NOISE IMPACT STUDY

"496 WALKER'S LINE DEVELOPMENT"
490, 496 & 508 WALKER'S LINE
BURLINGTON, ON
REGIONAL MUNICIPALITY OF HALTON

Prepared for:

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1.0 INTRODUCTION

dBA Acoustical Consultants Inc. has been asked to provide a noise impact study on behalf of 2381792 Ontario Ltd. for the proposed Townhouse Development located at 490, 496 & 508 Walker's Line, Burlington, ON.

The purpose of the study is to determine, for ZBA approval, the traffic noise impact from Walker's Line and New Street, Burlington. The proposed development is a townhouse development consisting of 16 condo units and one detached Heritage unit.

This study will detail noise impact relative to the proposed site plan and recommend the noise control measures necessary (if applicable) to meet Ministry of Environment, Conservation and Parks (MECP) guidelines, while satisfying the planning requirements of the City of Burlington.

Rail noise was not considered in this report as the CN/GO rail lines are approximately 1km west of the proposed development. There is extensive shielding by existing 1-2 storey single family dwellings and will have no acoustical impact on the proposed development.

Aircraft noise was not considered in this report as the development is located outside the 25 NEF of any area airports. Vibration is not considered in this report due to no industry in the area. (See Attached Figure 1 Site Location).

2.0 SITE DESCRIPTION

The proposed development is in an area comprised of residential properties to the north and west and commercial properties to the east and south. Other local streets are not considered in this report due to low traffic volumes and speed limits and/or distance separations and will not have an acoustical impact on the proposed development.

Walker's Line is approximately 28m immediately east of the proposed development and runs north and south of the proposed development and is a 4-lane roadway with a center turn lane with a speed limit of 50km/hr. New Street is approximately 190m south of the proposed development and runs east and west. It is a 4-lane roadway with a center turn lane at the lights and a posted speed limit of 60km/hr. See Figure 2 Site Plan.

3.0 NOISE IMPACT ASSESSMENT

3.1 NOISE CRITERIA

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

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

The OLA refers to an outdoor patio, a backyard, a terrace or other area where outdoor passive recreation is expected to occur on the residential property. Noise levels are calculated at the upper storey bedroom window to represent nighttime (23:00 - 07:00) periods.

Where noise levels estimated in the Outdoor Living Area (OLA) and at an upper storey window (POW) are equal to or less than the values listed in Table 1, no noise control measures are required. Where noise levels exceed Table 1 values, the following action is required:

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

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

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

3.2 ROAD NOISE

Predicted road traffic noise levels were calculated for Plains Road East, the major road noise source in the site area. The City of Burlington AADT traffic data was taken from the City's OpenData website and maps and details have been included in Appendix "A". Computer program STAMSON version 5.04 was used to carry out prediction calculations (See Appendix "A" Attached). Traffic data is summarized in Table 4.

The daytime/night-time volume ratio relative for Walker's Line and New Street is calculated using a 90/10 split and a 16/8-hour assessment as required by the MECP. The 2022 AADT (Annual Average Daily Traffic) volumes were forecasted over 12 years and reflective of the worst-case scenario. Truck volumes were factored at 2% medium and 2% heavy of the total vehicle volumes for Walker's Line and New Street.

TABLE 4 – Future Road Traffic Volumes (2034)			
Walker's Line	Forecasted AADT 27128 Vehicles		
	Cars	Medium Trucks	Heavy Trucks
Day	23438	488	488
Night	2604	54	54
New Street	Forecasted AADT 33709 Vehicles		
	Cars	Medium Trucks	Heavy Trucks
Day	29124	607	607
Night	3236	67	67

Table 5A summarizes the "free field" traffic noise prediction results, modeled at 5 receptor locations representative of the 1st & 3rd floor building facades as well as the Outdoor Living Area (OLA) within the proposed development. (See Figure 3 Receptor Locations).

TABLE 5A – Predicted Future Traffic Noise (dBA) Free Field – Walker's Line		
Location	07:00 – 23:00	23:00 – 07:00
R1 – North-East Facade	65 dBA (2.5m)	59 dBA (9m)
R2 – North-West and South-East Facades	61 dBA (2.5m)	55 dBA (9m)
R3 – South-East Façade Rear Block right	51 dBA (2.5m)	45 dBA (9m)
R4 – North East Façade Rear Block middle	31 dBA (2.5m)	25 dBA (9m)
R5 – Outdoor Amenity Area	30 dBA (2.5m)	N/A

Table 5B summarizes the "free field" traffic noise prediction results, modeled at 5 receptor locations representative of the 1st & 3rd floor building facades as well as the Outdoor Living Area (OLA) within the proposed development. (See Figure 3 Receptor Locations).

TABLE 5B – Predicted Future Traffic Noise (dBA) Free Field – New Street		
Location	07:00 – 23:00	23:00 – 07:00
R1 – North-East Facade	40 dBA (2.5m)	42 dBA (9m)
R2 – South-East Facade	40 dBA (2.5m)	42 dBA (9m)
R3 – South-East Façade Rear Block right	38 dBA (2.5m)	40 dBA (9m)
R4 – North East Façade Rear Block middle	37 dBA (2.5m)	39 dBA (9m)
R5 – Outdoor Amenity Area	33 dBA (2.5m)	N/A

Table 5C summarizes the "free field" traffic noise prediction results, modeled at 5 receptor locations representative of the 1st & 3rd floor building facades as well as the Outdoor Living Area (OLA) within the proposed development. (See Figure 3 Receptor Locations).

TABLE 5C – Predicted Future Traffic Noise (dBA) Free Field COMBINED		
Location	07:00 – 23:00	23:00 – 07:00
R1 – North-East Facade	65 dBA (2.5m)	59 dBA (9m)
R2 – North-West and South-East Facades	61 dBA (2.5m)	55 dBA (9m)
R3 – South-East Façade Rear Block right	52 dBA (2.5m)	46 dBA (9m)
R4 – North East Façade Rear Block middle	38 dBA (2.5m)	39 dBA (9m)
R5 – Outdoor Amenity Area	35 dBA (2.5m)	N/A

4.0 RECOMMENDATIONS - NOISE CONTROL

4.1 OUTDOOR LIVING AREAS

Calculated road noise levels do not exceed 55 dBA daytime criteria as outlined in Table 1. Proposed for the condo development is a large outdoor amenity area behind the back condos at the west for all units to share. There are standard balconies proposed, however they are less than 4m in depth and therefore not considered as an Outdoor Living Area (OLA) as defined by the MECP and mitigation measures are not required.

4.2 INDOOR NOISE LEVELS

Calculated nighttime road noise levels at the Plane of Window (POW) exceed the 50 dBA criteria outlined in Table 1 for indoor spaces for R1. Specific building components (walls, windows, doors etc.) are required and confirmed using the STC (Sound Transmission Class) methods and are summarized in Table 6 following with minimum window door and wall construction specified for all residential units throughout the development.

The STC values were calculated for each room type, based on typical window to floor ratios of 20% for bedrooms and 30% for living room areas. Wall-to-floor ratio was factored at 80%. A maximum of two components were factored per room. All windows throughout the condo development must meet STC-30 values with acoustical ratings.

Acoustically tested windows must be verified by a letter from the appropriate window company to confirm the STC values have been achieved. dBA has taken the highest traffic noise level and applied the STC-30 rating to all windows throughout all condo development as it is cost efficient for all the windows to have the same STC value will ensure that the proper windows are professionally installed which eliminates any errors.

TABLE 6 – Recommended Door, Wall, and Window Construction			
LOCATION	Window STC To Be Used	Exterior Wall STC Construction	Patio Door STC Construction
All Units	Example	Example	Example
Bedroom	30	32	30
Living room	30	32	30

Recommendations assume windows are well-fitted, weather-stripped units that can be opened.

5.0 VENTILATION / WARNING CLAUSES

Ventilation and Warning Clause requirements are required for this project as noted 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.

