JLR No.: 24566-002
Revision: 0

January 17, 2019

Minto Communities Inc.

Morgan's Creek Stage 2 (335 Sandhill Road)

Noise Control Feasibility Study

J.L.Richards
ENGINEERS · ARCHITECTS · PLANNERS

Value through service and commitment

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1.0 INTRODUCTION

Minto Communities Inc. (Minto) has retained the services of J.L. Richards & Associates Limited (JLR) to prepare a Noise Control Feasibility Study for their development known as Morgan's Creek Stage 2, located at 335 Sandhill Road in the Morgan's Grant-Shirley's Brook Area, within the City of Ottawa. The purpose of this study is to assess the potential environmental noise impact on the Development, due to vehicular traffic on Sandhill Road. This Noise Control Feasibility Study develops a strategy for subdivision development that minimizes the reliance upon noise barriers, ventilation requirements and air conditioning as a means of addressing roadway noise and instead examines land use, roadway layout and building orientation as a principal means to mitigate roadway noise. Land use and building orientation identified in this study will then be examined in detail as part of the Noise Control Detailed Design Study prepared for the subdivision application.

This report is prepared to satisfy the Ministry of the Environment (MOE) Environmental Noise Guidelines NPC-300 and the City of Ottawa Environmental Noise Control Guidelines (approved by City Council January 2016) and in particular Part 4 Section 3.1 Noise Control Feasibility Study Requirements.

2.0 PROJECT DESCRIPTION

The proposed Morgan's Creek Stage 2 development is situated on a ±1.6 ha parcel of land that is bounded by an existing cemetery to the east, Sandhill Road and existing residential to the north, Shirley's Brook to the south, and future development land and existing residential to the west as shown on Figure 1 - Location Plan.

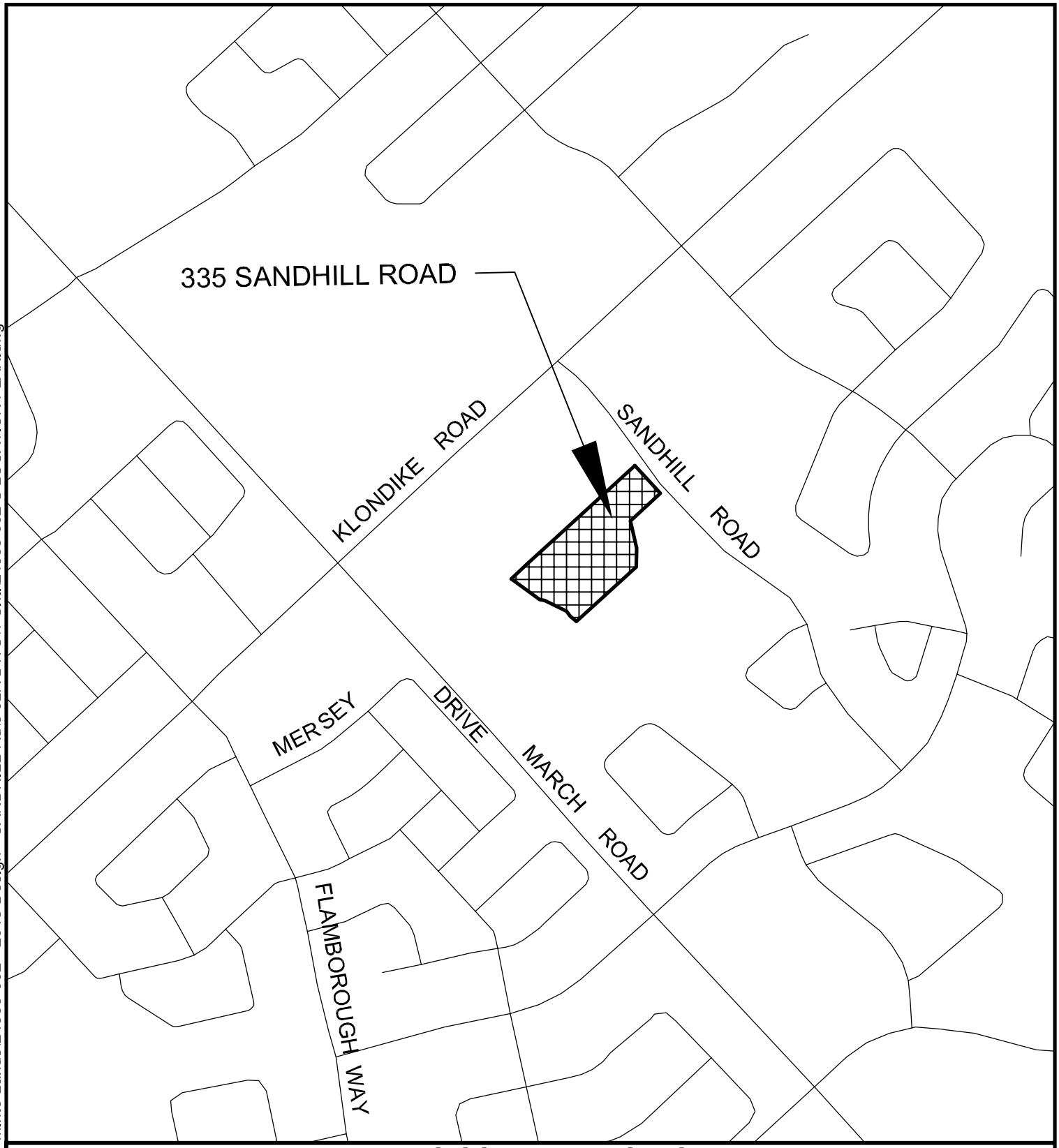
Minto's proposed Sandhill Road development consists of 14 Blocks that will accomodate 60 Executive Townhouse dwellings, as shown on the Draft Plan of Subdivision, provided in Appendix 'A'.

3.0 TRANSPORTATION NOISE SOURCE

The transportation noise sources include Sandhill Road. Drawing N1, provided in Appendix 'A', shows the location of the existing and proposed roadways in relation to the proposed development.

3.1 Transportation Sound Level Criteria

For the purpose of determining the predicted noise levels, and based on the sound level criteria established by the City of Ottawa Environmental Noise Control Guidelines (ENCG), the following will be used as the maximum acceptable sound levels (Leq) for residential development and other land uses, such as nursing homes, schools and daycare centres:



PROJECT:

MINTO COMMUNITIES INC.
MORGAN'S CREEK STAGE 2
335 SANDHILL ROAD

DRAWING:

LOCATION PLAN

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ENGINEERS · ARCHITECTS · PLANNERS

DESIGN:	TB
DRAWN:	TB
CHECKED:	LD
JLR #:	24566-002

DRAWING #: FIGURE1

File Location: V:\24000\24566.LD Minto Lands\24566-002 - 2018 Design - SANDHILL Rd\3-JLR DWG\1-Civil\24566-002 C LOCATION PLAN.dwg

PLOT DATE: November 29, 2018 4:34:51 PM

Receiver Location	Criteria	Time Period
Outdoor Living Area:	55 dBA	Daytime (0700 - 2300 hrs.)
Indoor Living/Dining Rooms (inside):	45 dBA	Daytime (0700 - 2300 hrs.)
General Office, Reception Area (inside):	50 dBA	Daytime (0700 - 2300 hrs.)
Sleeping Quarters (inside):	40 dBA	Nighttime (2300 - 0700 hrs.)

Outdoor Living Areas (OLA) are defined as that portion of the outdoor amenity area of a dwelling for the quiet enjoyment of the outdoor environment during the daytime period. Typically, the point of assessment in an OLA is 3.0 m from the building façade mid-point and 1.5 m above the ground within the designated OLA for each individual unit. OLAs commonly include backyards, balconies (with a minimum depth of 4 m as per NPC-300), common outdoor living areas, and passive recreational areas.

3.2 Transportation Noise Attenuation Requirements

When the sound levels are equal to or less than the specified criteria, per the City of Ottawa ENCG and/or MOE NPC-300, no noise attenuation (control) measures are required.

The following tables outline noise attenuation measures to achieve required dBA Leq for surface transportation noise, per the City of Ottawa ENCG.

Table 1: Outdoor Noise Control Measures for Surface Transportation Noise

<table>
<tr><th rowspan="2">Primary Mitigation Measure
(in order of preference)</th><th colspan="2">Secondary Mitigation Measures</th></tr>
<tr><th>Landscape Plantings and/or Non-acoustic Fence to Obscure Noise Source</th><th>Warning Clauses</th></tr>
<tr><td>Distance setback with soft ground</td><td rowspan="2">Recommended</td><td rowspan="2"></td></tr>
<tr><td>Insertion of Noise insensitive land uses between the source and receiver receptor</td></tr>
<tr><td>Orientation of buildings to provide sheltered zones in rear yards</td><td rowspan="4">Required</td><td rowspan="4">Warning Clauses necessary and to include:
- Reference to specific noise mitigation measures in the development.
- Whether noise is expected to increase in the future.
- That there is a need to maintain mitigation.</td></tr>
<tr><td>Shared outdoor amenity areas</td></tr>
<tr><td>Earth berms (sound barriers)</td></tr>
<tr><td>Acoustic barriers (acoustic barriers)</td></tr>
</table>

Table 2: Indoor Noise Control Measures for Surface Transportation Noise

Primary Mitigation Measure (in order of preference)	Secondary Mitigation Measures	
	Landscape Plantings and/or Non-acoustic Fence to Obscure Noise Source	Warning Clauses
Distance setback with soft ground	Recommended	Not necessary
Insertion of Noise insensitive land uses between the source and receiver receptor		
Orientation of buildings to provide sheltered zones or modified interior spaces and amenity areas	Required	Warning Clauses necessary and to include: - Reference to specific noise mitigation measures in the development. - Whether noise is expected to increase in the future. - That there is a need to maintain mitigation.
Enhanced construction techniques and construction quality		
Earth berms (sound barriers)		
Indoor isolation – air conditioning and ventilation, enhanced dampening materials (indoor isolation)		

The following tables outline the noise level limits per the MOE NPC-300 and City of Ottawa ENCG.

Table 3: Outdoor Living Area (OLA) Noise Limit for Surface Transportation

Time Period	Leq (16 hr) (dBA)
16 hr., 07:00 am - 23:00	55

Table 4: Indoor Noise Limit for Surface Transportation

Type of Space	Time Period	Leq (dBA)	
		Road	Rail
Living/dining, den areas of residences, hospitals, nursing homes, schools, daycare centres, etc.	07:00-23:00	45	40
Living/dining, den areas of residences, hospitals, nursing homes, etc. (except schools or daycare centres)	23:00-07:00	45	40
Sleeping quarters	07:00-23:00	45	40
	23:00-07:00	40	35

In addition to the implementation of noise attenuation features, if required, and depending on the severity of the noise problem, warning clauses may be recommended to advise the prospective purchasers/tenants of affected units of the potential environmental noise. These warning clauses should be included in the Site Plan and Subdivision Agreements, in the Offers of Purchase and Sale, and should be registered on Title. Warning clauses may be included for any development, irrespective of whether it is considered a noise sensitive land use.

Where site measures are required to mitigate noise levels, the City of Ottawa requires that notices be placed on Title informing potential buyers and/or tenants of the site conditions. Sample templates of the notices that could be registered on Title are included in Appendix 'B' as presented in the City of Ottawa ENCG.

Detailed wording for clauses should be provided as part of a detailed Noise Impact Study to be completed in support of the Subdivision Application. Clauses are to be worded to describe the mitigation measures and noise conditions applicable where MOE and City of Ottawa noise criteria are exceeded.

3.3 Prediction of Noise Levels (Transportation)

3.3.1 Road Traffic Data

The following traffic data was used to predict noise levels:

Table 5: Road Traffic Data to Predict Noise Levels

	Sandhill Road
Total Traffic Volume (AADT)	8,000
Day/Night Split (%)	92/8
Medium Trucks (%)	7
Heavy Trucks (%)	5
Posted Speed (km/hr.)	40
Road Gradient (%)	1
Road Classification	2-Lane Urban Collector (2-UCU)

Schedule 'E' and Annex 1 of the City of Ottawa Official Plan (May 2003) were utilized to determine the correct road classification and protected right-of-way. These road classifications were compared to Map 6 of the City of Ottawa Transportation Master Plan (Road Network – Urban). All findings were then compared to Table B1 (Part 4, Appendix 'B') of the City of Ottawa Environmental Noise Control Guidelines in order to determine an appropriate AADT value.

3.3.2 Noise Level Calculations (Transportation)

Noise contours for the daytime periods were developed using the MOE Road Traffic Noise Computer program STAMSON, Version 5.03.

Distances were calculated from the centre of the roadway to even 5 dBA freefield noise levels ranging from 50 dBA to 70 dBA for each of the roadways. Table 6 below presents this information. Computer printouts are included in Appendix 'D'.

Drawing N1 identifies the contours for the calculations of the roadway freefield noise levels.

