MINTO COMMUNITIES INC.
3311 GREENBANK ROAD
NOISE CONTROL FEASIBILITY STUDY

June 2017
Revised October 2017

Prepared for:

MINTO COMMUNITIES INC.
180 Kent Street, Suite 200
Ottawa, Ontario
K1P 0B6

Prepared by:

J.L. RICHARDS & ASSOCIATES LIMITED
864 Lady Ellen Place
Ottawa, Ontario
K1Z 5M2

Tel: 613-728-3571
Fax: 613-728-6012

JLR No.: 27519-0001

J.L.Richards
ENGINEERS · ARCHITECTS · PLANNERS

Table of Contents

List of Tables

List of Figures

List of Appendices

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 located at 3311 Greenbank Road, situated in Barrhaven, 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 existing Greenbank Road, Jockvale Road, Longfields Drive and Street No. 1. 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

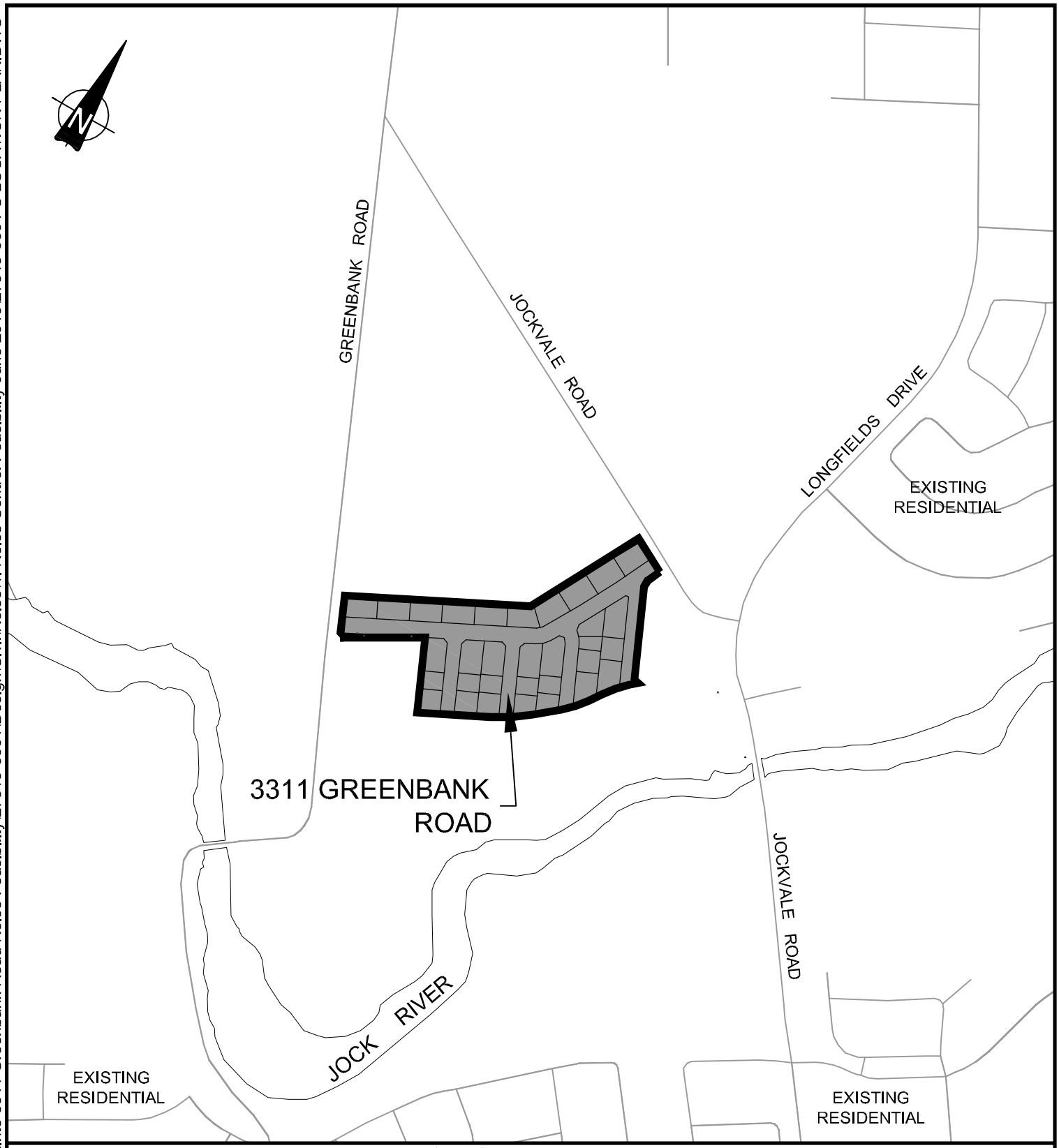
Minto's Development is located within the City of Ottawa's Official Plan (OP) boundary, and consists of a +/-4.7 ha parcel bounded by an existing high school to the north, Greenbank Road to the west, Jockvale Road and Longfields Drive to the east, and vacant residential land to the south, as depicted on the Location Plan in Figure 1.

3.0 TRANSPORTATION NOISE SOURCE

The transportation noise sources include existing Greenbank Road, Jockvale Road, Longfields Drive, and Street No. 1. Drawing N1 shows the location of the existing and proposed roadways in relation to the proposed development. It should be noted that Greenbank Road is proposed to be realigned; however, at the time this feasibility study was prepared the alignment of Greenbank Road was still conceptual as shown on Drawing N3.

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.
3311 GREENBANK ROAD
OTTAWA, ONTARIO

DRAWING:

LOCATION PLAN

J.L.Richards
ENGINEERS · ARCHITECTS · PLANNERS
www.jlrichards.ca

DESIGN: TB	JLR NO: 27519–0001
DRAWN: TB	DRAWING NO.: FIGURE 1
CHECKED: LJ	

File Location: R:\27000\27519 - Minto 3311 Greenbank Road Noise Feasibility\27519-0001\Design\Civil\Noise\1. Noise Control Feasibility June 2016\27519-0001 C LOCATION PLAN.DWG

PLOT DATE: June 8, 2017 11:31:20 AM

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

	Jockvale Road/Longfields Drive	Existing Greenbank Road	Jockvale Road	Street No. 1
Total Traffic Volume (AADT)	35,000	15,000	8,000	8,000
Day/Night Split (%)	92/8	92/8	92/8	92/8
Medium Trucks (%)	7	7	7	7
Heavy Trucks (%)	5	5	5	5
Posted Speed (km/hr.)	60	60	60	50
Road Gradient (%)	1	1	1	1
Road Classification	4-Lane Urban Arterial Divided (4-UAD)	2-Lane Urban Arterial (2-UAU)	2-Lane Urban Collector (2-UCU)	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. The following procedure was used to establish the contours:

1. 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 'C'. Drawing N1 identifies the receiver locations as contours for the calculations of the roadway freefield noise levels.

2. Additional calculations were conducted to generate freefield noise levels where two roadways intersect to establish the distances along a 45 degree angle from the centre of the intersection. For example, receiver locations were identified along the bisecting angle between existing Greenbank Road and Street No. 1. These receiver locations are identified on Drawing N1.

3. These calculations were then compiled to prepare freefield noise level contours for each of existing Greenbank Road, Jockvale/Longfields Drive, Jockvale Drive and Street No. 1. Drawing N1 presents these contours. For the purpose of this study, only the daytime freefield noise levels are presented. Computer printouts are included in Appendix 'D' for each of the receivers presented on Drawing N1.

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

Roads	Contour (dBA)	OLA (Freefield) Distance (m)
		Daytime
4-UAD (Jockvale/Longfields Drive) 60km/hr.	50	327.12
	55	163.48
	60	81.66
	65	40.81
	70	20.42
2-UAU (Greenbank Road) 60km/hr.	50	196.40
	55	98.12
	60	49.04
	65	24.50
	70	n/a

Roads	Contour (dBA)	OLA (Freefield) Distance (m)
		Daytime
2-UCU (Jockvale Drive) 60km/hr.	50	134.36
	55	67.22
	60	33.59
	65	16.78
	70	n/a
2-UCU (Street No. 1) 50km/hr.	50	109.00
	55	54.43
	60	27.20
	65	n/a
	70	n/a

3.4 Summary of Findings (Transportation)

The development of 3311 Greenbank Road will result in multiple blocks of residential units that will be impacted by roadway traffic noise.

Blocks 1, 2, 9, and 10 will support townhome blocks that will front onto Street No. 1 and in the case of Blocks 1 and 10, flank onto existing Greenbank Road or Jockvale Road. Freefield noise levels at the property line are estimated to be approximately 65 dBA as presented on Figure N1. A noise barrier is projected to be required to mitigate outdoor living area noise levels. As a minimum, a 2.2 m high noise barrier will be required along the rear lot line between the school property and Blocks 1, 2, 9, and 10. Resulting noise levels will be approximately 55 dBA for the outdoor living area. The location of the receiver and noise barrier are presented on Figure N2. It is recommended that details concerning the height of the noise barrier, mitigated noise levels and landscape treatments be confirmed in the Phase 2 Noise Control Detailed Study.

For units flanking Greenbank Road or Jockvale Road, Minto has limited options to mitigate outdoor noise levels without using a noise barrier. A setback buffer could be created to reduce or eliminate the noise barrier; however, at a minimum the blocks flanking the arterial roads would have to be eliminated from the Subdivision Plan. This is not considered a financially practical solution. Additionally, blocks that flank onto arterial roads could be developed as stacked townhouses but due to the limited lot depth this is not considered a feasible solution. The lot depth only supports a freehold townhome development. Due to these constraints, outdoor noise mitigation is limited to noise barriers.

This study provides a high level building component analysis (see Section 3.5 and Appendices 'H' and 'I'). It is recommended that details concerning building components, mitigated noise levels and landscape treatments be confirmed in the Phase 2 Noise Control Detailed Study and Detailed Building Components Study prepared for the subdivision development and building permits.

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 for Blocks 1-11, 17, 18, 23, 24, 29, 30, and surrounding blocks 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 Impact Study prepared to support the subdivision application.

Predicted mitigated noise levels were calculated based on 2.2 m and 2.5 m high noise barriers. For R1 (Blocks 1 and 2) a 2.2 m high noise barrier will not mitigate noise levels below the MOE and City's criteria. It is recommended that a 2.5 m high noise barrier be constructed for R1 (Blocks 1 and 2). For R2 (Blocks 9 and 10) a 2.2 m high noise barrier is predicted to mitigate noise levels below the MOE and City criteria. It is recommended that a 2.2 m high noise barrier be constructed for R2 (Blocks 9 and 10). At the time this study was completed a grading plan was not available. For the purposes of this analysis JLR assumed the barrier base to be 0.35 m above the noise source. Barrier heights and placement will need to be reviewed and confirmed during the detailed design phase.

The following Table 7 summarizes the predicted freefield daytime noise levels at selected locations and the potential mitigated noise levels resulting from the inclusion of the noise attenuation barriers, as shown on Drawing N2.

Computer printouts are included in Appendix 'E'.

Table 7: Potential Noise Attenuation Due to Barriers

Receiver Location	Daytime Noise Level (dBA) Freefield	Attenuation Leq 16 (dBA) with a 2.2m High Barrier	Attenuation Leq 16 (dBA) with a 2.5m High Barrier	Recommended Height of Barrier (m)
R1 – Block 1, 2	65.00	56.78	**55.69**	2.5
R2 – Blocks 9, 10	65.00	**54.78**	53.62	2.2

Note: At the time this study was completed, a grading plan was not available. For the purposes of this analysis JLR assumed the barrier base to be 0.35 m above the noise source. Barrier heights and placement will need to be reviewed and confirmed during the detailed design phase.

For the purposes of this report, the future realigned Greenbank Road is conservatively considered a 4-Lane Urban Divided Arterial with an AADT of 35,000 and a speed limit of 80 km/hr. Using the conceptual alignment from the Greenbank Road Class Environmental Assessment Amendment 2013 (as shown on Drawing N3) the impact on 3311 Greenbank Road is predicted to be less than the impact of the existing Greenbank Road. The following Table 8

summarizes the predicted freefield daytime noise levels for the realigned Greenbank Road, as shown on Drawing N3 with contours.

Table 8: Predicted Freefield Noise Levels and Distances from Realigned Greenbank

Roads	Contour (dBA)	OLA (Freefield) Distance (m)
		Daytime
4-UAD (Realigned Greenbank Road) 80km/hr.	55	240.92
	60	119.32
	65	59.05
	70	29.24

Computer printouts are included in Appendix 'F'.

3.5 Summary of Findings (Building Component)

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 MOE 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. For the purpose of this assessment, an exterior freefield noise level of 65 dBA at the plane of window was conservatively utilized to determine wall and window construction.

Minto provided floor plan and building elevation drawings for the 'Venice' unit. This unit is considered representative of the type to be constructed on either of Blocks 1, 2, 9, 10 and other surrounding blocks. Floor and elevation drawings are included in Appendix 'G'. Using Minto's drawings, JLR calculated the window areas, floor areas and wall areas for the each of the rooms within 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 the ENALUP were then utilized to identify either minimum window construction or wall construction requirements to mitigate the exterior noise levels. Table 9 in Appendix 'H' presents 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 9: Minimum Window and Wall Construction Types

Unit Type	Window Type Glass Thickness (Spacing) Glass Thickness (Spacing) Glass Thickness	Exterior Wall Type
Executive Townhome (i.e., Venice)	3(6)3(6)3 Triple 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 complete with siding, sheathing, insulation and 12.7 mm gypsum board 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.

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.

4.0 CONCLUSION AND RECOMMENDATIONS

Predicted noise levels are expected to exceed the City of Ottawa ENCG and MOE criteria for the proposed units adjacent to existing Greenbank Road, and Jockvale Road. To address these exceedances, 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. Noise barriers will still be required to protect outdoor living areas. However, the resulting noise levels are expected to be approximate to the criteria established by the City for each of the proposed residential blocks proposed. Preliminary calculations indicate that 2.5 m high noise barriers will satisfactorily mitigate noise levels for the outdoor living areas for each of the residential blocks.

It is recommended that the City of Ottawa accept the draft plan subdivision submitted and include a condition for the proponent to complete a Noise Impact Study as per the City of Ottawa ENCG 2016 for the 3311 Greenbank Road development.

It is further recommended that the following be addressed as part of a detailed Noise Impact Study:

- Noise barrier details, such as height and location are to be identified for each of Blocks 1, 2, 9, and 10.

