          TOTAL Leq FROM ALL SOURCES                    (DAY): 51.60
Road data, segment # 1: King St E (day/night)
----------------------------------------------
Car traffic volume  : 26908/2990  veh/TimePeriod  *
Medium truck volume :   561/62    veh/TimePeriod  *
Heavy truck volume  :   561/62    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):  24556
    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     :   2.00
    Day (16 hrs) % of Total Volume     :  90.00

Data for Segment # 1: King St E (day/night)
----------------------------------------------
Angle1   Angle2           : -90.00 deg   90.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  20.00 /
Receiver height           :  23.00 /
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 /
Source elevation          :   0.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :  23.00 m
Reference angle           :   0.00

Road data, segment # 2: Lawrence (day/night)
----------------------------------------------
Car traffic volume  : 11517/1280  veh/TimePeriod  *
Medium truck volume :   240/27    veh/TimePeriod  *
Heavy truck volume  :   240/27    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):   9607
    Percentage of Annual Growth        :   1.50
    Number of Years of Growth          :  22.00
    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: Lawrence (day/night)
----------------------------------------------
Angle1   Angle2           :  -0.00 deg   10.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2        (Reflective ground surface)
Receiver source distance  : 153.00 /
Receiver height           :  23.00 /
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            :  -0.00 deg   Angle2 : 10.00 deg
Barrier height            :   0.91 m
Barrier receiver distance :   3.00 /
