Transportation Noise Assessment

Wateridge Village - Phase 1B

Blocks 15, 22 and 24

Proposed Residential Development
Hemlock Road and Codd's Road
City of Ottawa

August 11, 2017
Project: 117-0363

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1.0 INTRODUCTION

Valcoustics Canada Ltd. (VCL) was retained by Mattamy (Rockcliffe) Inc. to prepare a Transportation Noise Assessment report in support of the Site Plan Approval (SPA) application submission to the City of Ottawa. The potential sound levels and noise mitigation measures needed to comply with the Ministry of the Environment and Climate Change (MOE) and the City of Ottawa noise guidelines are outlined herein.

This report addresses the potential impact of transportation noise sources on the subject site described herein. The proposed development consists of three residential blocks (Blocks 15, 22 and 24) located within Phase 1B of the Wateridge Village development in the City of Ottawa.

The site is identified as:

Part of Lots 21, 22 and 23
Concession 1 (Ottawa Front)
Geographic Township of Gloucester
and Blocks 118-124, 126 and 127
Registered Plan 4M-1559
City of Ottawa

Wateridge Village is to be located on the site of the former Canadian Forces Rockcliffe Base. The overall site is bounded by:

- the National Research Council of Canada facility to the east;
- natural areas, with Sir George-Étienne Cartier Parkway (Rockcliffe Parkway) beyond, to the north;
- Aviation Parkway to the west; and
- existing residential, commercial and hospital uses to the south.

Phase 1B is at the middle southeast corner of the development, south of Hemlock Road and east of Codd's Road. Phase 1B will consist of residential, mixed-use, institutional and employment uses.

Blocks 15, 22 and 24 will consist of rear lane and stacked townhouse units. The units will be provided with small (less than 4 m in depth) private amenity terraces at the rooftops and over the garages. There will be 3 m front yards with at grade terraces and no grade-level outdoor amenity areas within these blocks.

Figure 1 shows a Key Plan.

This report is based on the Site Plan for Blocks 15, 22 and 24, prepared by Korsiak Urban Planning, dated August 1, 2017. The Site Plan is shown as Figure 2.

2.0 ENVIRONMENTAL NOISE ASSESSMENT

2.1 NOISE SENSITIVE RECEPTORS

The noise sensitive receptors as defined by the MOE Publication NPC-300, *"Stationary and Transportation Sources - Approval and Planning"* (see Appendix B), and the City of Ottawa Environmental Noise Control Guidelines, are all residential units within the development.

2.2 NOISE SOURCES

The main noise sources with potential for impact on Blocks 15, 22 and 24 will be road traffic on Montreal Road, Hemlock Road, Codd's Road, Burma Road and Mikinak Road. Aviation Parkway is located over 1000 m to the west of the proposed dwellings and Sir George-Étienne Parkway is located over 600 m to the north. Due to the distance separation, no significant noise impact from these roadways is anticipated at the subject site. Therefore, noise impact from these roadways has not been considered further in this assessment.

Standard ultimate traffic volumes and compositions were used. These volumes were obtained from the City of Ottawa ENCG Appendix B: Table of Traffic Parameters To Be Used for Sound Level Predictions. The road traffic data is summarized in Table 1.

A preliminary assessment of the noise impact due to the Rockcliffe Airport has been done. Based on the Environmental Noise Impact Assessment - Wateridge Village Phase 1B (prepared by IBI Group, and dated July 2016), the Rockcliffe Airport is operated by the Rockcliffe Flying Club and provides flying lessons in two and four seat Cessna planes. Although NEF/NEP contours are not available for the airport, a comparison was done between the NEF25 setback at Buttonville airport in Markham (relative to the runway centreline) and the proposed residential setback at the Rockcliffe Airport (relative to the runway centreline). It should be noted that Buttonville is a busy private airport with more than 100,000 movements per year. Based on the preliminary analysis discussed here, noise impacts due to Rockcliffe Airport will not be considered further in this report.

2.3 ENVIRONMENTAL NOISE GUIDELINES

City of Ottawa has implemented the "Environmental Noise Control Guideline" (ENCG) for use in the planning applications. With a few exceptions, the current version of the ENCG, dated January 2016, is based on the MOE Publication NPC-300, "*Stationary and Transportation Sources - Approval and Planning*". The environmental noise guidelines in NPC-300, as well as some items in the ENCG which are distinct from NPC-300, are described below.

2.3.1 MOE Publication NPC-300

In accordance with NPC-300, if the daytime sound level, $L_{eq\ Day}$(1), at the exterior plane of living/dining room windows is greater than 65 dBA, or if the nighttime sound level, $L_{eq\ Night}$(2), at the exterior plane of bedroom windows is greater than 60 dBA, means must be provided so that windows can be kept closed for noise control purposes and central air conditioning is required. For daytime sound exposures greater than 55 dBA and less than or equal to 65 dBA, or for nighttime sound exposures greater than 50 dBA and less than or equal to 60 dBA, there need only be the provision for adding air conditioning at a later date. For single family and townhouse dwellings, the provision is typically in the form of a ducted ventilation system suitably sized to permit the addition of central air conditioning by the occupant. A warning clause advising the occupants of the potential interference with some activities is also required.

For outdoor amenity areas ("Outdoor Living Areas"- OLA's), the design goal is 55 dBA $L_{eq\ Day}$, with an excess not exceeding 5 dBA considered acceptable if it is technically not practicable to achieve the 55 dBA objective, provided warning clauses are registered on title.

Note that for road traffic sources, a balcony is not considered an OLA, unless it is the only OLA for the occupant and it is:

- at least 4 m in depth; and
- unenclosed.

For indoor areas, the daytime guideline for living and dining rooms is $L_{eq\ Day} \leq$ 45 dBA for road traffic sound sources. The nighttime guideline for bedrooms is $L_{eq\ Night} \leq$ 40 dBA for road traffic sound sources.

2.3.2 City of Ottawa

The City of Ottawa requires that the noise analysis use standard ultimate road traffic volumes, subject to the road type and number of lanes. The ultimate daily traffic volumes listed in the ENCG Appendix B: Table of Traffic and Road Parameters To Be Used For Sound Level Predictions. The Table in included in Appendix A of this report.

Warning clauses are required whenever noise is expected to meet or exceed 55 dBA during the daytime (L_{eq},16 hour) in the outdoor living area or plane of window of any living space prior to mitigation.

(1) $L_{eq\ Day}$: 16-hour energy equivalent sound level (0700-2300 hours).
(2) $L_{eq\ Night}$: 8-hour energy equivalent sound level (2300-0700 hours).

The City of Ottawa also requires that the use of the 5 dB allowable excess in OLA sound levels be justified. For this purpose, the City requires an analysis of the sound levels for various alternative planning and engineering options (including setbacks, grades and calculated barrier height options) in increments of one dB from $L_{eq\ Day}$ 55 to 60 dBA.

The City of Ottawa has a minimum sound barrier fence height requirement of 2.2 m. The maximum sound barrier fence height is allowed to be determined by the City for a given development.