Table 6: Predicted Freefield Noise Levels and Distances from Individual Noise Sources

Roads	Contour (dBA)	OLA (Freefield) Distance (m)
		Daytime
2-UCU (Sandhill Road) 40 km/hr.	50	84.98
	55	42.47
	60	21.22
	62.5	15.00
	65	n/a
	70	n/a

3.4 Summary of Findings (Transportation)

Morgan's Creek Stage 2 outdoor living areas will not be impacted by roadway traffic noise.

Minto has designed a subdivision layout to include single loaded "window" streets to minimize the number of lots backing onto Sandhill Road. As a result of Minto's efforts to passively mitigate the transportation noise, barriers will not be required.

Freefield noise levels at the property lines are estimated to be approximately 62 dBA as presented on Drawing N1. Noise barriers and berms will not be required to mitigate outdoor living area noise levels.

Warning clauses similar to those presented in Appendix 'B' will be required to highlight the exceedance of MOE and City of Ottawa noise criteria and to identify mitigation measures integrated into the subdivision design. Warning clauses could be required until it can be demonstrated that the noise guideline criteria is not exceeded. It is recommended that specific wording be developed for each unit and/or block in the Noise Control Detailed Study prepared to support the subdivision application.

At the time this study was completed, a detailed grading plan was not available.

Based on the freefield noise contours, as presented on Drawing N1, no Blocks have the potential of requiring a noise barrier.

Based on the freefield noise contours, as presented on Drawing N1, Blocks 1 & 2 have the potential of requiring the Generic warning clause as provided in Appendix 'B'.

3.5 Summary of Findings (Building Component)

This study provides a high level building component analysis. It is recommended that details concerning building components, be confirmed in a Detailed Building Components Study prepared for building permits.

A Building Components Study is recommended if sound levels exceed the requirements of the MOE NPC-300, Section C7.1.3. JLR completed a preliminary analysis of a Minto Executive Townhome to determine if sufficient acoustical insulation is provided with a 'typical' building construction to mitigate interior noise levels to meet MOECC and City of Ottawa criteria. The Acoustical Insulation Factor (AIF) Method, as described in the Ministry of the Environment Ontario, Ontario Publication, Environmental Noise Assessment in Land Use Planning, (ENALUP) 1987 (Page 10-29), was used; to assess the building construction required to mitigate exterior noise to meet interior noise criteria. Exterior freefield noise levels at the plane of the windows were calculated individually for each unit type. A freefield noise level, of 62 dBA, was conservatively utilized to determine wall and window construction.

Minto provided floor plan and building elevation drawings, for the 'Venice' Executive Townhome. Floor and elevation drawings are included in Appendix 'D'. These units are considered representative units for a typical Minto development. The 'Venice' is an executive townhome which could be expected to be constructed on all of the Blocks. Using Minto's drawings JLR calculated the window areas, floor areas and wall areas for the each of the rooms within the each of the units. This data was then used to calculate either the window to floor area ratios or the wall to floor area ratios. Design tables provided in ENALUP were then utilized to identify either minimum window construction or wall construction requirements to mitigate the exterior noise levels. Table 9 in Appendix 'E' present the working calculations for the window and wall requirements necessary to acoustically insulate each of the principal rooms within each of the representative units. The following table presents a summary of the analysis with the minimum standard window and wall construction required per unit type.

Table 7: Minimum Window and Wall Construction Types

Unit Type	Window Type Glass Thickness (Spacing) Glass Thickness (Spacing) Glass Thickness	Exterior Wall Type	Exterior Door Type
Executive Townhome (i.e., Venice)	2(13)2 Double Pane	EW1	-

For this analysis, the sliding glass door identified on the plans is treated as a window. The acoustic insulation factor methodology does not account for sliding glass doors as a door type. It is noted that no additional doors are identified with a connection to the principal interior rooms such as the living room, bedroom or kitchen area.

A standard wall construction detail with a 38 x 89 mm framework complete with siding, sheathing, insulation and 12.7 mm gypsum board or equivalent EW1 (see below) exterior wall type will provide satisfactory acoustic insulation to achieve indoor noise requirements.

Exterior wall type construction notes:

EW1 – Standard wall construction (noted above), with sheathing, wood or metal siding and fibre backer board.

EW2 – Standard wall construction (noted above), with rigid insulation (25-30 mm), wood or metal siding, and fibre backer board.

EW3 – Standard wall construction (noted above), with sheathing, 28 x 89 mm framing, sheathing and asphalt roofing material.

EW4 – Standard wall construction (noted above), with sheathing and 20 mm stucco.

Minto's standard exterior wall construction is 38 x 148 mm complete with 140 mm fibre insulation, siding, 19 mm sheathing, 12.7 mm gypsum board, and occasionally brick veneer on the exterior lower level wall.

It should be noted that other types of window and wall construction could be chosen to achieve the same minimum noise mitigation. These details will be established during the detailed building component study in consultation with Minto.

Tables A2 and A3 from Canada Mortgage and Housing's (CMHC) publication, Airport Noise, revised 1981 were used to convert AIF values to the more widely recognized Sound Transmission Class (STC) values. Appendix 'F' presents these CMHC tables.

AIF and equivalent STC values are presented on Table 8 for the town unit bedroom with the highest AIF requirement. It is recommended that at the time of building permit application that the AIF/STC be confirmed to suit the specific unit proposed for the Block.

Table 8: AIF Value Conversion to STC Value

Type of Unit	AIF Required	Windows/Doors			Walls		
		Window/Floor Area Ratio	AIF Conversion Formula	STC	Wall/Floor Area Ratio	AIF Conversion Formula	STC
Town Unit	29	21%	STC + 1	28	128%	STC – 8	37

4.0 CONCLUSION AND RECOMMENDATIONS

Predicted noise levels are not expected to exceed the City of Ottawa ENCG and MOE criteria for the proposed units adjacent to Sandhill Road for the outdoor living areas. To ensure compliance with City guidelines, Minto has revised the subdivision plan to reduce the reliance of noise barriers as the primary noise mitigation tool. Building orientation and increased separation to the transportation noise source have been used to reduce noise levels for residential units in close proximity to a significant transportation noise source. As a result noise barriers will not be required to protect outdoor living areas.

It is recommended that the City of Ottawa accept the draft plan of subdivision submitted and include a condition for the proponent to complete a Noise Control Detailed Study as per the City of Ottawa ENCG 2016 for Morgan's Creek Stage 2 development.

It is further recommended that the following be addressed as part of the Noise Control Detailed Study:

- Noise levels should be assessed at the building façade of units nearest the transportation noise sources.
- If it is determined that the noise level at the façade of a building exceeds 60.49 dBA, then it is recommended that the Acoustical Insulation Factor (AIF) method be utilized to review building acoustic measures to be incorporated into the building construction. This method is described in the Ministry of the Environment of Ontario document, *Environmental Noise Assessment in Land Use Planning*, 1987 and 1999.

This report has been prepared for the exclusive use of Minto Communities Inc., for the stated purpose, for the named facility. Its discussions and conclusions are summary in nature and cannot be properly used, interpreted or extended to other purposes without a detailed understanding and discussions with the client as to its mandated purpose, scope and limitations. This report was prepared for the sole benefit and use of Minto Communities and may not be used or relied on by any other party without the express written consent of J.L. Richards & Associates Limited.

J.L. RICHARDS & ASSOCIATES LIMITED

Prepared by:

Thomas Blais, A.Sc.T.
Senior GIS Technologist

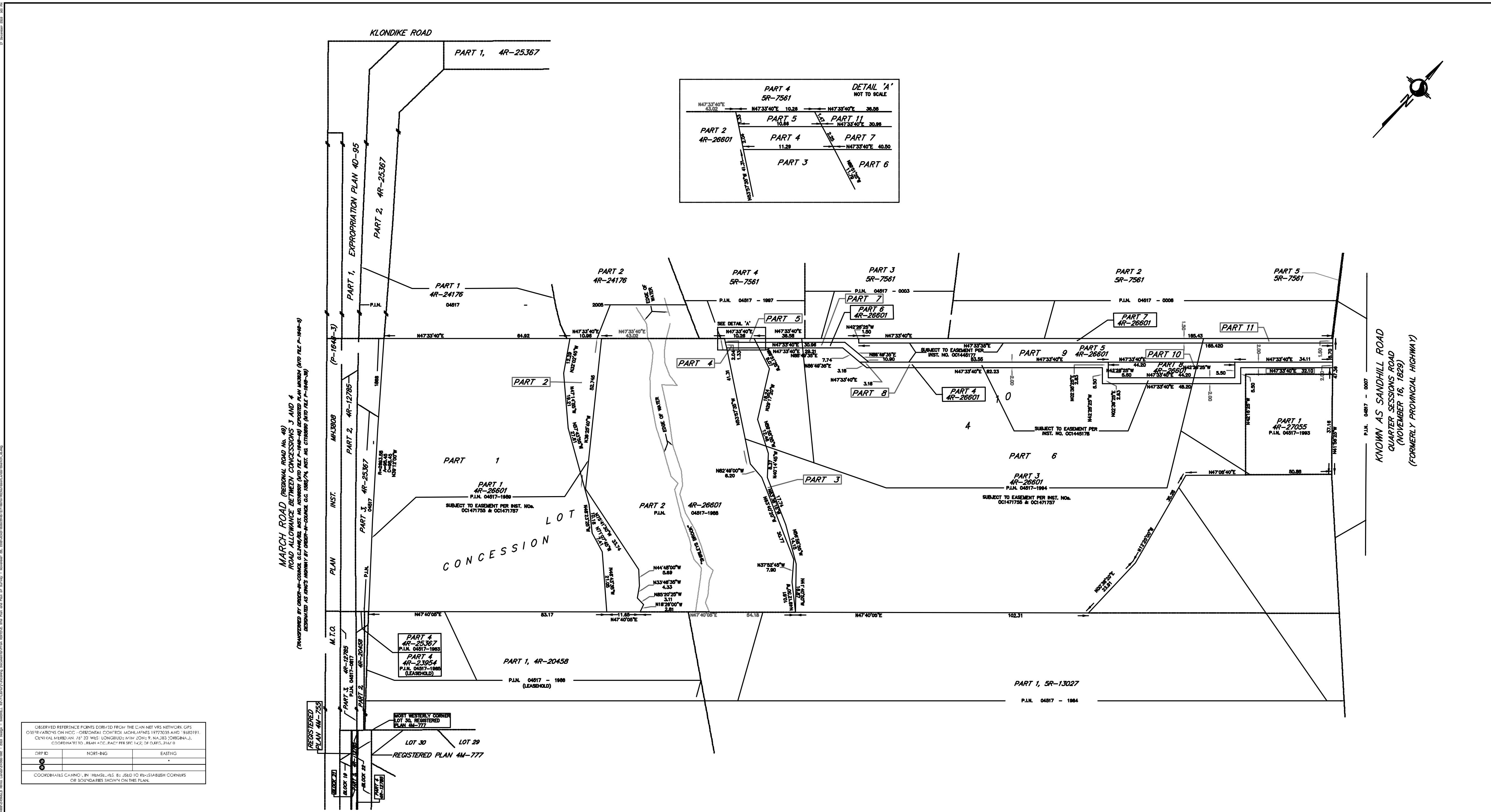
Reviewed by:

LICENSED PROFESSIONAL ENGINEER
L.J.A. JABLONSKI
17 Jan 2019
PROVINCE OF ONTARIO

Lee Jablonski, P.Eng.
Senior Civil Engineer

Appendix A

Plan of Survey
Draft Plan of Subdivision
Freefield Daytime Noise
Contours (Roads) – N1



I REQUIRE THIS PLAN TO BE DEPOSITED UNDER THE LAND TITLES ACT.

DATE: ______________

BRIAN J. WEBSTER
ONTARIO LAND SURVEYOR

PLAN 4R-________

RECEIVED AND DEPOSITED

DATE: ______________

REPRESENTATIVE FOR THE LAND REGISTRAR FOR THE LAND TITLES DIVISION OF OTTAWA-CARLETON No. 4

SCHEDULE			
PART	LOT	CONCESSION	PIN
1	10	4	PIN 04517-1989
2			
3			PIN 04517-1994
4			
5			
6			
7			
8			
9			
10			
11			

PARTS 1 TO 11 ARE SUBJECT TO EASEMENT PER INST. NOs. OC1471757 & OC1471755
PARTS 4, 5, 7 & 9 ARE SUBJECT TO EASEMENT PER INST. NO OC1445177
PARTS 7 & 8 ARE SUBJECT TO EASEMENT PER INST. NO OC1445178

PLAN OF SURVEY of

PART OF LOT 10
CONCESSION 4
(GEOGRAPHIC TOWNSHIP OF MARCH)
CITY OF OTTAWA

Scale 1:500

10 0 10 20 30 METRES

METRIC CONVERSION

DISTANCES AND COORDINATES SHOWN ON THIS PLAN ARE IN METRES AND CAN BE CONVERTED TO FEET BY DIVIDING BY 0.3048

LEGEND

■	DENOTES	FOUND MONUMENTS
□	"	SET MONUMENTS
IB	"	IRON BAR
IBØ	"	ROUND IRON BAR
SIB	"	STANDARD IRON BAR
SSIB	"	SHORT STANDARD IRON BAR
CC	"	CUT CROSS
CP	"	CONCRETE PIN
WIT	"	WITNESS
PIN	"	PROPERTY IDENTIFICATION NUMBER
MEAS	"	MEASURED
PROP	"	PROPORTIONED
OU	"	ORIGIN UNKNOWN
SG	"	STANTEC GEOMATICS LTD.
ORP	"	OBSERVED REFERENCE POINT

BEARING NOTE

BEARINGS ARE GRID, DERIVED FROM THE CAN-NET VRS NETWORK GPS OBSERVATIONS ON NCC HORIZONTAL CONTROL MONUMENTS 19773035 AND 19680191, CENTRAL MERIDIAN, 76° 30' WEST LONGITUDE MTM ZONE 9, NAD83 (ORIGINAL).