TABLE 7 - Ventilation and Warning Clause Requirements		
LOCATION	VENTILATION	WARNING CLAUSE
Front Blocks (R1)	Central Air Conditioning	Type "D"
Rear Blocks (R4)	OBC	OBC

TYPE D: Front Blocks (R1)

"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's noise criteria."

6.0 SUMMARY OF RECOMMENDATIONS

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

- Window, door, and wall construction as recommended in Section 4.
- Central Air conditioners for Front Block as shown in Table 7.
- Specific Warning Clauses inserted into all Offers and Agreements of Purchase and Sale or Lease for Front Blocks (R1). (Section 5.0)
- Appropriate STC-30 rating for all windows and patio doors, throughout the development for all condos.
- Exterior walls require an STC-32, throughout the development for all condos.
- A Letter from the window supplier indicating the proposed windows STC-30 construction has been achieved.
- 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 impact study on behalf of 2381792 Ontario Ltd. for the proposed Townhouse Development located at 490, 496 & 508 Walker's Line, Burlington, ON.

The study determined, for ZBA approval, the traffic noise impact from Walker's Line and New Street, Burlington. The proposed development is a townhouse development consisting of 16 condo units and one detached Heritage unit.

This study detailed noise impact relative to the proposed site plan and recommended noise control measures necessary to meet Ministry of Environment, Conservation and Parks (MECP) guidelines, while satisfying the planning requirements of the City of Burlington.