- 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 the Acoustical Insulation Factor (AIF) method should 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 Inc. 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.
J.L. Richards & Associates Limited

Reviewed by:

LICENSED PROFESSIONAL ENGINEER
L.J.A. JABŁONSKI
24 Oct 2017
PROVINCE OF ONTARIO

Lee Jablonski, P.Eng.
J.L. Richards & Associates Limited

Appendix A

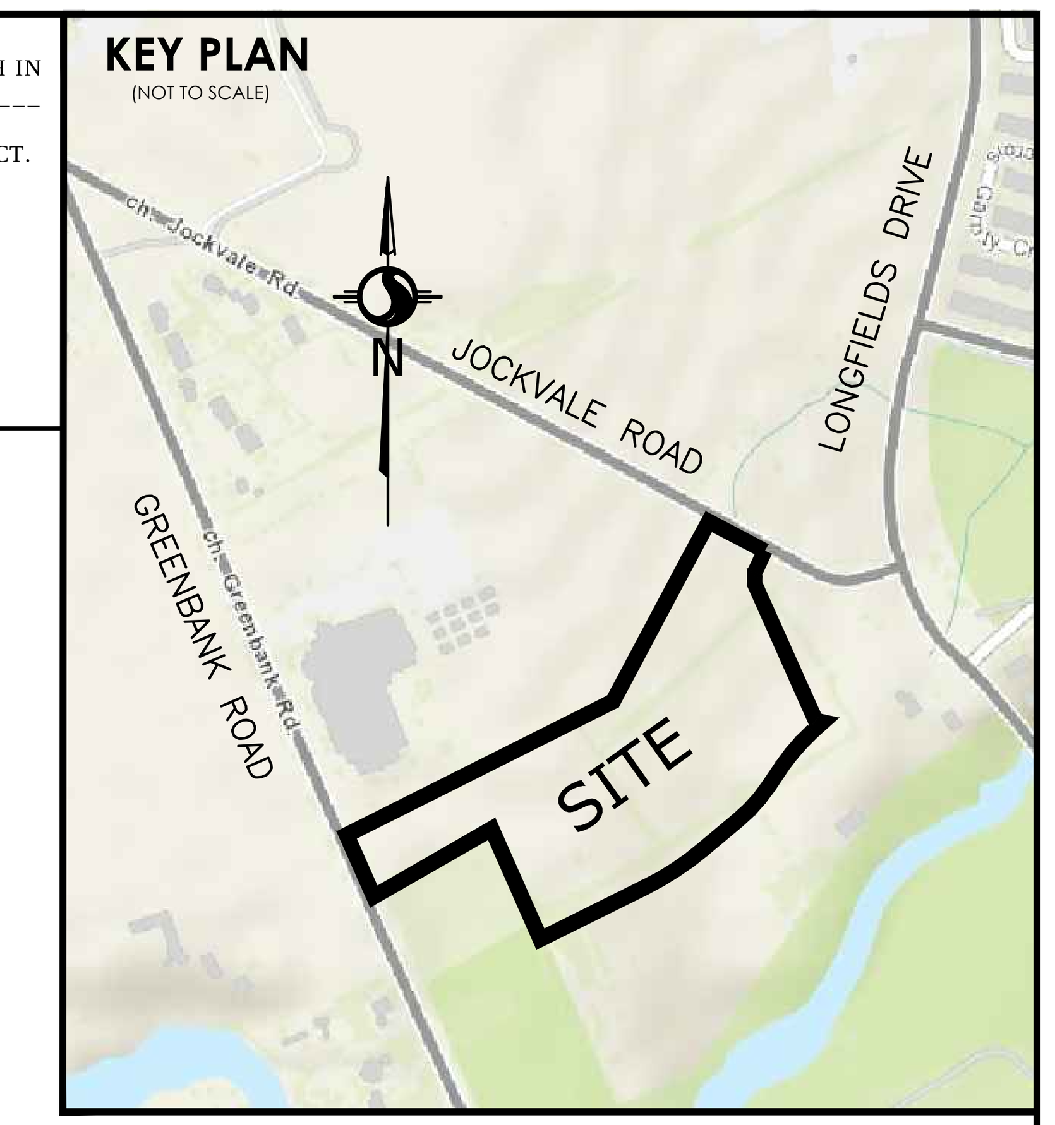
Draft Plan of Subdivision
Freefield Daytime Noise Contours – N1
Potential Noise Barriers – N2
Freefield Daytime Noise Contours
(Realigned Greenbank) – N3

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____________,2017.

DON HERWEYER, MCIP RPP
MANAGER, DEVELOPMENT REVIEW-SOUTH
PLANNING, INFRASTRUCTURE AND ECONOMIC DEVELOPMENT DEPARTMENT, CITY OF OTTAWA

KEY PLAN

(NOT TO SCALE)



DRAFT PLAN OF SUBDIVISION of

PART OF LOTS 12 AND 13 CONCESSION 2 (RIDEAU FRONT)

(GEOGRAPHIC TOWNSHIP OF NEPEAN)

CITY OF OTTAWA

Scale 1:1000

20 0 20 40 60 METRES

METRIC CONVERSION

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

SCHEDULE OF LAND USE			
BLOCK	USE	UNITS	AREA (Ha/ac)
1 TO 32	RESIDENTIAL	148	3.13/7.73
33	MISC.		0.04/0.09
34	RESERVE		0.004/0.01
STREETS	STREET		1.60/3.96
TOTAL		148	4.77/11.79

INFORMATION: REQUIRED UNDER SECTION 51 (17) OF THE PLANNING ACT R.S.O. 1990

a. SEE PLAN
b. SEE PLAN
c. SEE PLAN
d. SEE PROPOSED LAND USE SCHEDULE (ABOVE)
e. SEE PLAN
f. SEE PLAN
g. SEE PLAN
h. CITY WATER AVAILABLE
i. SEE SOIL REPORT
j. SEE TOPOGRAPHICAL INFORMATION
k. ALL CITY SERVICES AVAILABLE
l. NO EASEMENTS REGISTERED ON TITLE

OWNER'S CERTIFICATE

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

DATED : __________ DATED : __________

SUSAN MURPHY
VICE PRESIDENT, DEVELOPMENT

BRENT STRACHAN
SENIOR VICE PRESIDENT, DEVELOPMENT

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

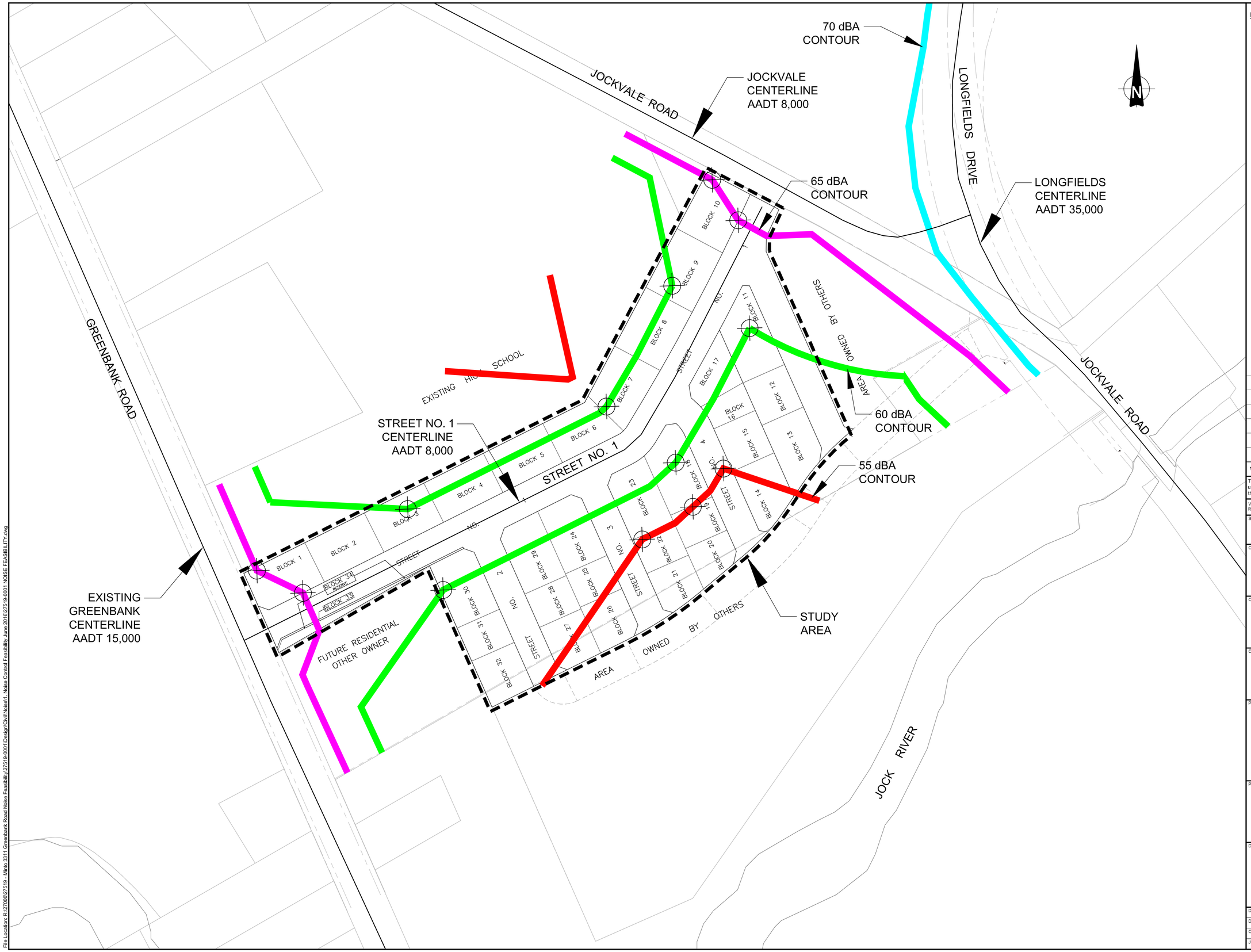
BRIAN J. WEBSTER
ONTARIO LAND SURVEYOR

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: CEC | CHECKED: * | PM: FP | FIELD: * | PROJECT No.: 161613630-131

6 June 2017 9:16 AM

W:\active\161613630_minto_3311 greenbank rd_fp\subdivision_draft_plan\drawing\161613630-131-3311 Greenbank_d5_c3d.dwg



LEGEND

- 55 dBA
- 60 dBA
- 65 dBA
- 70 dBA

APPROXIMATE RECEIVER LOCATION REFER TO APPENDIX 'D' & 'E' FOR DETAILED NOISE LEVEL CALCULATIONS.

No.	ISSUE / REVISION	DD/MM/YY

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

SCALE: 1:1,000

CLIENT:

CONSULTANT:

CONSULTANT:

PROFESSIONAL STAMP

PROFESSIONAL STAMP

PROJECT:

MINTO COMMUNITIES INC.
3311 GREENBANK ROAD

OTTAWA, ONTARIO

DRAWING:

FREEFIELD DAYTIME NOISE CONTOURS

DESIGN:	LJ/TB
DRAWN:	TB
CHECKED:	LJ
JLR #:	27519-0001

DRAWING #: N1

PLOT DATE: June 15, 2017 1:24:41 PM

File Location: R:\27000\27519 - Minto 3311 Greenbank Road Noise Feasibility\27519-0001\Design\Civil\Noise\1 - Noise Control Feasibility June 2016\27519-0001 NOISE FEASIBILITY.dwg

JOCKVALE ROAD

LONGFIELDS DRIVE

GREENBANK ROAD

JOCKVALE ROAD

90°

45°

21.1

R2

2.2m HIGH
NOISE FENCE

BLOCK 10

BLOCK 9

BLOCK 8

BLOCK 7

BLOCK 6

BLOCK 5

BLOCK 4

BLOCK 3

BLOCK 2

BLOCK 1

BLOCK 34
(0.3m reserve)

BLOCK 33

2.5m HIGH
NOISE FENCE

R1

90°

24.5

45°

EXISTING HIGH SCHOOL

STREET NO. 1

STREET NO. 2

STREET NO. 3

STREET NO. 4

BLOCK 11

BLOCK 17

BLOCK 16

BLOCK 15

BLOCK 14

BLOCK 13

BLOCK 12

BLOCK 18

BLOCK 19

BLOCK 20

BLOCK 21

BLOCK 22

BLOCK 23

BLOCK 24

BLOCK 25

BLOCK 26

BLOCK 27

BLOCK 28

BLOCK 29

BLOCK 30

BLOCK 31

BLOCK 32

AREA OWNED BY OTHERS

AREA OWNED BY OTHERS

FUTURE RESIDENTIAL
OTHER OWNER

JOCK RIVER

N

LEGEND

APPROXIMATE RECEIVER LOCATION
REFER TO APPENDIX 'E' FOR DETAILED NOISE LEVEL CALCULATIONS.

POTENTIAL PERMANENT NOISE FENCE

No.	ISSUE / REVISION	DD/MM/YY

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

SCALE: 1:1,000

CLIENT:

CONSULTANT:

CONSULTANT:

PROFESSIONAL STAMP

PROFESSIONAL STAMP

PROJECT:

MINTO COMMUNITIES INC.
3311 GREENBANK ROAD

OTTAWA, ONTARIO

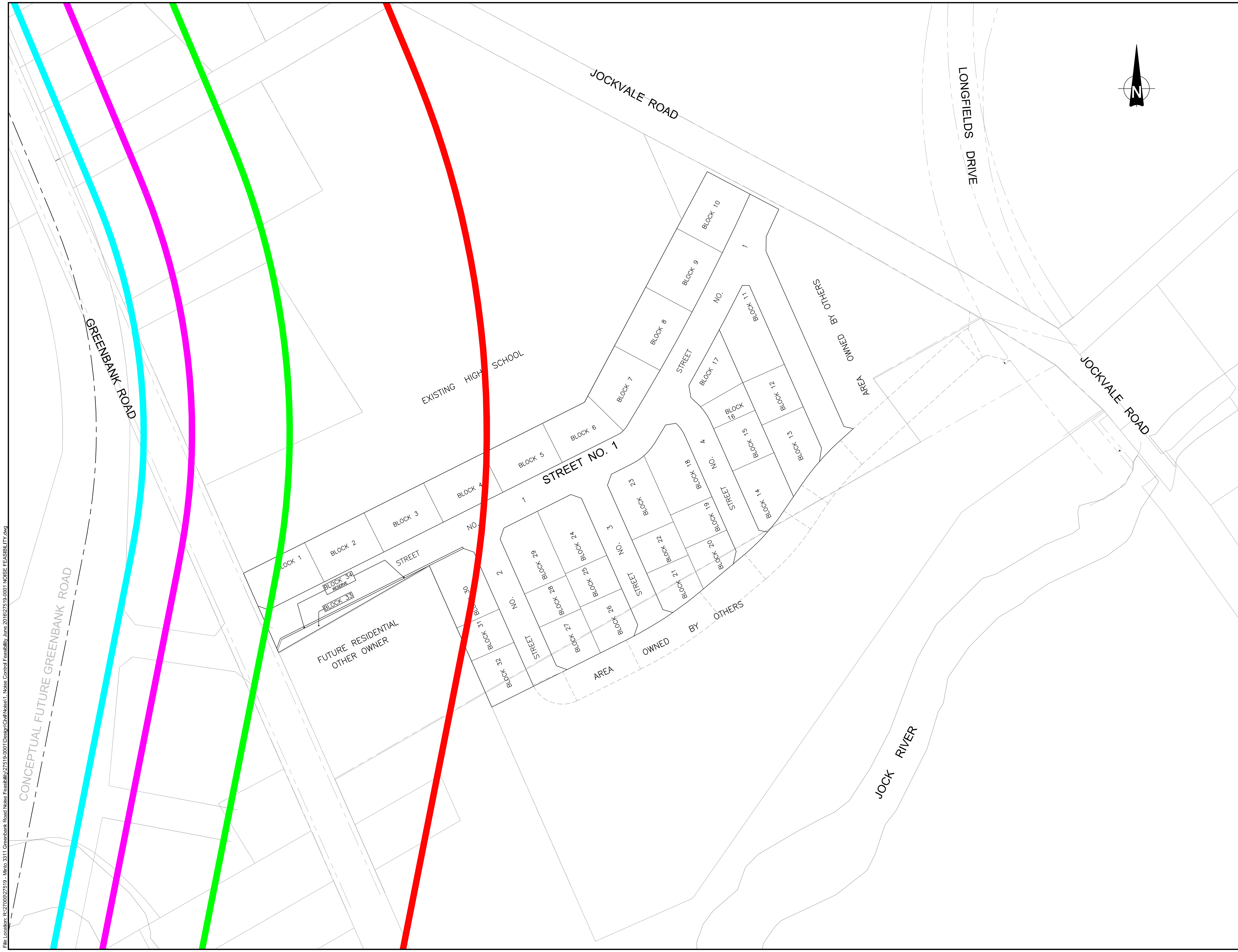
DRAWING:

POTENTIAL NOISE BARRIERS

DESIGN: LJ/TB	
DRAWN: TB	DRAWING #:
CHECKED: LJ	N2
JLR #: 27519-0001	

PLOT DATE: October 6, 2017 11:06:30 AM

File Location: R:\27000\27519-0001\Design\Civil\Notes\2. Noise Control Feasibility\ REVISED October 2017\27519-0001 NOISE FEASIBILITY.dwg



No.	ISSUE / REVISION	DD/MM/YY

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

SCALE: 1:1,000

CLIENT:

CONSULTANT:

CONSULTANT:

PROFESSIONAL STAMP

PROFESSIONAL STAMP

PROJECT:

MINTO COMMUNITIES INC.
3311 GREENBANK ROAD

OTTAWA, ONTARIO

DRAWING:

FREEFIELD DAYTIME NOISE CONTOURS (REALIGNED GREENBANK)

DESIGN: LJ/TB
DRAWN: TB
CHECKED: LJ
JLR #: 27519-0001

DRAWING #: N3

PLOT DATE: June 15, 2017 1:35:19 PM

File Location: R:\27000\27519 - Minto 3311 Greenbank Road Noise Feasibility\27519-0001\Design\Civil\Noise\1. Noise Control Feasibility June 2016\27519-0001 NOISE FEASIBILITY.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 include:

- A setback of buildings from the noise source and
- 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: 08-06-2017 14:04:37
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: 2uau_50d.te Time Period: Day/Night 16/8 hours
Description: 2UAU daytime ff 50 dBA

Road data, segment # 1: 2-UAU (day/night)

Car traffic volume : 12144/1056 veh/TimePeriod *
Medium truck volume : 966/84 veh/TimePeriod *
Heavy truck volume : 690/60 veh/TimePeriod *
Posted speed limit : 60 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): 15000
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: 2-UAU (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 : 196.40 / 76.34 m
Receiver height : 1.50 / 4.50 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

Results segment # 1: 2-UAU (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	70.00	0.00	-18.54	-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: 2-UAU (night)

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	0.57	62.40	0.00	-11.10	-1.30	0.00	0.00	0.00	50.00

Segment Leq : 50.00 dBA

Total Leq All Segments: 50.00 dBA

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

STAMSON 5.0 NORMAL REPORT Date: 08-06-2017 14:06:04
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: 2uau_55d.te Time Period: Day/Night 16/8 hours
Description: 2UAU daytime ff 55 dBA

Road data, segment # 1: 2-UAU (day/night)

Car traffic volume : 12144/1056 veh/TimePeriod *
Medium truck volume : 966/84 veh/TimePeriod *
Heavy truck volume : 690/60 veh/TimePeriod *
Posted speed limit : 60 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): 15000
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: 2-UAU (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 : 98.12 / 36.67 m
Receiver height : 1.50 / 4.50 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

Results segment # 1: 2-UAU (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	70.00	0.00	-13.54	-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: 2-UAU (night)

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	0.57	62.40	0.00	-6.10	-1.30	0.00	0.00	0.00	55.00

Segment Leq : 55.00 dBA

Total Leq All Segments: 55.00 dBA

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

STAMSON 5.0 NORMAL REPORT Date: 08-06-2017 14:07:13
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: 2uau_60d.te Time Period: Day/Night 16/8 hours
Description: 2UAU daytime ff 60 dBA

Road data, segment # 1: 2-UAU (day/night)

Car traffic volume : 12144/1056 veh/TimePeriod *
Medium truck volume : 966/84 veh/TimePeriod *
Heavy truck volume : 690/60 veh/TimePeriod *
Posted speed limit : 60 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): 15000
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: 2-UAU (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 : 49.04 / 17.62 m
Receiver height : 1.50 / 4.50 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

Results segment # 1: 2-UAU (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	70.00	0.00	-8.54	-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: 2-UAU (night)

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	0.57	62.40	0.00	-1.10	-1.30	0.00	0.00	0.00	60.00

Segment Leq : 60.00 dBA

Total Leq All Segments: 60.00 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 60.00
(NIGHT): 60.00

STAMSON 5.0 NORMAL REPORT Date: 08-06-2017 14:08:26
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: 2uau_65d.te Time Period: Day/Night 16/8 hours
Description: 2UAU daytime ff 65 dBA

Road data, segment # 1: 2-UAU (day/night)

Car traffic volume : 12144/1056 veh/TimePeriod *
Medium truck volume : 966/84 veh/TimePeriod *
Heavy truck volume : 690/60 veh/TimePeriod *
Posted speed limit : 60 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): 15000
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: 2-UAU (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 : 24.50 / 15.00 m
Receiver height : 1.50 / 4.50 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

Results segment # 1: 2-UAU (day)

Source height = 1.50 m

ROAD (0.00 + 65.00 + 0.00) = 65.00 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.66	70.00	0.00	-3.54	-1.46	0.00	0.00	0.00	65.00

Segment Leq : 65.00 dBA

Total Leq All Segments: 65.00 dBA

Results segment # 1: 2-UAU (night)

Source height = 1.50 m

ROAD (0.00 + 61.10 + 0.00) = 61.10 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.57	62.40	0.00	0.00	-1.30	0.00	0.00	0.00	61.10

Segment Leq : 61.10 dBA

Total Leq All Segments: 61.10 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 65.00
(NIGHT): 61.10

STAMSON 5.0 NORMAL REPORT Date: 07-02-2017 10:53:37
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: 2ucu_50d.te Time Period: Day/Night 16/8 hours
Description: Paine & Riverchase daytime ff 50 dBA

Road data, segment # 1: 2-UCU (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 : 50 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: 2-UCU (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 : 109.00 / 54.43 m
Receiver height : 1.50 / 4.50 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

Results segment # 1: 2-UCU (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	65.75	0.00	-14.30	-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: 2-UCU (night)

Source height = 1.50 m

ROAD (0.00 + 48.07 + 0.00) = 48.07 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.57	58.16	0.00	-8.79	-1.30	0.00	0.00	0.00	48.07

Segment Leq : 48.07 dBA

Total Leq All Segments: 48.07 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 50.00
(NIGHT): 48.07

STAMSON 5.0 NORMAL REPORT Date: 06-02-2017 15:58:38
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: 2ucu_55d.te Time Period: Day/Night 16/8 hours
Description: Paine & Riverchase daytime freefield 55 dBA

Road data, segment # 1: 2-UCU (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 : 50 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: 2-UCU (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 : 54.43 / 54.43 m
Receiver height : 1.50 / 4.50 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

Results segment # 1: 2-UCU (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	65.75	0.00	-9.29	-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: 2-UCU (night)

Source height = 1.50 m

ROAD (0.00 + 48.07 + 0.00) = 48.07 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.57	58.16	0.00	-8.79	-1.30	0.00	0.00	0.00	48.07

Segment Leq : 48.07 dBA

Total Leq All Segments: 48.07 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 55.00
(NIGHT): 48.07

STAMSON 5.0 NORMAL REPORT Date: 06-02-2017 15:57:41
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: 2ucu_60d.te Time Period: Day/Night 16/8 hours
Description: Paine & Riverchase daytime freefield 60 dBA

Road data, segment # 1: 2-UCU (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 : 50 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: 2-UCU (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 : 27.20 / 27.20 m
Receiver height : 1.50 / 4.50 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

Results segment # 1: 2-UCU (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	65.75	0.00	-4.29	-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: 2-UCU (night)

Source height = 1.50 m

ROAD (0.00 + 52.80 + 0.00) = 52.80 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.57	58.16	0.00	-4.06	-1.30	0.00	0.00	0.00	52.80

Segment Leq : 52.80 dBA

Total Leq All Segments: 52.80 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 60.00
(NIGHT): 52.80

STAMSON 5.0 NORMAL REPORT Date: 08-06-2017 13:46:14
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: 2ucu_50d.te Time Period: Day/Night 16/8 hours
Description: 2UCU daytime ff 50 dBA

Road data, segment # 1: 2-UCU (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 : 60 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: 2-UCU (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 : 134.36 / 51.17 m
Receiver height : 1.50 / 4.50 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

Results segment # 1: 2-UCU (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	67.27	0.00	-15.81	-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: 2-UCU (night)

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	0.57	59.67	0.00	-8.37	-1.30	0.00	0.00	0.00	50.00

Segment Leq : 50.00 dBA

Total Leq All Segments: 50.00 Dba

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

STAMSON 5.0 NORMAL REPORT Date: 08-06-2017 13:47:24
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: 2ucu_55d.te Time Period: Day/Night 16/8 hours
Description: 2UCU daytime ff 55 dBA

Road data, segment # 1: 2-UCU (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 : 60 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: 2-UCU (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 : 67.22 / 24.59 m
Receiver height : 1.50 / 4.50 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

Results segment # 1: 2-UCU (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	67.27	0.00	-10.81	-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: 2-UCU (night)

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	0.57	59.67	0.00	-3.37	-1.30	0.00	0.00	0.00	55.00

Segment Leq : 55.00 dBA

Total Leq All Segments: 55.00 dBA

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

STAMSON 5.0 NORMAL REPORT Date: 08-06-2017 13:53:05
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: 2ucu_60d.te Time Period: Day/Night 16/8 hours
Description: 2UCU daytime ff 60 dBA

Road data, segment # 1: 2-UCU (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 : 60 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: 2-UCU (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 : 33.59 / 24.59 m
Receiver height : 1.50 / 4.50 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

Results segment # 1: 2-UCU (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	67.27	0.00	-5.81	-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: 2-UCU (night)

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	0.57	59.67	0.00	-3.37	-1.30	0.00	0.00	0.00	55.00

Segment Leq : 55.00 dBA

Total Leq All Segments: 55.00 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 60.00
(NIGHT): 55.00

STAMSON 5.0 NORMAL REPORT Date: 08-06-2017 13:54:17
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: 2ucu_65d.te Time Period: Day/Night 16/8 hours
Description: 2UCU daytime ff 65 dBA

Road data, segment # 1: 2-UCU (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 : 60 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: 2-UCU (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 : 16.78 / 15.00 m
Receiver height : 1.50 / 4.50 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

Results segment # 1: 2-UCU (day)

Source height = 1.50 m

ROAD (0.00 + 65.00 + 0.00) = 65.00 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.66	67.27	0.00	-0.81	-1.46	0.00	0.00	0.00	65.00

Segment Leq : 65.00 dBA

Total Leq All Segments: 65.00 dBA

Results segment # 1: 2-UCU (night)

Source height = 1.50 m

ROAD (0.00 + 58.37 + 0.00) = 58.37 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.57	59.67	0.00	0.00	-1.30	0.00	0.00	0.00	58.37

Segment Leq : 58.37 dBA

Total Leq All Segments: 58.37 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 65.00
(NIGHT): 58.37

STAMSON 5.0 NORMAL REPORT Date: 08-06-2017 13:38:22
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: 4uad_50d.te Time Period: Day/Night 16/8 hours
Description: 4UAD daytime ff 50 dBA

Road data, segment # 1: 4-UAD (day/night)

Car traffic volume : 28336/2464 veh/TimePeriod *
Medium truck volume : 2254/196 veh/TimePeriod *
Heavy truck volume : 1610/140 veh/TimePeriod *
Posted speed limit : 60 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): 35000
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: 4-UAD (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 : 327.12 / 131.04 m
Receiver height : 1.50 / 4.50 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

Results segment # 1: 4-UAD (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	73.68	0.00	-22.22	-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: 4-UAD (night)

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	0.57	66.08	0.00	-14.78	-1.30	0.00	0.00	0.00	50.00

Segment Leq : 50.00 dBA

Total Leq All Segments: 50.00 dBA

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

STAMSON 5.0 NORMAL REPORT Date: 08-06-2017 13:39:46
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: 4uad_55d.te Time Period: Day/Night 16/8 hours
Description: 4UAD daytime ff 55 dBA

Road data, segment # 1: 4-UAD (day/night)

Car traffic volume : 28336/2464 veh/TimePeriod *
Medium truck volume : 2254/196 veh/TimePeriod *
Heavy truck volume : 1610/140 veh/TimePeriod *
Posted speed limit : 60 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): 35000
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: 4-UAD (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 : 163.48 / 62.96 m
Receiver height : 1.50 / 4.50 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

Results segment # 1: 4-UAD (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	73.68	0.00	-17.22	-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: 4-UAD (night)

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	0.57	66.08	0.00	-9.78	-1.30	0.00	0.00	0.00	55.00

Segment Leq : 55.00 dBA

Total Leq All Segments: 55.00 dBA

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

STAMSON 5.0 NORMAL REPORT Date: 08-06-2017 13:40:53
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: 4uad_60d.te Time Period: Day/Night 16/8 hours
Description: 4UAD daytime ff 60 dBA

Road data, segment # 1: 4-UAD (day/night)

Car traffic volume : 28336/2464 veh/TimePeriod *
Medium truck volume : 2254/196 veh/TimePeriod *
Heavy truck volume : 1610/140 veh/TimePeriod *
Posted speed limit : 60 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): 35000
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: 4-UAD (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 : 81.66 / 30.22 m
Receiver height : 1.50 / 4.50 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

Results segment # 1: 4-UAD (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	73.68	0.00	-12.22	-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: 4-UAD (night)

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	0.57	66.08	0.00	-4.78	-1.30	0.00	0.00	0.00	60.00

Segment Leq : 60.00 dBA

Total Leq All Segments: 60.00 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 60.00
(NIGHT): 60.00

STAMSON 5.0 NORMAL REPORT Date: 08-06-2017 13:42:23
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: 4uad 65d.te Time Period: Day/Night 16/8 hours
Description: 4UAD daytime ff 65 dBA

Road data, segment # 1: 4-UAD (day/night)

Car traffic volume : 28336/2464 veh/TimePeriod *
Medium truck volume : 2254/196 veh/TimePeriod *
Heavy truck volume : 1610/140 veh/TimePeriod *
Posted speed limit : 60 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): 35000
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: 4-UAD (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 : 40.81 / 15.00 m
Receiver height : 1.50 / 4.50 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

Results segment # 1: 4-UAD (day)

Source height = 1.50 m

ROAD (0.00 + 65.00 + 0.00) = 65.00 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.66	73.68	0.00	-7.22	-1.46	0.00	0.00	0.00	65.00

Segment Leq : 65.00 dBA

Total Leq All Segments: 65.00 dBA

Results segment # 1: 4-UAD (night)

Source height = 1.50 m

ROAD (0.00 + 64.78 + 0.00) = 64.78 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.57	66.08	0.00	0.00	-1.30	0.00	0.00	0.00	64.78

Segment Leq : 64.78 dBA

Total Leq All Segments: 64.78 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 65.00
(NIGHT): 64.78