19773035 N:5006060.42 E:324888.04
19680191 N:5033564.26 E:388064.94

GRID SCALE CONVERSION

DISTANCES ARE GROUND AND CAN BE CONVERTED TO GRID BY MULTIPLYING BY THE COMBINED SCALE FACTOR OF 0.999916.

SURVEYOR'S CERTIFICATE

I CERTIFY THAT:

1. THIS SURVEY AND PLAN ARE CORRECT AND IN ACCORDANCE WITH THE SURVEYS ACT, THE SURVEYORS ACT AND THE LAND TITLES ACT AND THE REGULATIONS MADE UNDER THEM.
2. THE SURVEY WAS COMPLETED ON THE DAY OF , 2018.

DATE

BRIAN J. WEBSTER
ONTARIO LAND SURVEYOR

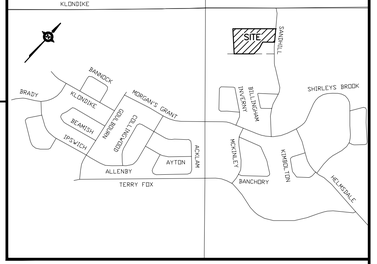
Stantec Geomatics Ltd.
CANADA LANDS SURVEYORS
ONTARIO LAND SURVEYORS
1331 CLYDE AVENUE, SUITE 400
OTTAWA, ONTARIO, K2C 3G4
TEL. 613.722.4420 FAX. 613.722.2799
stantec.com

DRAWN: TMT	CHECKED: CT	PM: CT	FIELD: *	PROJECT No.: 161613946-117

SUBJECT TO THE CONDITIONS, IF ANY, SET FORTH IN OUR LETTER DATED _____20____
THIS DRAFT PLAN IS APPROVED BY THE CITY OF OTTAWA UNDER SECTION 51 OF THE PLANNING ACT.
THIS____DAY OF_____,20___.

DERRICK MOODIE, MANAGER
DEVELOPMENT REVIEW-WEST
PLANNING, INFRASTRUCTURE AND ECONOMIC DEVELOPMENT DEPARTMENT, CITY OF OTTAWA

KEY PLAN
(NOT TO SCALE)



DRAFT PLAN OF SUBDIVISION
PART 1 - PLAN OF
PART OF LOT 10 CONCESSION 4
(GEOGRAPHIC TOWNSHIP OF MARCH)
CITY OF OTTAWA

Scale 1:400
5 0 10 20 30 METRES

ADDITIONAL INFORMATION REQUIRED UNDER SECTION 51 OF THE PLANNING ACT.

(A)-AS SHOWN ON DRAFT PLAN
(B)-AS SHOWN ON DRAFT PLAN
(C)-AS SHOWN ON DRAFT AND KEY PLANS
(D)- SEE PROPOSED LAND USE SCHEDULE (BELOW)
(E)-AS SHOWN ON DRAFT PLAN
(F)-AS SHOWN ON DRAFT PLAN
(G)-AS SHOWN ON DRAFT PLAN
(H)-CITY WATER AVAILABLE
(I)-SEE SOIL REPORT
(J)-SEE TOPOGRAPHICAL INFORMATION
(K)-ALL CITY SERVICES AVAILABLE
(L)-AS SHOWN ON DRAFT PLAN

SCHEDULE OF LAND USE			
LOT/BLOCK	USE	UNITS	AREA (Ha/ac)
1 TO 14	EXECUTIVE TOWNS	60	1.19/2.95
15	OPEN SPACE		0.04/0.09
16	OPEN SPACE		0.01/0.03
17	PARK		0.05/0.12
18	PRIVATE ROAD		0.30/0.73
TOTAL			1.59/3.92

METRIC CONVERSION
DISTANCES AND COORDINATES SHOWN ON THIS PLAN ARE IN METRES AND CAN BE CONVERTED TO FEET BY DIVIDING BY 0.3048

OWNER'S CERTIFICATE
I HEREBY AUTHORIZE STANTEC GEOMATICS LTD. TO SUBMIT THIS DRAFT PLAN OF SUBDIVISION ON MY BEHALF

DATE

*.PRESIDENT
####### ONTARIO LIMITED
I HAVE THE AUTHORITY TO BIND THE CORPORATION

SURVEYOR'S CERTIFICATE
I HEREBY CERTIFY THAT THE BOUNDARIES OF THE SUBJECT LANDS AND THEIR RELATIONSHIP TO ADJOINING LANDS HAVE BEEN ACCURATELY AND CORRECTLY SHOWN.

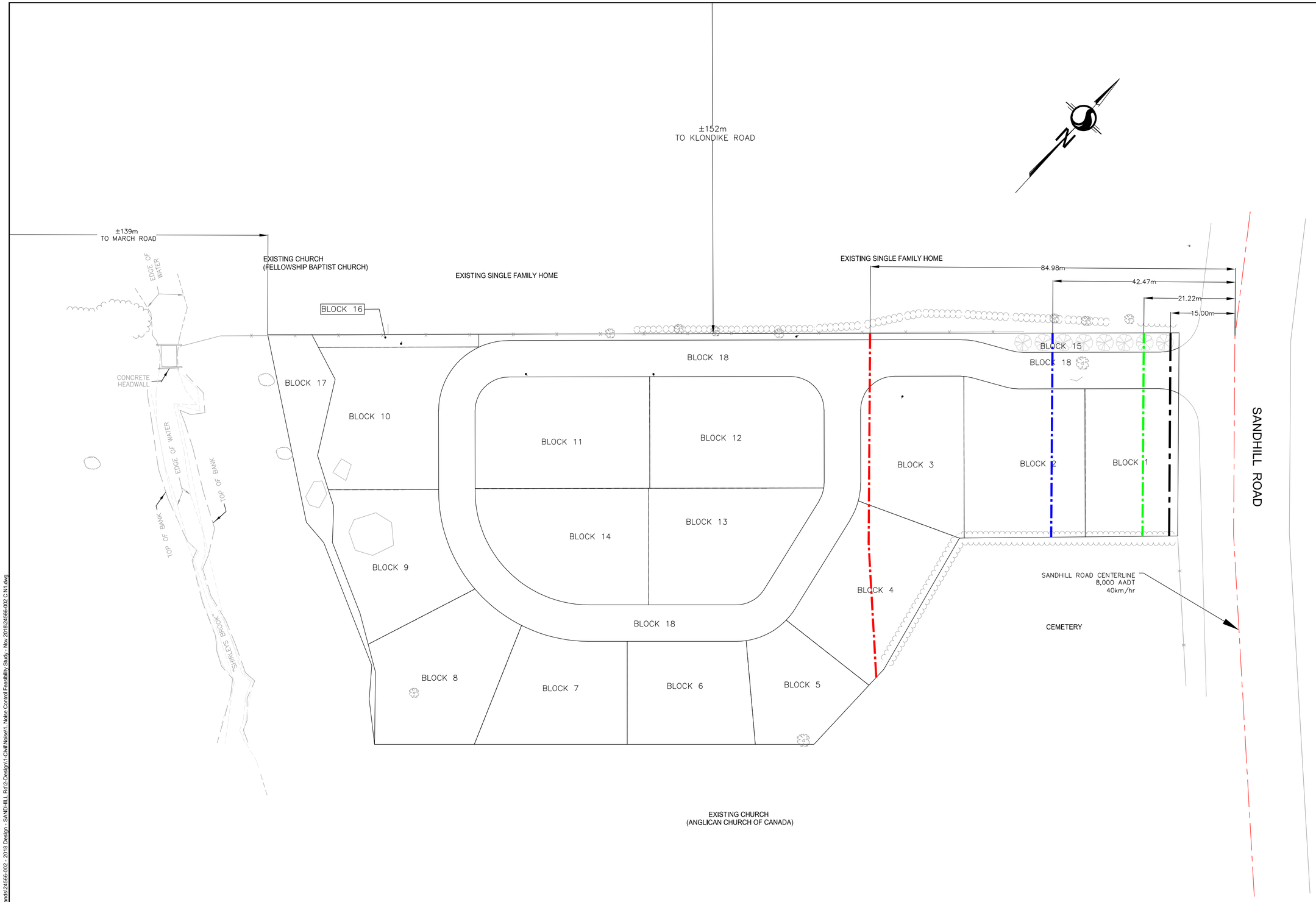
DATE

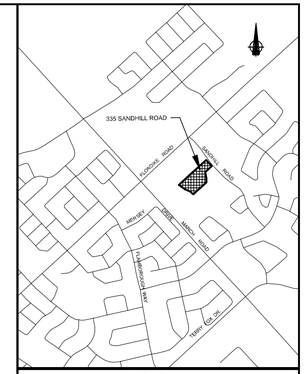
BRIAN J. WEBSTER
ONTARIO LAND SURVEYOR

NOTE:
THE PLAN DATA IS COMPILED FROM OFFICE RECORDS OF STANTEC GEOMATICS LTD. AND HAS NOT BEEN VERIFIED BY FIELD MEASUREMENTS. ALL DISTANCES ARE APPROXIMATE, TO BE VERIFIED BY FINAL REGISTERED PLAN(S).

Stantec
Stantec Geomatics Ltd.
CANADA LANDS SURVEYORS
ONTARIO LAND SURVEYORS
1331 CLYDE AVENUE, SUITE 400
OTTAWA, ONTARIO, K2C 3G4
TEL. 613.722.4420 FAX. 613.722.2799
stantec.com

DRAWN: TMT	CHECKED: CT	PM: CT	FIELD: *	PROJECT No.: 161613946-130





KEY PLAN

LEGEND

NOISE CONTOURS

- 50 dBA
- 55 dBA
- 60 dBA
- 62.5 dBA (@ 15.0m)

No.	ISSUE / REVISION	DD/MM/YY
1	ISSUED WITH NOISE CONTROL FEASIBILITY STUDY	17/01/19

VERIFY SHEET SIZE AND SCALES. BAR TO THE RIGHT IS 25mm IF THIS IS A FULL SIZE DRAWING. 0 25mm

SCALE: 1:400

CLIENT: minto Communities

CONSULTANT: www.jlrichards.ca

J.L.Richards ENGINEERS · ARCHITECTS · PLANNERS

CONSULTANT:

PROFESSIONAL STAMP

PROJECT NORTH

PROJECT:

MINTO COMMUNITIES INC.
MORGAN'S CREEK
STAGE 2

335 SANDHILL ROAD

DRAWING:

FREEFIELD DAYTIME NOISE CONTOURS (ROADS)

DESIGN: TB	
DRAWN: TB	DRAWING #:
CHECKED: LJ	N1
JLR #: 24566-002	

PLOT DATE: January 17, 2019 8:23:03 AM

File Location: V:\2400\active\24566_LD Minto Lands\24566-002 - 2018 Design - SANDHILL Rd\2-Design\1-Civil\Noise\1 Noise Control Feasibility Study - Nov 2018\24566-002 C N1.dwg

Appendix B

City of Ottawa Surface Transportation Sample Warning Clauses

City of Ottawa Environmental Noise Control Guidelines Sample Warning Clauses

Generic

Purchasers/tenants are advised that sound levels due to increasing road/rail/Light Rail/transitway traffic may occasionally interfere with some outdoor activities as the sound levels may exceed the sound level limits of the City and the Ministry of the Environment.

To help address the need for sound attenuation this development has been designed so as to provide an outdoor amenity area that is within provincial guidelines. Measures for sound attenuation could include:

- A setback of buildings from the noise source and/or
- An acoustic barrier.

To ensure that provincial sound level limits are not exceeded it is important to maintain sound attenuation features.

The acoustic barrier shall be maintained and kept in good repair by the property owner. Any maintenance, repair or replacement is the responsibility of the owner and shall be with the same material or to the same standards, having the same colour, appearance and function of the original.

Additionally this development includes trees and shrubs to screen the source of noise from occupants.

Extensive mitigation of indoor and outdoor amenity area

Purchasers/tenants are advised that despite the inclusion of noise control features in the development and within the building units, sound levels due to increasing road/rail/Light Rail/transitway traffic may, on occasion, interfere with some activities of the dwelling occupants as the sound levels exceed the sound level limits of the City and the Ministry of the Environment.

To help address the need for sound attenuation this development includes:

- multi-pane glass;
- double brick veneer;
- an earth berm; and
- an acoustic barrier.

To ensure that provincial sound level limits are not exceeded it is important to maintain these sound attenuation features.