FIGURE 1
SITE LOCATION

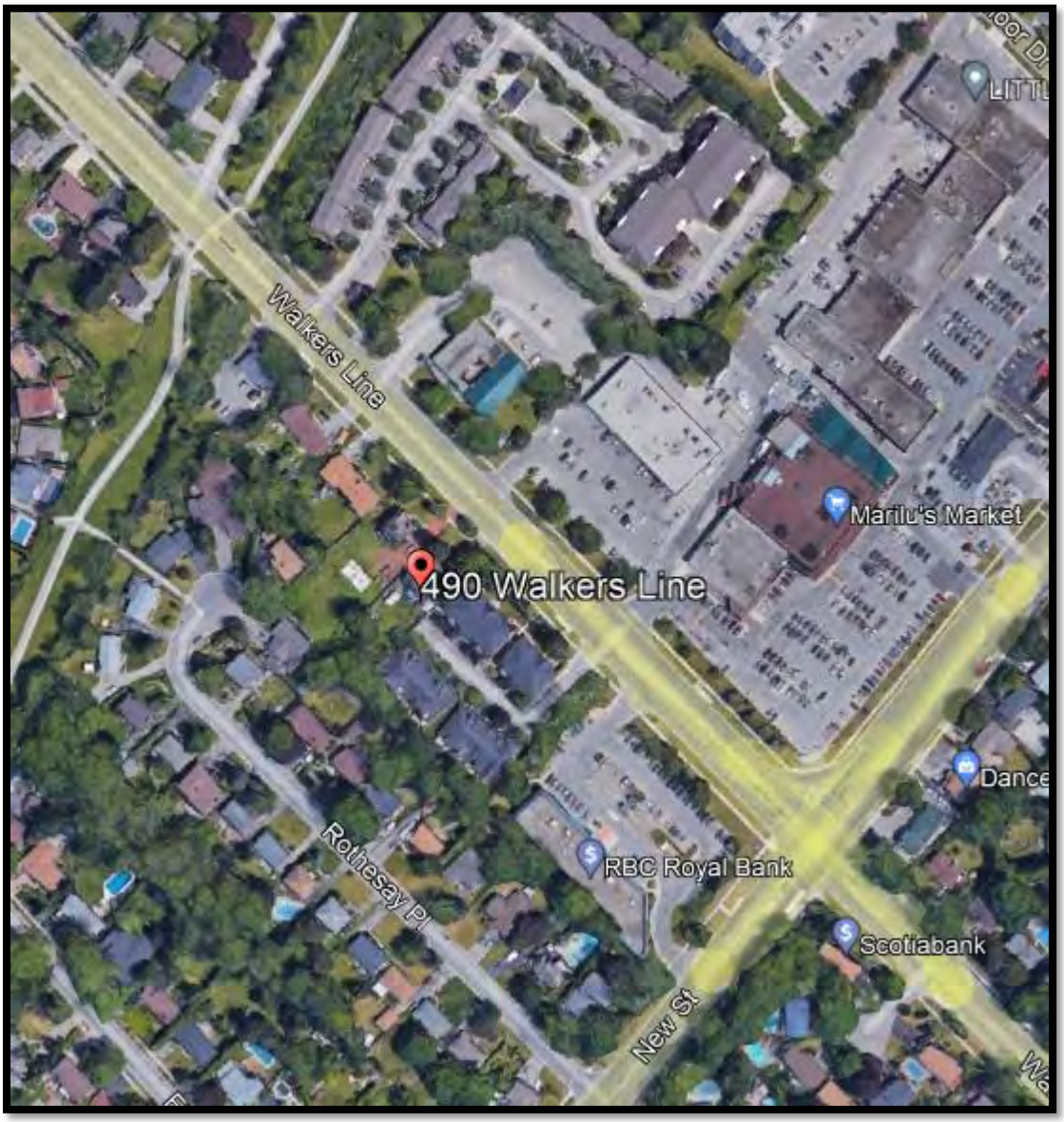


FIGURE 2
SITE PLAN

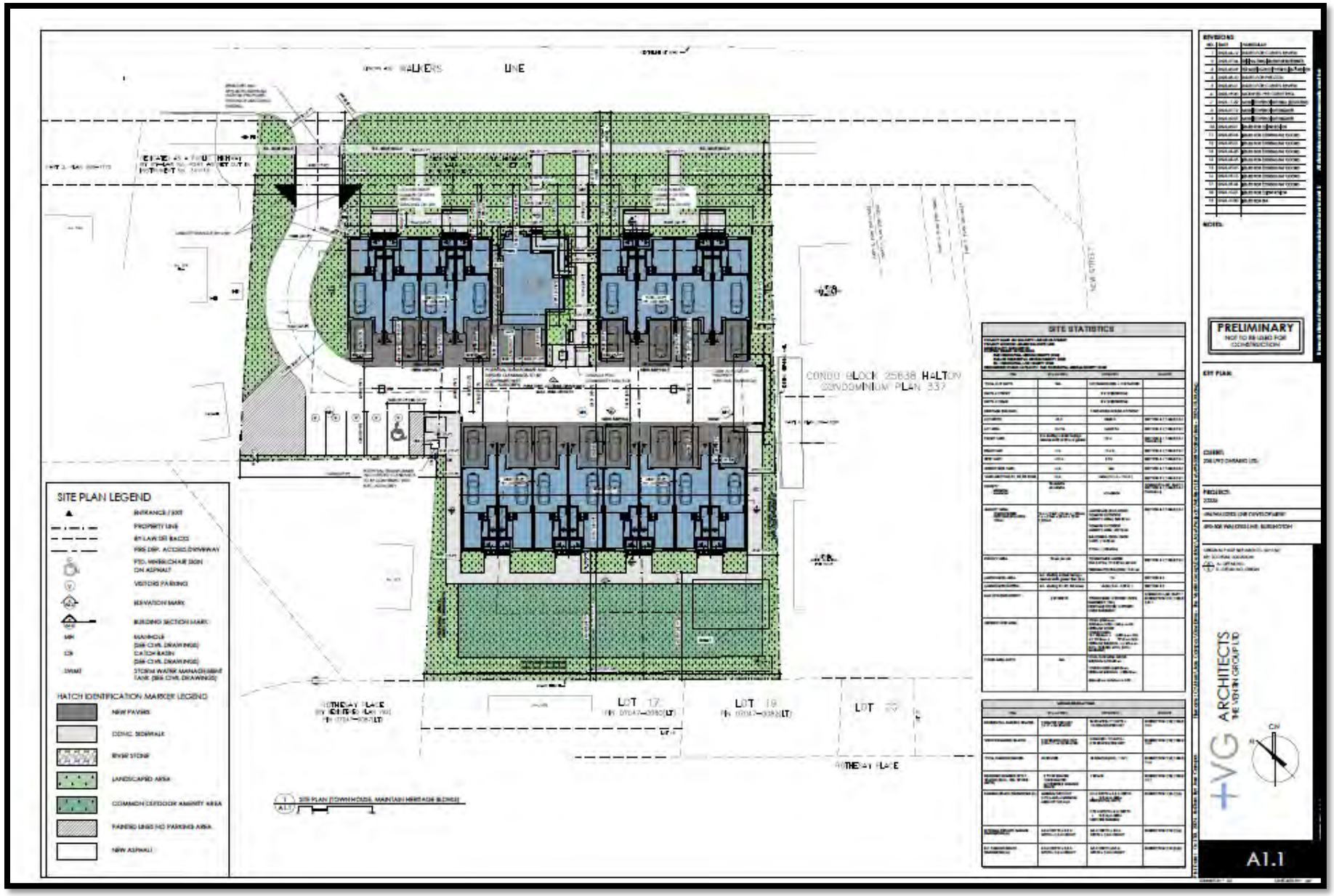


FIGURE 3
RECEPTOR LOCATIONS

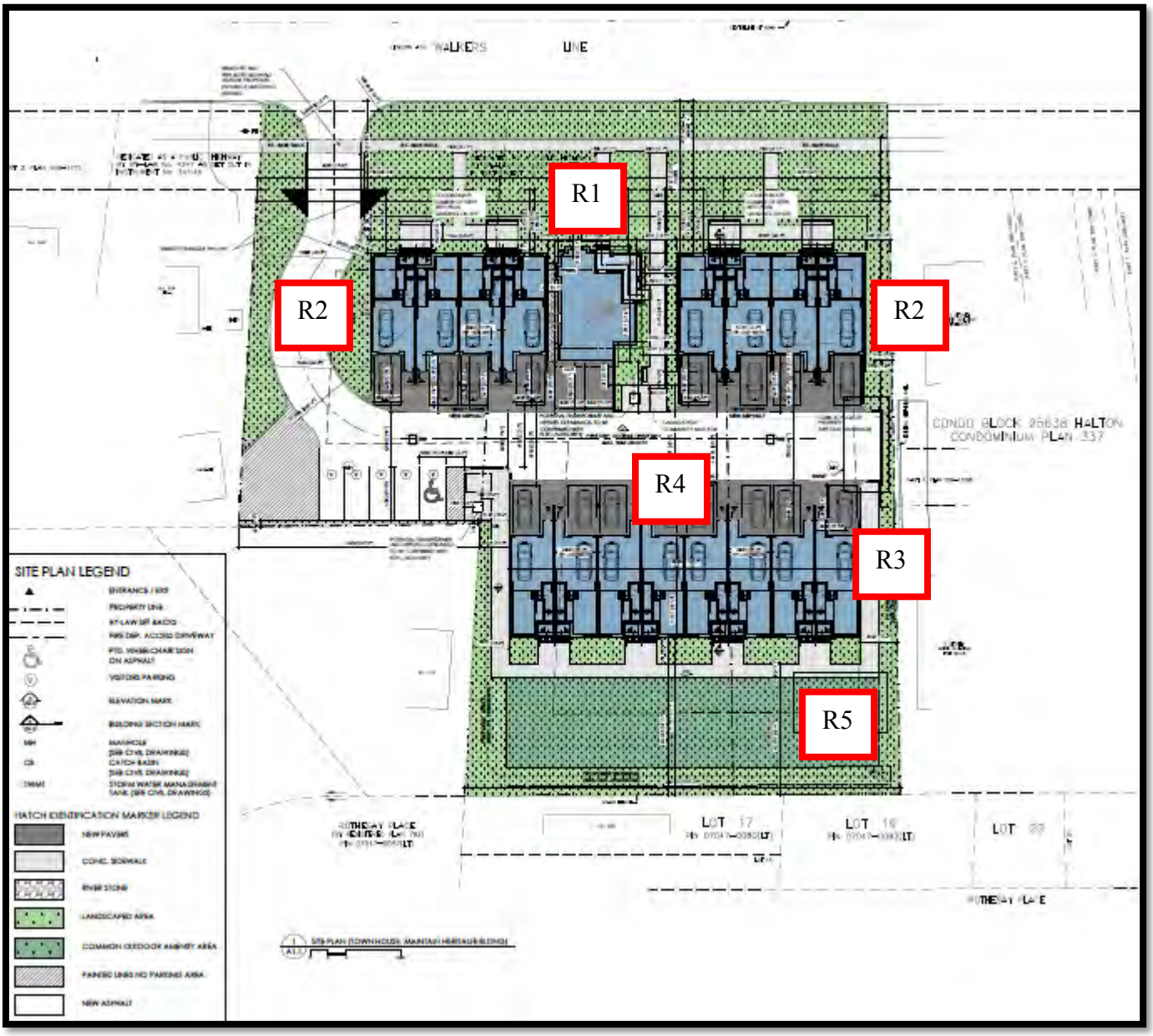
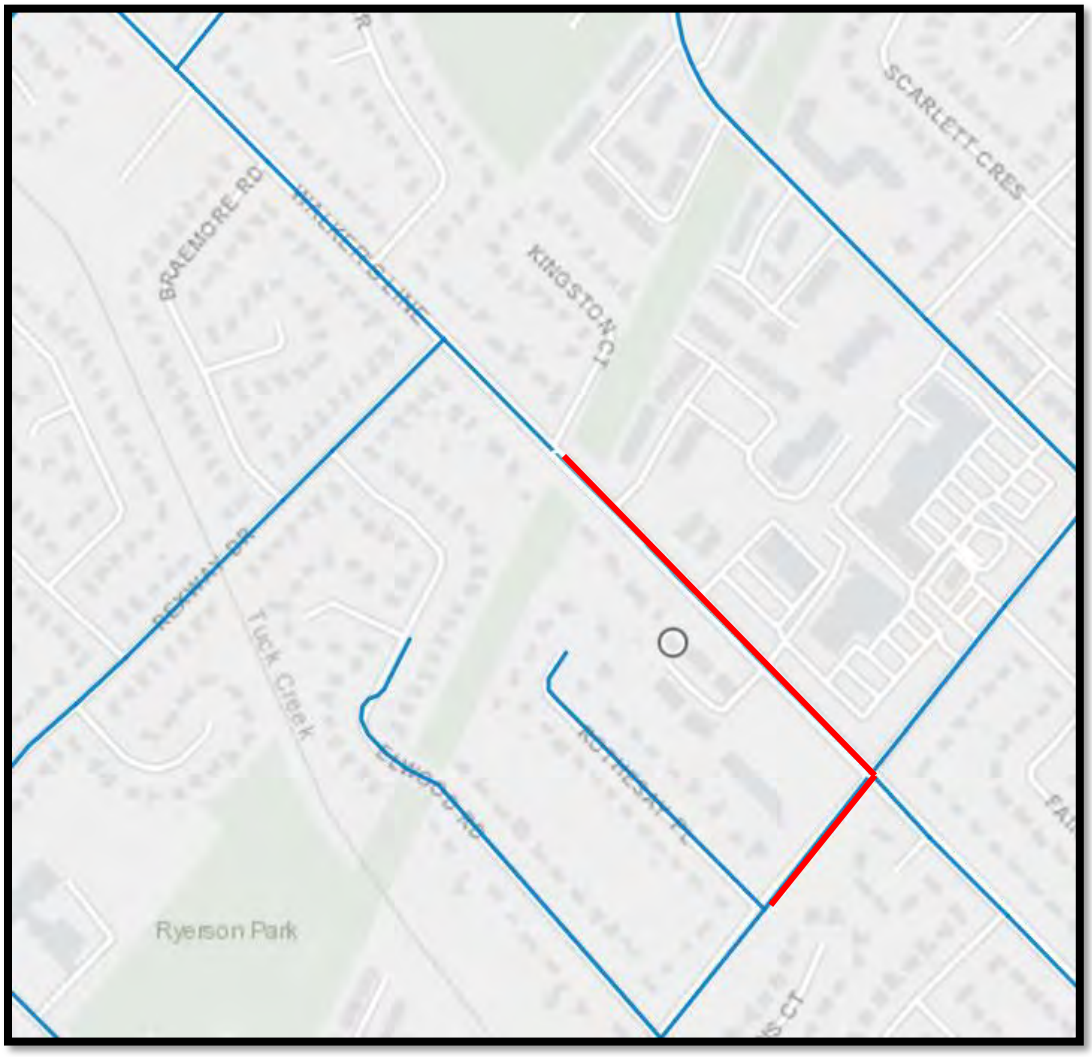