Note that all outdoor amenity areas in Blocks 15, 22 and 24 are elevated terraces at the rooftops and over the garages. Since these terraces are less than 4 m in depth, they do not qualify as OLA's under the guideline definitions. Thus, the OLA sound level limits do not apply at these terraces.

2.4 NOISE IMPACT ASSESSMENT

Using the road traffic data in Table 1, the sound energy exposures, in terms of $L_{eq\ Day}$ and $L_{eq\ Night}$, were determined using STAMSON V5.04 – ORNAMENT, the computerized road traffic noise prediction model of the MOE.

The highest *unmitigated daytime* sound level of 68 dBA would occur at the north facade of units fronting onto Hemlock Road (Townhouse Blocks 1 and 2 in Block 22, and Townhouse Blocks 1 to 3 in Block 24). The highest unmitigated *nighttime* sound level of 61 dBA would occur at the same locations.

Inherent screening of each building face due to its orientation to the noise source was taken into account. Screening from the other buildings in Blocks 15, 22 and 24 was also included in the assessment. However, to be conservative, screening from other development blocks within Wateridge Village was not included.

The existing residential development to the south will provide screening from road traffic on Montreal Road and a portion of Codd's Road. In particular, there are several rows of dwellings between the subject site and Montreal Road between Codd's Road and Burma Road. To be conservative, the existing dwellings were modelled as one row of 80% screening for Montreal Road and were not included as screening for Codd's Road.

For facade calculations, receptor heights of 12.9 m and 12.7 m were used for the rear lane and stacked townhouses, respectively. This corresponds to the height of the roof access to theOLA's, relative to the finished floor of the basement, based on the Proof of Concept plans prepared by Q4 Architects. (The receptor setback distances correspond to the facade closest to the roadways.) In the final design, the basement floor level will likely be lower than the road level, and there may not be any noise sensitive spaces at the roof access level. If this is the case, the worst case receptor heights would be lower than those used in the assessment, which would result in slightly lower sound levels than the predictions in this report.

Table 2 summarizes the predicted sound levels outdoors at specific locations. Note that Table 2 shows the contributions from each of the roadways as well as the total sound level at each location. Sound level calculations for sample locations are presented in Appendix C.

3.0 NOISE ABATEMENT REQUIREMENTS

The noise control measures can generally be classified into two categories which are interrelated, but which the designer can treat separately for the most part:

(a) Architectural elements to achieve acceptable indoor noise guidelines;

(b) Design features to protect the OLA's.

Noise abatement requirements are summarized in Table 3 and the notes to Table 3.

3.1 INDOORS

The indoor noise exposure guidelines can be achieved by using appropriate construction for exterior walls, windows and doors. The specific STC requirements of these building components will depend on the wall and window areas relative to the floor areas of the associated rooms. Since building plans have not yet been established for this development, it is not possible to calculate the specific STC requirements at this time. However, based on the predicted sound levels, upgraded exterior window construction is anticipated at all dwellings adjacent to Hemlock Road. Specific STC requirements for walls and windows should be determined once architectural plans are available. This would likely be a condition of site plan approval or a condition of building permit.

To assess the feasibility of meeting the indoor noise criteria, a sample calculation was done at a worst-case location (Townhouse Block 3, Unit 7 in development Block 24) adjacent to Hemlock Road. The daytime sound level at the north facade of this unit is predicted to be 68 dBA. The daytime sound level at the east facade is predicted to be 65 dBA. Based on typical assumptions, a corner bedroom with windows on both the northwest and northeast facades could be expected to have wall and window areas that are 80% and 30%, respectively, of the associated floor area, on each facade.

Based on the analysis procedures outlined in Building Practice Note BPN 56, *"Controlling Sound Transmission Into Buildings"*, as well as the assumptions outlined above, the STC requirements for elements of the building envelope were assessed. To meet the indoor noise criteria, exterior wall construction meeting STC 37 (typical construction meeting the non-acoustical requirements of the Ontario Building Code) and exterior window construction meeting STC 30 can be used. If wall constructions exceeding STC 37 are used (for example masonry), window STC requirements may be reduced. It is noted that windows with higher STC ratings may be required if the wall and window dimensions are greater than those used in this sample calculation. It is anticipated that dwellings farther setback from the roadways would have lower STC requirements due to the lower sound levels at the building facades.

Calculation details, as well as example window configurations and their STC ratings are shown in Appendix D.

As outlined in NPC-300, where the sound level on the outside of a window is greater than 60 dBA during the night or 65 dBA during the day, ventilation provisions must be made to permit the windows to remain closed. A commonly used technique is to provide central air conditioning. Table 3 indicates which dwellings would require mandatory air conditioning.

Where the nighttime sound levels are between 51 dBA and 60 dBA (or the daytime sound level is between 56 dBA and 65 dBA), the provision for the addition of air conditioning at the occupant's discretion is required. Table 3 indicates which dwellings would require the provision for the addition of air conditioning. In practice, this means forced air heating with adequately sized ductwork.

3.2 OUTDOORS

As previously noted, current building design includes private terraces at the rooftops and above the garages. (Note that only the rear lane townhouse units have been provided with garages.) There will be no grade-level outdoor amenity areas. Since the private terraces are less than 4 m in depth, they do not qualify as OLA's under MOE and ENCG guidelines. Thus, the sound level limits do not apply at these locations.

If the building design is modified to include terraces greater than 4 m depth, or if grade level amenity areas are added, the analysis should be updated to include these locations.

3.3 WARNING CLAUSES

Where the sound level guidelines are exceeded, appropriate warning clauses should be registered on title and included on Offers of Purchase and Sale to make future occupants aware of the potential noise situation. Lots requiring warning clauses and the wording for the City of Ottawa warning clauses are given in Table 3 and the notes to Table 3. Note, warning clauses in the ENCG have ventilation and sound barrier requirements grouped together. The ventilation and sound barrier requirements have been separated for use in Table 3 but the wording has been maintained.

As noted above, exact calculations of wall and window requirements cannot be completed at this point as architectural plans are not available, although a sample calculation based on typical room dimensions indicates that it will feasible to meet the indoor noise criteria. Reviews of building components (wall and window constructions) will be done prior to the application for building permit with dwelling-specific building component requirements to be included in the building permit application package.

Where upgraded wall and/or window constructions are anticipated, warning clauses include language indicating that building components have been designed to provide sound isolation performance that will result in the indoor sound level limits being met when windows and exterior doors are closed.

4.0 NON-RESIDENTIAL BLOCKS

The proposed future school blocks and employment lands which are not part of this phase of development, have the potential to generate noise which may impact the proposed site. Non-residential blocks have to be designed to comply with NPC-300, the MOE stationary noise source guideline, recognizing the surrounding residential development. This is typically addressed, in part, at the site plan approval stage of the non-residential development and, in part, in the detailed design stage. Any resulting mitigation required to meet the applicable MOE guidelines would be the responsibility of the developer/builder of the non-residential use.

Potential noise sources consist of rooftop or other mechanical equipment and possibly motor vehicle movements in parking lots. The former is easily addressed during detailed design,

considering equipment selection, location and the use of silencing components. The latter is typically dealt with sound barriers along the interface.