The acoustic barrier shall be maintained and kept in good repair by the property owner. Any maintenance, repair or replacement is the responsibility of the owner and shall be with the same material or to the same standards, having the same colour, appearance and function of the original.

This dwelling unit has also been designed with the provision for adding central air conditioning at the occupant's discretion. Installation of central air conditioning will allow windows and exterior doors to remain closed, thereby ensuring that the indoor sound levels are within the sound level limits of the City and the Ministry of the Environment.

Additionally this development includes trees and shrubs to screen the source of noise from occupants.

No Outdoor amenity area

Purchasers/tenants are advised that sound levels due to increasing road/rail/Light Rail/transitway traffic will interfere with outdoor activities as the sound levels exceed the sound level limits of the City and the Ministry of the Environment.
To help address the need for sound attenuation this development includes:

- multi-pane glass;
- double brick veneer;
- high sound transmission class walls.

To ensure that provincial sound level limits are not exceeded it is important to maintain these sound attenuation features.
This dwelling unit has been supplied with a central air conditioning system and other measures which will allow windows and exterior doors to remain closed, thereby ensuring that the indoor sound levels are within the sound level limits of the City and the Ministry of the Environment

Appendix C

Transportation Noise Source Predictions

-Detailed Predicted Freefield Noise Level Calculations (Individual Noise Sources)

STAMSON 5.0 NORMAL REPORT Date: 09-11-2018 09:21:26
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: 2ucu50.te Time Period: Day/Night 16/8 hours
Description: 2-UCU (Sandhill Road) 55 dBA

Road data, segment # 1: sandhill rd (day/night)

Car traffic volume	: 6477/563	veh/TimePeriod *
Medium truck volume	: 515/45	veh/TimePeriod *
Heavy truck volume	: 368/32	veh/TimePeriod *
Posted speed limit	: 40 km/h	
Road gradient	: 1 %	
Road pavement	: 1 (Typical asphalt or concrete)	

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

24 hr Traffic Volume (AADT or SADT)	: 8000
Percentage of Annual Growth	: 0.00
Number of Years of Growth	: 0.00
Medium Truck % of Total Volume	: 7.00
Heavy Truck % of Total Volume	: 5.00
Day (16 hrs) % of Total Volume	: 92.00

Data for Segment # 1: sandhill rd (day/night)

Angle1 Angle2	: -90.00 deg	90.00 deg
Wood depth	: 0	(No woods.)
No of house rows	: 0 / 0	
Surface	: 1	(Absorptive ground surface)
Receiver source distance	: 84.98 / 84.98	m
Receiver height	: 1.50 / 4.50	m
Topography	: 1	(Flat/gentle slope; no barrier)
Reference angle	: 0.00	

♀
Results segment # 1: sandhill rd (day)

Source height = 1.50 m

ROAD (0.00 + 50.00 + 0.00) = 50.00 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.66	63.96	0.00	-12.50	-1.46	0.00	0.00	0.00	50.00

Segment Leq : 50.00 dBA

Total Leq All Segments: 50.00 dBA

♀
Results segment # 1: sandhill rd (night)

Source height = 1.50 m

ROAD (0.00 + 43.23 + 0.00) = 43.23 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.57	56.36	0.00	-11.83	-1.30	0.00	0.00	0.00	43.23

Segment Leq : 43.23 dBA

Total Leq All Segments: 43.23 dBA

♀

TOTAL Leq FROM ALL SOURCES (DAY): 50.00
(NIGHT): 43.23

♀
♀
STAMSON 5.0 NORMAL REPORT Date: 09-11-2018 09:20:24
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: 2ucu55.te Time Period: Day/Night 16/8 hours
Description: 2-UCU (Sandhill Road) 55 dBA

Road data, segment # 1: sandhill rd (day/night)

Car traffic volume : 6477/563 veh/TimePeriod *
Medium truck volume : 515/45 veh/TimePeriod *
Heavy truck volume : 368/32 veh/TimePeriod *
Posted speed limit : 40 km/h
Road gradient : 1 %
Road pavement : 1 (Typical asphalt or concrete)

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

24 hr Traffic Volume (AADT or SADT): 8000
Percentage of Annual Growth : 0.00
Number of Years of Growth : 0.00
Medium Truck % of Total Volume : 7.00
Heavy Truck % of Total Volume : 5.00
Day (16 hrs) % of Total Volume : 92.00

Data for Segment # 1: sandhill rd (day/night)

Angle1 Angle2 : -90.00 deg 90.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 0
Surface : 1 (Absorptive ground surface)
Receiver source distance : 42.47 / 42.47 m
Receiver height : 1.50 / 4.50 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

♀
Results segment # 1: sandhill rd (day)

Source height = 1.50 m

ROAD (0.00 + 55.00 + 0.00) = 55.00 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.66	63.96	0.00	-7.50	-1.46	0.00	0.00	0.00	55.00

Segment Leq : 55.00 dBA

Total Leq All Segments: 55.00 dBA

♀

Results segment # 1: sandhill rd (night)

Source height = 1.50 m

ROAD (0.00 + 47.96 + 0.00) = 47.96 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.57	56.36	0.00	-7.10	-1.30	0.00	0.00	0.00	47.96

Segment Leq : 47.96 dBA

Total Leq All Segments: 47.96 dBA

♀

TOTAL Leq FROM ALL SOURCES (DAY): 55.00
(NIGHT): 47.96

♀
♀

STAMSON 5.0 NORMAL REPORT Date: 09-11-2018 09:19:27
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: 2ucu60.te Time Period: Day/Night 16/8 hours
Description: 2-UCU (Sandhill Road) 60 dBA

Road data, segment # 1: sandhill rd (day/night)

Car traffic volume	6477/563	veh/TimePeriod *
Medium truck volume	515/45	veh/TimePeriod *
Heavy truck volume	368/32	veh/TimePeriod *
Posted speed limit	40 km/h	
Road gradient	1 %	
Road pavement	1 (Typical asphalt or concrete)	

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

24 hr Traffic Volume (AADT or SADT)	8000
Percentage of Annual Growth	0.00
Number of Years of Growth	0.00
Medium Truck % of Total Volume	7.00
Heavy Truck % of Total Volume	5.00
Day (16 hrs) % of Total Volume	92.00

Data for Segment # 1: sandhill rd (day/night)

Angle1 Angle2	-90.00 deg	90.00 deg
Wood depth	0	(No woods.)
No of house rows	0 / 0	
Surface	1	(Absorptive ground surface)
Receiver source distance	21.22 / 21.22	m
Receiver height	1.50 / 4.50	m
Topography	1	(Flat/gentle slope; no barrier)
Reference angle	0.00	

♀

Results segment # 1: sandhill rd (day)

Source height = 1.50 m

ROAD (0.00 + 60.00 + 0.00) = 60.00 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.66	63.96	0.00	-2.50	-1.46	0.00	0.00	0.00	60.00

Segment Leq : 60.00 dBA

Total Leq All Segments: 60.00 dBA

♀
Results segment # 1: sandhill rd (night)

Source height = 1.50 m

ROAD (0.00 + 52.69 + 0.00) = 52.69 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.57	56.36	0.00	-2.37	-1.30	0.00	0.00	0.00	52.69

Segment Leq : 52.69 dBA

Total Leq All Segments: 52.69 dBA

♀

TOTAL Leq FROM ALL SOURCES (DAY): 60.00
(NIGHT): 52.69
♀
♀
STAMSON 5.0 NORMAL REPORT Date: 09-11-2018 09:18:46
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: 2ucu62.te Time Period: Day/Night 16/8 hours
Description: 2-UCU (Sandhill Road) 62.5 dBA

Road data, segment # 1: sandhill rd (day/night)

Car traffic volume : 6477/563 veh/TimePeriod *
Medium truck volume : 515/45 veh/TimePeriod *
Heavy truck volume : 368/32 veh/TimePeriod *
Posted speed limit : 40 km/h
Road gradient : 1 %
Road pavement : 1 (Typical asphalt or concrete)

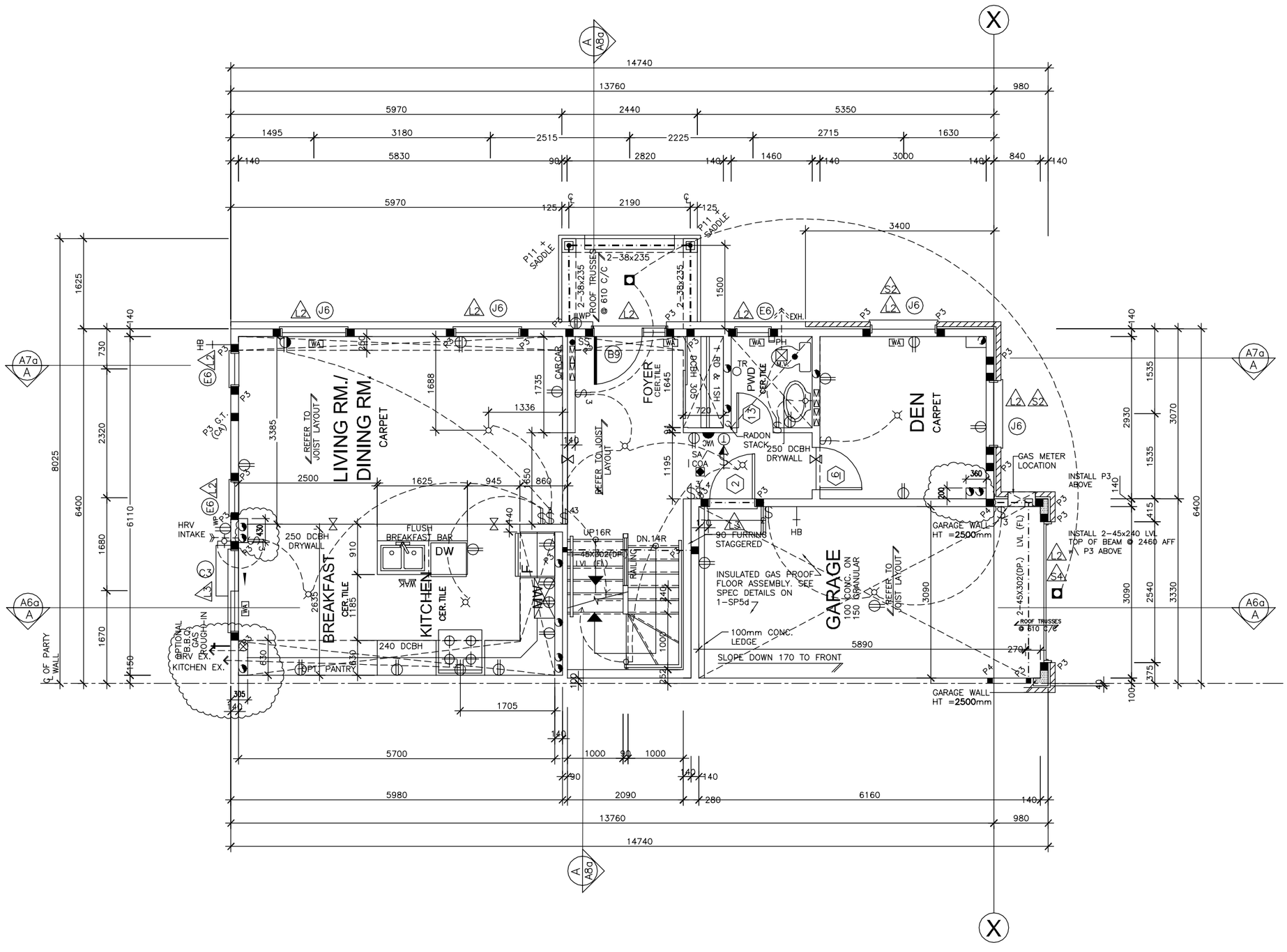
* Refers to calculated road volumes based on the following input:

24 hr Traffic Volume (AADT or SADT): 8000
Percentage of Annual Growth : 0.00
Number of Years of Growth : 0.00
Medium Truck % of Total Volume : 7.00
Heavy Truck % of Total Volume : 5.00
Day (16 hrs) % of Total Volume : 92.00

```
Data for Segment # 1: sandhill rd (day/night)
---------------------------------------------
Angle1   Angle2           : -90.00 deg   90.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  :  15.00 / 15.00  m
Receiver height           :   1.50 / 4.50   m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00

♀
Results segment # 1: sandhill rd (day)
--------------------------------------

Source height = 1.50 m

ROAD (0.00 + 62.50 + 0.00) = 62.50 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90     90   0.66  63.96   0.00   0.00  -1.46   0.00   0.00   0.00  62.50
-------------------------------------------------------------------------------

Segment Leq : 62.50 dBA

Total Leq All Segments: 62.50 dBA

♀
Results segment # 1: sandhill rd (night)
----------------------------------------

Source height = 1.50 m

ROAD (0.00 + 55.06 + 0.00) = 55.06 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90     90   0.57  56.36   0.00   0.00  -1.30   0.00   0.00   0.00  55.06
-------------------------------------------------------------------------------

Segment Leq : 55.06 dBA

Total Leq All Segments: 55.06 dBA

♀



TOTAL Leq FROM ALL SOURCES (DAY): 62.50
                           (NIGHT): 55.06
♀
♀
→
```

Appendix D

Building Elevation Drawings
-The Venice - 2015



GROUND FLOOR PLAN ELEVATION 'CA'

STRUCTURAL FRAMING SCHEDULE

For Steel Framing Layout, Beam/Column/Plate Connection Details, see Structural Dwgs ST- * (Also Specs SP-1 & SP-4).