Source elevation          :   0.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :  23.00 m
Reference angle           :   0.00
```

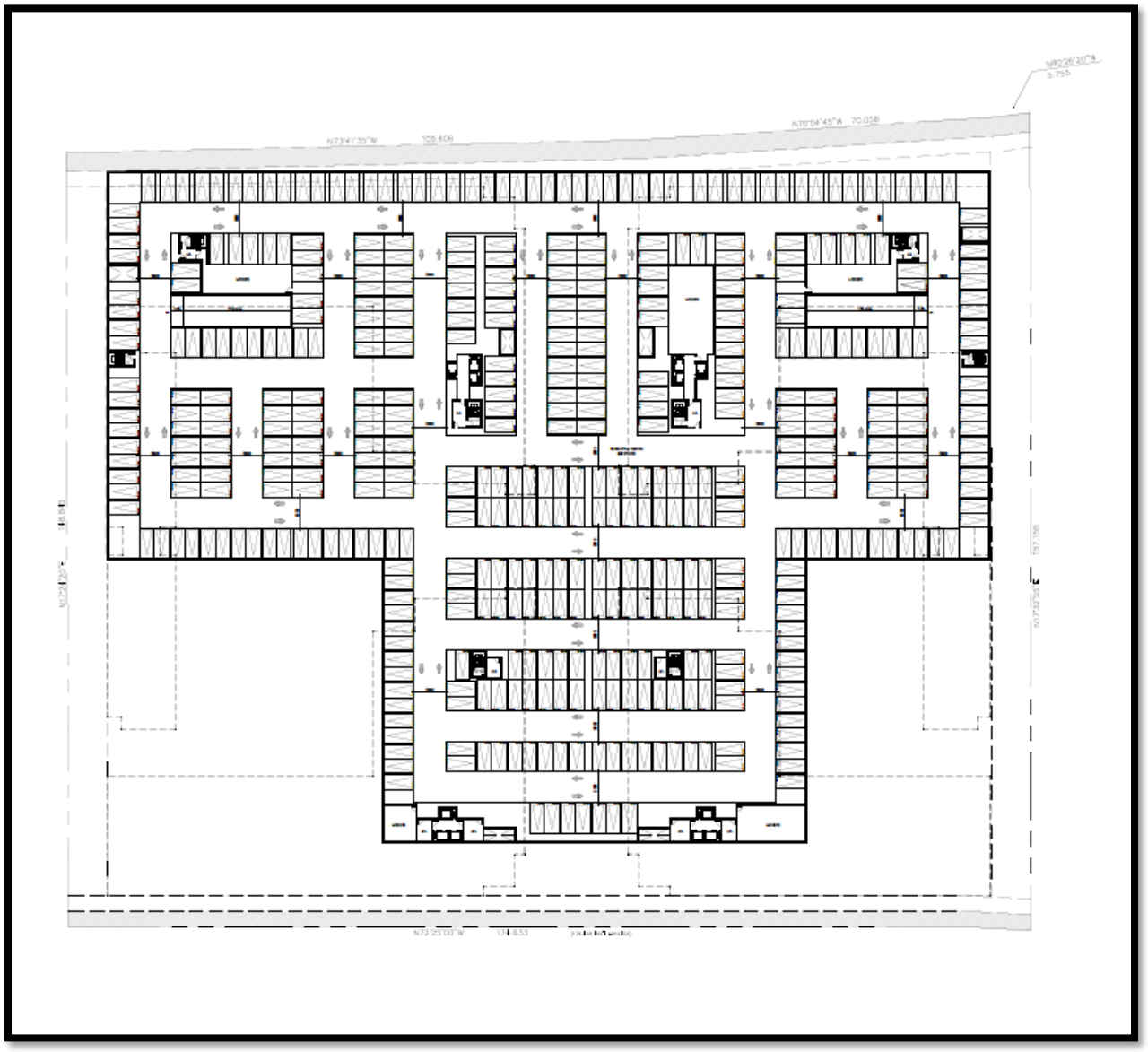
Result summary (day)

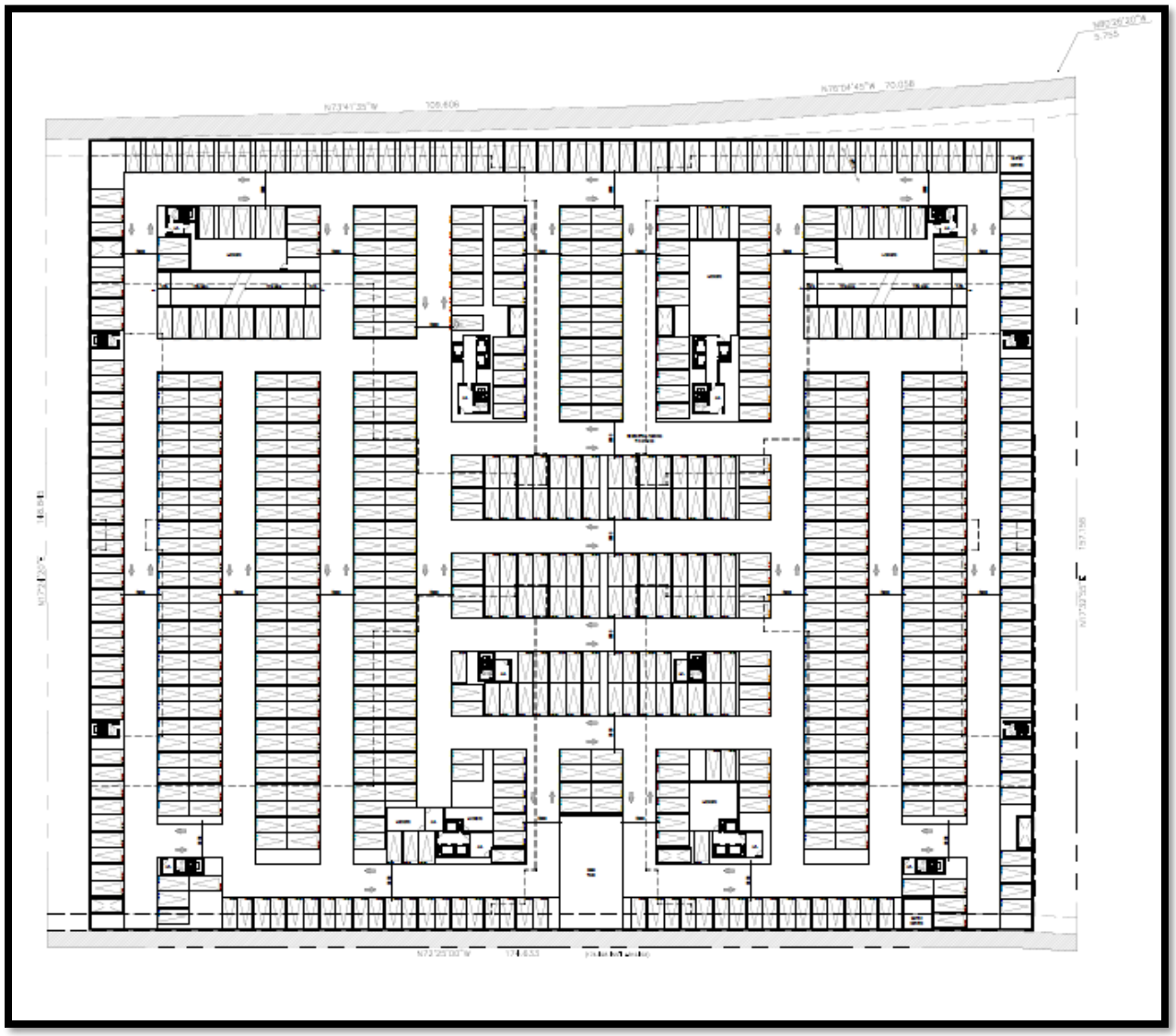
	source height (m)	Road Leq (dBA)	Total Leq (dBA)
1.King St E	1.19	51.57	51.57
2.Lawrence	1.19	29.67	29.67
		Total	51.60 dBA

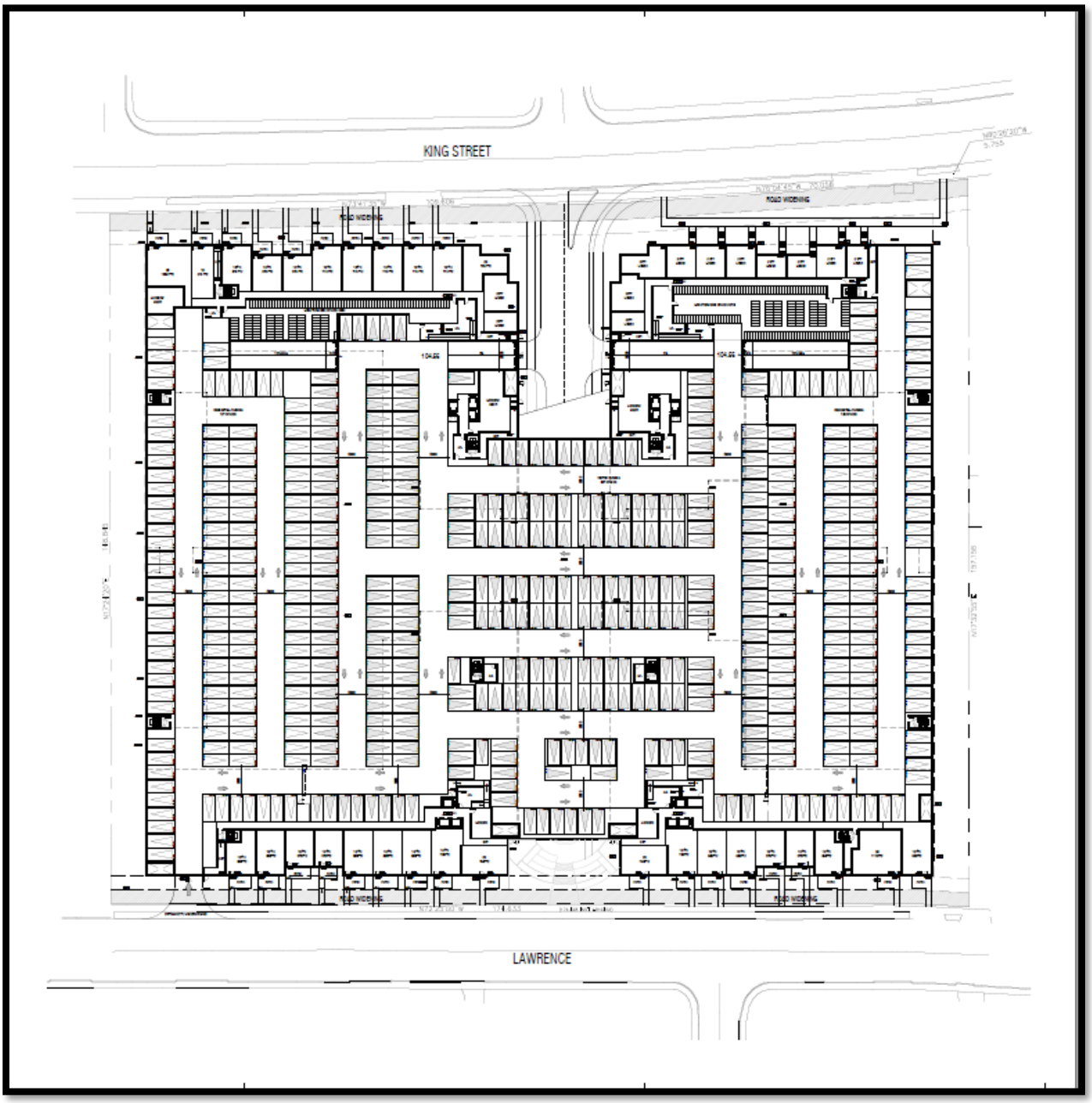
```
STAMSON 5.04        SUMMARY REPORT        Date: 05-10-2021 05:59:10
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: r15law.te            Time Period: Day/Night 16/8 hours
Description: R15- 7th Terraces Building A & C
                     TOTAL Leq FROM ALL SOURCES                    (DAY): 48.19

Road data, segment # 1: King St E (day/night)
----------------------------------------------
Car traffic volume  : 26908/2990  veh/TimePeriod  *
Medium truck volume :   561/62    veh/TimePeriod  *