5.0 CONCLUSIONS

With the incorporation of the recommendations above, the indoor noise guidelines will be met at all units. Future occupants will be made aware of the potential noise situation through warning clauses, as per MOE guidelines.

6.0 REFERENCES

1. "PC STAMSON 5.04 Computer Program for Road Traffic Noise Assessment", Ontario Ministry of the Environment.

2. Building Practice Note No. 56: "Controlling Sound Transmission into Buildings", by J. D. Quirt, Division of Building Research, National Council of Canada, September, 1985.

3. Environmental Noise Guideline NPC-300, "Stationary and Transportation Noise Sources - Approval and Planning", Ontario Ministry of the Environment and Climate Change, August 2013.

4. "Road and Rail Noise: Effects on Housing", Canada Mortgage and Housing Corporation, Publication NHA 5156, 81/10.

5. "City of Ottawa Environmental Noise Control Guidelines", January 2016.

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TABLE 1

ROAD TRAFFIC DATA

Roadway	Classification	Ult. AADT	% Trucks		Speed Limit (kph)	Day/ Night Split (%)
			Medium	Heavy		
Montreal Road	4-UAD	35 000	7	5	60	92/8
Hemlock Road	2-UMCU	12 000	7	5	50	92/8
Codd's Road	2-UMCU	12 000	7	5	50	92/8
Burma Road	2-UMCU	12 000	7	5	50	92/8
Mikinak	2-UCU	8 000	7	5	50	92/8

Note:

(1) As per Appendix B of the City of Ottawa "Environmental Noise Control Guidelines", dated January 2016.

TABLE 2

PREDICTED UNMITIGATED SOUND LEVELS OUTDOORS

Location[1]	Source	$L_{eq\ Day}$[2] (dBA)	$L_{eq\ Night(2)}$ (dBA)
Block 15			
Townhouse Block 1 - Unit 1 (North Facade)	Hemlock Road	47	40
	Mikinak Road	65	58
	Codd's Road	43	36
	TOTAL	**66**	**58**
Townhouse Block 4 - Unit 8 (North Facade)	Hemlock Road	50	43
	Mikinak Road	65	58
	Burma Road	49	42
	TOTAL	**66**	**58**
Townhouse Block 11 - Unit 1 (North Facade)	Hemlock Road	44	36
	Mikinak Road	52	45
	Burma Road	43	36
	TOTAL	**53**	**46**
Townhouse Block 13 - Unit 1 (North Facade)	Hemlock Road	49	42
	Mikinak Road	58	51
	Burma Road	50	42
	TOTAL	**59**	**52**
Townhouse Block 14 - Unit 1 (East Facade)	Hemlock Road	48	40
	Mikinak Road	55	48
	Burma Road	51	43
	TOTAL	**57**	**50**
Townhouse Block 15 - Unit 1 (East Facade)	Hemlock Road	47	39
	Mikinak Road	54	46
	Burma Road	51	43
	TOTAL	**56**	**48**

.../cont'd

TABLE 2 (continued)

PREDICTED UNMITIGATED SOUND LEVELS OUTDOORS

Location[1]	Source	$L_{eq\ Day}$[3] (dBA)	$L_{eq\ Night(4)}$ (dBA)
Block 15			
Townhouse Block 15 - Unit 7 (South Facade)	Montreal Road	50	42
	Codd's Road	46	38
	Burma Road	49	41
	TOTAL	**53**	**46**
Townhouse Block 16 - Unit 1 (North Facade)	Hemlock Road	46	39
	Mikinak Road	58	51
	Codd's Road	44	37
	TOTAL	**59**	**51**
Townhouse Block 17 - Unit 1 (West Facade)	Hemlock Road	46	38
	Mikinak Road	56	48
	Codd's Road	49	41
	TOTAL	**57**	**50**
Townhouse Block 18 - Unit 1 (North Facade)	Hemlock Road	45	37
	Mikinak Road	54	47
	Codd's Road	46	39
	TOTAL	**55**	**48**
Townhouse Block 19 - Unit 1 (South Facade)	Montreal Road	48	41
	Codd's Road	48	41
	TOTAL	**51**	**44**
Block 22			
Townhouse Block 2 - Unit 6 (North Facade)	Hemlock Road	68	61
	Burma Road	47	40
	Codd's Road	46	38
	TOTAL	**68**	**61**

..../cont'd

TABLE 2 (continued)

PREDICTED UNMITIGATED SOUND LEVELS OUTDOORS

Location[1]	Source	$L_{eq\ Day}$[3] (dBA)	$L_{eq\ Night(4)}$ (dBA)
Block 22			
Townhouse Block 3 - Unit 1 (West Facade)	Hemlock Road	60	53
	Mikinak Road	50	43
	Codd's Road	50	42
	TOTAL	**61**	**53**
Townhouse Block 4 - Unit 1 (East Facade)	Hemlock Road	58	50
	Mikinak Road	47	40
	TOTAL	**58**	**50**
Block 24			
Townhouse Block 1 - Unit 1 (North Facade)	Hemlock Road	68	61
	Burma Road	48	40
	Codd's Road	45	38
	TOTAL	**68**	**61**
Townhouse Block 3 - Unit 7 (East Facade)	Hemlock Road	65	58
	Mikinak Road	49	41
	Burma Road	53	45
	TOTAL	**65**	**58**
Townhouse Block 3 - Unit 7 (North Facade)	Hemlock Road	68	61
	Burma Road	51	43
	TOTAL	**68**	**61**
Townhouse Block 4 - Unit 1 (North Facade)	Hemlock Road	58	50
Townhouse Block 5 - Unit 6 (West Facade)	Hemlock Road	53	46
	Mikinak Road	58	51
	Codd's Road	47	39
	TOTAL	**60**	**52**

.../cont'd

TABLE 2 (continued)

PREDICTED UNMITIGATED SOUND LEVELS OUTDOORS

Location[(1)]	Source	$L_{eq\ Day}$[(3)] (dBA)	$L_{eq\ Night(4)}$ (dBA)
Block 24			
Townhouse Block 10 - Unit 1 (East Facade)	Hemlock Road	58	50
	Mikinak Road	50	43
	Burma Road	52	45
	TOTAL	**59**	**52**
Townhouse Block 11 - Unit 6 (East Facade)	Hemlock Road	52	44
	Mikinak Road	56	49
	Burma Road	51	44
	TOTAL	**58**	**51**
Townhouse Block 12 - Unit 1 (South Facade)	Mikinak Road	66	59
	Codd's Road	46	38
	TOTAL	**66**	**59**
Townhouse Block 14 - Unit 7 (South Facade)	Mikinak Road	66	59
	Burma Road	46	39
	TOTAL	**66**	**59**
Townhouse Block 14 - Unit 7 (East Facade)	Hemlock Road	51	43
	Mikinak Road	63	56
	Burma Road	51	43
	TOTAL	**64**	**56**

Notes:

(1) See Figure 2.
(2) Rear lane townhouse receptors were assessed at a height of 12.9 m above grade. Stacked townhouse receptors were assessed at a height of 12.7 m above grade.