STAMSON 5.0 NORMAL REPORT Date: 08-06-2017 13:43:12
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: 4uad_70d.te Time Period: Day/Night 16/8 hours
Description: 4UAD daytime ff 70 dBA

Road data, segment # 1: 4-UAD (day/night)

Car traffic volume : 28336/2464 veh/TimePeriod *
Medium truck volume : 2254/196 veh/TimePeriod *
Heavy truck volume : 1610/140 veh/TimePeriod *
Posted speed limit : 60 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): 35000
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: 4-UAD (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 : 20.42 / 15.00 m
Receiver height : 1.50 / 4.50 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

Results segment # 1: 4-UAD (day)

Source height = 1.50 m

ROAD (0.00 + 70.00 + 0.00) = 70.00 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.66	73.68	0.00	-2.22	-1.46	0.00	0.00	0.00	70.00

Segment Leq : 70.00 dBA

Total Leq All Segments: 70.00 dBA

Results segment # 1: 4-UAD (night)

Source height = 1.50 m

ROAD (0.00 + 64.78 + 0.00) = 64.78 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.57	66.08	0.00	0.00	-1.30	0.00	0.00	0.00	64.78

Segment Leq : 64.78 dBA

Total Leq All Segments: 64.78 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 70.00
(NIGHT): 64.78

Appendix D

Transportation Noise Source Predictions

- Detailed Predicted Freefield Noise Level Calculations (Combined Road Noise Sources)

STAMSON 5.0 NORMAL REPORT Date: 09-06-2017 07:28:38
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: com1_60d.te Time Period: Day/Night 16/8 hours
Description: 2uau & 2ucu composite daytime ff 60 dBA

Road data, segment # 1: 2-UAU (day/night)

Car traffic volume : 12144/1056 veh/TimePeriod *
Medium truck volume : 966/84 veh/TimePeriod *
Heavy truck volume : 690/60 veh/TimePeriod *
Posted speed limit : 60 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): 15000
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: 2-UAU (day/night)

Angle1 Angle2 : -90.00 deg 45.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 0
Surface : 1 (Absorptive ground surface)
Receiver source distance : 49.04 / 49.04 m
Receiver height : 1.50 / 4.50 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

Road data, segment # 2: 2-UCU (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 : 50 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 # 2: 2-UCU (day/night)

Angle1 Angle2 : -90.00 deg 45.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 0
Surface : 1 (Absorptive ground surface)
Receiver source distance : 69.00 / 69.00 m
Receiver height : 1.50 / 4.50 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

Results segment # 1: 2-UAU (day)

Source height = 1.50 m

ROAD (0.00 + 59.17 + 0.00) = 59.17 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	45	0.66	70.00	0.00	-8.54	-2.29	0.00	0.00	0.00	59.17

Segment Leq : 59.17 dBA

Results segment # 2: 2-UCU (day)

Source height = 1.50 m

ROAD (0.00 + 52.46 + 0.00) = 52.46 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	45	0.66	65.75	0.00	-11.00	-2.29	0.00	0.00	0.00	52.46

Segment Leq : 52.46 dBA

Total Leq All Segments: 60.01 dBA

Results segment # 1: 2-UAU (night)

Source height = 1.50 m

ROAD (0.00 + 52.14 + 0.00) = 52.14 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	45	0.57	62.40	0.00	-8.08	-2.18	0.00	0.00	0.00	52.14

Segment Leq : 52.14 dBA

Results segment # 2: 2-UCU (night)

Source height = 1.50 m

ROAD (0.00 + 45.57 + 0.00) = 45.57 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	45	0.57	58.16	0.00	-10.41	-2.18	0.00	0.00	0.00	45.57

Segment Leq : 45.57 dBA

Total Leq All Segments: 53.00 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 60.01
(NIGHT): 53.00

STAMSON 5.0 NORMAL REPORT Date: 09-06-2017 07:38:16
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: com1_65d.te Time Period: Day/Night 16/8 hours
Description: 2uau & 2ucu composite daytime ff 65 dBA

Road data, segment # 1: 2-UAU (day/night)

Car traffic volume : 12144/1056 veh/TimePeriod *
Medium truck volume : 966/84 veh/TimePeriod *
Heavy truck volume : 690/60 veh/TimePeriod *
Posted speed limit : 60 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): 15000
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: 2-UAU (day/night)

Angle1 Angle2 : -90.00 deg 45.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 0
Surface : 1 (Absorptive ground surface)
Receiver source distance : 45.00 / 45.00 m
Receiver height : 1.50 / 4.50 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

Road data, segment # 2: 2-UCU (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 : 50 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 # 2: 2-UCU (day/night)

Angle1 Angle2 : -90.00 deg 45.00 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: 2-UAU (day)

Source height = 1.50 m

ROAD (0.00 + 59.79 + 0.00) = 59.79 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	45	0.66	70.00	0.00	-7.92	-2.29	0.00	0.00	0.00	59.79

Segment Leq : 59.79 dBA

Results segment # 2: 2-UCU (day)

Source height = 1.50 m

ROAD (0.00 + 63.46 + 0.00) = 63.46 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	45	0.66	65.75	0.00	0.00	-2.29	0.00	0.00	0.00	63.46

Segment Leq : 63.46 dBA

Total Leq All Segments: 65.01 dBA

Results segment # 1: 2-UAU (night)

Source height = 1.50 m

ROAD (0.00 + 52.73 + 0.00) = 52.73 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	45	0.57	62.40	0.00	-7.49	-2.18	0.00	0.00	0.00	52.73

Segment Leq : 52.73 dBA

Results segment # 2: 2-UCU (night)

Source height = 1.50 m

ROAD (0.00 + 55.98 + 0.00) = 55.98 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	45	0.57	58.16	0.00	0.00	-2.18	0.00	0.00	0.00	55.98

Segment Leq : 55.98 dBA

Total Leq All Segments: 57.66 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 65.01
(NIGHT): 57.66

STAMSON 5.0 NORMAL REPORT Date: 08-06-2017 16:12:07
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: com1_70d.te Time Period: Day/Night 16/8 hours
Description: 4uad and 2ucu composite daytime 70 dBA

Road data, segment # 1: 4-UAD (day/night)

Car traffic volume : 28336/2464 veh/TimePeriod *
Medium truck volume : 2254/196 veh/TimePeriod *
Heavy truck volume : 1610/140 veh/TimePeriod *
Posted speed limit : 60 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): 35000
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: 4-UAD (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 : 20.42 / 15.00 m
Receiver height : 1.50 / 4.50 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

Road data, segment # 2: 2-UCU (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 : 60 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 # 2: 2-UCU (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 : 100.00 / 15.00 m
Receiver height : 1.50 / 4.50 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

Results segment # 1: 4-UAD (day)

Source height = 1.50 m

ROAD (0.00 + 70.00 + 0.00) = 70.00 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.66	73.68	0.00	-2.22	-1.46	0.00	0.00	0.00	70.00

Segment Leq : 70.00 dBA

Results segment # 2: 2-UCU (day)

Source height = 1.50 m

ROAD (0.00 + 52.13 + 0.00) = 52.13 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.66	67.27	0.00	-13.68	-1.46	0.00	0.00	0.00	52.13

Segment Leq : 52.13 dBA

Total Leq All Segments: 70.07 dBA

Results segment # 1: 4-UAD (night)

Source height = 1.50 m

ROAD (0.00 + 64.78 + 0.00) = 64.78 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.57	66.08	0.00	0.00	-1.30	0.00	0.00	0.00	64.78

Segment Leq : 64.78 dBA

Results segment # 2: 2-UCU (night)

Source height = 1.50 m

ROAD (0.00 + 58.37 + 0.00) = 58.37 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.57	59.67	0.00	0.00	-1.30	0.00	0.00	0.00	58.37

Segment Leq : 58.37 dBA

Total Leq All Segments: 65.67 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 70.07
(NIGHT): 65.67

STAMSON 5.0 NORMAL REPORT Date: 09-06-2017 07:49:08
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: com2_55d.te Time Period: Day/Night 16/8 hours
Description: 2uau & 2ucu composite daytime ff 55 dBA

Road data, segment # 1: 2-UAU (day/night)

Car traffic volume : 12144/1056 veh/TimePeriod *
Medium truck volume : 966/84 veh/TimePeriod *
Heavy truck volume : 690/60 veh/TimePeriod *

Posted speed limit : 60 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): 15000
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: 2-UAU (day/night)

Angle1 Angle2 : -90.00 deg 45.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 0
Surface : 1 (Absorptive ground surface)
Receiver source distance : 250.00 / 250.00 m
Receiver height : 1.50 / 4.50 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

Road data, segment # 2: 2-UCU (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 : 50 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 # 2: 2-UCU (day/night)

Angle1 Angle2 : -90.00 deg 45.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 0
Surface : 1 (Absorptive ground surface)
Receiver source distance : 54.43 / 54.43 m
Receiver height : 1.50 / 4.50 m

Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

Results segment # 1: 2-UAU (day)

Source height = 1.50 m

ROAD (0.00 + 47.43 + 0.00) = 47.43 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	45	0.66	70.00	0.00	-20.28	-2.29	0.00	0.00	0.00	47.43

Segment Leq : 47.43 dBA

Results segment # 2: 2-UCU (day)

Source height = 1.50 m

ROAD (0.00 + 54.17 + 0.00) = 54.17 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	45	0.66	65.75	0.00	-9.29	-2.29	0.00	0.00	0.00	54.17

Segment Leq : 54.17 dBA

Total Leq All Segments: 55.00 dBA

Results segment # 1: 2-UAU (night)

Source height = 1.50 m

ROAD (0.00 + 41.04 + 0.00) = 41.04 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	45	0.57	62.40	0.00	-19.18	-2.18	0.00	0.00	0.00	41.04

Segment Leq : 41.04 dBA

Results segment # 2: 2-UCU (night)

Source height = 1.50 m

ROAD (0.00 + 47.19 + 0.00) = 47.19 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	45	0.57	58.16	0.00	-8.79	-2.18	0.00	0.00	0.00	47.19

Segment Leq : 47.19 dBA

Total Leq All Segments: 48.13 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 55.00
(NIGHT): 48.13

STAMSON 5.0 NORMAL REPORT Date: 09-06-2017 07:31:33
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: com2_60d.te Time Period: Day/Night 16/8 hours
Description: 2uau & 2ucu composite daytime ff 60 dBA

Road data, segment # 1: 2-UAU (day/night)

Car traffic volume : 12144/1056 veh/TimePeriod *
Medium truck volume : 966/84 veh/TimePeriod *
Heavy truck volume : 690/60 veh/TimePeriod *
Posted speed limit : 60 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): 15000
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: 2-UAU (day/night)

Angle1 Angle2 : -90.00 deg 45.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 0
Surface : 1 (Absorptive ground surface)
Receiver source distance : 125.00 / 125.00 m
Receiver height : 1.50 / 4.50 m

Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

Road data, segment # 2: 2-UCU (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 : 50 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 # 2: 2-UCU (day/night)

Angle1 Angle2 : -90.00 deg 45.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 0
Surface : 1 (Absorptive ground surface)
Receiver source distance : 27.20 / 27.20 m
Receiver height : 1.50 / 4.50 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

Results segment # 1: 2-UAU (day)

Source height = 1.50 m

ROAD (0.00 + 52.42 + 0.00) = 52.42 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	45	0.66	70.00	0.00	-15.29	-2.29	0.00	0.00	0.00	52.42

Segment Leq : 52.42 dBA

Results segment # 2: 2-UCU (day)

Source height = 1.50 m

ROAD (0.00 + 59.17 + 0.00) = 59.17 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	45	0.66	65.75	0.00	-4.29	-2.29	0.00	0.00	0.00	59.17

Segment Leq : 59.17 dBA

Total Leq All Segments: 60.00 dBA

Results segment # 1: 2-UAU (night)

Source height = 1.50 m

ROAD (0.00 + 45.76 + 0.00) = 45.76 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	45	0.57	62.40	0.00	-14.46	-2.18	0.00	0.00	0.00	45.76

Segment Leq : 45.76 dBA

Results segment # 2: 2-UCU (night)

Source height = 1.50 m

ROAD (0.00 + 51.92 + 0.00) = 51.92 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	45	0.57	58.16	0.00	-4.06	-2.18	0.00	0.00	0.00	51.92

Segment Leq : 51.92 dBA

Total Leq All Segments: 52.86 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 60.00
(NIGHT): 52.86

STAMSON 5.0 NORMAL REPORT Date: 09-06-2017 07:40:55
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: com2_65d.te Time Period: Day/Night 16/8 hours
Description: 2uau & 2ucu composite daytime ff 65 dBA

Road data, segment # 1: 2-UAU (day/night)

Car traffic volume : 12144/1056 veh/TimePeriod *
Medium truck volume : 966/84 veh/TimePeriod *
Heavy truck volume : 690/60 veh/TimePeriod *
Posted speed limit : 60 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): 15000
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: 2-UAU (day/night)

Angle1 Angle2 : -90.00 deg 45.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 0
Surface : 1 (Absorptive ground surface)
Receiver source distance : 24.50 / 24.50 m
Receiver height : 1.50 / 4.50 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

Road data, segment # 2: 2-UCU (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 : 50 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 # 2: 2-UCU (day/night)

Angle1 Angle2 : -90.00 deg 45.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 0
Surface : 1 (Absorptive ground surface)
Receiver source distance : 35.00 / 35.00 m
Receiver height : 1.50 / 4.50 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

Results segment # 1: 2-UAU (day)

Source height = 1.50 m

ROAD (0.00 + 64.17 + 0.00) = 64.17 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	45	0.66	70.00	0.00	-3.54	-2.29	0.00	0.00	0.00	64.17

Segment Leq : 64.17 dBA

Results segment # 2: 2-UCU (day)

Source height = 1.50 m

ROAD (0.00 + 57.35 + 0.00) = 57.35 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	45	0.66	65.75	0.00	-6.11	-2.29	0.00	0.00	0.00	57.35

Segment Leq : 57.35 dBA

Total Leq All Segments: 64.99 dBA

Results segment # 1: 2-UAU (night)

Source height = 1.50 m

ROAD (0.00 + 56.88 + 0.00) = 56.88 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	45	0.57	62.40	0.00	-3.35	-2.18	0.00	0.00	0.00	56.88

Segment Leq : 56.88 dBA

Results segment # 2: 2-UCU (night)

Source height = 1.50 m

ROAD (0.00 + 50.20 + 0.00) = 50.20 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	45	0.57	58.16	0.00	-5.78	-2.18	0.00	0.00	0.00	50.20

Segment Leq : 50.20 dBA

Total Leq All Segments: 57.72 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 64.99
(NIGHT): 57.72

STAMSON 5.0 NORMAL REPORT Date: 08-06-2017 16:18:26
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: com2_70d.te Time Period: Day/Night 16/8 hours
Description: 4uad and 2ucu composite daytime 70 dBA

Road data, segment # 1: 4-UAD (day/night)

Car traffic volume : 28336/2464 veh/TimePeriod *
Medium truck volume : 2254/196 veh/TimePeriod *
Heavy truck volume : 1610/140 veh/TimePeriod *
Posted speed limit : 60 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): 35000
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: 4-UAD (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 : 27.00 / 15.00 m
Receiver height : 1.50 / 4.50 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

Road data, segment # 2: 2-UCU (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 : 60 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 # 2: 2-UCU (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: 4-UAD (day)