Heavy truck volume  :   561/62    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):  24556
    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     :   2.00
    Day (16 hrs) % of Total Volume     :  90.00

Data for Segment # 1: King St E (day/night)
-------------------------------------------
Angle1   Angle2           : -20.00 deg   0.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  : 153.00 /
Receiver height           :  23.00 /
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -20.00 deg   Angle2 : 0.00 deg
Barrier height            :   0.91 m
Barrier receiver distance :   3.00 /
Source elevation          :   0.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :  23.00 m
Reference angle           :   0.00

Road data, segment # 2: Lawrence (day/night)
--------------------------------------------
Car traffic volume  : 11517/1280  veh/TimePeriod  *
Medium truck volume :   240/27    veh/TimePeriod  *
Heavy truck volume  :   240/27    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):   9607
    Percentage of Annual Growth        :   1.50
    Number of Years of Growth          :  22.00
    Medium Truck % of Total Volume     :   2.00
    Heavy Truck  % of Total Volume     :   2.00
    Day (16 hrs) % of Total Volume     :  90.00
```

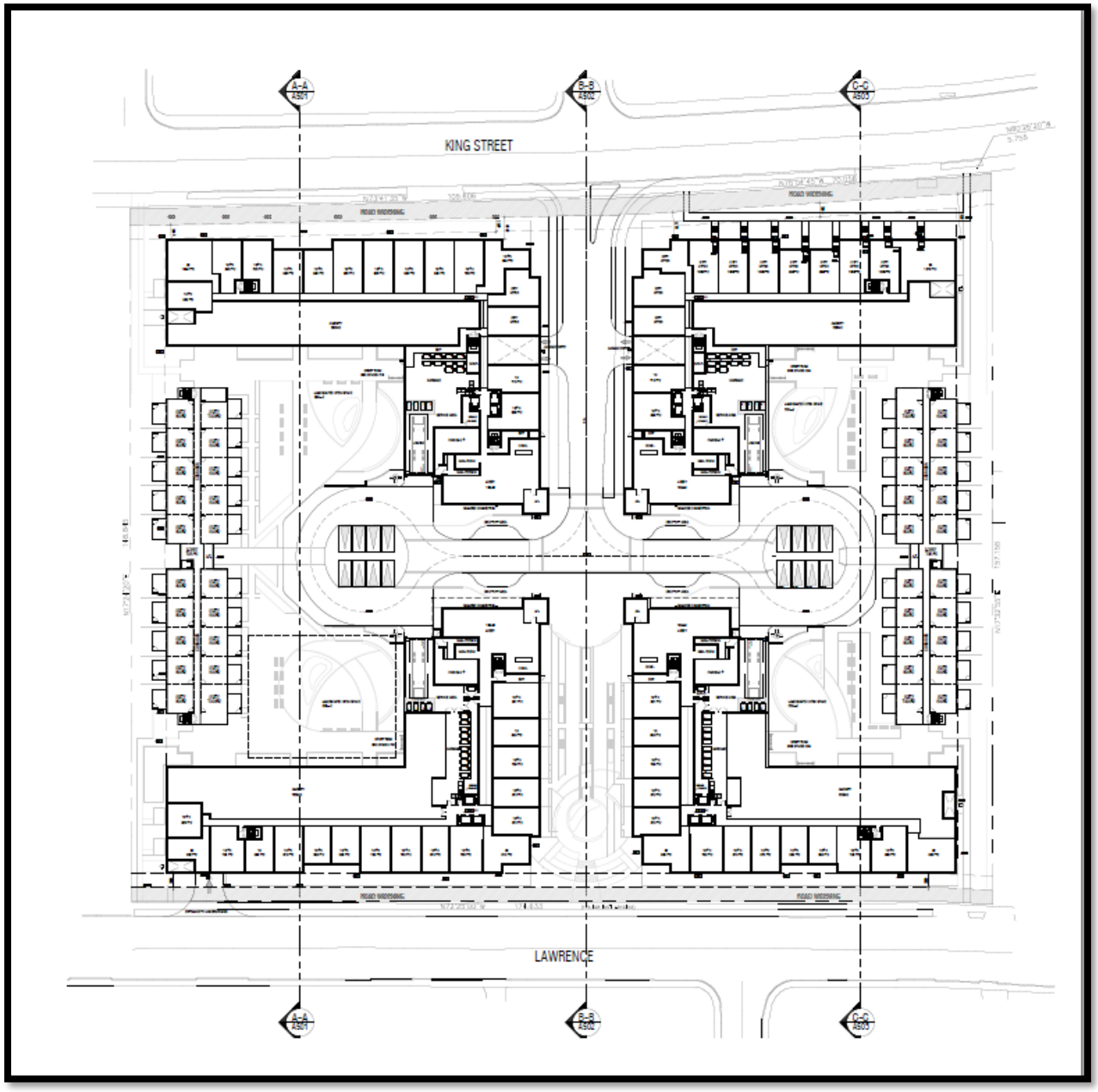
```
Data for Segment # 2: Lawrence (day/night)
------------------------------------------
Angle1   Angle2           : -90.00 deg   90.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  20.00 /
Receiver height           :  23.00 /
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 /
Source elevation          :   0.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :  23.00 m
Reference angle           :   0.00

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