FIGURE 4
AREA OVERVIEW



APPENDIX "A"

CITY OF BURLINGTON
2022 AADT WALKER'S LINE & NEW STREET



AADT Counts 2022

Zoom to

FID	420
STREET_NAM	WALKER'S LINE
TES_ID	225220
Volume	21,390
AADT_Year	2,022
Shape__Length	353.788

AADT Counts 2022

Zoom to

FID	803
STREET_NAM	NEW ST.
TES_ID	[illegible]
Volume	26,579
AADT_Year	2,022
Shape__Length	135.357

STAMSON CALCULATIONS

```
STAMSON 5.04        SUMMARY REPORT        Date: 31-07-2024 15:27:20
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: r1walker.te          Time Period: Day/Night 16/8 hours
Description: R1 North Facade and OLA's
                  TOTAL Leq FROM ALL SOURCES              (DAY): 65.22
                                                         (NIGHT): 58.76

Road data, segment # 1: Walkers Line (day/night)
-----------------------------------------------
Car traffic volume  : 23438/2604  veh/TimePeriod  *
Medium truck volume :   488/54    veh/TimePeriod  *
Heavy truck volume  :   488/54    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):  21390
    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: Walkers Line (day/night)
----------------------------------------------
Angle1   Angle2           : -90.00 deg   90.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  28.00 / 28.00  m
Receiver height           :   2.50 / 9.00   m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00

Road data, segment # 2: New Street (day/night)
----------------------------------------------
Car traffic volume  : 29124/3236  veh/TimePeriod  *
Medium truck volume :   607/67    veh/TimePeriod  *
Heavy truck volume  :   607/67    veh/TimePeriod  *
Posted speed limit  :    60 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

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

    24 hr Traffic Volume (AADT or SADT):  26579
    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 # 2: New Street (day/night)
--------------------------------------------
Angle1   Angle2           :  -0.00 deg   45.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      2 / 0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  : 190.00 / 190.00 m
Receiver height           :   2.50 / 9.00   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.Walkers Line	1.19	65.21	65.21
2.New Street	1.19	39.83	39.83
Total			65.22 dBA

Result summary (night)

	source height (m)	Road Leq (dBA)	Total Leq (dBA)
1.Walkers Line	1.19	58.67	58.67
2.New Street	1.19	41.85	41.85
Total			58.76 dBA

```
STAMSON 5.04        SUMMARY REPORT        Date: 31-07-2024 15:28:52
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: r2walker.te          Time Period: Day/Night 16/8 hours
```
Description: R2 North Facade Facing New Street
TOTAL Leq FROM ALL SOURCES (DAY): 61.26
(NIGHT): 54.93

```
Road data, segment # 1: Walkers Line (day/night)
-----------------------------------------------
Car traffic volume  : 23438/2604  veh/TimePeriod  *
Medium truck volume :   488/54    veh/TimePeriod  *
Heavy truck volume  :   488/54    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):  21390
    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: Walkers Line (day/night)
----------------------------------------------
Angle1   Angle2           :  -0.00 deg   90.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  35.00 / 35.00  m
Receiver height           :   2.50 / 10.00  m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00

Road data, segment # 2: New Street (day/night)
----------------------------------------------
Car traffic volume  : 29124/3236  veh/TimePeriod  *
Medium truck volume :   607/67    veh/TimePeriod  *
Heavy truck volume  :   607/67    veh/TimePeriod  *
Posted speed limit  :    60 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

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

    24 hr Traffic Volume (AADT or SADT):  26579
    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 # 2: New Street (day/night)
--------------------------------------------
Angle1   Angle2           :  -0.00 deg   45.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      2 / 0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  : 190.00 / 190.00 m
Receiver height           :   2.50 / 10.00  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.Walkers Line	1.19	61.23	61.23
2.New Street	1.19	39.83	39.83
Total			61.26 dBA

Result summary (night)

	source height (m)	Road Leq (dBA)	Total Leq (dBA)
1.Walkers Line	1.19	54.69	54.69
2.New Street	1.19	42.19	42.19
Total			54.93 dBA`

```
STAMSON 5.04        SUMMARY REPORT        Date: 31-07-2024 15:31:18
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: r3walker.te          Time Period: Day/Night 16/8 hours
Description: R3 East Facade Facing Walkers Line
                  TOTAL Leq FROM ALL SOURCES              (DAY): 51.60
                                                          (NIGHT): 46.04

Road data, segment # 1: Walkers Line (day/night)
-----------------------------------------------
Car traffic volume  : 23438/2604  veh/TimePeriod  *
Medium truck volume :   488/54    veh/TimePeriod  *
Heavy truck volume  :   488/54    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):  21390
    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: Walkers Line (day/night)
----------------------------------------------
Angle1   Angle2           : -15.00 deg   0.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  56.00 / 56.00  m
Receiver height           :   2.50 / 9.00   m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00

Road data, segment # 2: New Street (day/night)
----------------------------------------------
Car traffic volume  : 29124/3236  veh/TimePeriod  *
Medium truck volume :   607/67    veh/TimePeriod  *
Heavy truck volume  :   607/67    veh/TimePeriod  *
Posted speed limit  :    60 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

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

    24 hr Traffic Volume (AADT or SADT):  26579
    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 # 2: New Street (day/night)
--------------------------------------------
Angle1   Angle2           :  -0.00 deg   27.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      2 / 0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  : 190.00 / 190.00 m
Receiver height           :   2.50 / 9.00   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.Walkers Line	1.19	51.41	51.41
2.New Street	1.19	37.81	37.81
Total			51.60 dBA

Result summary (night)

	source height (m)	Road Leq (dBA)	Total Leq (dBA)
1.Walkers Line	1.19	44.87	44.87
2.New Street	1.19	39.76	39.76
Total			46.04 dBA

```
STAMSON 5.04        SUMMARY REPORT        Date: 31-07-2024 15:32:16
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: r4walker.te          Time Period: Day/Night 16/8 hours
Description: R4 East Facade Facing Midway Walkers Line
                  TOTAL Leq FROM ALL SOURCES              (DAY): 37.93
                                                         (NIGHT): 39.01

Road data, segment # 1: Walkers Line (day/night)
-----------------------------------------------
Car traffic volume  : 23438/2604  veh/TimePeriod  *
Medium truck volume :   488/54    veh/TimePeriod  *
Heavy truck volume  :   488/54    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):  21390
    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: Walkers Line (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  :  56.00 / 56.00  m
Receiver height           :   2.50 / 9.00   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -15.00 deg   Angle2 : 0.00 deg
Barrier height            :  11.00 m
Barrier receiver distance :  10.00 / 10.00  m
Source elevation          :   0.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :  11.00 m
Reference angle           :   0.00