TABLE 3

NOISE ABATEMENT MEASURES

Location	Air Conditioning[1]	Exterior Wall and Window[2]	Sound Barrier[4]	Warning Clauses[5]
Block 15				
Townhouse Blocks 1 to 3	Mandatory	Upgraded window construction is expected	None	A + C + E
Townhouse Block 4	Mandatory	Upgraded window construction is expected	None	A + C + D + E
Townhouse Blocks 13 to 17	Provision for adding	Upgraded construction may be required	None	A + B + E
All other locations	No special acoustical requirements			E
Block 22				
Blocks 1 and 2	Mandatory	Upgraded window construction is expected	None	A + C + E
Blocks 3 and 4	Provision for adding	Upgraded construction may be required	None	A + B + E
Block 24				
Blocks 1, 2, 12 and 13	Mandatory	Upgraded window construction is expected	None	A + C + E
Blocks 3 and 14	Mandatory	Upgraded window construction is expected	None	A + C + D + E
Blocks 4 and 5	Provision for adding	Upgraded construction may be required	None	A + B + E
Blocks 10 and 11	Provision for adding	Upgraded construction may be required	None	A + B + D + E
All other locations	No special acoustical requirements			E

For notes to this table, see following page.

NOTES TO TABLE 3

(1) Where means must be provided to allow windows to remain closed for noise control purposes, a commonly used technique is that of central air conditioning. Where possible, air cooled condenser units, if any, should be located in a noise insensitive area.

Provision for air conditioning would correspond to a ducted, forced air heating system, which would allow the addition of central air conditioning at a later date by the occupant.

(2) STC - Sound Transmission Class Rating (Reference ASTM-E413). Values, where shown, are based on assumed areas. Requirements should be checked once building plans become available.

OBC indicates that construction meeting the minimum non-acoustical requirements of the Ontario Building Code will provide adequate sound isolation.

(3) STC - Sound Transmission Class Rating (Reference ASTM-E413). A sliding glass walkout door should be considered as a window and be included in the percentage of glazing. Values shown are based on assumed areas. Requirements should be checked once building plans become available.

OBC indicates that construction meeting the minimum non-acoustical requirements of the Ontario Building Code will provide adequate sound isolation.

(4) Sound barriers must be of solid construction having a minimum face density of 20 kg/m^2 with no gaps or cracks. Earthen berms, solid fences or combinations of berms/fences are acceptable.

(5) Warning clauses to be registered on title and be included in Offers of Purchase and Sale for designated lots:

A. "The Transferee, for himself, his heirs, executors, administrators, successors and assigns acknowledge being advised that despite the inclusion of noise control features in the development and/or within the building unit sound levels due to increasing road traffic may occasionally interfere with some indoor and/or outdoor activities of the dwelling occupants as the sound levels may at times exceed the sound level limits of the City of Ottawa and the Ministry of the Environment and Climate Change noise criteria."

"This development includes a number of measures to help reduce noise impacts, listed below. To ensure that provincial and municipal sound level limits are not exceeded and/or to keep sound levels as low as possible it is important to maintain the sound attenuation features provided."

"This development includes building and street orientation to help increase setback distances to major noise sources and shield some rear yards from excessive noise levels."

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

"The building components of this dwelling unit (walls, windows and exterior doors) have been designed to provide acoustic insulation so that, when windows and exterior doors are closed, the indoor sound levels are within the sound level limits of the City of Ottawa and the Ministry of Environment and Climate Change. The details of this building component design are available by contacting the builder of this unit."

C. "This dwelling unit has been supplied with a central air conditioning system which will allow windows and exterior doors to remain closed, thereby ensuring that the indoor sound levels are within the sound level limits of the City and the Ministry of the Environment."

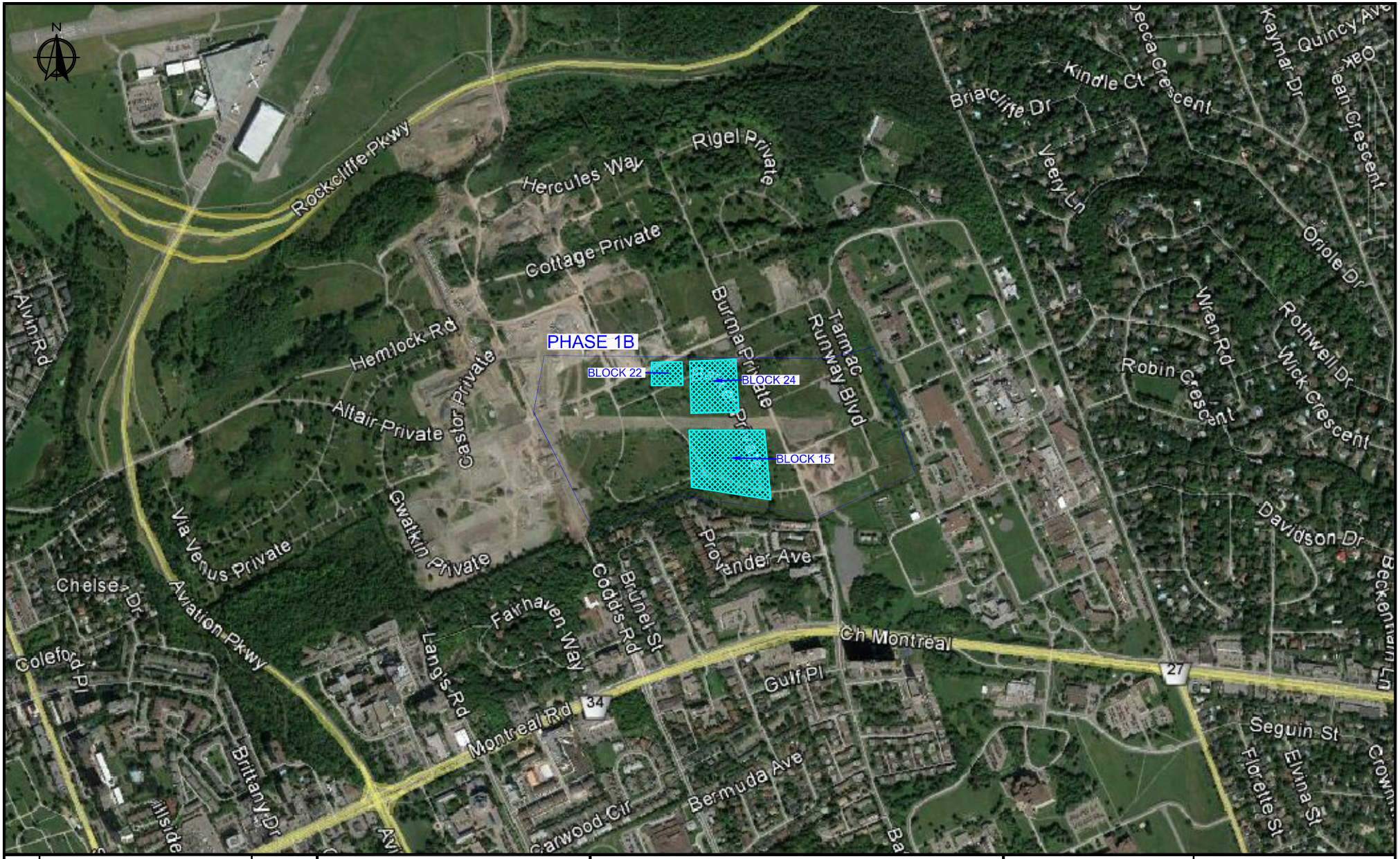
"The building components of this dwelling unit (walls, windows and exterior doors) have been designed to provide acoustic insulation so that, when windows and exterior doors are closed, the indoor sound levels are within the sound level limits of the City of Ottawa and the Ministry of Environment and Climate Change. The details of this building component design are available by contacting the builder of this unit."