Source height = 1.50 m

ROAD (0.00 + 67.98 + 0.00) = 67.98 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.66	73.68	0.00	-4.24	-1.46	0.00	0.00	0.00	67.98

Segment Leq : 67.98 dBA

Results segment # 2: 2-UCU (day)

Source height = 1.50 m

ROAD (0.00 + 65.81 + 0.00) = 65.81 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.66	67.27	0.00	0.00	-1.46	0.00	0.00	0.00	65.81

Segment Leq : 65.81 dBA

Total Leq All Segments: 70.04 dBA

Results segment # 1: 4-UAD (night)

Source height = 1.50 m

ROAD (0.00 + 64.78 + 0.00) = 64.78 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.57	66.08	0.00	0.00	-1.30	0.00	0.00	0.00	64.78

Segment Leq : 64.78 dBA

Results segment # 2: 2-UCU (night)

Source height = 1.50 m

ROAD (0.00 + 58.37 + 0.00) = 58.37 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.57	59.67	0.00	0.00	-1.30	0.00	0.00	0.00	58.37

Segment Leq : 58.37 dBA

Total Leq All Segments: 65.67 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 70.04
(NIGHT): 65.67

STAMSON 5.0 NORMAL REPORT Date: 09-06-2017 09:02:08
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: com3_55d.te Time Period: Day/Night 16/8 hours
Description: 2ucu & 2ucu composite daytime ff 55 dBA

Road data, segment # 1: 2-UCU (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 : 60 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: 2-UCU (day/night)

Angle1 Angle2 : -90.00 deg 45.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 0
Surface : 1 (Absorptive ground surface)
Receiver source distance : 170.00 / 170.00 m
Receiver height : 1.50 / 4.50 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

Road data, segment # 2: 2-UCU (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 : 50 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 # 2: 2-UCU (day/night)

Angle1 Angle2 : -90.00 deg 45.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 0
Surface : 1 (Absorptive ground surface)
Receiver source distance : 54.43 / 54.43 m
Receiver height : 1.50 / 4.50 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

Results segment # 1: 2-UCU (day)

Source height = 1.50 m

ROAD (0.00 + 47.48 + 0.00) = 47.48 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	45	0.66	67.27	0.00	-17.50	-2.29	0.00	0.00	0.00	47.48

Segment Leq : 47.48 dBA

Results segment # 2: 2-UCU (day)

Source height = 1.50 m

ROAD (0.00 + 54.17 + 0.00) = 54.17 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	45	0.66	65.75	0.00	-9.29	-2.29	0.00	0.00	0.00	54.17

Segment Leq : 54.17 dBA

Total Leq All Segments: 55.01 dBA

Results segment # 1: 2-UCU (night)

Source height = 1.50 m

ROAD (0.00 + 40.94 + 0.00) = 40.94 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	45	0.57	59.67	0.00	-16.55	-2.18	0.00	0.00	0.00	40.94

Segment Leq : 40.94 dBA

Results segment # 2: 2-UCU (night)

Source height = 1.50 m

ROAD (0.00 + 47.19 + 0.00) = 47.19 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	45	0.57	58.16	0.00	-8.79	-2.18	0.00	0.00	0.00	47.19

Segment Leq : 47.19 dBA

Total Leq All Segments: 48.11 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 55.01
(NIGHT): 48.11

STAMSON 5.0 NORMAL REPORT Date: 09-06-2017 08:50:17
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: com3_60d.te Time Period: Day/Night 16/8 hours
Description: 2ucu & 2ucu composite daytime ff 60 dBA

Road data, segment # 1: 2-UCU (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 : 60 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: 2-UCU (day/night)

Angle1 Angle2 : -90.00 deg 45.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 0
Surface : 1 (Absorptive ground surface)
Receiver source distance : 86.00 / 86.00 m
Receiver height : 1.50 / 4.50 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

Road data, segment # 2: 2-UCU (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 : 50 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 # 2: 2-UCU (day/night)

Angle1 Angle2 : -90.00 deg 45.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 0
Surface : 1 (Absorptive ground surface)
Receiver source distance : 27.20 / 27.20 m
Receiver height : 1.50 / 4.50 m
Topography : 1 (Flat/gentle slope; no barrier)

Reference angle : 0.00

Results segment # 1: 2-UCU (day)

Source height = 1.50 m

ROAD (0.00 + 52.39 + 0.00) = 52.39 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	45	0.66	67.27	0.00	-12.59	-2.29	0.00	0.00	0.00	52.39

Segment Leq : 52.39 dBA

Results segment # 2: 2-UCU (day)

Source height = 1.50 m

ROAD (0.00 + 59.17 + 0.00) = 59.17 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	45	0.66	65.75	0.00	-4.29	-2.29	0.00	0.00	0.00	59.17

Segment Leq : 59.17 dBA

Total Leq All Segments: 60.00 dBA

Results segment # 1: 2-UCU (night)

Source height = 1.50 m

ROAD (0.00 + 45.59 + 0.00) = 45.59 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	45	0.57	59.67	0.00	-11.91	-2.18	0.00	0.00	0.00	45.59

Segment Leq : 45.59 dBA

Results segment # 2: 2-UCU (night)

Source height = 1.50 m

ROAD (0.00 + 51.92 + 0.00) = 51.92 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	45	0.57	58.16	0.00	-4.06	-2.18	0.00	0.00	0.00	51.92

Segment Leq : 51.92 dBA

Total Leq All Segments: 52.83 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 60.00
(NIGHT): 52.83

STAMSON 5.0 NORMAL REPORT Date: 09-06-2017 08:10:52
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: com3_65d.te Time Period: Day/Night 16/8 hours
Description: 2ucu & 2ucu composite daytime ff 65 dBA

Road data, segment # 1: 2-UCU (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 : 60 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: 2-UCU (day/night)

Angle1 Angle2 : -90.00 deg 45.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 0
Surface : 1 (Absorptive ground surface)
Receiver source distance : 31.00 / 31.00 m
Receiver height : 1.50 / 4.50 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

Road data, segment # 2: 2-UCU (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 : 50 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 # 2: 2-UCU (day/night)

Angle1 Angle2 : -90.00 deg 45.00 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: 2-UCU (day)

Source height = 1.50 m

ROAD (0.00 + 59.74 + 0.00) = 59.74 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	45	0.66	67.27	0.00	-5.23	-2.29	0.00	0.00	0.00	59.74

Segment Leq : 59.74 dBA

Results segment # 2: 2-UCU (day)

Source height = 1.50 m

ROAD (0.00 + 63.46 + 0.00) = 63.46 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	45	0.66	65.75	0.00	0.00	-2.29	0.00	0.00	0.00	63.46

Segment Leq : 63.46 dBA

Total Leq All Segments: 65.00 dBA

Results segment # 1: 2-UCU (night)

Source height = 1.50 m

ROAD (0.00 + 52.55 + 0.00) = 52.55 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	45	0.57	59.67	0.00	-4.95	-2.18	0.00	0.00	0.00	52.55

Segment Leq : 52.55 dBA

Results segment # 2: 2-UCU (night)

Source height = 1.50 m

ROAD (0.00 + 55.98 + 0.00) = 55.98 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	45	0.57	58.16	0.00	0.00	-2.18	0.00	0.00	0.00	55.98

Segment Leq : 55.98 dBA

Total Leq All Segments: 57.61 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 65.00
(NIGHT): 57.61

STAMSON 5.0 NORMAL REPORT Date: 09-06-2017 09:29:37
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: com4_55d.te Time Period: Day/Night 16/8 hours
Description: 2ucu & 2ucu composite daytime ff 55 dBA

Road data, segment # 1: 2-UCU (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 : 60 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: 2-UCU (day/night)

Angle1 Angle2 : -90.00 deg 45.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 0
Surface : 1 (Absorptive ground surface)
Receiver source distance : 67.22 / 67.22 m
Receiver height : 1.50 / 4.50 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

Road data, segment # 2: 2-UCU (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 : 50 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 # 2: 2-UCU (day/night)

Angle1 Angle2 : -90.00 deg 45.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 0
Surface : 1 (Absorptive ground surface)
Receiver source distance : 138.00 / 138.00 m
Receiver height : 1.50 / 4.50 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

Results segment # 1: 2-UCU (day)

Source height = 1.50 m

ROAD (0.00 + 54.16 + 0.00) = 54.16 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	45	0.66	67.27	0.00	-10.81	-2.29	0.00	0.00	0.00	54.16

Segment Leq : 54.16 dBA

Results segment # 2: 2-UCU (day)

Source height = 1.50 m

ROAD (0.00 + 47.46 + 0.00) = 47.46 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	45	0.66	65.75	0.00	-16.00	-2.29	0.00	0.00	0.00	47.46

Segment Leq : 47.46 dBA

Total Leq All Segments: 55.00 dBA

Results segment # 1: 2-UCU (night)

Source height = 1.50 m

ROAD (0.00 + 47.27 + 0.00) = 47.27 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	45	0.57	59.67	0.00	-10.23	-2.18	0.00	0.00	0.00	47.27

Segment Leq : 47.27 dBA

Results segment # 2: 2-UCU (night)

Source height = 1.50 m

ROAD (0.00 + 40.85 + 0.00) = 40.85 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	45	0.57	58.16	0.00	-15.13	-2.18	0.00	0.00	0.00	40.85

Segment Leq : 40.85 dBA

Total Leq All Segments: 48.16 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 55.00
(NIGHT): 48.16

STAMSON 5.0 NORMAL REPORT Date: 09-06-2017 08:52:51
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: com4_60d.te Time Period: Day/Night 16/8 hours
Description: 2ucu & 2ucu composite daytime ff 60 dBA

Road data, segment # 1: 2-UCU (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 : 60 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: 2-UCU (day/night)

Angle1 Angle2 : -90.00 deg 45.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 0
Surface : 1 (Absorptive ground surface)
Receiver source distance : 33.59 / 33.59 m
Receiver height : 1.50 / 4.50 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

Road data, segment # 2: 2-UCU (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 : 50 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 # 2: 2-UCU (day/night)

Angle1 Angle2 : -90.00 deg 45.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 0
Surface : 1 (Absorptive ground surface)
Receiver source distance : 70.00 / 70.00 m
Receiver height : 1.50 / 4.50 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

Results segment # 1: 2-UCU (day)

Source height = 1.50 m

ROAD (0.00 + 59.17 + 0.00) = 59.17 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	45	0.66	67.27	0.00	-5.81	-2.29	0.00	0.00	0.00	59.17

Segment Leq : 59.17 dBA

Results segment # 2: 2-UCU (day)

Source height = 1.50 m

ROAD (0.00 + 52.36 + 0.00) = 52.36 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	45	0.66	65.75	0.00	-11.11	-2.29	0.00	0.00	0.00	52.36

Segment Leq : 52.36 dBA

Total Leq All Segments: 59.99 dBA

Results segment # 1: 2-UCU (night)

Source height = 1.50 m

ROAD (0.00 + 52.00 + 0.00) = 52.00 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	45	0.57	59.67	0.00	-5.50	-2.18	0.00	0.00	0.00	52.00

Segment Leq : 52.00 dBA

Results segment # 2: 2-UCU (night)

Source height = 1.50 m

ROAD (0.00 + 45.47 + 0.00) = 45.47 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	45	0.57	58.16	0.00	-10.50	-2.18	0.00	0.00	0.00	45.47

Segment Leq : 45.47 dBA

Total Leq All Segments: 52.87 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 59.99
(NIGHT): 52.87

STAMSON 5.0 NORMAL REPORT Date: 09-06-2017 08:35:47
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: com4 65d.te Time Period: Day/Night 16/8 hours
Description: 2ucu & 2ucu composite daytime ff 65 dBA

Road data, segment # 1: 2-UCU (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 : 60 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: 2-UCU (day/night)

Angle1 Angle2 : -90.00 deg 45.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 0
Surface : 1 (Absorptive ground surface)
Receiver source distance : 16.78 / 16.78 m
Receiver height : 1.50 / 4.50 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

Road data, segment # 2: 2-UCU (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 : 50 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 # 2: 2-UCU (day/night)

Angle1 Angle2 : -90.00 deg 45.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 0
Surface : 1 (Absorptive ground surface)
Receiver source distance : 35.00 / 35.00 m
Receiver height : 1.50 / 4.50 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

Results segment # 1: 2-UCU (day)

Source height = 1.50 m

ROAD (0.00 + 64.17 + 0.00) = 64.17 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	45	0.66	67.27	0.00	-0.81	-2.29	0.00	0.00	0.00	64.17

Segment Leq : 64.17 dBA

Results segment # 2: 2-UCU (day)

Source height = 1.50 m

ROAD (0.00 + 57.35 + 0.00) = 57.35 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	45	0.66	65.75	0.00	-6.11	-2.29	0.00	0.00	0.00	57.35

Segment Leq : 57.35 dBA

Total Leq All Segments: 64.99 dBA

Results segment # 1: 2-UCU (night)

Source height = 1.50 m

ROAD (0.00 + 56.73 + 0.00) = 56.73 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	45	0.57	59.67	0.00	-0.76	-2.18	0.00	0.00	0.00	56.73

Segment Leq : 56.73 dBA

Results segment # 2: 2-UCU (night)

Source height = 1.50 m

ROAD (0.00 + 50.20 + 0.00) = 50.20 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	45	0.57	58.16	0.00	-5.78	-2.18	0.00	0.00	0.00	50.20

Segment Leq : 50.20 dBA

Total Leq All Segments: 57.60 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 64.99
(NIGHT): 57.60

STAMSON 5.0 NORMAL REPORT Date: 09-06-2017 09:56:49
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: com5_55d.te Time Period: Day/Night 16/8 hours
Description: 4uad & 2ucu composite daytime ff 55 dBA

Road data, segment # 1: 4-UAD (day/night)

Car traffic volume : 28336/2464 veh/TimePeriod *
Medium truck volume : 2254/196 veh/TimePeriod *
Heavy truck volume : 1610/140 veh/TimePeriod *

Posted speed limit : 60 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): 35000
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: 4-UAD (day/night)

Angle1 Angle2 : -90.00 deg 45.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 0
Surface : 1 (Absorptive ground surface)
Receiver source distance : 163.48 / 163.48 m
Receiver height : 1.50 / 4.50 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

Road data, segment # 2: 2-UCU (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 : 60 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 # 2: 2-UCU (day/night)

Angle1 Angle2 : -90.00 deg 45.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 0
Surface : 1 (Absorptive ground surface)
Receiver source distance : 170.00 / 170.00 m
Receiver height : 1.50 / 4.50 m

Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

Results segment # 1: 4-UAD (day)

Source height = 1.50 m

ROAD (0.00 + 54.17 + 0.00) = 54.17 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	45	0.66	73.68	0.00	-17.22	-2.29	0.00	0.00	0.00	54.17

Segment Leq : 54.17 dBA

Results segment # 2: 2-UCU (day)

Source height = 1.50 m

ROAD (0.00 + 47.48 + 0.00) = 47.48 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	45	0.66	67.27	0.00	-17.50	-2.29	0.00	0.00	0.00	47.48

Segment Leq : 47.48 dBA

Total Leq All Segments: 55.01 dBA

Results segment # 1: 4-UAD (night)

Source height = 1.50 m

ROAD (0.00 + 47.61 + 0.00) = 47.61 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	45	0.57	66.08	0.00	-16.29	-2.18	0.00	0.00	0.00	47.61