STEEL LINTEL

- S1 – L 90x90x6
- S2 – L 90x90x8
- S3 – L 100x90x6
- S4 – L 125x90x8
- S5 – L 125x90x10
- S6 – L 200x100x12
- S7 – L 150x100x10 (L.L.V.) 200mm BEARING
- S8 – L 100x90x8

WOOD LINTEL

- L1 – 2–38x235 w/ 12.7 PLYWOOD SPACER
- L2 – 2–38x235
- L3 – 3–38x235
- L4 – 3–38x235 c/w 2–12.7 PLYWOOD SPACERS & 2 ROWS OF 90mm C.W.N. @ 200 c/c B/S
- L5 – 3–38x286 c/w 2–12.7 PLYWOOD SPACERS & 2 ROWS OF 90mm C.W.N. @ 200 c/c B/S
- L6 – 2–45x240 M.L.
- L7 – 3–45x240 M.L.
- L8 – 2–38x286
- L9 – 3–38x286

PROVIDE MINIMUM 'P2' POST BOTH ENDS OF LINTEL

POSTS

- P1(8) – 75 ø STEEL TELEPOST (8 Feet Max)
- P1(9) – 75 ø STEEL TELEPOST (9 Feet Max)
- P2 – 2–38x89 or 2–38x140
- P3 – 3–38x89 or 3–38x140
- P4 – 4–38x89 or 4–38x140
- P5 – 5–38x89 or 5–38x140
- P6 – 6–38x89 or 6–38x140
- P11 – HEAVY DUTY STEEL POST, CAPACITY = 55 KN
- P12 – ADJUSTABLE HSS, CAPACITY 100 KN
- HSS 73 OD – HSS 73 O.D. X 4.8 + 12mm PLATE TOP & BOTT.
- HSS 89 OD – HSS 89 O.D. X 4.8 + 12mm PLATE TOP & BOTT.
- HSS 76 – HSS 76.2 X 76.2 X 4.8 + 12mm PLATE TOP & BOTT.
- HSS 89 – HSS 89 X 89 X 4.8 + 12mm PLATE TOP & BOTT.
- HSS 102 – HSS 102 X 102 X 4.8 + 12mm PLATE TOP & BOTT.

FOOTINGS

ALL CONC. FOOTINGS DESIGNED FOR AN ALLOWABLE SOIL CAP.= 100kpa

No	Revision	Date	By
10	ADDED DIMENSIONS FOR MECH. CHASES	FEB 19/16	KO
9	CLARIFIED BEAM HT. AT GAS METER	JAN 26/16	KO
8	GARAGE SLOPE REVISED	JAN 18/16	MC
7	REVISED LVL @ GAS METRE	NOV 9/15	PS
6	REVISED LVL @ GAS METRE	NOV 4/15	PS
5	KITCHEN DCBH REVISED	OCT 01/15	MC
4	ISSUED FOR CONSTRUCTION	AUG 17/15	MC
3	COORDINATED & ISSUED FOR BUILDING PERMIT	6JULY2015	MGC
2	ISSUED PRELIMINARY WORKING TO CLIENT FOR 2ND REVIEW	14MAY2015	MGC
1	ISSUED PRELIMINARY WORKING TO CLIENT FOR REVIEW	07MAY2015	MGC

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STRCT'L FRM'G LEGEND: SEE DWG A3 ELEVATION LEGEND: SEE DWG A4 FLOOR PLAN LEGEND:SEE DWG SP-1 DR/WIN LEGEND:SEE DWG SP-7* FOR ADDT'L INFORMATION, ABBREV'S, SYMBOLS,SEE SPECS. SP-*,SD-*,W-*

Title: GROUND FLOOR PLAN ELEV.: 'CA'

Acad File W:\15\15-18 MINTO OTTAWA\MODELS\6.2m PRODUCT\WORKING DRAWINGS\20-05.dwg

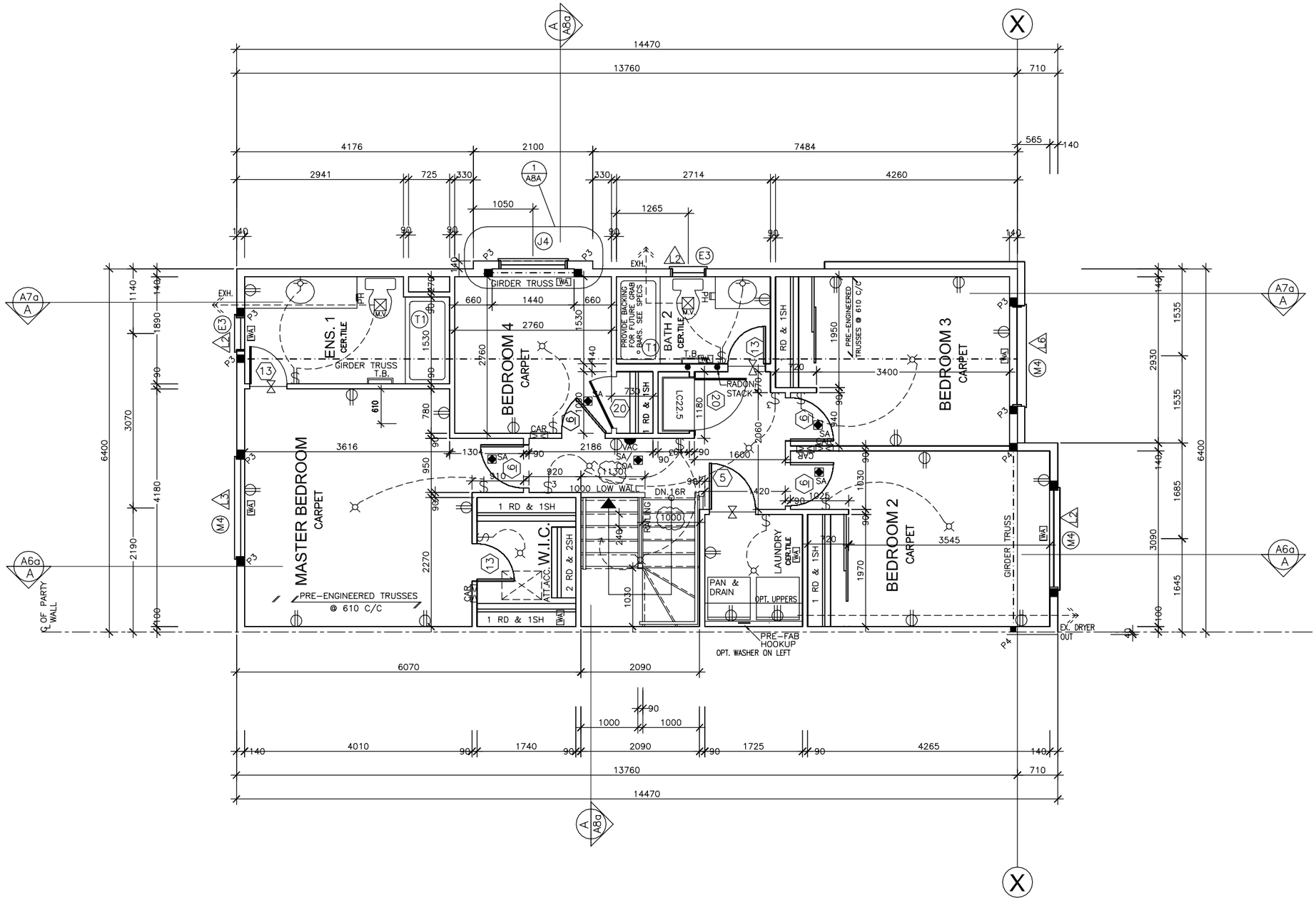
Scale 1:75

2015-20ft Excutive Townhomes

THE VENICE-2015-CA
THE VENICE-2015-PA

(2015 STANDARD DRAWING)

dwg A-2a



SECOND FLOOR PLAN ELEVATION 'CA'

STRUCTURAL FRAMING SCHEDULE

For Steel Framing Layout, Beam/Column/Plate Connection Details, see Structural Dwgs ST- * (Also Specs SP-1 & SP-4).

STEEL LINTEL

- S1 – L 90x90x6
- S2 – L 90x90x8
- S3 – L 100x90x6
- S4 – L 125x90x8
- S5 – L 125x90x10
- S6 – L 200x100x12
- S7 – L 150x100x10 (L.L.V.) 200mm BEARING
- S8 – L 100x90x8

WOOD LINTEL

- L1 – 2–38x235 w/ 12.7 PLYWOOD SPACER
- L2 – 2–38x235
- L3 – 3–38x235
- L4 – 3–38x235 c/w 2–12.7 PLYWOOD SPACERS & 2 ROWS OF 90mm C.W.N. @ 200 c/c B/S
- L5 – 3–38x286 c/w 2–12.7 PLYWOOD SPACERS & 2 ROWS OF 90mm C.W.N. @ 200 c/c B/S
- L6 – 2–45x240 M.L.
- L7 – 3–45x240 M.L.
- L8 – 2–38x286
- L9 – 3–38x286

PROVIDE MINIMUM 'P2' POST BOTH ENDS OF LINTEL

POSTS

- P1(8) – 75 ø STEEL TELEPOST (8 Feet Max)
- P1(9) – 75 ø STEEL TELEPOST (9 Feet Max)
- P2 – 2–38x89 or 2–38x140
- P3 – 3–38x89 or 3–38x140
- P4 – 4–38x89 or 4–38x140
- P5 – 5–38x89 or 5–38x140
- P6 – 6–38x89 or 6–38x140
- P11 – HEAVY DUTY STEEL POST, CAPACITY = 55 KN
- P12 – ADJUSTABLE HSS, CAPACITY 100 KN
- HSS 73 OD – HSS 73 O.D. X 4.8 + 12mm PLATE TOP & BOTT.
- HSS 89 OD – HSS 89 O.D. X 4.8 + 12mm PLATE TOP & BOTT.
- HSS 76 – HSS 76.2 X 76.2 X 4.8 + 12mm PLATE TOP & BOTT.
- HSS 89 – HSS 89 X 89 X 4.8 + 12mm PLATE TOP & BOTT.
- HSS 102 – HSS 102 X 102 X 4.8 + 12mm PLATE TOP & BOTT.

FOOTINGS

ALL CONC. FOOTINGS DESIGNED FOR AN ALLOWABLE SOIL CAP.= 100kpa

No	Revision	Date	By	Proj.
9	REVISED LOW WALL DIMENSION	OCT 28/16	KO	
8	REVISED W.I.C. DIMENSIONS	MAR 08/16	KO	
7	ROTATED WARM AIR IN W.I.C.	FEB 17/16	KO	
6	LAUNDRY ROOM WALL FURRED	JAN 29/16	MC	
5	ROOMS RELABELLED	NOV 23/15	MC	
4	ISSUED FOR CONSTRUCTION	AUG 17/15	MC	
3	COORDINATED & ISSUED FOR BUILDING PERMIT	6JULY2015	MGC	
2	ISSUED PRELIMINARY WORKING TO CLIENT FOR 2ND REVIEW	14MAY2015	MGC	
1	ISSUED PRELIMINARY WORKING TO CLIENT FOR REVIEW	07MAY2015	MGC	

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STRCT'L FRM'G LEGEND: SEE DWG A3 ELEVATION LEGEND: SEE DWG A4 FLOOR PLAN LEGEND:SEE DWG SP-1 DR/WIN LEGEND:SEE DWG SP-7* FOR ADDT'L INFORMATION, ABBREV'S, SYMBOLS,SEE SPECS. SP-*,SD-*,W-*

Title: SECOND FLOOR PLAN ELEV.: 'CA'