D. "The Transferee, for himself, his heirs, executors, administrators, successors and assigns acknowledge being additionally advised that due to the proximity of the adjacent school, sound levels from the school may at times be audible"

E. "The Transferee, for himself, his heirs, executors, administrators, successors and assigns acknowledge being additionally advised that due to the proximity of the Rockcliffe Airport, sound levels from the airport may at times be audible"

(6) Conventional ventilated attic roof construction meeting OBC requirements is satisfactory.

(7) All exterior doors shall be fully weatherstripped.



No.	Revision/Issue	Date

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Title
Key Plan

Project No.
117-0363

Date
Aug. 3, 2017

Project Name
Wateridge Village Phase 1B - Blocks 15, 22 and 24

Scale
N.T.S.

Figure
1

BASE DRAWING BY KORSIAK URBAN PLANNING

No.	Revision/Issue	Date

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Title	Project No.	Date
Site Plan	117-0363	Aug. 3, 2017
Project Name Wateridge Village Phase 1B Blocks 15, 22 and 24	**Scale** N.T.S.	**Figure** 2

APPENDIX A

ROAD TRAFFIC DATA

Appendix B (Reference 6)

Traffic And Road Parameters To Be Used For Sound Level Predictions

ROW Width (m)	Implied Roadway Class	AADT Vehicles/ Day	Posted Speed Km/Hr	Day/Night Split %	Medium Trucks %	Heavy Trucks %[1]
NA[2]	Freeway, Queensway, Highway	18,333 per lane	100	92/8	7	5
37.5-44.5	6-Lane Urban Arterial-Divided (6-UAD)	50000	50 - 80	92/8	7	5
34-37.5	4-Lane Urban Arterial-Divided (4-UAD)	35000	50 - 80	92/8	7	5
23-34	4-Lane Urban Arterial-Undivided (4-UAU)	30000	50 - 80	92/8	7	5
23-34	4-Lane Major Collector (4-UMCU)	24000	40 -60	92/8	7	5
30-35.5	2-Lane Rural Arterial (2-RAU)	15000	50 - 80	92/8	7	5
20-30	2-Lane Urban Arterial (2-UAU)	15000	50 - 80	92/8	7	5
20-30	2-Lane Major Collector (2-UMCU)	12000	40 - 60	92/8	7	5
30-35.5	2-Lane Outer Rural Arterial (near the extremities of the City) (2-RAU)	10000	50 -80	92/8	7	5
20-30	2-Lane Urban Collector (2-UCU)	8000	40 -50	92/8	7	5

[1] The MOE Vehicle Classification definitions should be used to estimate automobiles, medium trucks and heavy trucks.
[2] The number of lanes is determined by the future mature state of the roadway.

APPENDIX B

ENVIRONMENTAL NOISE GUIDELINES

APPENDIX B

ENVIRONMENTAL NOISE GUIDELINES

MINISTRY OF THE ENVIRONMENT AND CLIMATE CHANGE (MOE)

Reference: MOE Publication NPC-300, October 2013: "Environmental Noise Guideline, Stationary and Transportation Source – Approval and Planning".

SPACE	SOURCE	TIME PERIOD	CRITERION
Living/dining, den areas of residences, hospitals, nursing homes, schools, daycare centres, etc.	Road	07:00 to 23:00	45 dBA
	Rail	07:00 to 23:00	40 dBA
	Aircraft	24-hour period	NEF/NEP 5
Living/dining, den areas of residences, hospitals, nursing homes, etc. (except schools or daycare centres)	Road	23:00 to 07:00	45 dBA
	Rail	23:00 to 07:00	40 dBA
	Aircraft	24-hour period	NEF/NEP 5
Sleeping quarters	Road	07:00 to 23:00	45 dBA
	Rail	07:00 to 23:00	40 dBA
	Aircraft	24-hour period	NEF/NEP 0
Sleeping quarters	Road	23:00 to 07:00	40 dBA
	Rail	23:00 to 07:00	35 dBA
	Aircraft	24-hour period	NEF/NEP 0
Outdoor Living Areas	Road and Rail	07:00 to 23:00	55 dBA
Outdoor Point of Reception	Aircraft	24-hour period	NEF/NEP 30#
	Stationary Source		
	Class 1 Area	07:00 to 19:00(1)	50* dBA
		19:00 to 23:00(1)	50* dBA
	Class 2 Area	07:00 to 19:00(2)	50* dBA
		19:00 to 23:00(2)	45* dBA
	Class 3 Area	07:00 to 19:00(3)	45* dBA
		19:00 to 23:00(3)	40* dBA
	Class 4 Area	07:00 to 19:00(4)	55* dBA
		19:00 to 23:00(4)	55* dBA

..../cont'd

SPACE	SOURCE	TIME PERIOD	CRITERION
Plane of a Window of Noise Sensitive Spaces	Stationary Source		
	Class 1 Area	07:00 to 19:00(1)	50* dBA
		19:00 to 23:00(1)	50* dBA
		23:00 to 07:00(1)	45* dBA
	Class 2 Area	07:00 to 19:00(2)	50* dBA
		19:00 to 23:00(2)	50* dBA
		23:00 to 07:00(2)	45* dBA
	Class 3 Area	07:00 to 19:00(3)	45* dBA
		19:00 to 23:00(3)	45* dBA
		23:00 to 07:00(3)	40* dBA
	Class 4 Area	07:00 to 19:00(4)	60* dBA
		19:00 to 23:00(4)	60* dBA
		23:00 to 07:00(4)	55* dBA

\# may not apply to in-fill or re-development.
* or the minimum hourly background sound exposure $L_{eq}(1)$, due to road traffic, if higher.
(1) Class 1 Area : Urban
(2) Class 2 Area : Urban during day; rural-like evening and night
(3) Class 3 Area : Rural
(4) Class 4 Area: Subject to land use planning authority's approval

Reference: MOE Publication ISBN 0-7729-2804-5, 1987: "Environmental Noise Assessment in Land-Use Planning".