Segment Leq : 47.61 dBA

Results segment # 2: 2-UCU (night)

Source height = 1.50 m

ROAD (0.00 + 40.94 + 0.00) = 40.94 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	45	0.57	59.67	0.00	-16.55	-2.18	0.00	0.00	0.00	40.94

Segment Leq : 40.94 dBA

Total Leq All Segments: 48.46 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 55.01
(NIGHT): 48.46

STAMSON 5.0 NORMAL REPORT Date: 09-06-2017 10:01:58
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: com5_60d.te Time Period: Day/Night 16/8 hours
Description: 4uad & 2ucu composite daytime ff 60 dBA

Road data, segment # 1: 4-UAD (day/night)

Car traffic volume : 28336/2464 veh/TimePeriod *
Medium truck volume : 2254/196 veh/TimePeriod *
Heavy truck volume : 1610/140 veh/TimePeriod *
Posted speed limit : 60 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): 35000
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: 4-UAD (day/night)

Angle1 Angle2 : -90.00 deg 45.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 0
Surface : 1 (Absorptive ground surface)

Receiver source distance : 81.66 / 81.66 m
Receiver height : 1.50 / 4.50 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

Road data, segment # 2: 2-UCU (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 : 60 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 # 2: 2-UCU (day/night)

Angle1 Angle2 : -90.00 deg 45.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 0
Surface : 1 (Absorptive ground surface)
Receiver source distance : 85.00 / 85.00 m
Receiver height : 1.50 / 4.50 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

Results segment # 1: 4-UAD (day)

Source height = 1.50 m

ROAD (0.00 + 59.17 + 0.00) = 59.17 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	45	0.66	73.68	0.00	-12.22	-2.29	0.00	0.00	0.00	59.17

Segment Leq : 59.17 dBA

Results segment # 2: 2-UCU (day)

Source height = 1.50 m

ROAD (0.00 + 52.47 + 0.00) = 52.47 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	45	0.66	67.27	0.00	-12.51	-2.29	0.00	0.00	0.00	52.47

Segment Leq : 52.47 dBA

Total Leq All Segments: 60.01 dBA

Results segment # 1: 4-UAD (night)

Source height = 1.50 m

ROAD (0.00 + 52.35 + 0.00) = 52.35 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	45	0.57	66.08	0.00	-11.55	-2.18	0.00	0.00	0.00	52.35

Segment Leq : 52.35 dBA

Results segment # 2: 2-UCU (night)

Source height = 1.50 m

ROAD (0.00 + 45.67 + 0.00) = 45.67 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	45	0.57	59.67	0.00	-11.83	-2.18	0.00	0.00	0.00	45.67

Segment Leq : 45.67 dBA

Total Leq All Segments: 53.19 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 60.01
(NIGHT): 53.19

STAMSON 5.0 NORMAL REPORT Date: 09-06-2017 08:42:39
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: com5_65d.te Time Period: Day/Night 16/8 hours
Description: 4uad & 2ucu composite daytime ff 65 dBA

Road data, segment # 1: 4-UAD (day/night)

Car traffic volume : 28336/2464 veh/TimePeriod *
Medium truck volume : 2254/196 veh/TimePeriod *
Heavy truck volume : 1610/140 veh/TimePeriod *
Posted speed limit : 60 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): 35000
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: 4-UAD (day/night)

Angle1 Angle2 : -90.00 deg 45.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 0
Surface : 1 (Absorptive ground surface)
Receiver source distance : 40.81 / 40.81 m
Receiver height : 1.50 / 4.50 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

Road data, segment # 2: 2-UCU (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 : 60 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 # 2: 2-UCU (day/night)

Angle1 Angle2 : -90.00 deg 45.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 0
Surface : 1 (Absorptive ground surface)
Receiver source distance : 43.00 / 43.00 m
Receiver height : 1.50 / 4.50 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

Results segment # 1: 4-UAD (day)

Source height = 1.50 m

ROAD (0.00 + 64.17 + 0.00) = 64.17 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	45	0.66	73.68	0.00	-7.22	-2.29	0.00	0.00	0.00	64.17

Segment Leq : 64.17 dBA

Results segment # 2: 2-UCU (day)

Source height = 1.50 m

ROAD (0.00 + 57.39 + 0.00) = 57.39 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	45	0.66	67.27	0.00	-7.59	-2.29	0.00	0.00	0.00	57.39

Segment Leq : 57.39 dBA

Total Leq All Segments: 65.00 dBA

Results segment # 1: 4-UAD (night)

Source height = 1.50 m

ROAD (0.00 + 57.08 + 0.00) = 57.08 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	45	0.57	66.08	0.00	-6.83	-2.18	0.00	0.00	0.00	57.08

Segment Leq : 57.08 dBA

Results segment # 2: 2-UCU (night)

Source height = 1.50 m

ROAD (0.00 + 50.31 + 0.00) = 50.31 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	45	0.57	59.67	0.00	-7.18	-2.18	0.00	0.00	0.00	50.31

Segment Leq : 50.31 dBA

Total Leq All Segments: 57.91 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 65.00
(NIGHT): 57.91

Appendix E

Transportation Noise Source Predictions

- Detailed Predicted Mitigated Noise Level Calculations (Combined Road Noise Sources)

STAMSON 5.0 NORMAL REPORT Date: 06-10-2017 09:40:20
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: 2uau22.te Time Period: Day/Night 16/8 hours
Description: 2uau block 1 r1 mitigated with 2.2m barrier

Road data, segment # 1: 2-UAU (day/night)

Car traffic volume : 12144/1056 veh/TimePeriod *
Medium truck volume : 966/84 veh/TimePeriod *
Heavy truck volume : 690/60 veh/TimePeriod *
Posted speed limit : 60 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): 15000
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: 2-UAU (day/night)

Angle1 Angle2 : -90.00 deg 45.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 0
Surface : 1 (Absorptive ground surface)
Receiver source distance : 24.50 / 24.50 m
Receiver height : 1.50 / 4.50 m
Topography : 2 (Flat/gentle slope; with barrier)
Barrier angle1 : -90.00 deg Angle2 : 45.00 deg
Barrier height : 2.20 m
Barrier receiver distance : 7.75 / 7.75 m
Source elevation : 0.00 m
Receiver elevation : 0.00 m
Barrier elevation : 0.35 m
Reference angle : 0.00

Results segment # 1: 2-UAU (day)

Source height = 1.50 m

Barrier height for grazing incidence

Source ! Receiver ! Barrier ! Elevation of

Height (m) ! Height (m) ! Height (m) ! Barrier Top (m)

1.50 ! 1.50 ! 1.15 ! 1.50

ROAD (0.00 + 56.78 + 0.00) = 56.78 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	45	0.53	70.00	0.00	-3.26	-2.12	0.00	0.00	-7.83	56.78

Segment Leq : 56.78 dBA

Total Leq All Segments: 56.78 dBA

Results segment # 1: 2-UAU (night)

Source height = 1.50 m

Barrier height for grazing incidence

Source ! Receiver ! Barrier ! Elevation of
Height (m) ! Height (m) ! Height (m) ! Barrier Top (m)

1.50 ! 4.50 ! 3.20 ! 3.55

ROAD (0.00 + 56.88 + 0.00) = 56.88 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	45	0.44	62.40	0.00	-3.06	-2.00	0.00	0.00	-0.69	56.65*
-90	45	0.57	62.40	0.00	-3.35	-2.18	0.00	0.00	0.00	56.88

* Bright Zone !

Segment Leq : 56.88 dBA

Total Leq All Segments: 56.88 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 56.78
(NIGHT): 56.88

STAMSON 5.0 NORMAL REPORT Date: 09-06-2017 13:14:19
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: mit2uau.te Time Period: Day/Night 16/8 hours
Description: 2uau block 1 r1 mitigated

Road data, segment # 1: 2-UAU (day/night)

Car traffic volume : 12144/1056 veh/TimePeriod *
Medium truck volume : 966/84 veh/TimePeriod *
Heavy truck volume : 690/60 veh/TimePeriod *
Posted speed limit : 60 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): 15000
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: 2-UAU (day/night)

Angle1 Angle2 : -90.00 deg 45.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 0
Surface : 1 (Absorptive ground surface)
Receiver source distance : 24.50 / 24.50 m
Receiver height : 1.50 / 4.50 m
Topography : 2 (Flat/gentle slope; with barrier)
Barrier angle1 : -90.00 deg Angle2 : 45.00 deg
Barrier height : 2.50 m
Barrier receiver distance : 7.75 / 7.75 m
Source elevation : 0.00 m
Receiver elevation : 0.00 m
Barrier elevation : 0.35 m
Reference angle : 0.00

Results segment # 1: 2-UAU (day)

Source height = 1.50 m

Barrier height for grazing incidence

Source ! Receiver ! Barrier ! Elevation of

Height (m) ! Height (m) ! Height (m) ! Barrier Top (m)

1.50 ! 1.50 ! 1.15 ! 1.50

ROAD (0.00 + 55.69 + 0.00) = 55.69 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	45	0.51	70.00	0.00	-3.22	-2.10	0.00	0.00	-8.99	55.69

Segment Leq : 55.69 dBA

Total Leq All Segments: 55.69 dBA

Results segment # 1: 2-UAU (night)

Source height = 1.50 m

Barrier height for grazing incidence

Source Height (m) ! Receiver Height (m) ! Barrier Height (m) ! Elevation of Barrier Top (m)

1.50 ! 4.50 ! 3.20 ! 3.55

ROAD (0.00 + 56.88 + 0.00) = 56.88 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	45	0.42	62.40	0.00	-3.03	-1.98	0.00	0.00	-2.85	54.55*
-90	45	0.57	62.40	0.00	-3.35	-2.18	0.00	0.00	0.00	56.88

* Bright Zone !

Segment Leq : 56.88 dBA

Total Leq All Segments: 56.88 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 55.69
(NIGHT): 56.88

STAMSON 5.0 NORMAL REPORT Date: 06-10-2017 09:37:32
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: mit2ucu.te Time Period: Day/Night 16/8 hours
Description: 2ucu block 10 r2 mitigated

Road data, segment # 1: 2-UCU (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 : 60 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: 2-UCU (day/night)

Angle1 Angle2 : -90.00 deg 45.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 0
Surface : 1 (Absorptive ground surface)
Receiver source distance : 21.12 / 21.12 m
Receiver height : 1.50 / 4.50 m
Topography : 2 (Flat/gentle slope; with barrier)
Barrier angle1 : -90.00 deg Angle2 : 45.00 deg
Barrier height : 2.20 m
Barrier receiver distance : 7.00 / 7.00 m
Source elevation : 0.00 m
Receiver elevation : 0.00 m
Barrier elevation : 0.35 m
Reference angle : 0.00

Results segment # 1: 2-UCU (day)

Source height = 1.50 m

Barrier height for grazing incidence

Source ! Receiver ! Barrier ! Elevation of

Height (m) ! Height (m) ! Height (m) ! Barrier Top (m)

1.50 ! 1.50 ! 1.15 ! 1.50

ROAD (0.00 + 54.78 + 0.00) = 54.78 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	45	0.53	67.27	0.00	-2.27	-2.12	0.00	0.00	-8.10	54.78

Segment Leq : 54.78 dBA

Total Leq All Segments: 54.78 dBA

Results segment # 1: 2-UCU (night)

Source height = 1.50 m

Barrier height for grazing incidence

Source ! Receiver ! Barrier ! Elevation of
Height (m) ! Height (m) ! Height (m) ! Barrier Top (m)

1.50 ! 4.50 ! 3.15 ! 3.50

ROAD (0.00 + 55.16 + 0.00) = 55.16 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	45	0.44	59.67	0.00	-2.14	-2.00	0.00	0.00	-0.67	54.87*
-90	45	0.57	59.67	0.00	-2.33	-2.18	0.00	0.00	0.00	55.16

* Bright Zone !

Segment Leq : 55.16 dBA

Total Leq All Segments: 55.16 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 54.78
(NIGHT): 55.16

STAMSON 5.0 NORMAL REPORT Date: 20-10-2017 10:56:24
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: 2ucu25.te Time Period: Day/Night 16/8 hours
Description: 3311 Greenbank Block 10 ola w 2.5m high fence

Road data, segment # 1: 2-UCU (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 : 60 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: 2-UCU (day/night)

Angle1 Angle2 : -90.00 deg 45.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 0
Surface : 1 (Absorptive ground surface)
Receiver source distance : 21.12 / 21.12 m
Receiver height : 1.50 / 4.50 m
Topography : 2 (Flat/gentle slope; with barrier)
Barrier angle1 : -90.00 deg Angle2 : 45.00 deg
Barrier height : 2.50 m
Barrier receiver distance : 7.00 / 7.00 m
Source elevation : 0.00 m
Receiver elevation : 0.00 m
Barrier elevation : 0.35 m
Reference angle : 0.00

Results segment # 1: 2-UCU (day)

Source height = 1.50 m

Barrier height for grazing incidence

Source ! Receiver ! Barrier ! Elevation of

Height (m) ! Height (m) ! Height (m) ! Barrier Top (m)

1.50 ! 1.50 ! 1.15 ! 1.50

ROAD (0.00 + 53.62 + 0.00) = 53.62 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	45	0.51	67.27	0.00	-2.24	-2.10	0.00	0.00	-9.31	53.62

Segment Leq : 53.62 dBA

Total Leq All Segments: 53.62 dBA

Results segment # 1: 2-UCU (night)

Source height = 1.50 m

Barrier height for grazing incidence

Source ! Receiver ! Barrier ! Elevation of
Height (m) ! Height (m) ! Height (m) ! Barrier Top (m)

1.50 ! 4.50 ! 3.15 ! 3.50

ROAD (0.00 + 55.16 + 0.00) = 55.16 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	45	0.42	59.67	0.00	-2.11	-1.98	0.00	0.00	-2.90	52.69*
-90	45	0.57	59.67	0.00	-2.33	-2.18	0.00	0.00	0.00	55.16

* Bright Zone !