Road data, segment # 2: New Street (day/night)
-----------------------------------------------
Car traffic volume  : 29124/3236  veh/TimePeriod  *
Medium truck volume :   607/67    veh/TimePeriod  *
Heavy truck volume  :   607/67    veh/TimePeriod  *
Posted speed limit  :    60 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

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

```
    24 hr Traffic Volume (AADT or SADT):  26579
    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 # 2: New Street (day/night)
--------------------------------------------
Angle1   Angle2           :  -0.00 deg   27.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      2 / 0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  : 220.00 / 220.00 m
Receiver height           :   2.50 / 9.00   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.Walkers Line      !     1.19 !    31.41 !    31.41
 2.New Street        !     1.19 !    36.84 !    36.84
--------------------+---------+---------+---------
                       Total                 37.93 dBA

Result summary (night)
----------------------
                     !  source  !   Road   !  Total
                     !  height  !   Leq    !   Leq
                     !   (m)    !  (dBA)   !  (dBA)
--------------------+---------+---------+---------
 1.Walkers Line      !     1.19 !    24.87 !    24.87
 2.New Street        !     1.19 !    38.84 !    38.84
--------------------+---------+---------+---------
                       Total                 39.01 dBA
```

```
STAMSON 5.04        SUMMARY REPORT        Date: 31-07-2024 15:33:51
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: r5walker.te          Time Period: Day/Night 16/8 hours
Description: R5 Rear Yard OLA Outdoor Amenity Area
                  TOTAL Leq FROM ALL SOURCES              (DAY): 34.60
                                                          (NIGHT): 34.93

Road data, segment # 1: Walkers Line (day/night)
-----------------------------------------------
Car traffic volume  : 23438/2604  veh/TimePeriod  *
Medium truck volume :   488/54    veh/TimePeriod  *
Heavy truck volume  :   488/54    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):  21390
    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: Walkers Line (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  :  73.00 / 73.00  m
Receiver height           :   2.50 / 9.00   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -15.00 deg   Angle2 : 0.00 deg
Barrier height            :  11.00 m
Barrier receiver distance :  11.00 / 11.00  m
Source elevation          :   0.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :  11.00 m
Reference angle           :   0.00

Road data, segment # 2: New Street (day/night)
-----------------------------------------------
Car traffic volume  : 29124/3236  veh/TimePeriod  *
Medium truck volume :   607/67    veh/TimePeriod  *
Heavy truck volume  :   607/67    veh/TimePeriod  *
Posted speed limit  :    60 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

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

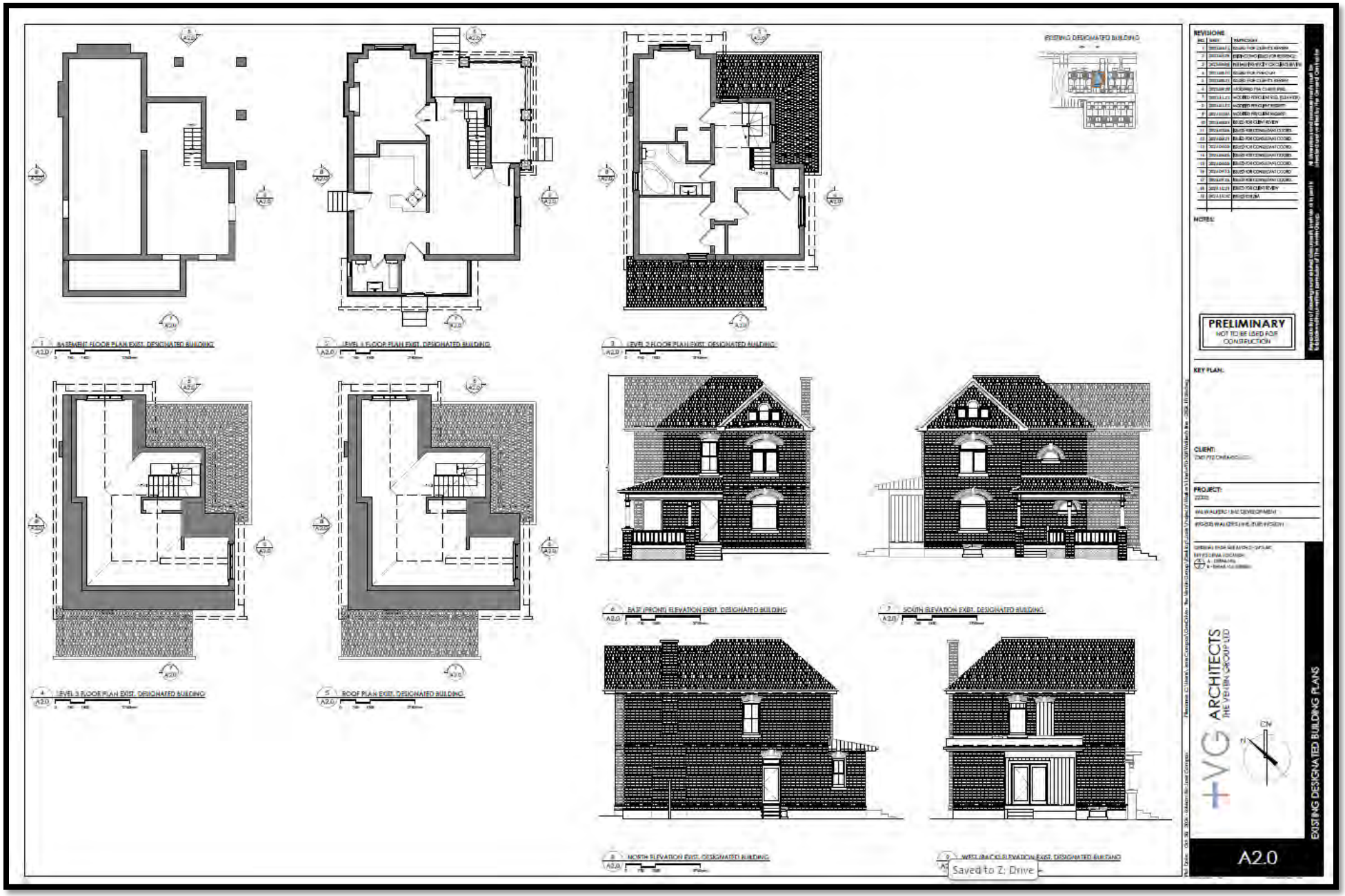
```
    24 hr Traffic Volume (AADT or SADT):  26579
    Percentage of Annual Growth        :   2.00
    Number of Years of Growth          :  12.00
    Medium Truck % of Total Volume     :   2.00
    Heavy Truck  % of Total Volume     :   2.00
    Day (16 hrs) % of Total Volume     :  90.00


Data for Segment # 2: New Street (day/night)
--------------------------------------------
Angle1   Angle2           :  -0.00 deg   10.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      2 / 0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  : 220.00 / 220.00 m
Receiver height           :   2.50 / 9.00   m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00