Acad File W:\15\15-18 MINTO OTTAWA\MODELS\6.2m PRODUCT\WORKING DRAWINGS\20-05.dwg

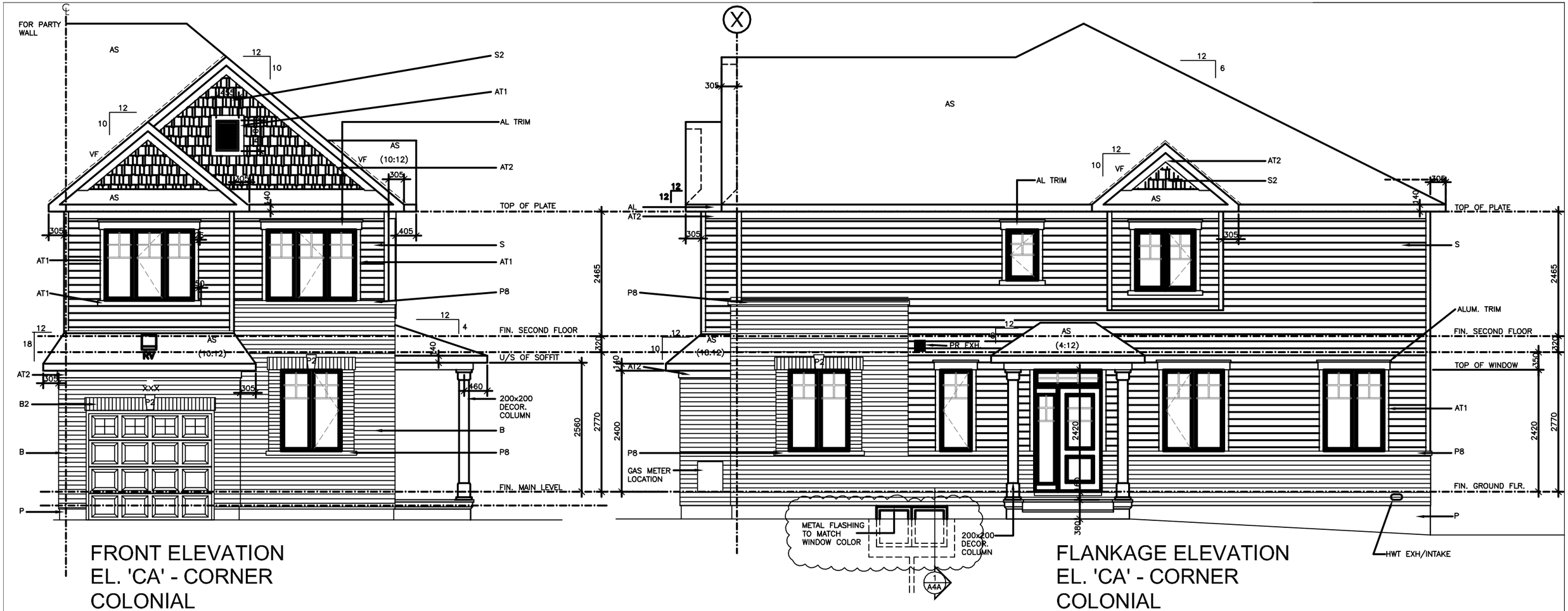
Scale 1:75

2015-20ft Excutive Townhomes

THE VENICE-2015-CA
THE VENICE-2015-PA

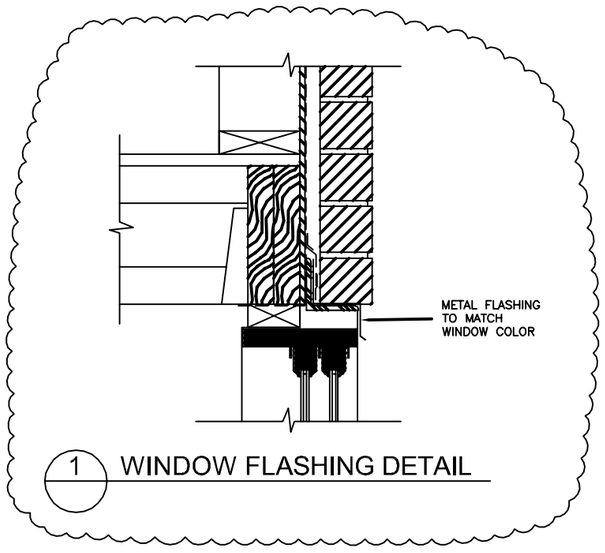
(2015 STANDARD DRAWING)

dwg A-3a



FRONT ELEVATION
EL. 'CA' - CORNER
COLONIAL

FLANKAGE ELEVATION
EL. 'CA' - CORNER
COLONIAL



1 WINDOW FLASHING DETAIL

** ALL FASCIA BOARD 140mm **

EXTERIOR FINISHES

AC	–	ACRYLIC FINISH
ACT1	–	ACRYLIC FINISH TRIM (90mm)
ACT2	–	ACRYLIC FINISH TRIM (140mm)
AL	–	ALUMINUM
AT1	–	ALUMINUM TRIM (90mm)
AT2	–	ALUMINUM TRIM (140mm)
AS	–	ASPHALT SHINGLES
B	–	BRICK VENEER (nominal size = 260x80)
B1	–	BRICK SOLDIER COURSE
B2	–	BRICK SOLDIER COURSE (20mm projection)
B3	–	BRICK STRETCHER COURSE
B4	–	BRICK STACK BOND
B5	–	BRICK SILL ROWLOCK (SLOPED)
B6	–	BRICK ROWLOCK
B7	–	BRICK CORBELLING
B8	–	BRICK COINING (20mm projection)
B9	–	BRICK HERRINGBONE
+20	–	BRICK PROJECTING 20mm
–20	–	BRICK RECESSED 20mm
CB	–	CEMENT BOARD PANEL
EB	–	EXTRA BRICK
F	–	FLASHING
HP	–	HARDBOARD PANEL TEXTURED
P	–	PARGING
PCS	–	POURED CONCRETE SILL (ONE PIECE)
PC	–	PRECAST CONC. BLOCK SHAPE (SEE DWG)
PCC	–	PRECAST CAP – 90mm
P1	–	PRECAST CONC. SILL 60mm HIGH
P2	–	PRECAST CONC. KEYSTONE
P3	–	PRECAST CONC. BLOCK 260mm SQ. PROJECTION TO MATCH SOLDIER COURSE
P4	–	PRECAST CONC. BLOCK 260mm HIGH PROJECTION TO MATCH SOLDIER COURSE
P5	–	****
P6	–	PRECAST CONC. BLOCK 150mm HIGH
P8	–	PRECAST CONC. BLOCK 78mm HIGH
P8	–	PRECAST CONC. SILL 78mm HIGH
PTW	–	PRESSURE TREATED WOOD
RV	–	ROOF VENT
S	–	SIDING HORIZONTAL
SA	–	SIDING (ALUMINUM)
SV	–	SIDING VERTICAL (VINYL)
S1	–	SIDING HALF ROUND PANELS
S2	–	SIDING SHAKE
S3	–	SIDING STAGGERED SHAKE
SH1	–	SHUTTERS (305mm)
SH2	–	SHUTTERS (380 mm)
ST	–	STONE VENEER
ST1	–	STONE VENEER STACK BOND 20mm PROJECTION
ST2	–	STONE VENEER SOLDIER COURSE 20mm PROJECTION
ST3	–	LIMESTONE STARTER
U.P.O	–	UNPROTECTED OPENING (SEE OBC 9.10.14)
VF	–	VALLEY FLASHING
WT1	–	WOOD TRIM (100mm)
WT2	–	WOOD TRIM (150mm)
WT3	–	WOOD TRIM (200mm)
WT4	–	WOOD TRIM (250mm – 20mm THICK)
WT5	–	WOOD TRIM (250mm – 30mm THICK)
XXX	–	ADDRESS LOCATION

FOR PRECAST ANGLESTONE SEE SPECS.

No	Revision	Date	By	Proj.
7	BSMT WINDOW DETAIL ADDED	NOV 04/16	MC	
6	ADDRESS LOCATION ADDED	JUN 02/16	MC	
5	GARAGE DOOR REVISED	SEP 18/15	MC	
4	ISSUED FOR CONSTRUCTION	AUG 17/15	MC	
3	COORDINATED & ISSUED FOR BUILDING PERMIT	6JULY2015	MGC	
2	ISSUED PRELIMINARY WORKING TO CLIENT FOR 2ND REVIEW	14MAY2015	MGC	
1	ISSUED PRELIMINARY WORKING TO CLIENT FOR REVIEW	07MAY2015	MGC	

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STRCT'L FRM'G LEGEND: SEE DWG A3 ELEVATION LEGEND: SEE DWG A4 FLOOR PLAN LEGEND:SEE DWG SP-1 DR/WIN LEGEND:SEE DWG SP-7* FOR ADDT'L INFORMATION, ABBREV'S, SYMBOLS,SEE SPECS. SP-*,SD-*,W-*

Title: FRONT & SIDE ELEVATION ELEV.: 'CA'

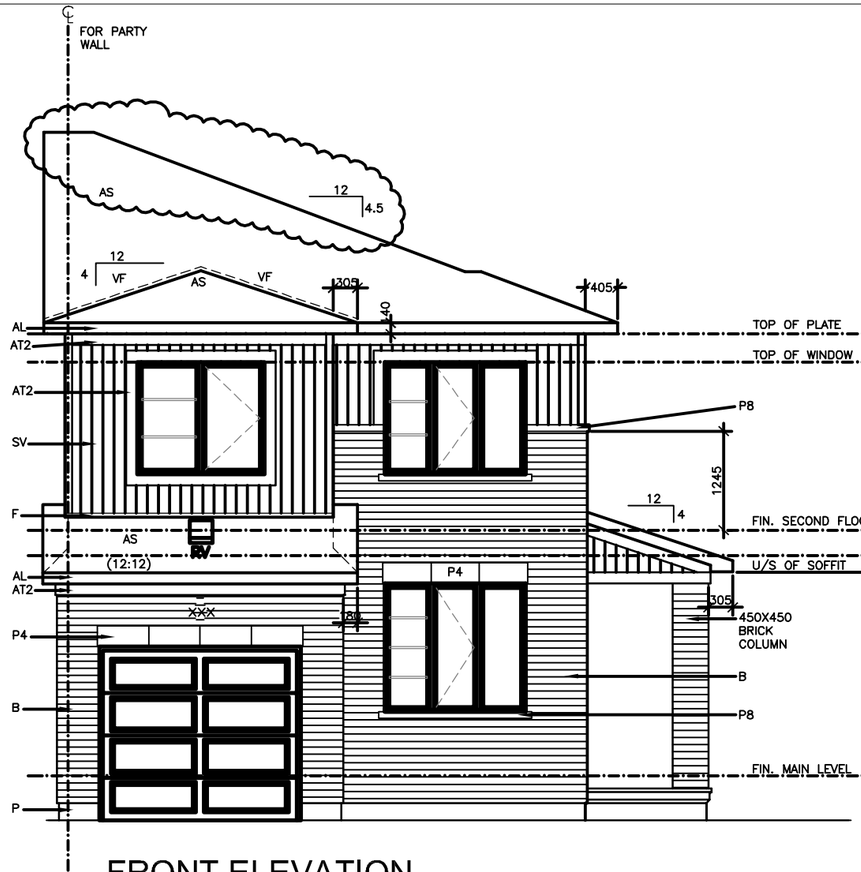
Acad File W:\15\15-18 MINTO OTTAWA\MODELS\6.2m PRODUCT\WORKING DRAWINGS\20-05.dwg

Scale 1:75

2015-36ft Singles

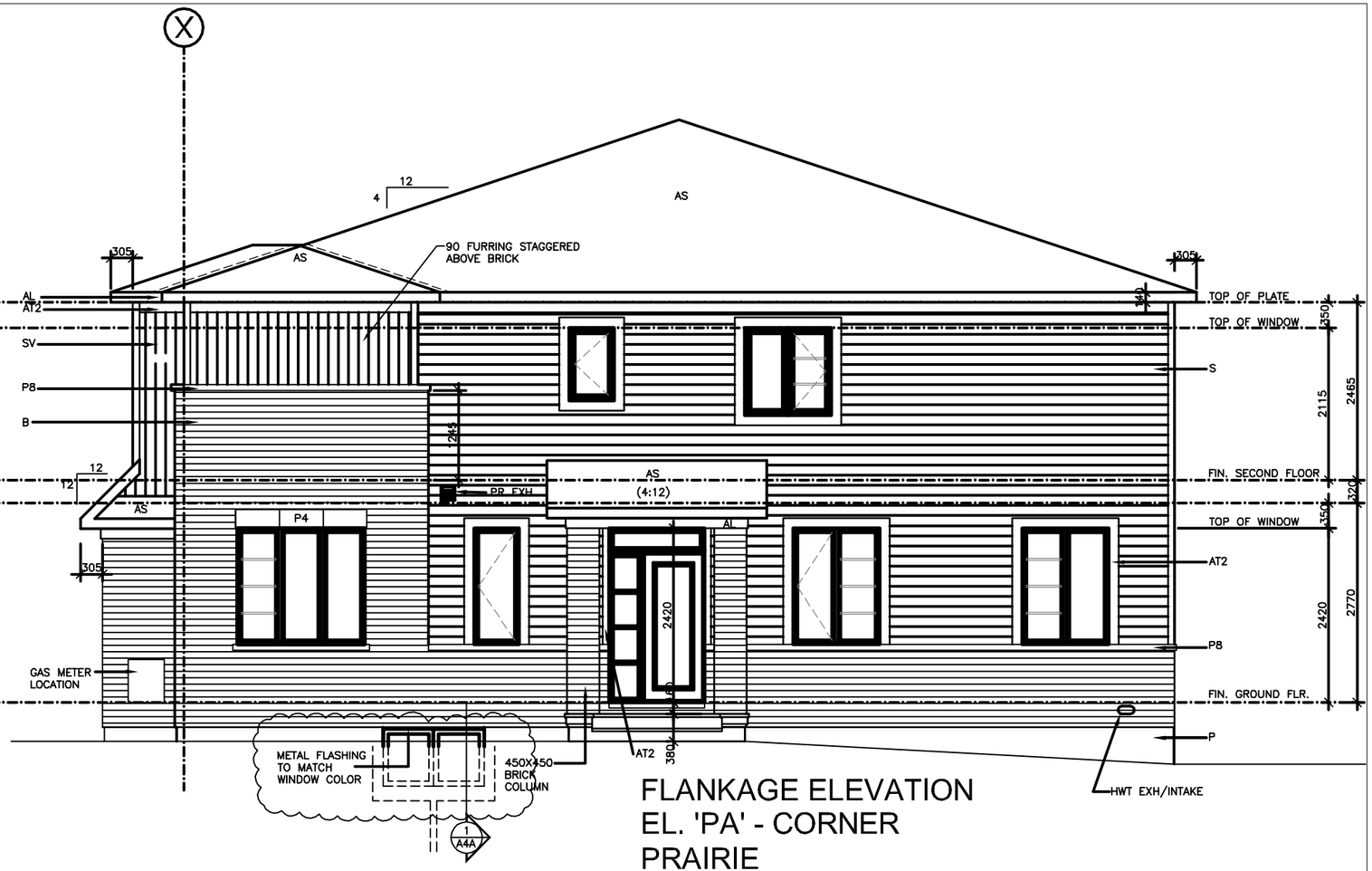
THE VENICE-2015-CA
THE VENICE-2015-PA

(2015 STANDARD DRAWING)