Segment Leq : 55.16 dBA

Total Leq All Segments: 55.16 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 53.62
(NIGHT): 55.16

Appendix F

Transportation Noise Source Predictions

- Detailed Predicted Freefield Noise Level Calculations (Realigned Greenbank Road)

STAMSON 5.0 NORMAL REPORT Date: 07-11-2016 13:47:44
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: 4uad 55d.te Time Period: Day/Night 16/8 hours
Description: 4 Lane Arterial ila 55 dBA

Road data, segment # 1: 4-UAD (day/night)

Car traffic volume : 28336/2464 veh/TimePeriod *
Medium truck volume : 2254/196 veh/TimePeriod *
Heavy truck volume : 1610/140 veh/TimePeriod *
Posted speed limit : 80 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): 35000
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: 4-UAD (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 : 240.92 / 90.66 m
Receiver height : 2.25 / 4.50 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

Results segment # 1: 4-UAD (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 0.64 76.17 0.00 -19.75 -1.42 0.00 0.00 0.00 55.00

Segment Leq : 55.00 dBA

Total Leq All Segments: 55.00 dBA

Results segment # 1: 4-UAD (night)

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 0.57 68.57 0.00 -12.27 -1.30 0.00 0.00 0.00 55.00

Segment Leq : 55.00 dBA

Total Leq All Segments: 55.00 dBA

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

STAMSON 5.0 NORMAL REPORT Date: 07-11-2016 13:51:17
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: 4uad 60d.te Time Period: Day/Night 16/8 hours
Description: 4 Lane Arterial ila 60 dBA

Road data, segment # 1: 4-UAD (day/night)

Car traffic volume : 28336/2464 veh/TimePeriod *
Medium truck volume : 2254/196 veh/TimePeriod *
Heavy truck volume : 1610/140 veh/TimePeriod *
Posted speed limit : 80 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): 35000
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: 4-UAD (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 : 119.32 / 43.54 m
Receiver height : 2.25 / 4.50 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

Results segment # 1: 4-UAD (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	0.64	76.17	0.00	-14.75	-1.42	0.00	0.00	0.00	60.00

Segment Leq : 60.00 dBA

Total Leq All Segments: 60.00 dBA

Results segment # 1: 4-UAD (night)

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	0.57	68.57	0.00	-7.27	-1.30	0.00	0.00	0.00	60.00

Segment Leq : 60.00 dBA

Total Leq All Segments: 60.00 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 60.00
(NIGHT): 60.00

STAMSON 5.0 NORMAL REPORT Date: 07-11-2016 13:52:49
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: 4uad 65d.te Time Period: Day/Night 16/8 hours
Description: 4 Lane Arterial ila 65 dBA

Road data, segment # 1: 4-UAD (day/night)

Car traffic volume : 28336/2464 veh/TimePeriod *
Medium truck volume : 2254/196 veh/TimePeriod *
Heavy truck volume : 1610/140 veh/TimePeriod *
Posted speed limit : 80 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): 35000
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: 4-UAD (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 : 59.05 / 20.92 m
Receiver height : 2.25 / 4.50 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

Results segment # 1: 4-UAD (day)

Source height = 1.50 m

ROAD (0.00 + 65.00 + 0.00) = 65.00 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.64	76.17	0.00	-9.75	-1.42	0.00	0.00	0.00	65.00

Segment Leq : 65.00 dBA

Total Leq All Segments: 65.00 dBA

Results segment # 1: 4-UAD (night)

Source height = 1.50 m

ROAD (0.00 + 65.00 + 0.00) = 65.00 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.57	68.57	0.00	-2.27	-1.30	0.00	0.00	0.00	65.00

Segment Leq : 65.00 dBA

Total Leq All Segments: 65.00 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 65.00
(NIGHT): 65.00

STAMSON 5.0 NORMAL REPORT Date: 07-11-2016 13:54:08
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: 4uad 70d.te Time Period: Day/Night 16/8 hours
Description: 4 Lane Arterial ila 70 dBA

Road data, segment # 1: 4-UAD (day/night)

Car traffic volume : 28336/2464 veh/TimePeriod *
Medium truck volume : 2254/196 veh/TimePeriod *
Heavy truck volume : 1610/140 veh/TimePeriod *
Posted speed limit : 80 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): 35000
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: 4-UAD (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 : 29.24 / 15.00 m
Receiver height : 2.25 / 4.50 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

Results segment # 1: 4-UAD (day)

Source height = 1.50 m

ROAD (0.00 + 70.00 + 0.00) = 70.00 dBA
Angle1 Angle2 Alpha RefLeq P.Adj D.Adj F.Adj W.Adj H.Adj B.Adj SubLeq

---

-90	90	0.64	76.17	0.00	-4.75	-1.42	0.00	0.00	0.00	70.00

Segment Leq : 70.00 dBA

Total Leq All Segments: 70.00 dBA

Results segment # 1: 4-UAD (night)

Source height = 1.50 m

ROAD (0.00 + 67.27 + 0.00) = 67.27 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.57	68.57	0.00	0.00	-1.30	0.00	0.00	0.00	67.27

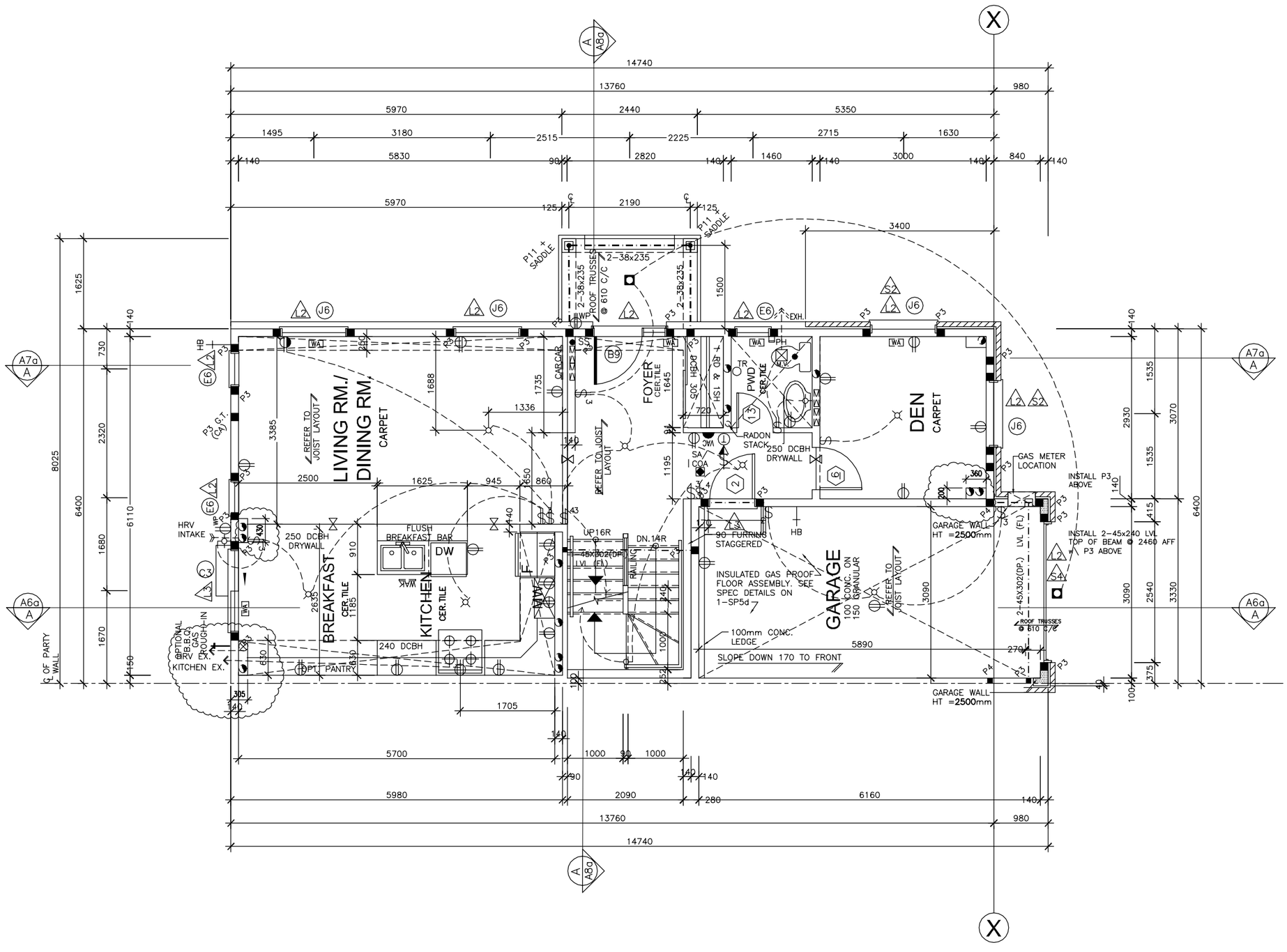
Segment Leq : 67.27 dBA

Total Leq All Segments: 67.27 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 70.00
(NIGHT): 67.27

Appendix G

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

C:\MINTO-CAD-CONTENT\MINTO-LOGOS-IMAGES\Minto_logo_blkw_horizontal_tagline.jpg

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

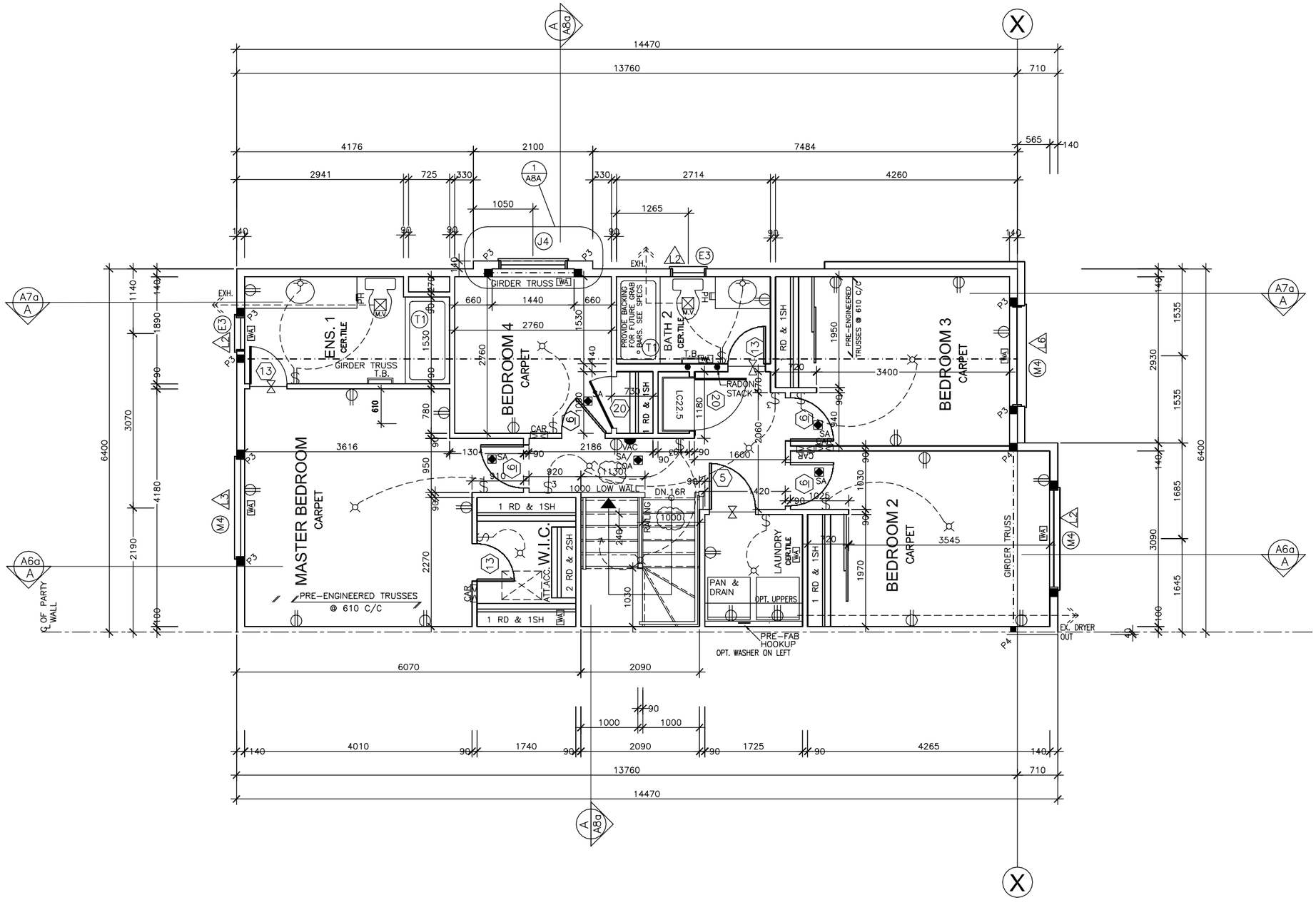
Scale 1:75

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	

C:\MINTO-CAD-CONTENT\MINTO-LOGOS-IMAGES\Minto_logo_bilw_horizontal_tagline.jpg

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

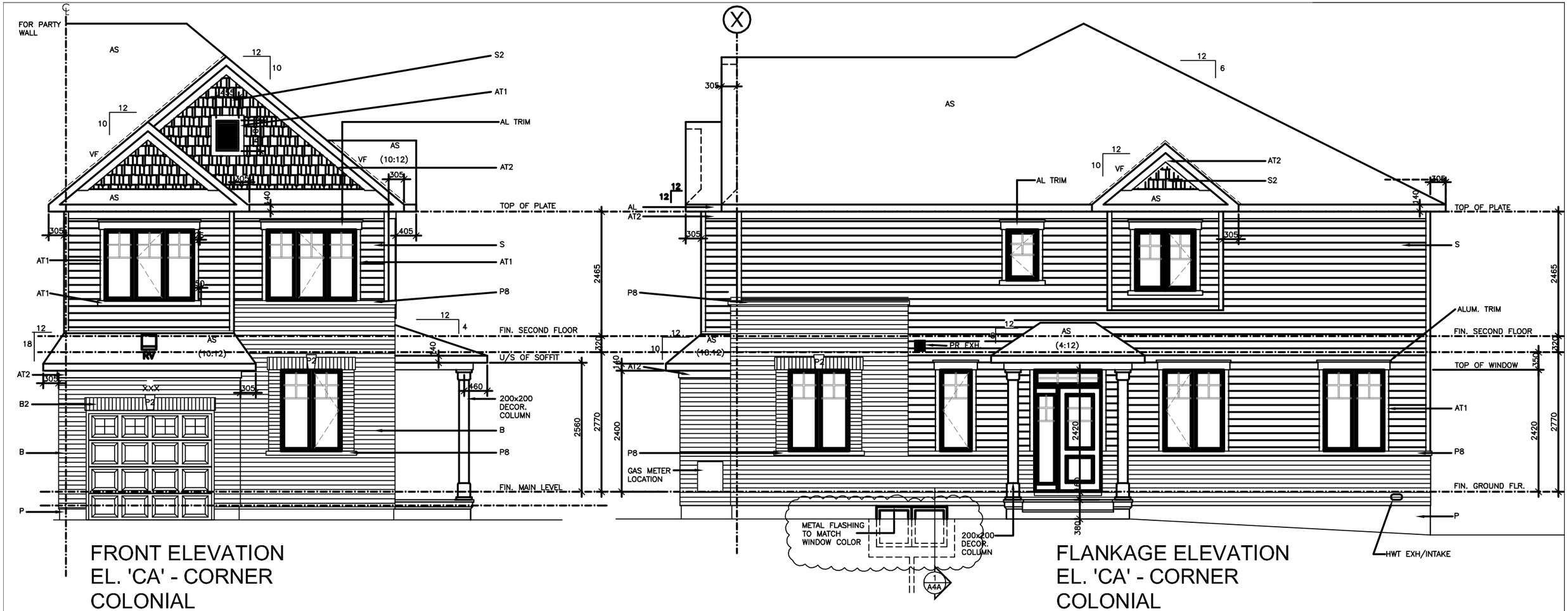
Scale 1:75

2015-20ft Excutive Townhomes

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

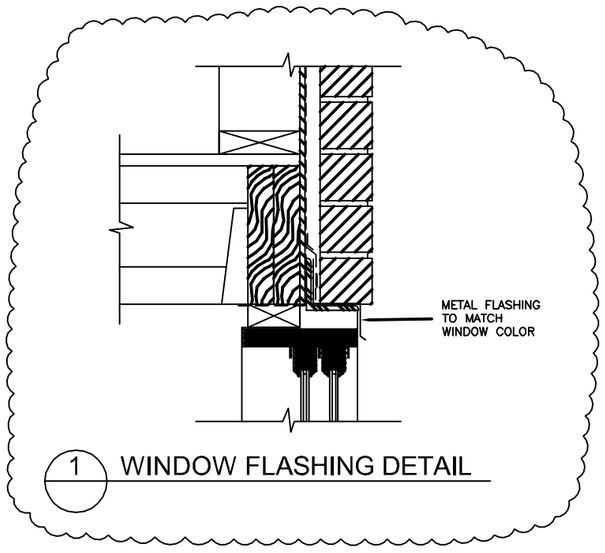
(2015 STANDARD DRAWING)