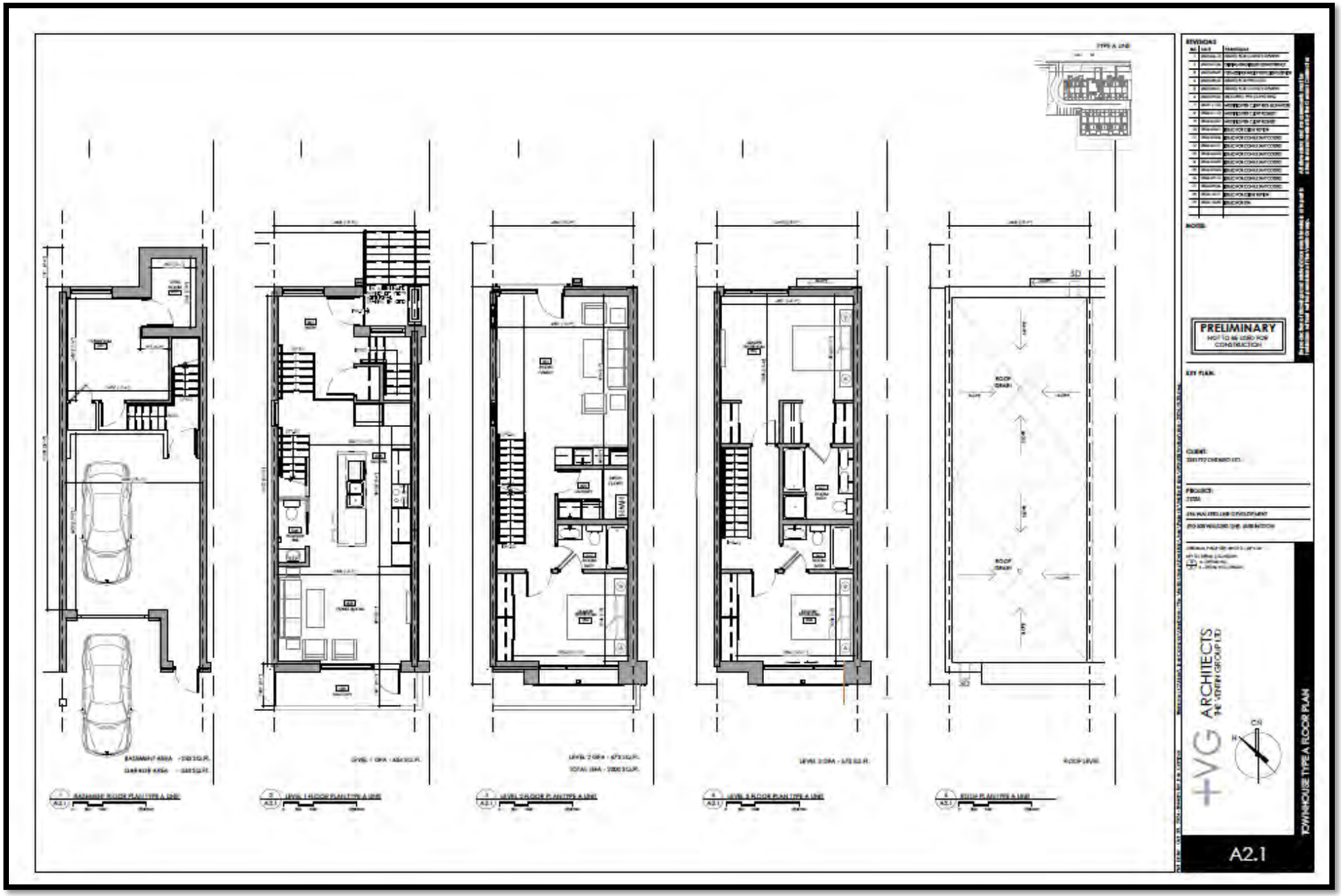
Result summary (day)
--------------------
                     !  source  !   Road   !  Total
                     !  height  !   Leq    !   Leq
                     !   (m)    !  (dBA)   !  (dBA)
---------------------+---------+---------+---------
 1.Walkers Line      !     1.19 !    30.26 !    30.26
 2.New Street        !     1.19 !    32.61 !    32.61
---------------------+---------+---------+---------
                       Total                 34.60 dBA