EXCESS ABOVE RECOMMENDED SOUND LEVEL LIMITS (dBA)	CHANGE IN SUBJECTIVE LOUDNESS ABOVE	MAGNITUDE OF THE NOISE PROBLEM	NOISE CONTROL MEASURES (OR ACTION TO BE TAKEN)
No excess (<55 dBA)	—	No expected noise problem	None
1 to 5 inclusive (56 to 60 dBA)	Noticeably louder	Slight noise impact	If no physical measures are taken, then prospective purchasers or tenants should be made aware by suitable warning clauses.
6 to 10 inclusive (61 - 65 dBA)	Almost twice as loud	Definite noise impact	Recommended.
11 to 15 inclusive (66 - 70 dBA)	Almost three times as loud	Serious noise impact	Strongly Recommended.
16 and over (>70 dBA)	Almost four times as loud	Very serious noise impact	Strongly Recommended (may be mandatory).

APPENDIX C

SOUND LEVEL CALCULATIONS

STAMSON 5.04 NORMAL REPORT Date: 04-08-2017 10:53:58
MINISTRY OF THE ENVIRONMENT AND CLIMATE CHANGE / NOISE ASSESSMENT

Filename: b1_1_nf.te Time Period: Day/Night 16/8 hours
Description: Block 15 - Block 1, Unit 1 (North Face)

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

Car traffic volume : 9715/845 veh/TimePeriod *
Medium truck volume : 773/67 veh/TimePeriod *
Heavy truck volume : 552/48 veh/TimePeriod *
Posted speed limit : 50 km/h
Road gradient : 0 %
Road pavement : 1 (Typical asphalt or concrete)

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

24 hr Traffic Volume (AADT or SADT): 12000
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: Hemlock (day/night)

Angle1 Angle2 : -90.00 deg 0.00 deg
Wood depth : 0 (No woods.)
No of house rows : 1 / 1
House density : 50 %
Surface : 1 (Absorptive ground surface)
Receiver source distance : 171.00 / 171.00 m
Receiver height : 12.90 / 12.90 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

Road data, segment # 2: Mikinak (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 : 0 %
Road pavement : 1 (Typical asphalt or concrete)

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

24 hr Traffic Volume (AADT or SADT): 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: Mikinak (day/night)

Angle1 Angle2 : -90.00 deg 90.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 0
Surface : 2 (Reflective ground surface)
Receiver source distance : 16.00 / 16.00 m

```
Receiver height           :  12.90 / 12.90  m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00

Road data, segment # 3: Codds (day/night)
-----------------------------------------
Car traffic volume  :  9715/845   veh/TimePeriod  *
Medium truck volume :   773/67    veh/TimePeriod  *
Heavy truck volume  :   552/48    veh/TimePeriod  *
Posted speed limit  :    50 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

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

    24 hr Traffic Volume (AADT or SADT):  12000
    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 # 3: Codds (day/night)
---------------------------------------
Angle1   Angle2           :   0.00 deg   50.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  : 365.00 / 365.00 m
Receiver height           :  12.90 / 12.90  m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00

Results segment # 1: Hemlock (day)
----------------------------------

Source height = 1.50 m

ROAD (0.00 + 47.20 + 0.00) = 47.20 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90      0   0.32  67.51   0.00 -13.93  -3.82   0.00  -2.56   0.00  47.20
-------------------------------------------------------------------------------

Segment Leq : 47.20 dBA

Results segment # 2: Mikinak (day)
----------------------------------

Source height = 1.50 m

ROAD (0.00 + 65.47 + 0.00) = 65.47 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90     90   0.00  65.75   0.00  -0.28   0.00   0.00   0.00   0.00  65.47
-------------------------------------------------------------------------------

Segment Leq : 65.47 dBA

Results segment # 3: Codds (day)
--------------------------------
```

Source height = 1.50 m

ROAD (0.00 + 43.49 + 0.00) = 43.49 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
0	50	0.32	67.51	0.00	-18.27	-5.75	0.00	0.00	0.00	43.49

Segment Leq : 43.49 dBA

Total Leq All Segments: 65.56 dBA

Results segment # 1: Hemlock (night)

Source height = 1.50 m

ROAD (0.00 + 39.60 + 0.00) = 39.60 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	0	0.32	59.91	0.00	-13.93	-3.82	0.00	-2.56	0.00	39.60

Segment Leq : 39.60 dBA

Results segment # 2: Mikinak (night)

Source height = 1.50 m

ROAD (0.00 + 57.88 + 0.00) = 57.88 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.00	58.16	0.00	-0.28	0.00	0.00	0.00	0.00	57.88

Segment Leq : 57.88 dBA

Results segment # 3: Codds (night)

Source height = 1.50 m

ROAD (0.00 + 35.89 + 0.00) = 35.89 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
0	50	0.32	59.91	0.00	-18.27	-5.75	0.00	0.00	0.00	35.89

Segment Leq : 35.89 dBA

Total Leq All Segments: 57.97 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 65.56
(NIGHT): 57.97

STAMSON 5.04 NORMAL REPORT Date: 04-08-2017 11:02:58
MINISTRY OF THE ENVIRONMENT AND CLIMATE CHANGE / NOISE ASSESSMENT

Filename: b11_1_nf.te Time Period: Day/Night 16/8 hours
Description: Block 15 - Block 11, Unit 1 (North Face)

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

Car traffic volume : 9715/845 veh/TimePeriod *
Medium truck volume : 773/67 veh/TimePeriod *
Heavy truck volume : 552/48 veh/TimePeriod *
Posted speed limit : 50 km/h
Road gradient : 0 %
Road pavement : 1 (Typical asphalt or concrete)

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

24 hr Traffic Volume (AADT or SADT): 12000
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: Hemlock (day/night)

Angle1 Angle2 : -5.00 deg 90.00 deg
Wood depth : 0 (No woods.)
No of house rows : 1 / 1
House density : 80 %
Surface : 1 (Absorptive ground surface)
Receiver source distance : 198.00 / 198.00 m
Receiver height : 12.90 / 12.90 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

Road data, segment # 2: Mikinak (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 : 0 %
Road pavement : 1 (Typical asphalt or concrete)

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

24 hr Traffic Volume (AADT or SADT): 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: Mikinak (day/night)

Angle1 Angle2 : -5.00 deg 90.00 deg
Wood depth : 0 (No woods.)
No of house rows : 1 / 1
House density : 80 %
Surface : 2 (Reflective ground surface)

```
Receiver source distance  :  43.00 / 43.00  m
Receiver height           :  12.90 / 12.90  m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00

Road data, segment # 3: Burma (day/night)
-----------------------------------------
Car traffic volume  :  9715/845   veh/TimePeriod  *
Medium truck volume :   773/67    veh/TimePeriod  *
Heavy truck volume  :   552/48    veh/TimePeriod  *
Posted speed limit  :    50 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

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

    24 hr Traffic Volume (AADT or SADT):  12000
    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 # 3: Burma (day/night)
---------------------------------------
Angle1   Angle2           : -70.00 deg   25.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      1 / 1
House density             :     80 %
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  : 230.00 / 230.00 m
Receiver height           :  12.90 / 12.90  m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00

Results segment # 1: Hemlock (day)
----------------------------------

Source height = 1.50 m

ROAD (0.00 + 43.80 + 0.00) = 43.80 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
    -5     90   0.32  67.51   0.00 -14.77  -3.54   0.00  -5.41   0.00  43.80
-------------------------------------------------------------------------------

Segment Leq : 43.80 dBA

Results segment # 2: Mikinak (day)
----------------------------------

Source height = 1.50 m

ROAD (0.00 + 52.33 + 0.00) = 52.33 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
    -5     90   0.00  65.75   0.00  -4.57  -2.78   0.00  -6.07   0.00  52.33
-------------------------------------------------------------------------------

Segment Leq : 52.33 dBA
```