                    !  source  !   Road   !  Total
                    !  height  !   Leq    !   Leq
                    !   (m)    !  (dBA)   !  (dBA)
--------------------+---------+---------+---------
 1.King St E        !     1.19 !    36.43 !    36.43
 2.Lawrence         !     1.19 !    47.89 !    47.89
--------------------+---------+---------+---------
                      Total                 48.19 dBA
```

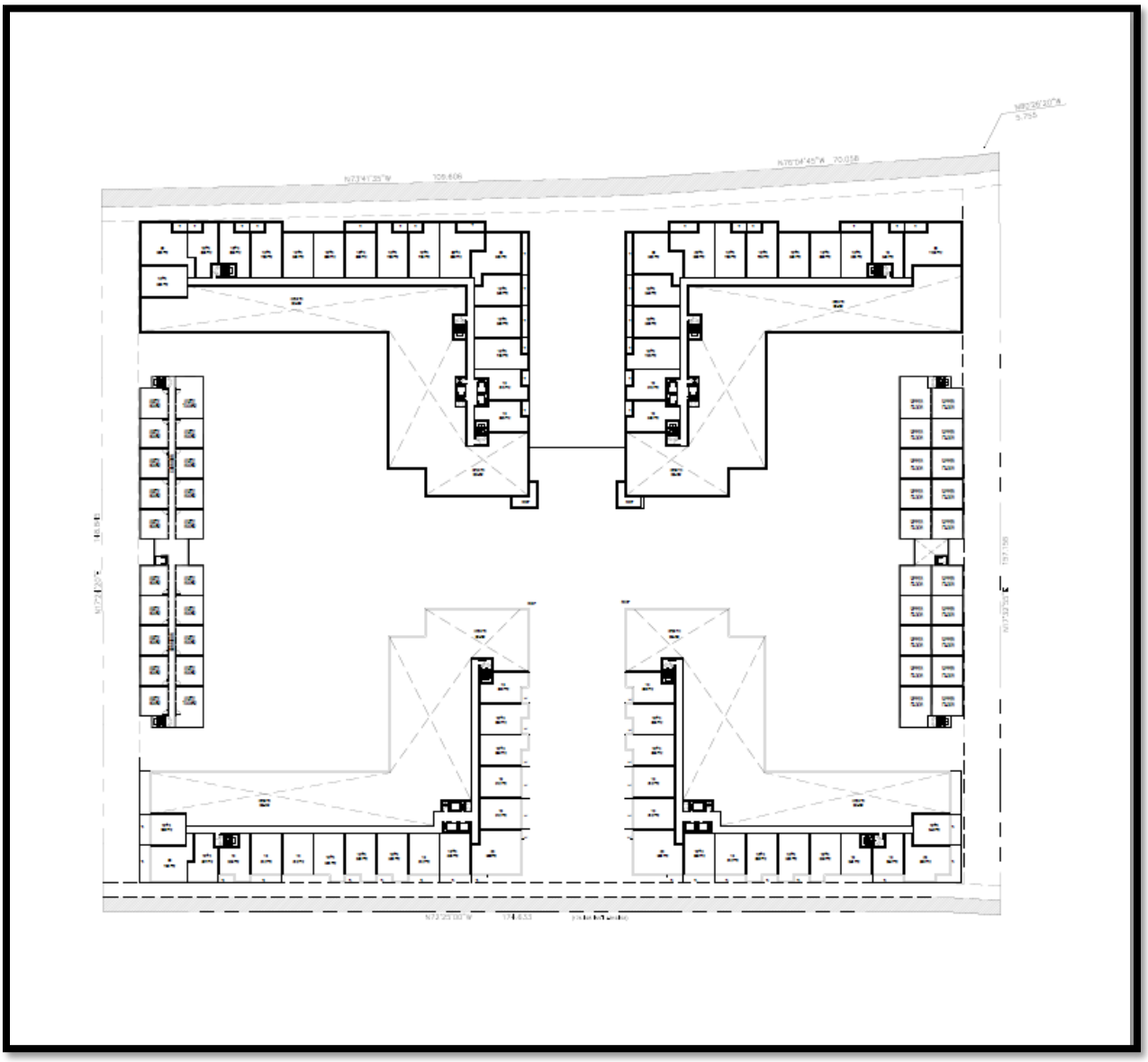
BUILDING DESIGNS

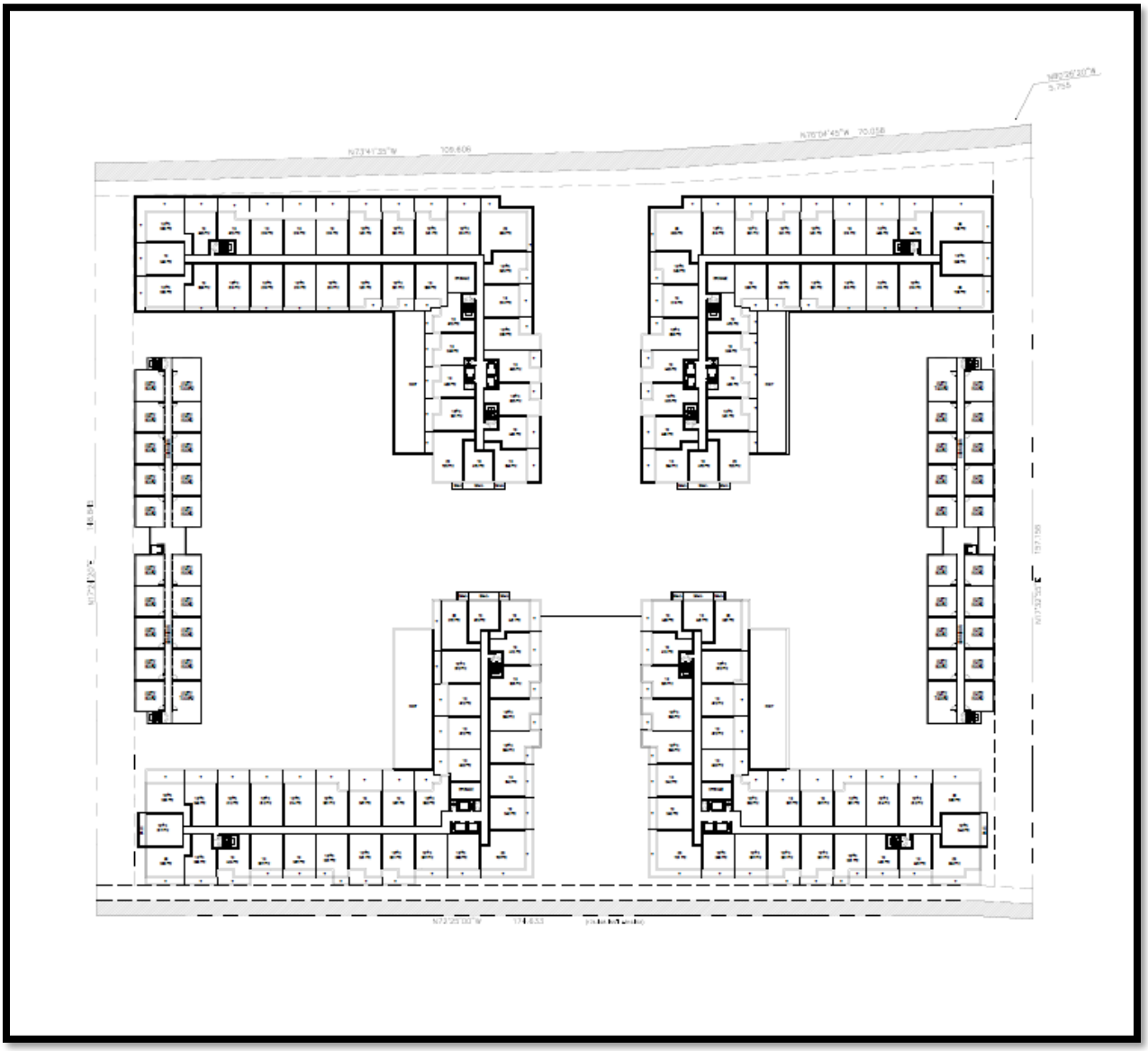


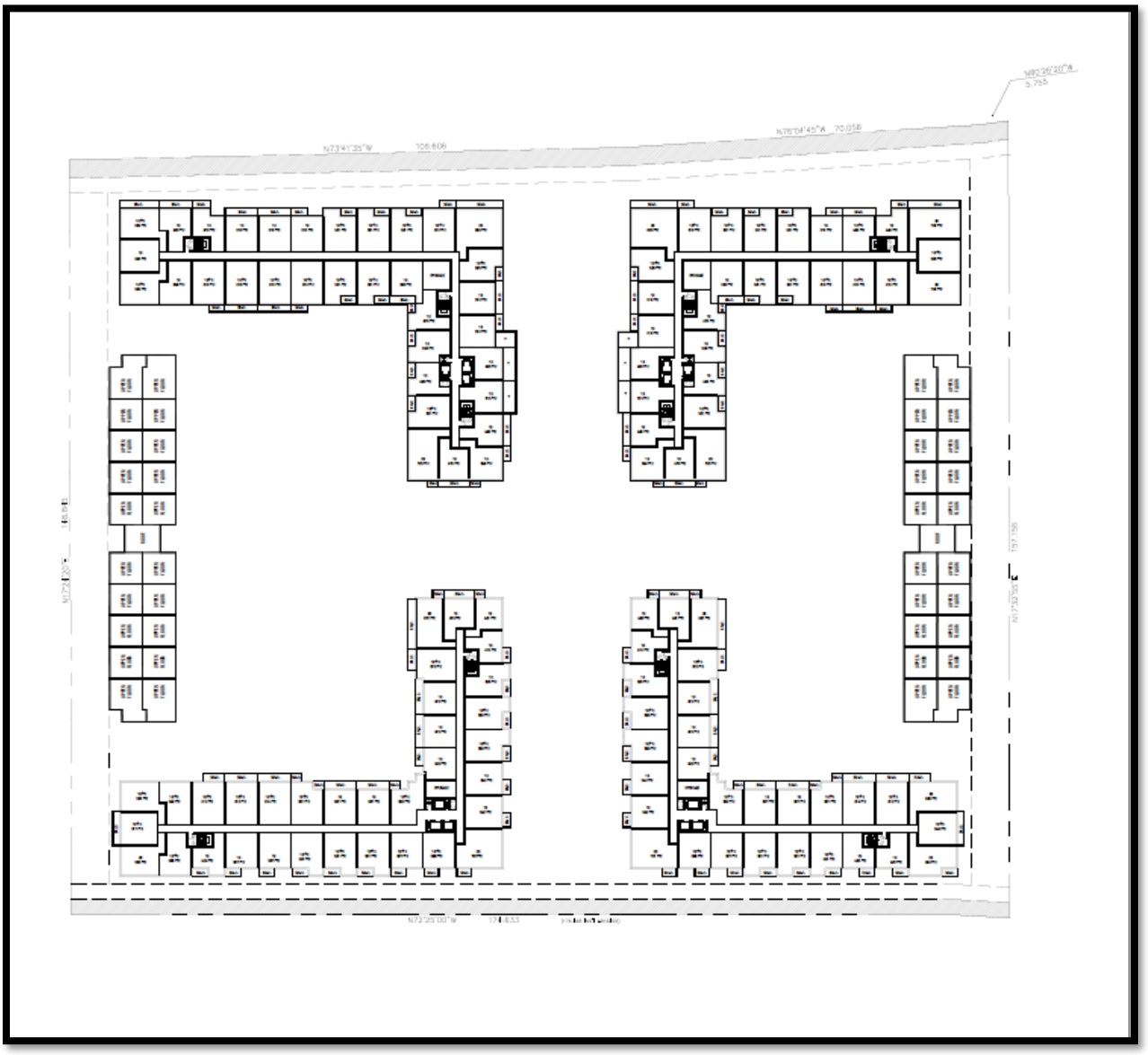


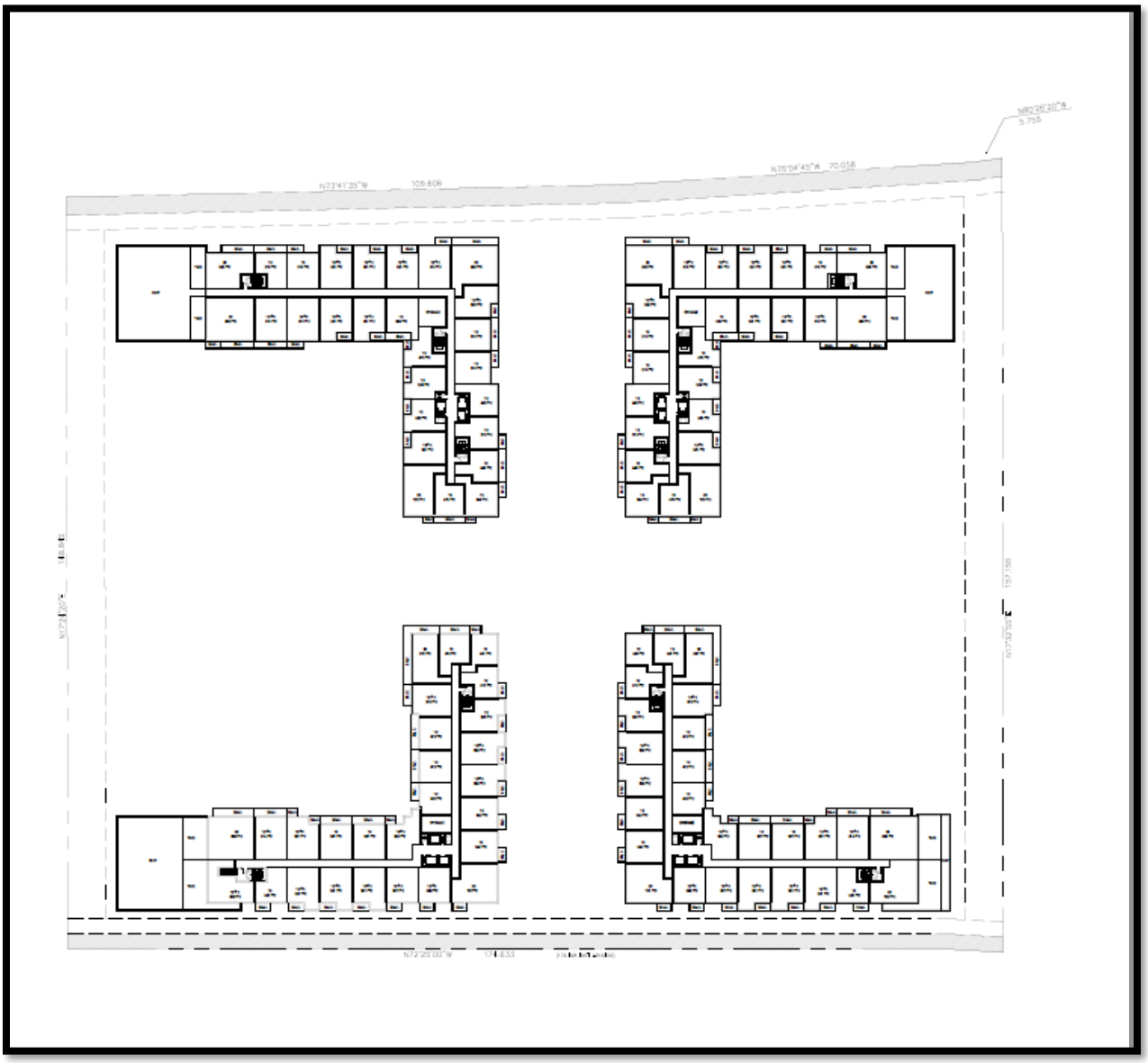

KING STREET
ROAD WIDENING
LAWRENCE

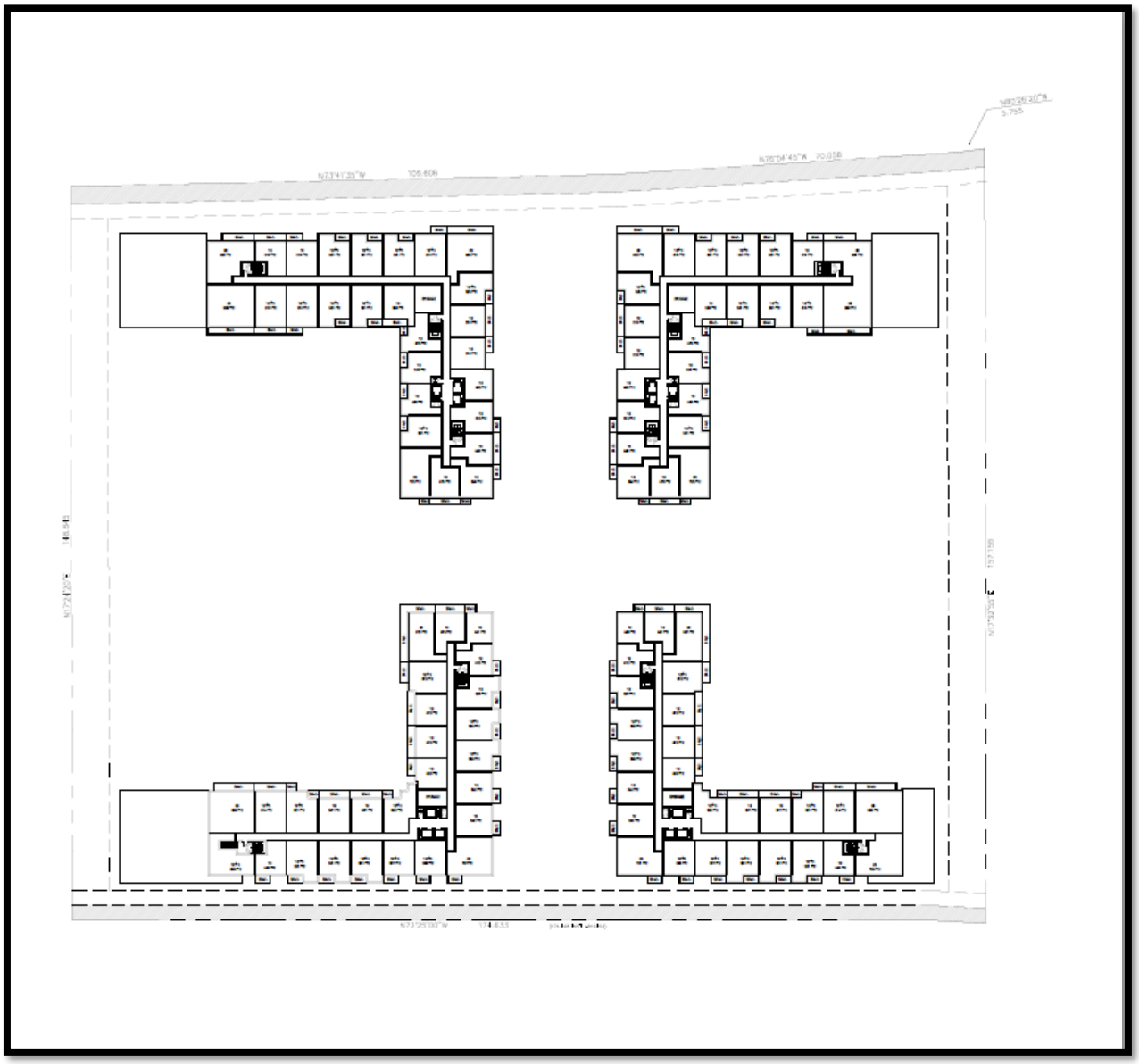

A-A
A501
B-B
A502
C-C
A503
KING STREET
LAWRENCE
A-A
A501
B-B
A502
C-C
A503

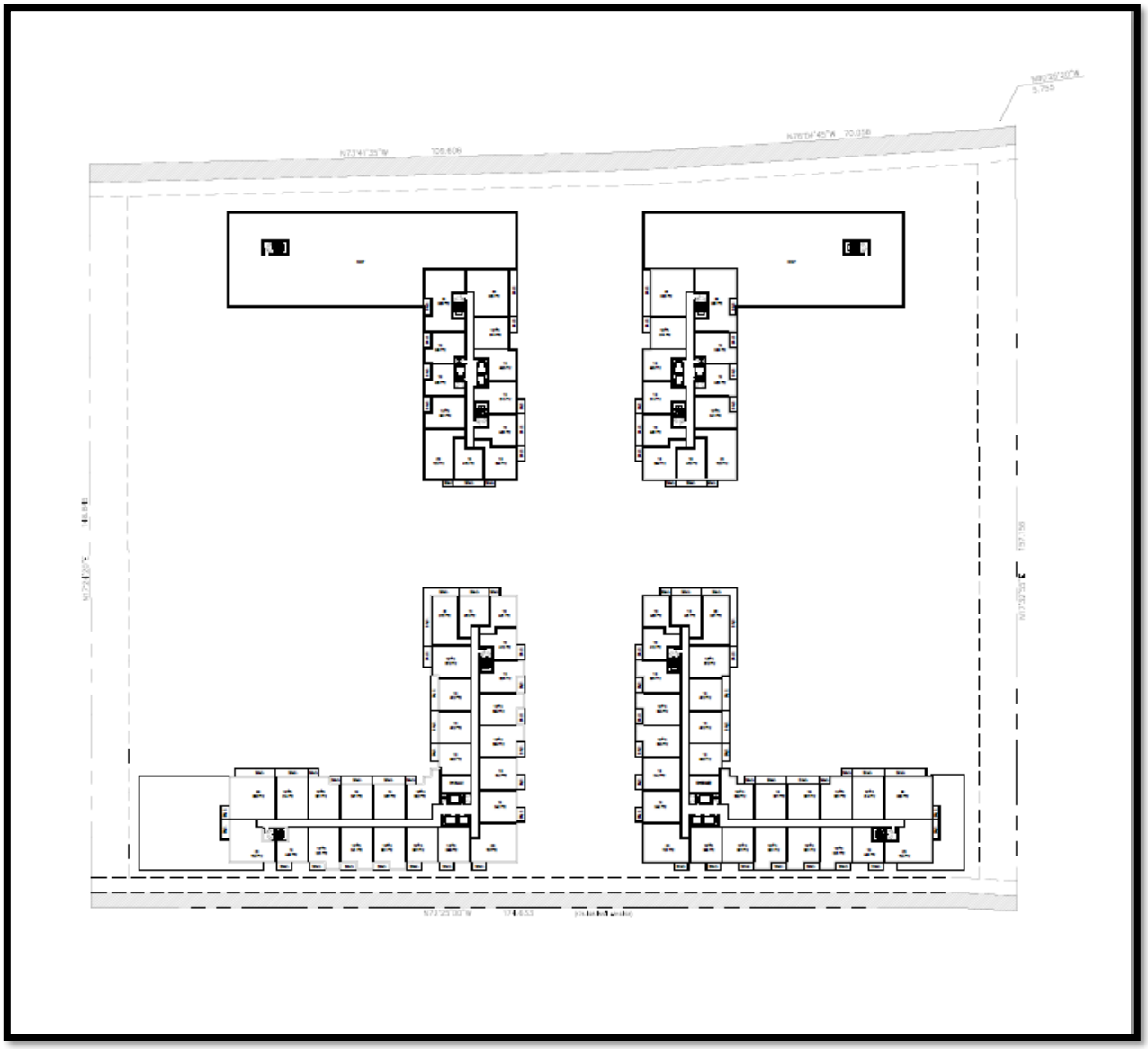


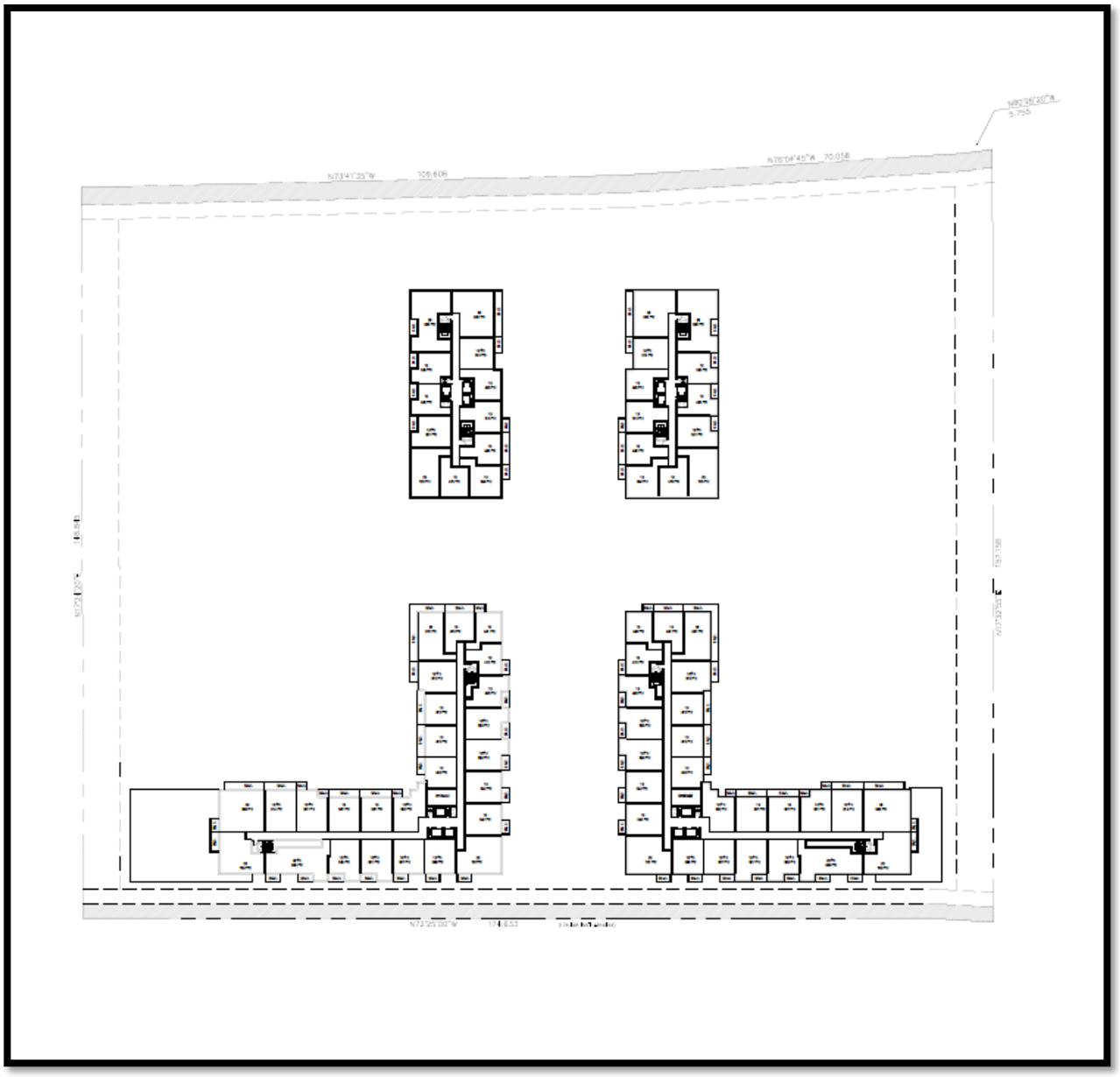


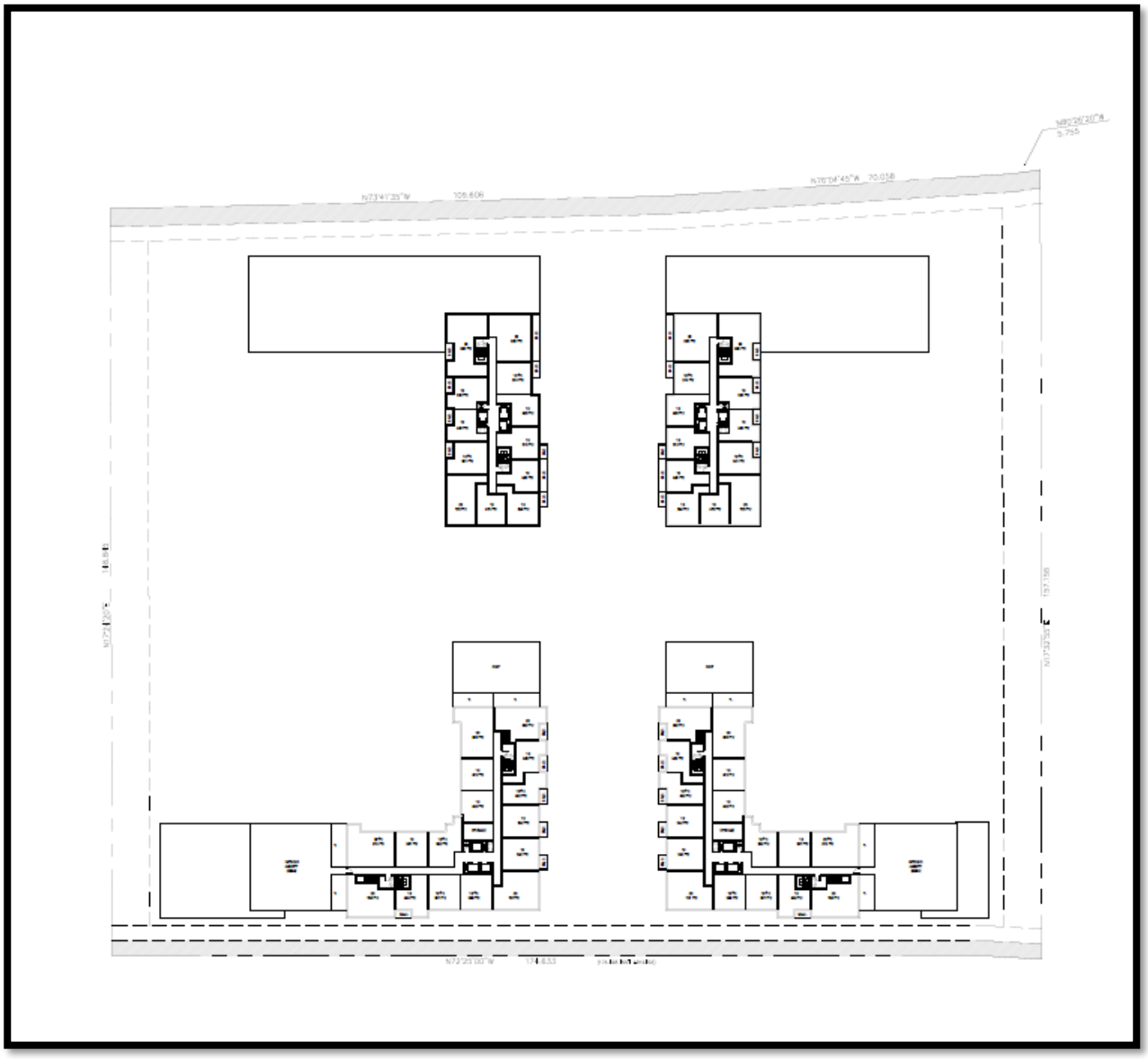