FRONT ELEVATION
EL. 'PA' - CORNER
PRAIRIE

** USE 19mm SHEATHING BEHIND VERTICLE SIDING **



FLANKAGE ELEVATION
EL. 'PA' - CORNER
PRAIRIE

** ALL FASCIA BOARD 140mm **

EXTERIOR FINISHES

AC	–	ACRYLIC FINISH	
ACT1	–	ACRYLIC FINISH TRIM (90mm)	
ACT2	–	ACRYLIC FINISH TRIM (140mm)	
AL	–	ALUMINUM	
AT1	–	ALUMINUM TRIM (90mm)	
AT2	–	ALUMINUM TRIM (140mm)	
AS	–	ASPHALT SHINGLES	
B	–	BRICK VENEER (nominal size = 260x80)	
B1	–	BRICK SOLDIER COURSE	
B2	–	BRICK SOLDIER COURSE (20mm projection)	
B3	–	BRICK STRETCHER COURSE	
B4	–	BRICK STACK BOND	
B5	–	BRICK SILL ROWLOCK (SLOPED)	
B6	–	BRICK ROWLOCK	
B7	–	BRICK CORBELLING	
B8	–	BRICK COINING (20mm projection)	
B9	–	BRICK HERRINGBONE	
+20	–	BRICK PROJECTING 20mm	
–20	–	BRICK RECESSED 20mm	
CB	–	CEMENT BOARD PANEL	
EB	–	EXTRA BRICK	
F	–	FLASHING	
HP	–	HARDBOARD PANEL TEXTURED	
P	–	PARGING	
PCS	–	POURED CONCRETE SILL (ONE PIECE)	
PC	–	PRECAST CONC. BLOCK SHAPE (SEE DWG)	
PCC	–	PRECAST CAP – 90mm	
P1	–	PRECAST CONC. SILL 60mm HIGH	
P2	–	PRECAST CONC. KEYSTONE	
P3	–	PRECAST CONC. BLOCK 260mm SQ. PROJECTION TO MATCH SOLDIER COURSE	
P4	–	PRECAST CONC. BLOCK 260mm HIGH PROJECTION TO MATCH SOLDIER COURSE	
P5	–	****	
P6	–	PRECAST CONC. BLOCK 150mm HIGH	
P8	–	PRECAST CONC. BLOCK 78mm HIGH	
P8	–	PRECAST CONC. SILL 78mm HIGH	
PTW	–	PRESSURE TREATED WOOD	
RV	–	ROOF VENT	
S	–	SIDING HORIZONTAL	
SA	–	SIDING (ALUMINUM)	
SV	–	SIDING VERTICAL (VINYL)	
S1	–	SIDING HALF ROUND PANELS	
S2	–	SIDING SHAKE	
S3	–	SIDING STAGGERED SHAKE	
SH1	–	SHUTTERS (305mm)	
SH2	–	SHUTTERS (380 mm)	
ST	–	STONE VENEER	
ST1	–	STONE VENEER STACK BOND 20mm PROJECTION	
ST2	–	STONE VENEER SOLDIER COURSE 20mm PROJECTION	
ST3	–	LIMESTONE STARTER	
U.P.O	–	UNPROTECTED OPENING (SEE OBC 9.10.14)	
VF	–	VALLEY FLASHING	
WT1	–	WOOD TRIM (100mm)	
WT2	–	WOOD TRIM (150mm)	
WT3	–	WOOD TRIM (200mm)	
WT4	–	WOOD TRIM (250mm – 20mm THICK)	
WT5	–	WOOD TRIM (250mm – 30mm THICK)	
XXX	–	ADDRESS LOCATION	

FOR PRECAST ANGLESTONE SEE SPECS.

No	Revision	Date	By	Proj.
7	BSMT WINDOW DETAIL ADDED	NOV 04/16	MC	
6	ADDRESS LOCATION ADDED	JUN 02/16	MC	
5	ROOF SLOPE REVISED	AUG 25/15	MC	
4	ISSUED FOR CONSTRUCTION	AUG 17/15	MC	
3	COORDINATED & ISSUED FOR BUILDING PERMIT	6JULY2015	MGC	
2	ISSUED PRELIMINARY WORKING TO CLIENT FOR 2ND REVIEW	14MAY2015	MGC	
1	ISSUED PRELIMINARY WORKING TO CLIENT FOR REVIEW	07MAY2015	MGC	

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Title: FRONT & SIDE ELEVATION
ELEV.: 'PA'

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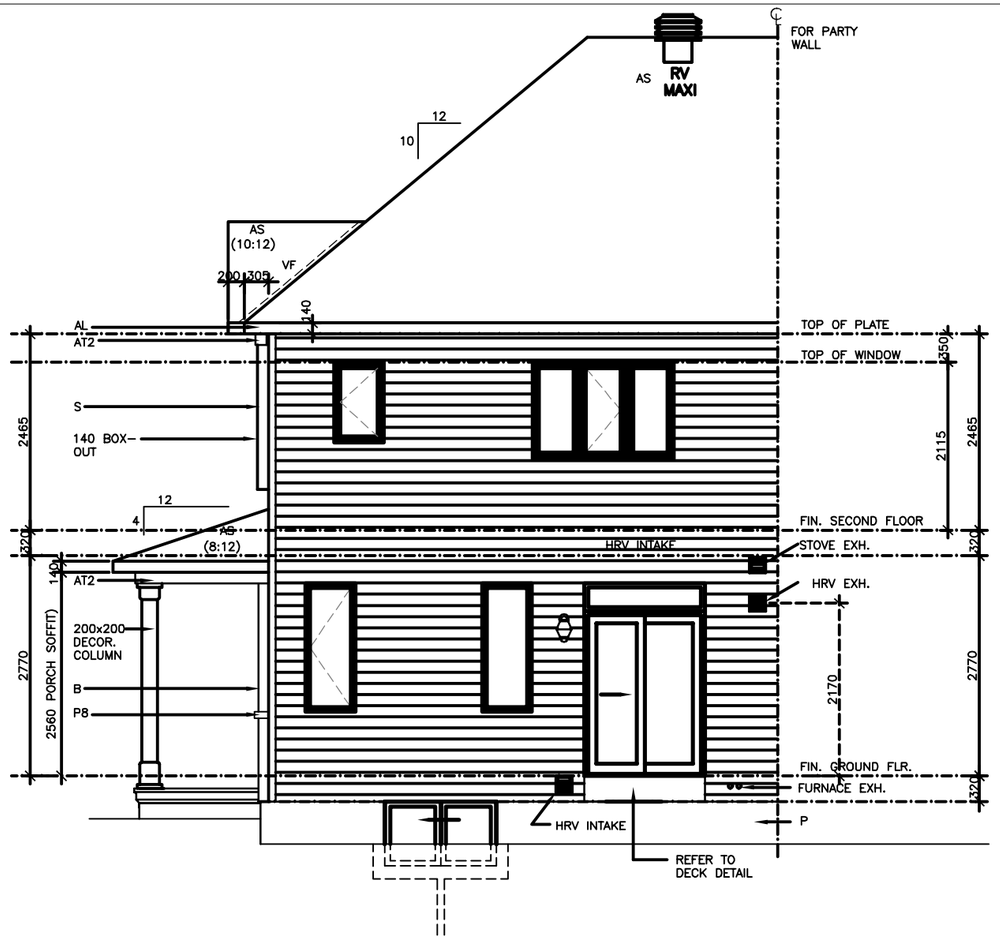
Scale 1:75

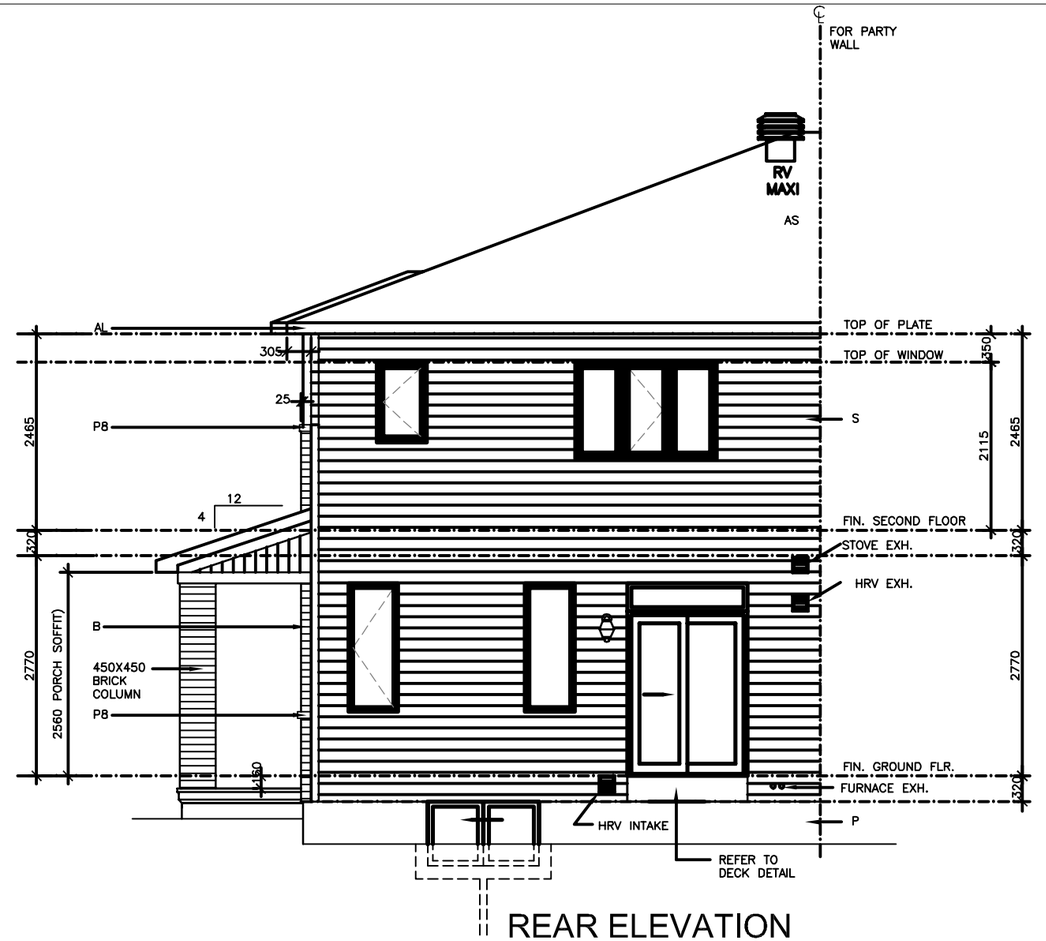
2015-36ft Singles

THE VENICE-2015-CA
THE VENICE-2015-PA

(2015 STANDARD DRAWING)



REAR ELEVATION
EL. 'CA' - CORNER
COLONIAL



REAR ELEVATION
EL. 'PA' - CORNER
PRAIRIE

** ALL FASCIA BOARD 140mm **

EXTERIOR FINISHES

AC	–	ACRYLIC FINISH	
ACT1	–	ACRYLIC FINISH TRIM (90mm)	
ACT2	–	ACRYLIC FINISH TRIM (140mm)	
AL	–	ALUMINUM	
AT1	–	ALUMINUM TRIM (90mm)	
AT2	–	ALUMINUM TRIM (140mm)	
AS	–	ASPHALT SHINGLES	
B	–	BRICK VENEER (nominal size = 260x80)	
B1	–	BRICK SOLDIER COURSE	
B2	–	BRICK SOLDIER COURSE (20mm projection)	
B3	–	BRICK STRETCHER COURSE	
B4	–	BRICK STACK BOND	
B5	–	BRICK SILL ROWLOCK (SLOPED)	
B6	–	BRICK ROWLOCK	
B7	–	BRICK CORBELLING	
B8	–	BRICK COINING (20mm projection)	
B9	–	BRICK HERRINGBONE	
+20	–	BRICK PROJECTING 20mm	
-20	–	BRICK RECESSED 20mm	
CB	–	CEMENT BOARD PANEL	
EB	–	EXTRA BRICK	
F	–	FLASHING	
HP	–	HARDBOARD PANEL TEXTURED	
P	–	PARGING	
PCS	–	POURED CONCRETE SILL (ONE PIECE)	
PC	–	PRECAST CONC. BLOCK SHAPE (SEE DWG)	
PCC	–	PRECAST CAP – 90mm	
P1	–	PRECAST CONC. SILL 60mm HIGH	
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XXX	–	ADDRESS LOCATION	

FOR PRECAST ANGLESTONE SEE SPECS.