Results segment # 3: Burma (day)

Source height = 1.50 m

ROAD (0.00 + 43.48 + 0.00) = 43.48 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-70	25	0.32	67.51	0.00	-15.63	-3.08	0.00	-5.33	0.00	43.48

Segment Leq : 43.48 dBA

Total Leq All Segments: 53.37 dBA

Results segment # 1: Hemlock (night)

Source height = 1.50 m

ROAD (0.00 + 36.20 + 0.00) = 36.20 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-5	90	0.32	59.91	0.00	-14.77	-3.54	0.00	-5.41	0.00	36.20

Segment Leq : 36.20 dBA

Results segment # 2: Mikinak (night)

Source height = 1.50 m

ROAD (0.00 + 44.74 + 0.00) = 44.74 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-5	90	0.00	58.16	0.00	-4.57	-2.78	0.00	-6.07	0.00	44.74

Segment Leq : 44.74 dBA

Results segment # 3: Burma (night)

Source height = 1.50 m

ROAD (0.00 + 35.88 + 0.00) = 35.88 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-70	25	0.32	59.91	0.00	-15.63	-3.08	0.00	-5.33	0.00	35.88

Segment Leq : 35.88 dBA

Total Leq All Segments: 45.78 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 53.37
(NIGHT): 45.78

STAMSON 5.04 NORMAL REPORT Date: 04-08-2017 11:03:30
MINISTRY OF THE ENVIRONMENT AND CLIMATE CHANGE / NOISE ASSESSMENT

Filename: b13_1_nf.te Time Period: Day/Night 16/8 hours
Description: Block 15 - Block 13, Unit 1 (North Face)

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

Car traffic volume : 9715/845 veh/TimePeriod *
Medium truck volume : 773/67 veh/TimePeriod *
Heavy truck volume : 552/48 veh/TimePeriod *
Posted speed limit : 50 km/h
Road gradient : 0 %
Road pavement : 1 (Typical asphalt or concrete)

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

24 hr Traffic Volume (AADT or SADT): 12000
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: Hemlock (day/night)

Angle1 Angle2 : -10.00 deg 90.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 0
Surface : 1 (Absorptive ground surface)
Receiver source distance : 201.00 / 201.00 m
Receiver height : 12.90 / 12.90 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

Road data, segment # 2: Mikinak (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 : 0 %
Road pavement : 1 (Typical asphalt or concrete)

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

24 hr Traffic Volume (AADT or SADT): 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: Mikinak (day/night)

Angle1 Angle2 : -10.00 deg 90.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 0
Surface : 2 (Reflective ground surface)
Receiver source distance : 46.00 / 46.00 m
Receiver height : 12.90 / 12.90 m

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

Road data, segment # 3: Burma (day/night)
-----------------------------------------
Car traffic volume  :  9715/845   veh/TimePeriod  *
Medium truck volume :   773/67    veh/TimePeriod  *
Heavy truck volume  :   552/48    veh/TimePeriod  *
Posted speed limit  :    50 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

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

    24 hr Traffic Volume (AADT or SADT):  12000
    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 # 3: Burma (day/night)
---------------------------------------
Angle1   Angle2           : -90.00 deg   25.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  : 208.00 / 208.00 m
Receiver height           :  12.90 / 12.90  m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00

Results segment # 1: Hemlock (day)
----------------------------------

Source height = 1.50 m

ROAD (0.00 + 49.38 + 0.00) = 49.38 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -10     90   0.32  67.51   0.00 -14.86  -3.28   0.00   0.00   0.00  49.38
-------------------------------------------------------------------------------

Segment Leq : 49.38 dBA

Results segment # 2: Mikinak (day)
----------------------------------

Source height = 1.50 m

ROAD (0.00 + 58.33 + 0.00) = 58.33 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -10     90   0.00  65.75   0.00  -4.87  -2.55   0.00   0.00   0.00  58.33
-------------------------------------------------------------------------------

Segment Leq : 58.33 dBA

Results segment # 3: Burma (day)
--------------------------------
```

Source height = 1.50 m

ROAD (0.00 + 49.88 + 0.00) = 49.88 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	25	0.32	67.51	0.00	-15.05	-2.58	0.00	0.00	0.00	49.88

Segment Leq : 49.88 dBA

Total Leq All Segments: 59.37 dBA

Results segment # 1: Hemlock (night)

Source height = 1.50 m

ROAD (0.00 + 41.78 + 0.00) = 41.78 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-10	90	0.32	59.91	0.00	-14.86	-3.28	0.00	0.00	0.00	41.78

Segment Leq : 41.78 dBA

Results segment # 2: Mikinak (night)

Source height = 1.50 m

ROAD (0.00 + 50.74 + 0.00) = 50.74 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-10	90	0.00	58.16	0.00	-4.87	-2.55	0.00	0.00	0.00	50.74

Segment Leq : 50.74 dBA

Results segment # 3: Burma (night)

Source height = 1.50 m

ROAD (0.00 + 42.28 + 0.00) = 42.28 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	25	0.32	59.91	0.00	-15.05	-2.58	0.00	0.00	0.00	42.28

Segment Leq : 42.28 dBA

Total Leq All Segments: 51.78 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 59.37
(NIGHT): 51.78

STAMSON 5.04 NORMAL REPORT Date: 04-08-2017 11:06:13
MINISTRY OF THE ENVIRONMENT AND CLIMATE / NOISE ASSESSMENT

Filename: b15_1_ef.te Time Period: Day/Night 16/8 hours
Description: Block 15 - Block 15, Unit 1 (East Face)

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

Car traffic volume : 9715/845 veh/TimePeriod *
Medium truck volume : 773/67 veh/TimePeriod *
Heavy truck volume : 552/48 veh/TimePeriod *
Posted speed limit : 50 km/h
Road gradient : 0 %
Road pavement : 1 (Typical asphalt or concrete)

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

24 hr Traffic Volume (AADT or SADT): 12000
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: Hemlock (day/night)

Angle1 Angle2 : 0.00 deg 90.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 0
Surface : 1 (Absorptive ground surface)
Receiver source distance : 280.00 / 280.00 m
Receiver height : 12.90 / 12.90 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

Road data, segment # 2: Mikinak (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 : 0 %
Road pavement : 1 (Typical asphalt or concrete)

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

24 hr Traffic Volume (AADT or SADT): 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: Mikinak (day/night)

Angle1 Angle2 : 0.00 deg 90.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 0
Surface : 2 (Reflective ground surface)
Receiver source distance : 125.00 / 125.00 m
Receiver height : 12.90 / 12.90 m

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

Road data, segment # 3: Burma (day/night)
-----------------------------------------
Car traffic volume  :  9715/845   veh/TimePeriod  *
Medium truck volume :   773/67    veh/TimePeriod  *
Heavy truck volume  :   552/48    veh/TimePeriod  *
Posted speed limit  :    50 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

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

    24 hr Traffic Volume (AADT or SADT):  12000
    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 # 3: Burma (day/night)
---------------------------------------
Angle1   Angle2           : -70.00 deg   90.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  : 240.00 / 240.00 m
Receiver height           :  12.90 / 12.90  m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00

Results segment # 1: Hemlock (day)
----------------------------------

Source height = 1.50 m

ROAD (0.00 + 46.94 + 0.00) = 46.94 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
     0     90   0.32  67.51   0.00 -16.75  -3.82   0.00   0.00   0.00  46.94
-------------------------------------------------------------------------------

Segment Leq : 46.94 dBA

Results segment # 2: Mikinak (day)
----------------------------------

Source height = 1.50 m

ROAD (0.00 + 53.53 + 0.00) = 53.53 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
     0     90   0.00  65.75   0.00  -9.21  -3.01   0.00   0.00   0.00  53.53
-------------------------------------------------------------------------------

Segment Leq : 53.53 dBA

Results segment # 3: Burma (day)
--------------------------------
```