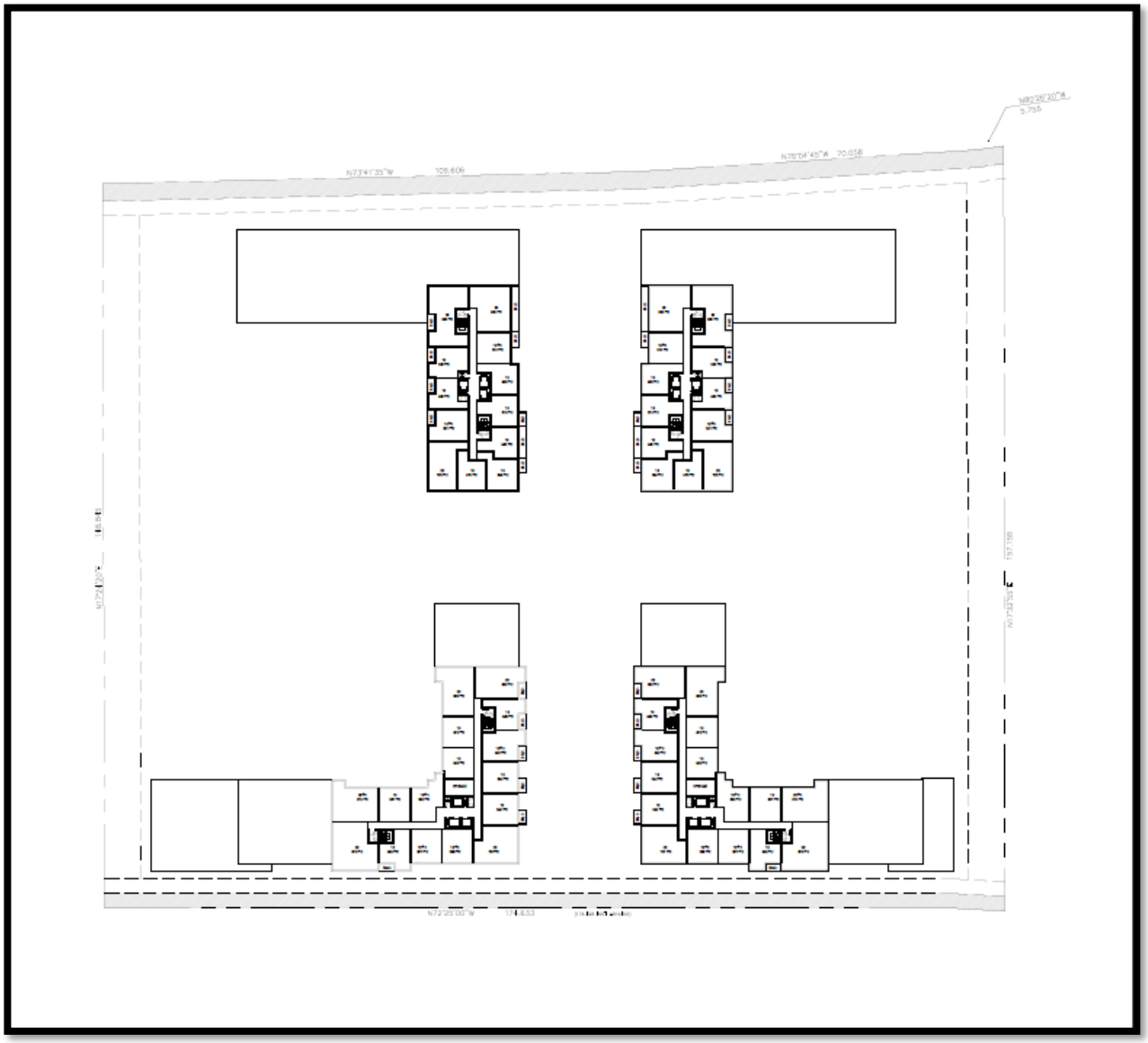


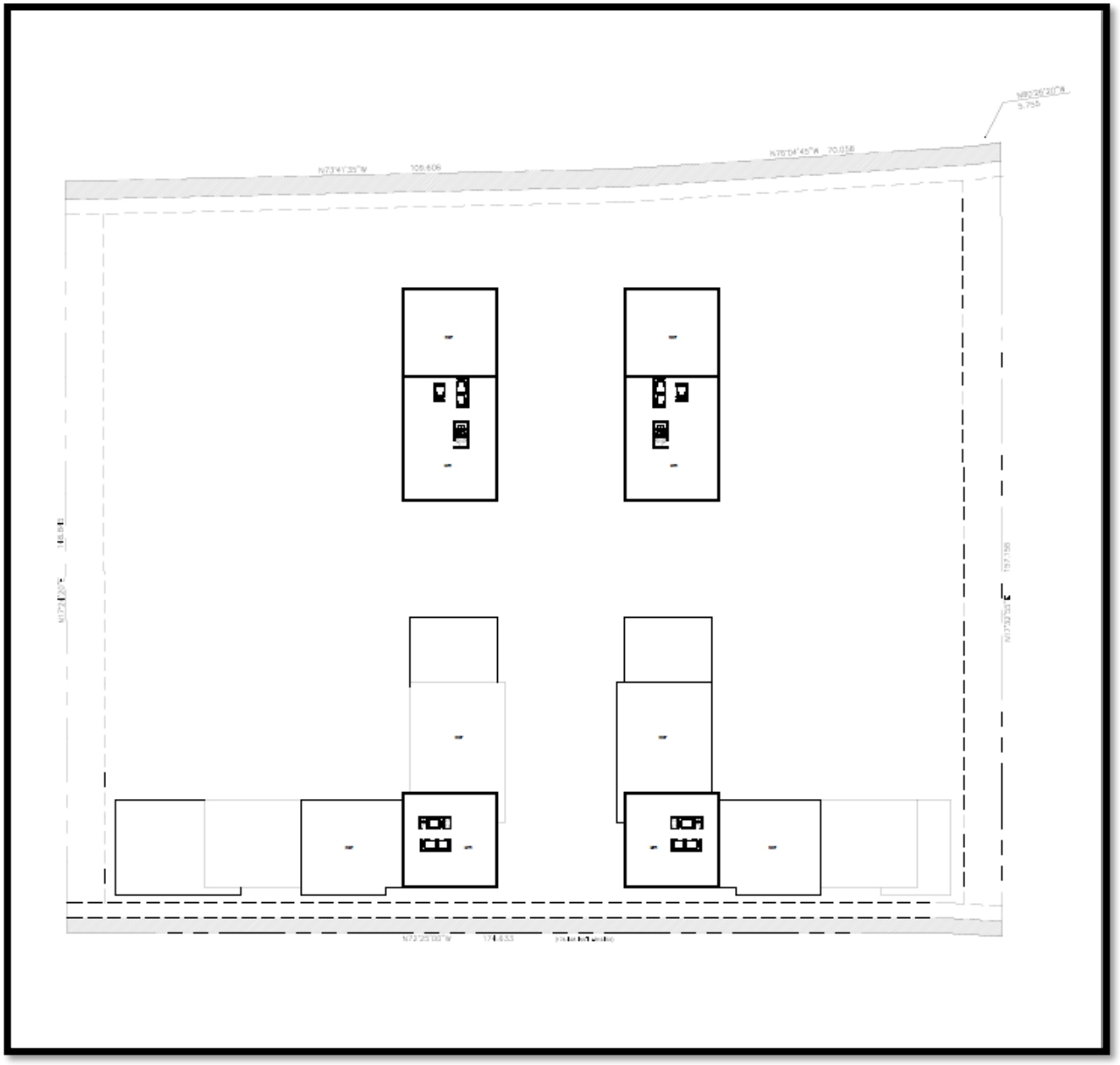












PROJECT STATISTICS

PROJECT STATISTICS

PROJECT STATISTICS
JOB No: 1804.20, 1842 KING STREET
DATE: Jan.12.2022

01. SITE AREA	(m2)	(ha)	(ft2)	(ac)
	26825.47	2.68	288746.66	6.63

02. G.C.A. (m2)		LOWRISE	BLDG A	BLDG B	BLDG C	BLDG D	TOTAL
BELOW GRADE		0	1917.2	853	1641.2	938.1	5349.5
ABOVE GRADE		5268.2	22621.2	21138.4	20945.8	19906.9	89967.3
TOTAL		5268.2	24538.4	22251.4	22586.8	20845	95316.8

03. F.S.I	PROPOSED
	3.55

04. SETBACKS * (m)		PROPOSED
BELOW GRADE	NORTH	0.00
	EAST	7.50
	SOUTH	0.00
	WEST	7.50
ABOVE GRADE	NORTH	3.00
	EAST	7.50
	SOUTH	3.00
	WEST	7.50

05. UNIT BREAKDOWN		LOWRISE	BLDG A	BLDG B	BLDG C	BLDG D	TOTAL
RESIDENTIAL UNITS	Studio	0	0	0	0	0	0
	1 Bedroom	0	270	307	221	276	1082
	2 Bedroom	80	33	41	45	46	245
	3 Bedroom	0	5	4	9	6	24
TOTAL		80	316	352	275	328	1351