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	

G:\MINTO-CAD-CONTENT\MINTO-LOGOS-IMAGES\Minto_logo_blue_horizontal_tagline.jpg

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'

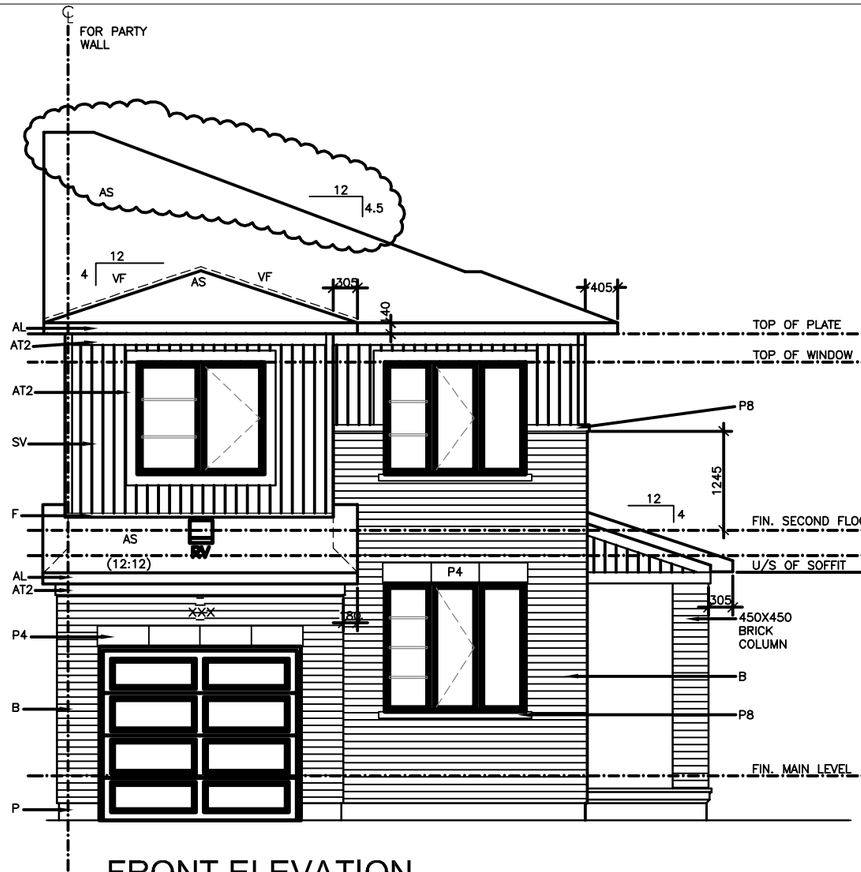
Acad File W:\15\15-18 MINTO OTTAWA\MODELS\6.2m PRODUCT\WORKING DRAWINGS\20-05.dwg

Scale 1:75

2015-36ft Singles

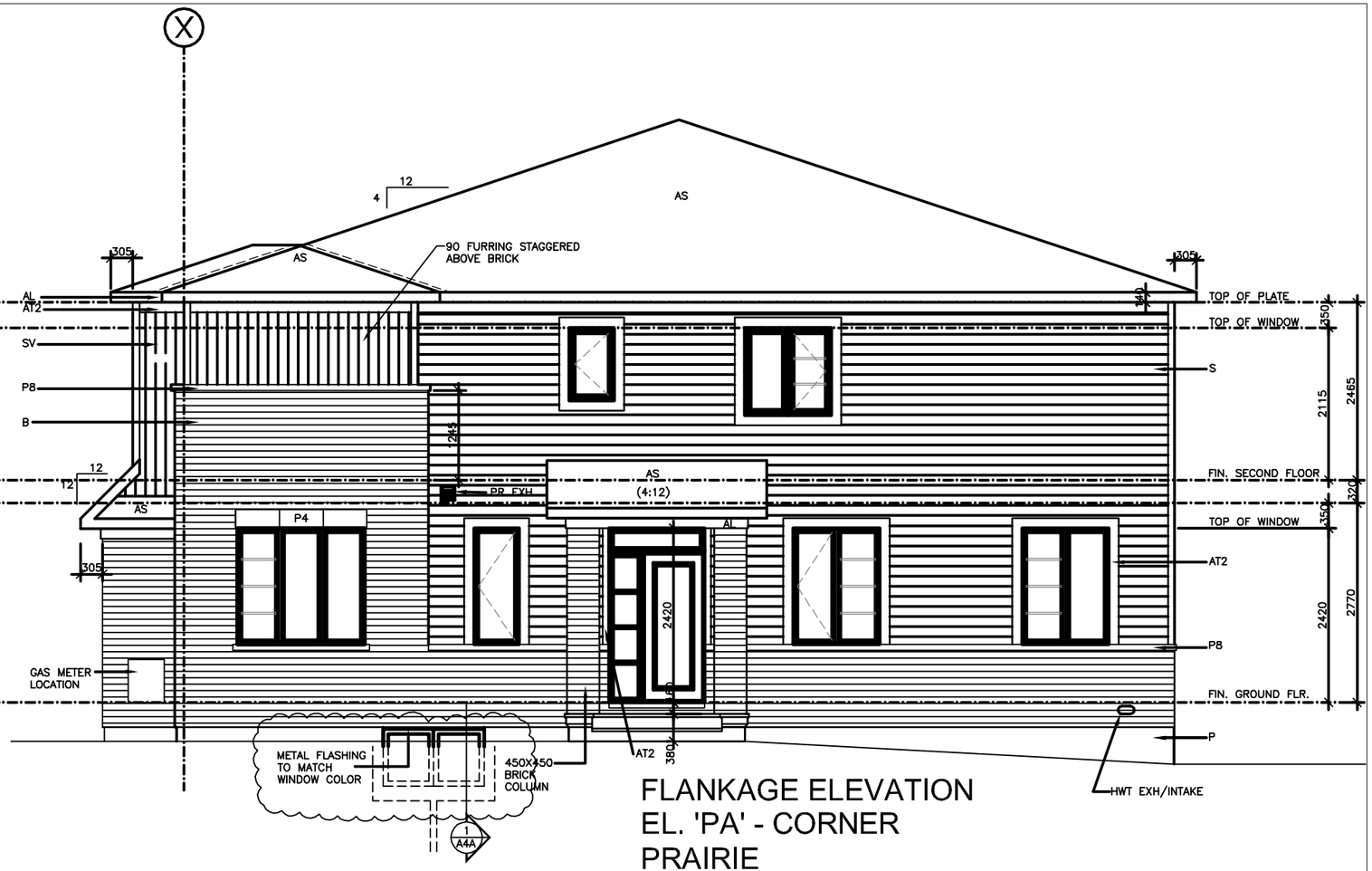
THE VENICE-2015-CA
THE VENICE-2015-PA

(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	

G:\MINTO-CAD-CONTENT\MINTO-LOGOS-IMAGES\Minto_logo_blue_horizontal_tagline.jpg

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.: 'PA'

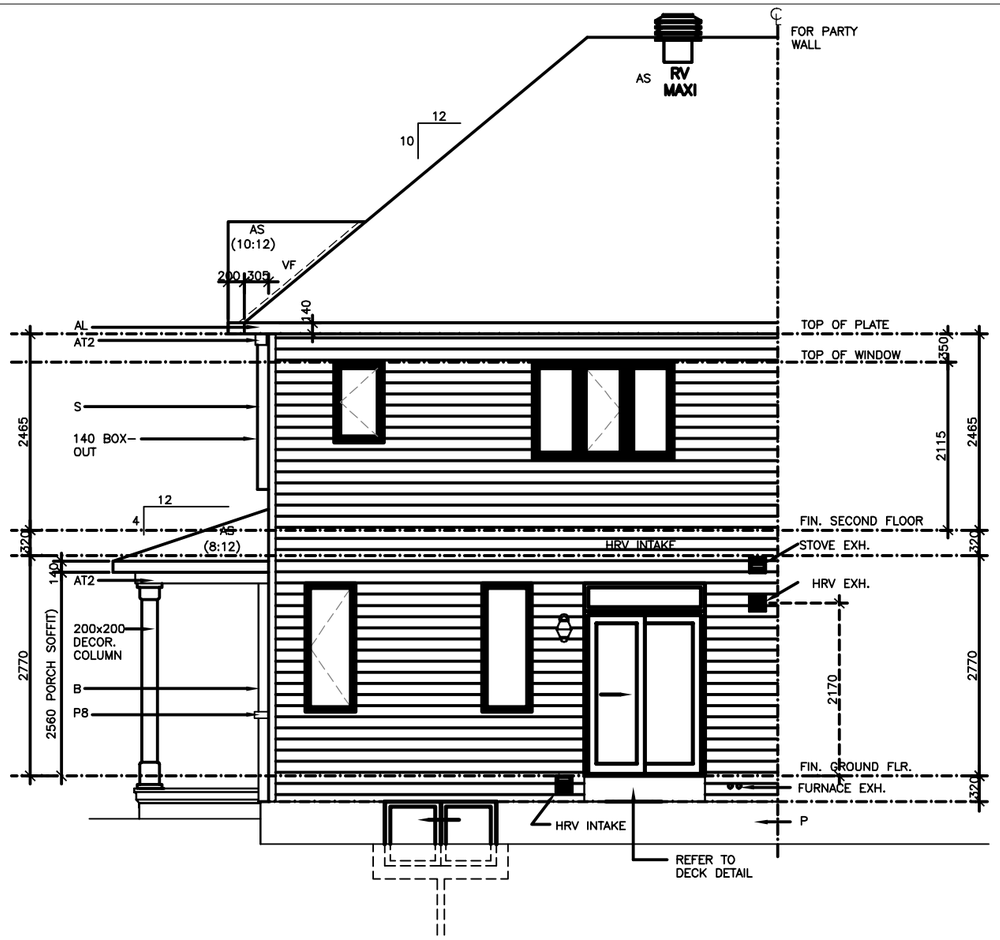
Acad File W:\15\15-18 MINTO OTTAWA\MODELS\6.2m PRODUCT\WORKING DRAWINGS\20-05.dwg

Scale 1:75

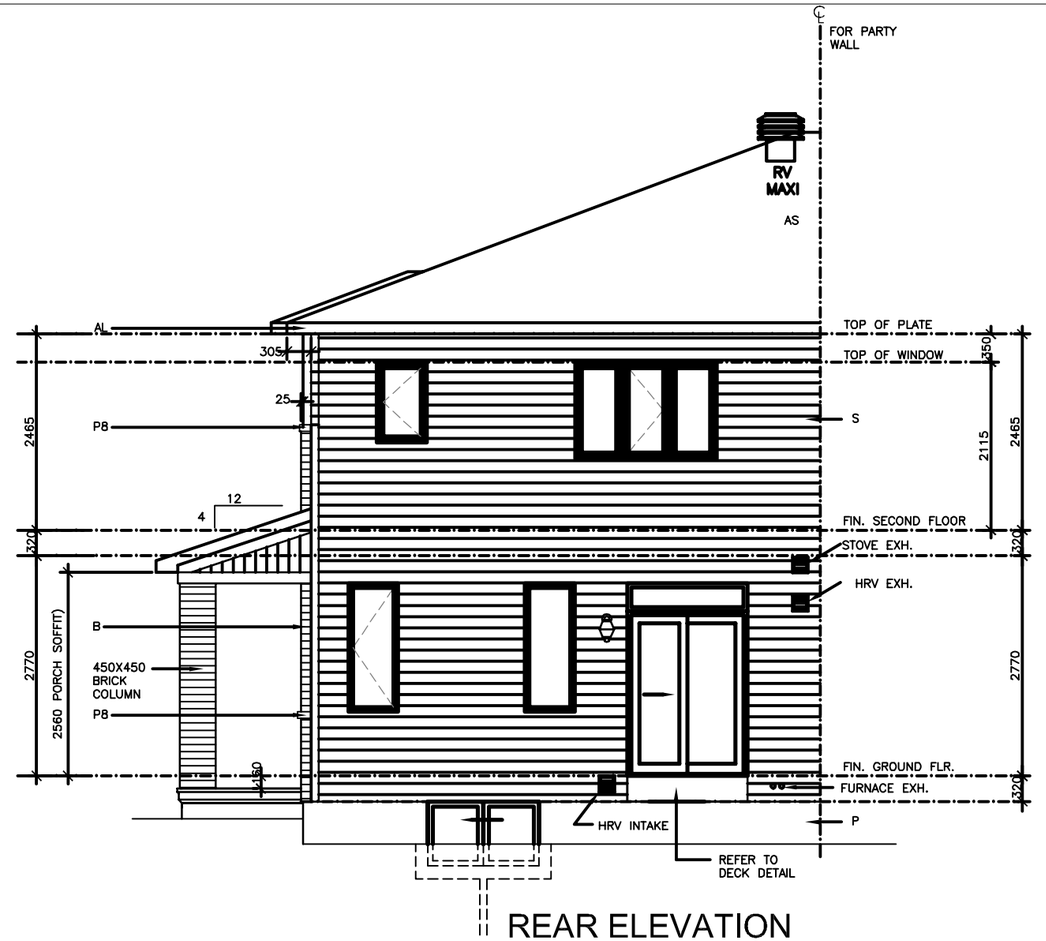
2015-36ft Singles

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

(2015 STANDARD DRAWING)



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	
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.
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	

D:\MINTO-CAD-CONTENT\MINTO-LOGOS-IMAGES\Minto_logo_blue_horizontal_tagline.jpg

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: REAR ELEVATION ELEV.: 'CA' & 'PA'

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)

Appendix H

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

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

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 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

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

Master Bedroom

Floor Area (sq.m) 17.3

	Width	Height	Area	
Window 1	1.8	1.2	2.16	
			2.16	Total Window Area
			12.49%	% 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 (rear)	4.2	2.5	10.50	10.50	
Exterior Wall (side)	0	0.0	0.00	-2.16	
				8.34	Total Exterior Wall Area
				48.21%	% of Floor Area

TABLE 9: BUILDING COMPONENT TEMPLATE

Architect:
Location: 3311 Greenbank Road
Building Type: Executive Townhouse (Venice)
Block Number: Blocks 1, 10
Front Façade Noise Level (dBA) 65

JLR No: 27519-0001
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%	30	2(6)2	31			EW1	34		
Bedroom 2	3	12.0	2.5	21%	-	-	7.7	64%	32	3(6)3(6)3	32	-	-	EW1	33	-	-
Kitchen / Breakfast / Living / Dining Room	2	35.6	3.8	11%	-	-	11.9	34%	25	2(6)2	31	-	-	EW1	36	-	-
Bedroom 3	3	11.9	2.5	21%	-	-	15.2	128%	32	3(6)3(6)3	32	-	-	EW2	32	-	-
Bedroom 4	2	7.6	1.4	19%	-	-	5.6	73%	30	4(6)4	30	-	-	EW1	32	-	-
Den	4	9.6	1.9	20%	-	-	7.1	74%	28	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.