No	Revision	Date	By	Proj.
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Title: REAR ELEVATION ELEV.: 'CA' & 'PA'

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Scale 1:75

2015-36ft Singles

THE VENICE-2015-CA
THE VENICE-2015-PA

(2015 STANDARD DRAWING)

Appendix E

Building Component Calculations

-Room Calculations

-Table 9: Building Component Template (Venice)

ROOM BY ROOM CALCULATIONS - VENICE

Note: Ceiling Height 9' 1" (first floor) and 8' 1" (second floor)

Kitchen / Breakfast / Living / Dining Room

Floor Area (sq.m) 35.6

	Width	Height	Area	
Window 1 (side)	1.2	1.6	1.9	
Window 2 (side)	1.2	1.6	1.9	
			3.8	Total Window Area
			10.79%	% of Floor Area

	Width	Height	Area	
Exterior Door	0	0	0	
			0	Total Door Area
			0.00%	% of Floor Area

	Width	Height	Area	Area minus windows/doors	
Exterior Wall (side)	5.7	2.8	15.79	11.95	
				11.95	Total Exterior Wall Area
				33.56%	% of Floor Area

Den

Floor Area (sq.m) 9.61

	Width	Height	Area	
Window 1	1.2	1.6	1.938	
			1.938	Total Window Area
			20.17%	% of Floor Area

	Width	Height	Area	
Exterior Door	0.0	0.0	0	
			0	Total Door Area
			0.00%	% of Floor Area

	Width	Height	Area	Area minus windows/doors	
Exterior Wall (side)	3.3	2.8	9.09	7.15	
				7.15	Total Exterior Wall Area
				74.38%	% of Floor Area

Bedroom 4

Floor Area (sq.m) 7.6

	Width	Height	Area	
Window 1	1.2	1.2	1.44	
			1.44	Total Window Area
			18.95%	% of Floor Area

	Width	Height	Area	
Exterior Door	0	0	0	
			0	Total Door Area
			0.00%	% of Floor Area

	Width	Height	Area	Area minus windows/doors	
Exterior Wall (side)	2.8	2.5	7.00	5.56	
				5.56	Total Exterior Wall Area
				73.16%	% of Floor Area

Bedroom 2

Floor Area (sq.m) 12

	Width	Height	Area	
Window 1	1.8	1.4	2.52	
			2.52	Total Window Area
			21.00%	% of Floor Area

	Width	Height	Area	
Exterior Door	0	0	0	
			0	Total Door Area
			0.00%	% of Floor Area

	Width	Height	Area	Area minus windows/doors	
Exterior Wall (front)	3.4	2.5	8.50	5.98	
Exterior Wall (side)	0.7	2.5	1.75	1.75	
				7.73	Total Exterior Wall Area
				64.42%	% of Floor Area

Bedroom 3

Floor Area (sq.m) 11.9

	Width	Height	Area	
Window 1 (front)	1.8	1.4	2.52	
			2.52	Total Window Area
			21.18%	% of Floor Area

	Width	Height	Area	
Exterior Door	0	0	0	
			0	Total Door Area
			0.00%	% of Floor Area

	Width	Height	Area	Area minus windows/doors	
Exterior Wall (front)	3.0	2.5	7.50	4.98	
Exterior Wall (side)	4.1	2.5	10.25	10.25	
				15.23	Total Exterior Wall Area
				127.98%	% of Floor Area

TABLE 9: BUILDING COMPONENT TEMPLATE

Architect:
Location: Sandhill Road Subdivision
Building Type: Executive Townhouse (Venice)
Block Number:
Front Façade Noise Level (dBA) 62

JLR No: 24566-002
Prepared by: Thomas Blais
Checked by: Lee Jablonski

ROOM	# OF COMPONENTS	ROOM FLOOR AREA (M^2)	WINDOW AREA (M^2)	W/RFA %	DOOR AREA (M^2)	D/RFA %	EXT. WALL AREA (M^2)	EW/RFA %	REQUIRED AIF*	WINDOW		EXT. DOOR		EXT. WALL		CEILING/ROOF	
										Type	AIF**	Type	AIF***	Type	AIF****	Type	AIF*****
Master Bedroom	2	17.3	2.2	12%	-	-	8.3	48%	27	2(6)2	30			EW1	34		
Bedroom 2	3	12.0	2.5	21%	-	-	7.7	64%	29	2(13)2	29	-	-	EW1	33	-	-
Kitchen / Breakfast / Living / Dining Room	2	35.6	3.8	11%	-	-	11.9	34%	22	2(6)2	31	-	-	EW1	36	-	-
Bedroom 3	3	11.9	2.5	21%	-	-	15.2	128%	29	2(13)2	29	-	-	EW1	30	-	-
Bedroom 4	2	7.6	1.4	19%	-	-	5.6	73%	27	2(6)2	28	-	-	EW1	32	-	-
Den	4	9.6	1.9	20%	-	-	7.1	74%	25	2(6)2	28	-	-	EW1	32	-	-

** Taken from Table 10.5: AIF required for Road and Rail Traffic Noise Cases*
*** Taken from Table 10.6: Acoustic Insulation Factor for various types of windows (example: 2(100)2 denotes 2 mm glass (100 mm space) 2 mm glass).*
**** Taken from Table 10.9: Acoustic Insulation Factor for various types of exterior doors*
***** Taken from Table 10.7: Acoustic Insulation Factor for various types of exterior walls*
****** Taken from Table 10.8: Acoustic Insulation Factor for various ceiling-roof combinations (only for aircraft noise)*

Exterior Door Details
All prime doors should be fully weatherstripped. Except as noted specifically below, doors shall not have inset glazing:
D1 denotes 44 mm hollow-core wood door (up to 20% of area glazed).
D2 denotes 44 mm glass-fibre reinforced plastic door with foam or glass-fibre insulated core (up to 20% area glazed).
D3 denotes 35 mm in solid slab wood door.
D4 denotes 44 mm steel door with foam or glass-fibre insulated core.
D5 denotes 44 mm solid slab door.
sd denotes storm door of wood or aluminum with openable glazed sections.

Exterior Wall Details
The common structure of walls EW1 to EW5 is composed of 12.7 mm gypsum board, vapour barrier, and 38x89 mm studs with 50 mm (or thicker) mineral wool or glass fibre batts in the inter-stud cavities.
EW1 denotes the above plus sheathing, plus wood siding or metal siding and fibre backer board.
EW2 denotes the above plus rigid insulation (25-50mm), and wood siding or metal siding and fibre backer board.
EW2 also denotes exterior wall described in EW1 with the addition of rigid insulation (25-50mm) between the sheathing and the external finish.
EW3 denotes simulated mansard with structure as the above plus sheathing, 38 x 89 mm framing, sheathing and asphalt roofing material.
EW4 denotes the above plus sheathing and 20 mm stucco.
EW5 denotes the above plus sheathing, 25 mm air space, 100 mm brick veneer.
EW6 denotes exterior wall composed of 12.7 mm gypsum board, rigid insulation (25-50mm), 100 mm back-up block, 100 mm face brick.
EW6 also denotes an exterior wall conforming to rainscreen design principles and composed of same gypsum board and rigid insulation with 100 mm concrete block, 25 mm air space, and 100 mm brick veneer.
EW7 denotes exterior wall composed of 12.7 mm gypsum board, rigid insulation (25-50mm), 140 mm back-up block, 100 mm face brick.
EW8 denotes exterior wall composed of 12.7 mm gypsum board, rigid insulation (25-50mm), 200 mm concrete.
R denotes the mounting of the interior gypsum board on resilient clips

Appendix F

Canada Mortgage and Housing (CMHC) Table A2 and A3

-Approximate Conversion from STC to AIF for Windows and Doors

-Approximate Conversion from STC to AIF for Exterior Walls and Ceiling-Roof System

Table A1: Standard source spectrum for calculating Acoustic Insulation Factor (AIF)

Frequency (Hz)	Source Sound Pressure Level	A-weighted Source Sound Pressure Level
100	66.1	47
125	69.1	53
160	71.4	58
200	71.9	61
250	71.6	63
315	71.6	65
400	71.8	67
500	71.2	68
630	70.9	69
800	70.8	70
1000	70.0	70
1250	69.4	70
1600	69.0	70
2000	68.8	70
2500	68.7	70
3150	67.8	69
4000	67.0	68
5000	65.5	66

Note: Values in the second and third columns of this table are $\frac{1}{3}$-octave band sound pressure levels expressed in dB.

Table A2: Approximate conversion from STC to AIF for windows and doors

Window (or door) Area Expressed as Percentage of Room Floor Area	Acoustic Insulation Factor (AIF)
80.0	STC-5
63.0	STC-4
50.0	STC-3
40.0	STC-2
32.0	STC-1
25.0	STC
20.0	STC+1
16.0	STC+2
12.5	STC+3
10.0	STC+4
8.0	STC+5
6.3	STC+6
5.0	STC+7
4.0	STC+8

Note: For area percentages not listed in the table, use the nearest listed value.

Examples: For a window whose area = 20% of the room floor area and STC = 32, the AIF is 32 + 1 = 33.
For a window whose area = 60% of the room floor area and STC = 29, the AIF is 29 - 4 = 25.

Table A3: Approximate conversion from STC to AIF for exterior walls and ceiling-roof systems.

Exterior Wall Area Expressed as Percentage of Room Floor Area	Acoustic Insulation Factor (AIF)
200.0	STC-10
160.0	STC-9
125.0	STC-8
100.0	STC-7
80.0	STC-6
63.0	STC-5
50.0	STC-4
40.0	STC-3
32.0	STC-2
25.0	STC-1
20.0	STC
16.0	STC+1
12.5	STC+2
10.0	STC+3
8.0	STC+4

Note: For area percentages not listed in the table, use the nearest listed value.

Example: For a wall whose area = 120% of room floor area and STC = 48, the AIF is 48 - 8 = 40.

Note: For ceiling-roof systems, AIF = STC - 7.

Figure A1: Worksheet for Calculating AIF from Transmission Loss Data

Frequency (Hz)	A-weighted Source Sound Pressure Level (dB)	Sound Transmission Loss (dB)	A-weighted Indoor Sound Pressure Level (dB)	Energy Equivalent of Indoor SPL
	(A)	(B)	(C = A-B)	(D = $10^{C/10}$)
100	47	24	23	200
125	53	26	27	501
160	58	19	39	7 943
200	61	21	40	10 000
250	63	20	43	19 953
315	65	20	45	31 623
400	67	25	42	15 849
500	68	30	38	6 310
630	69	33	36	3 981
800	70	37	33	1 995
1000	70	39	31	1 259
1250	70	41	29	794
1600	70	43	27	501
2000	70	44	26	398
2500	70	45	25	316
3150	69	43	26	398
4000	68	37	31	1 259
5000	66	35	31	1 259
			Sum of values in column D:	104 539=E

Calculated indoor A-weighted sound level: $10 \log_{10}$ (E) = 50.2 = F

AIF (component area = 80% of floor area): (77 - F) = 26.8 = G

Component Area as a Percentage of Room Floor Area	Acoustic Insulation Factor (AIF)
6.3	(G + 11) = 38
8.0	(G + 10) = 37
10.0	(G + 9) = 36
12.5	(G + 8) = 35
16.0	(G + 7) = 34
20.0	(G + 6) = 33
25.0	(G + 5) = 32
32.0	(G + 4) = 31
40.0	(G + 3) = 30
50.0	(G + 2) = 29
63.0	(G + 1) = 28
80.0	(G) = 27
100.0	(G - 1) = 26
125.0	(G - 2) = 25
160.0	(G - 3) = 24

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kingston@jlrichards.ca

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Sudbury ON Canada
P3E 6G2
Tel: 705 522-8174

sudbury@jlrichards.ca

Timmins

201-150 Algonquin Blvd. East
Timmins ON Canada
P4N 1A7
Tel: 705 360-1899
timmins@jlrichards.ca

North Bay

200-175 Progress Road
North Bay ON Canada
P1A 0B8
Tel: 705 495-7597

northbay@jlrichards.ca

Hawkesbury

326 Bertha Street
Hawkesbury ON Canada
K6A 2A8
Tel: 613 632-0287

hawkesbury@jlrichards.ca

Guelph

107-450 Speedvale Ave. West Guelph ON Canada
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