05. B.F UNIT BREAKDOWN **		LOWRISE	BLDG A	BLDG B	BLDG C	BLDG D	TOTAL	
RESIDENTIAL UNITS	Studio	0	0	0	0	0	0	15%
	1 Bedroom	0	42	46	33	41	162	15%
	2 Bedroom	12	5	6	7	7	37	15%
	3 Bedroom	0	1	1	1	1	4	15%
TOTAL		12	47	53	41	49	203	

06. PARKING		PROPOSED	
RESIDENTIAL	Studio 1 Bedroom 2 Bedroom 3 Bedroom	1.018	1375
NON RESIDENTIAL/VISITOR		0.222	300
TOTAL		1675	

07. BIKE PARKING	PROPOSED	
SHORT TERM	0.5	676
LONG TERM	0.05	68
TOTAL	743	

08. STORAGE LOCKERS	
PROPOSED	T.B.D.

09. ESTABLISHED GRADE		

10. BUILDING HEIGHT (m)	PROPOSED					
	LOWRISE	BLDG A	BLDG B	BLDG C	BLDG D	
TO MAIN ROOF SLAB	4 STY	13 STY	12 STY	13 STY	12 STY	
TO MECH. PENTHOUSE						

11. AMENITY (m2)		PROPOSED					
		LOWRISE	BLDG A	BLDG B	BLDG C	BLDG D	TOTAL
INDOOR		0	711	730	733	633	2825
OUTDOOR		0	3428	3428	3103	3103	13062
TOTAL		0	4140	4157	3836	3736	15888

NOTES:
* setbacks to main building face
** actual unit count may vary depending on market demand