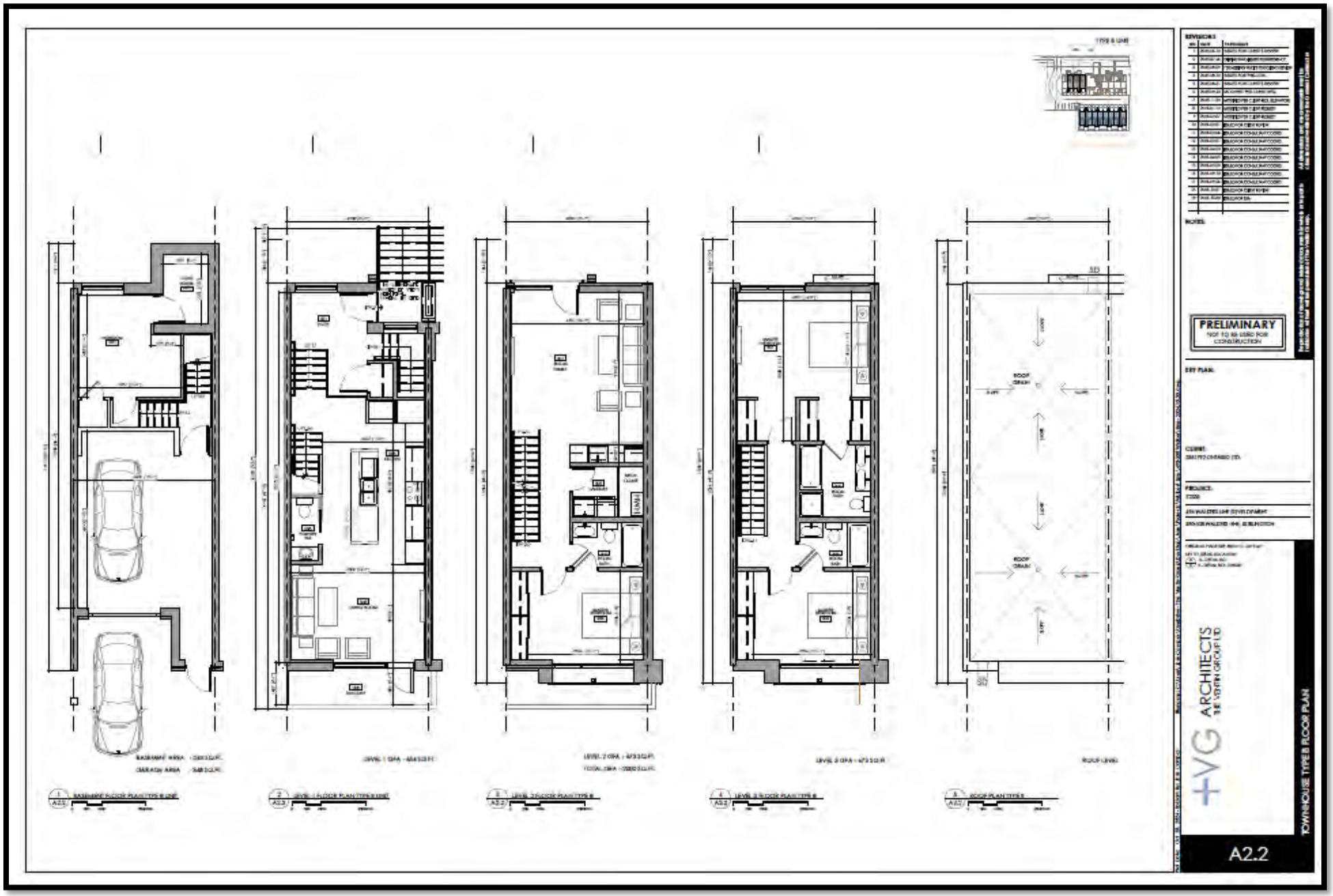
Result summary (night)
----------------------
                     !  source  !   Road   !  Total
                     !  height  !   Leq    !   Leq
                     !   (m)    !  (dBA)   !  (dBA)
---------------------+---------+---------+---------
 1.Walkers Line      !     1.19 !    23.72 !    23.72
 2.New Street        !     1.19 !    34.59 !    34.59
---------------------+---------+---------+---------
                       Total                 34.93 dBA
```

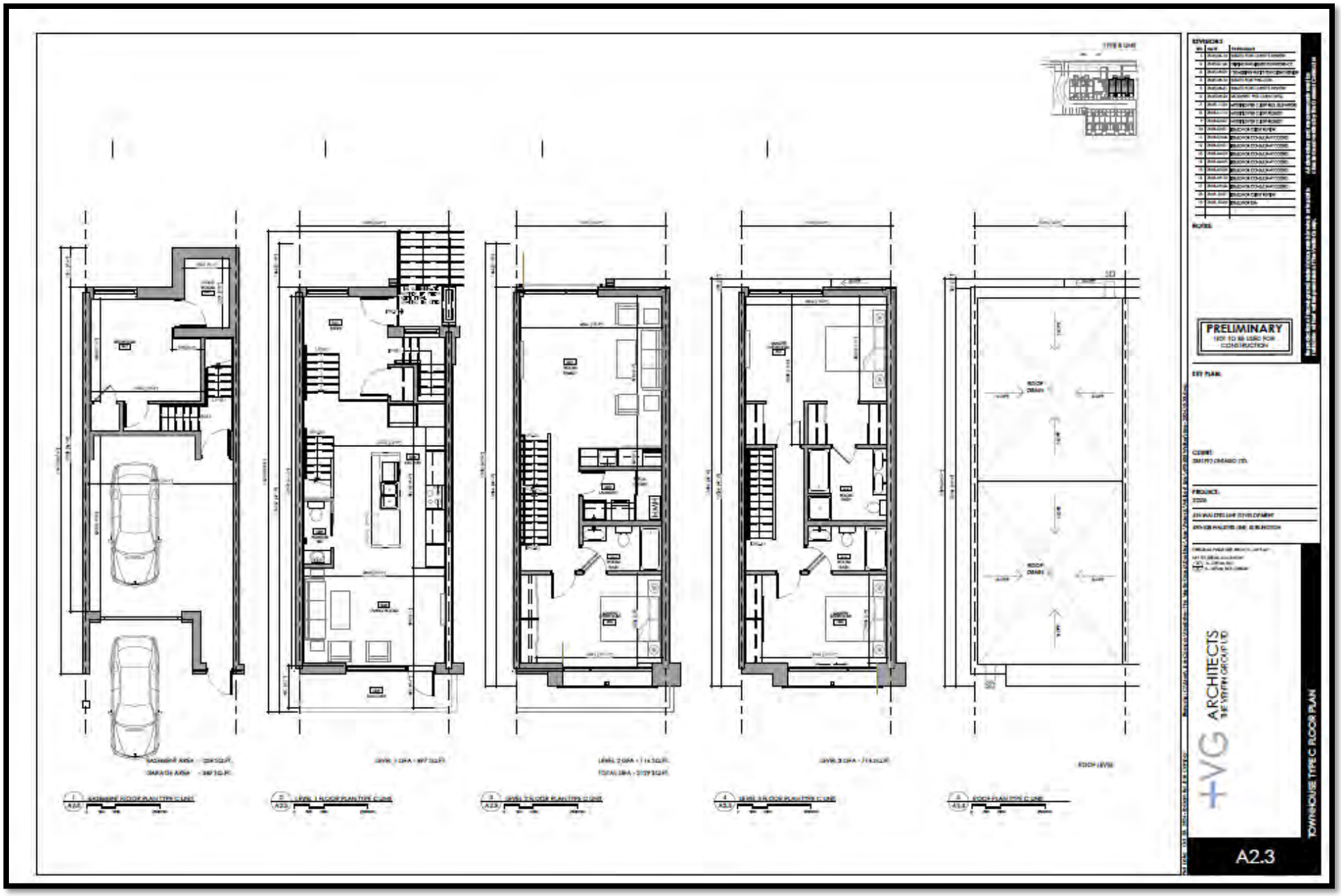
FLOOR PLANS & ELEVATIONS
HERITAGE BUILDING


EXISTING DESIGNATED BUILDING
REVISIONS
NOTES:
PRELIMINARY
NOT TO BE USED FOR CONSTRUCTION
KEY PLAN:
CLIENT:
PROJECT:
VG ARCHITECTS
EXISTING DESIGNATED BUILDING PLANS
A2.0
Saved to Z: Drive

FLOOR PLANS


PRELIMINARY
NOT TO BE USED FOR CONSTRUCTION
VG ARCHITECTS
THE VOGUERA GROUP LTD
TOWNHOUSE TYPE A ROOF PLAN
A2.1


PRELIMINARY
NOT TO BE USED FOR CONSTRUCTION
ROOF DRAIN
ROOF DRAIN
ROOF DRAIN
+VG ARCHITECTS
TOWNHOUSE TYPE B ROOF PLAN
A2.2

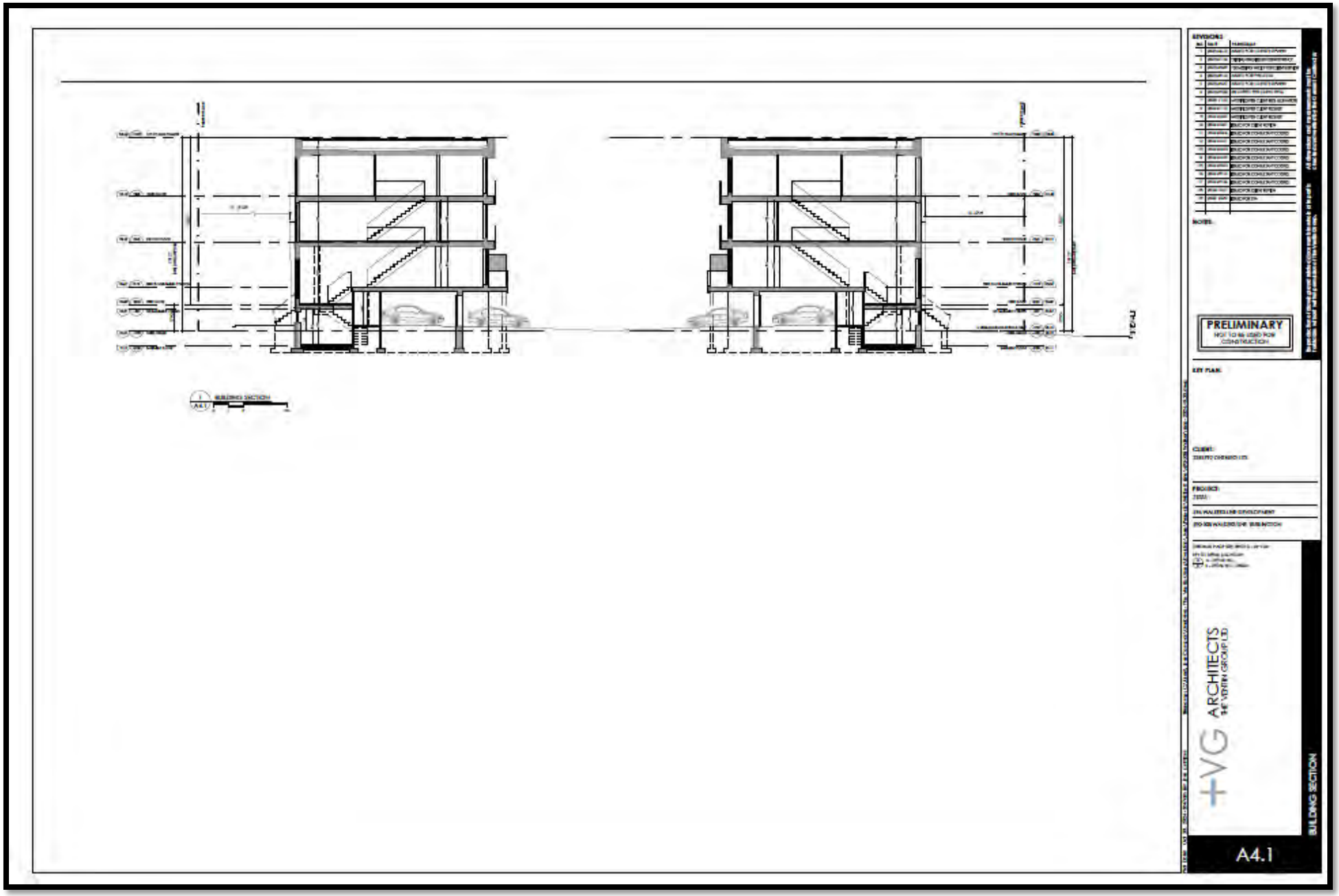

PRELIMINARY
NOT TO BE USED FOR CONSTRUCTION
+VG ARCHITECTS
TOWNHOUSE TYPE C FLOOR PLAN
A2.3

ELEVATIONS


PRELIMINARY
NOT TO BE USED FOR CONSTRUCTION
ARCHITECTS
EXTERIOR ELEVATIONS
A3.1


PRELIMINARY
NOT TO BE USED FOR CONSTRUCTION
VG ARCHITECTS
THE VOLPINI GROUP LTD.
EXTERIOR ELEVATIONS
A3.2


PRELIMINARY
NOT TO BE USED FOR CONSTRUCTION
ARCHITECTS
EXTERIOR ELEVATIONS
A3.3


PRELIMINARY
+VG ARCHITECTS
BUILDING SECTION
A4.1

3D VIEWS

VIEW 1



VIEW 2



PRELIMINARY
NOT TO BE USED FOR CONSTRUCTION

+VG ARCHITECTS
THE VISTEN GROUP LTD

3D VIEWS

A5.1

VIEW 3



VIEW 4



PRELIMINARY
NOT TO BE USED FOR CONSTRUCTION

VG ARCHITECTS
THE VERTIN GROUP LTD

3D VIEWS

A5.2

VIEW 5



VIEW 6



PRELIMINARY
NOT TO BE USED FOR CONSTRUCTION

+VG ARCHITECTS

3D VIEWS

A5.3

SITE STATISTICS

SITE STATISTICS

PROJECT NAME: 496 WALKER'S LINE DEVELOPMENT
PROJECT ADDRESS: 490-508 WALKER'S LINE
MUNICIPALITY: BURLINGTON
EXISTING ZONING CATEGORIES:
RM2 RESIDENTIAL MEDIUM DENSITY ZONE
RM2-189 RESIDENTIAL MEDIUM DENSITY ZONE
R2.1 RESIDENTIAL LOW DENSITY ZONE
REZONE/NEW ZONING CATEGORY: RM2 RESIDENTIAL MEDIUM DENSITY ZONE

ITEM	BY-LAW REQ.	PROVIDED	SOURCE
TOTAL # OF UNITS	N/A	16 TOWNHOUSES + 1 DETACHED	
UNITS AT FRONT		6 X (3 BEDROOM)	
UNITS AT REAR		8 X (3 BEDROOM)	
HERITAGE BUILDING		1 DETACHED HOUSE AT FRONT	
LOT WIDTH	45 m	69.80 m	SECTION 9.1, TABLE 2.9.1
LOT AREA	0.4 ha	0.4043 ha	SECTION 9.1, TABLE 2.9.1
FRONT YARD	9 m abutting a street having a deemed width of 30 m or greater	7.0 m	SECTION 9.1, TABLE 2.9.1 Footnote (a)
REAR YARD	9 m	17.4 m	SECTION 9.1, TABLE 2.9.1
SIDE YARD	4.5 m	2.7 m	SECTION 9.1, TABLE 2.9.1
STREET SIDE YARD	6 m	N/A	SECTION 9.1, TABLE 2.9.1
YARD ABUTTING R1, R2, R3 ZONE	9 m	varies (3.1 m - 17.4 m)	SECTION 9.1, TABLE 2.9.1
DENSITY: MINIMUM MAXIMUM	25 units/ha 40 units/ha	42 units/ha	ZONING BY-LAW, PART 2 SECTION 9.1, TABLE 2.9.1 Footnote (a)
AMENITY AREA: TOWNHOUSES: HERITAGE BUILDING: TOTAL:	16 u. x 3 bed. x 25 sm =1,200 sm 1 u. x 3 bed. x 25 sm = 75 sm 1,275 sm	LANDSCAPE (EXCLUDING COMMON OUTDOOR AMENITY AREA): 585.30 sm COMMON OUTDOOR AMENITY AREA: 407.10 sm BALCONIES / DECK / SIDE YARD : 116.05 sm TOTAL: 1,108.45 sm	SECTION 9.1, TABLE 2.9.1
PRIVACY AREA	20 sm per unit	TOWNHOMES VARIES: from 5.57 sm TO 5.92 sm per unit DESIGNATED BUILDING: 11.51 sm	SECTION 9.1, TABLE 2.9.1
LANDSCAPED AREA	6 m abutting a street having a deemed width greater than 26 m	7 m	SECTION 9.2
LANDSCAPED BUFFER	6 m abutting R1, R2, R3 zones	varies (0 m - 5.57 m)	SECTION 9.2
MAX. BUILDING HEIGHT	2 STOREYS	TOWNHOMES: 3 STOREY OVER BASEMENT (13m) HERITAGE HOUSE: 3 STOREY OVER BASEMENT	ZONING BY-LAW, PART 1 SUBSECTION 2.31, TABLE 2.31.1
GROSS FLOOR AREA		TOTAL: 3,263.4 sm 3,020.8 sm NEW + 242.6 sm EX. HERITAGE HOUSE TOWNHOUSES: 12 X 185.8 sm = 2,229.6 sm GFA 4 X 197.8 sm = 791.2 sm GFA HERITAGE BUILDING = ± 242.6 sm (INCL. FINISHED ATTIC, EXCL. BASEMENT)	
FLOOR AREA RATIO	N/A	TOTAL FLOR AREA GROSS BUILDING: 3,701.39 sm TOWNHOUSES: 3,369.36 sm HERITAGE BUILDING = 332.03 sm 3,844.43 sm /4,043 sm = 0.92	

PARKING REGULATIONS			
ITEM	BY-LAW REQ.	PROVIDED	SOURCE
RESIDENTIAL PARKING SPACES	2 SPACES PER UNIT 2 x 17 = 34 SPACES	34 SPACES / 17 UNITS = 2.0 SPACES PER UNIT	SUBSECTION 2.25; TABLE 1.2.6
VISITOR PARKING SPACES	0.25 SPACES PER UNIT 0.25 x 17 = 4.25 SPACES	5 SPACES / 17 UNITS = 0.29 SPACES PER UNIT	SUBSECTION 2.25; TABLE 1.2.6
TOTAL PARKING SPACES	39 SPACES	39 SPACES (INCL. 1 B.F.)	SUBSECTION 2.25; TABLE 1.2.6
REQUIRED NUMBER OF B.F. SPACES (EXCL. 20% OF RES. UNITS)	5 TO 50 SPACES: 1 DESIGNATED ACCESSIBLE PARKING SPACE	1 SPACE	SUBSECTION 2.26; TABLE 1.2.7
PARKING SPACE DIMENSIONS (m)	MINIMUM WIDTH OF 2.75 m AND A MINIMUM AREA OF 16.5 sq.m.	3.0 m WIDTH x 5.5 m DEPTH = 16.5 sq.m AREA RESIDENTIAL UNITS 2.75 m WIDTH x 6 m DEPTH = 16.5 sq.m AREA VISITORS PARKING	SUBSECTION 2.26 (1) (a)
INTERNAL PRIVATE GARAGE DIMENSIONS (m)	6.0 m DEPTH x 3.0 m WIDTH x 2.0 m HEIGHT	6.0 m DEPTH x 3.0 m WIDTH x 2.0 m HEIGHT	SUBSECTION 2.26 (1) (a)
B.F. PARKING SPACE DIMENSIONS (m)	6.0 m DEPTH x 3.0 m WIDTH x 2.0 m HEIGHT	6.0 m DEPTH x3.0 m WIDTH x 2.0 m HEIGHT	SUBSECTION 2.26 (3) (b)

EXTERIOR WALL STC RATINGS

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.