Source height = 1.50 m

ROAD (0.00 + 50.50 + 0.00) = 50.50 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-70	90	0.32	67.51	0.00	-15.87	-1.14	0.00	0.00	0.00	50.50

Segment Leq : 50.50 dBA

Total Leq All Segments: 55.88 dBA

Results segment # 1: Hemlock (night)

Source height = 1.50 m

ROAD (0.00 + 39.34 + 0.00) = 39.34 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
0	90	0.32	59.91	0.00	-16.75	-3.82	0.00	0.00	0.00	39.34

Segment Leq : 39.34 dBA

Results segment # 2: Mikinak (night)

Source height = 1.50 m

ROAD (0.00 + 45.94 + 0.00) = 45.94 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
0	90	0.00	58.16	0.00	-9.21	-3.01	0.00	0.00	0.00	45.94

Segment Leq : 45.94 dBA

Results segment # 3: Burma (night)

Source height = 1.50 m

ROAD (0.00 + 42.90 + 0.00) = 42.90 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-70	90	0.32	59.91	0.00	-15.87	-1.14	0.00	0.00	0.00	42.90

Segment Leq : 42.90 dBA

Total Leq All Segments: 48.28 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 55.88
(NIGHT): 48.28

STAMSON 5.04 NORMAL REPORT Date: 04-08-2017 11:06:37
MINISTRY OF THE ENVIRONMENT AND CLIMATE CHANGE / NOISE ASSESSMENT

Filename: b15_7_sf.te Time Period: Day/Night 16/8 hours
Description: Block 15 - Block 15, Unit 7 (South Face)

Road data, segment # 1: Montreal (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 : 0 %
Road pavement : 1 (Typical asphalt or concrete)

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

24 hr Traffic Volume (AADT or SADT): 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: Montreal (day/night)

Angle1 Angle2 : -90.00 deg 90.00 deg
Wood depth : 0 (No woods.)
No of house rows : 1 / 1
House density : 80 %
Surface : 1 (Absorptive ground surface)
Receiver source distance : 339.00 / 339.00 m
Receiver height : 12.90 / 12.90 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

Road data, segment # 2: Codds (day/night)

Car traffic volume : 9715/845 veh/TimePeriod *
Medium truck volume : 773/67 veh/TimePeriod *
Heavy truck volume : 552/48 veh/TimePeriod *
Posted speed limit : 50 km/h
Road gradient : 0 %
Road pavement : 1 (Typical asphalt or concrete)

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

24 hr Traffic Volume (AADT or SADT): 12000
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: Codds (day/night)

Angle1 Angle2 : -90.00 deg 20.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 0
Surface : 1 (Absorptive ground surface)
Receiver source distance : 416.00 / 416.00 m

```
Receiver height           :  12.90 / 12.90  m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00

Road data, segment # 3: Burma (day/night)
-----------------------------------------
Car traffic volume  :  9715/845   veh/TimePeriod  *
Medium truck volume :   773/67    veh/TimePeriod  *
Heavy truck volume  :   552/48    veh/TimePeriod  *
Posted speed limit  :    50 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

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

    24 hr Traffic Volume (AADT or SADT):  12000
    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 # 3: Burma (day/night)
---------------------------------------
Angle1   Angle2           : -15.00 deg   90.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  : 225.00 / 225.00 m
Receiver height           :  12.90 / 12.90  m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00

Results segment # 1: Montreal (day)
-----------------------------------

Source height = 1.50 m

ROAD (0.00 + 49.92 + 0.00) = 49.92 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90     90   0.32  73.68   0.00 -17.85  -0.81   0.00  -5.09   0.00  49.92
-------------------------------------------------------------------------------

Segment Leq : 49.92 dBA

Results segment # 2: Codds (day)
--------------------------------

Source height = 1.50 m

ROAD (0.00 + 45.70 + 0.00) = 45.70 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90     20   0.32  67.51   0.00 -19.02  -2.80   0.00   0.00   0.00  45.70
-------------------------------------------------------------------------------

Segment Leq : 45.70 dBA

Results segment # 3: Burma (day)
--------------------------------
```

Source height = 1.50 m

ROAD (0.00 + 48.98 + 0.00) = 48.98 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-15	90	0.32	67.51	0.00	-15.50	-3.03	0.00	0.00	0.00	48.98

Segment Leq : 48.98 dBA

Total Leq All Segments: 53.31 dBA

Results segment # 1: Montreal (night)

Source height = 1.50 m

ROAD (0.00 + 42.33 + 0.00) = 42.33 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.32	66.08	0.00	-17.85	-0.81	0.00	-5.09	0.00	42.33

Segment Leq : 42.33 dBA

Results segment # 2: Codds (night)

Source height = 1.50 m

ROAD (0.00 + 38.10 + 0.00) = 38.10 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	20	0.32	59.91	0.00	-19.02	-2.80	0.00	0.00	0.00	38.10

Segment Leq : 38.10 dBA

Results segment # 3: Burma (night)

Source height = 1.50 m

ROAD (0.00 + 41.38 + 0.00) = 41.38 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-15	90	0.32	59.91	0.00	-15.50	-3.03	0.00	0.00	0.00	41.38

Segment Leq : 41.38 dBA

Total Leq All Segments: 45.72 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 53.31
(NIGHT): 45.72

STAMSON 5.04 NORMAL REPORT Date: 04-08-2017 11:05:13
MINISTRY OF THE ENVIRONMENT AND CLIMATE CHANGE / NOISE ASSESSMENT

Filename: b16_1_nf.te Time Period: Day/Night 16/8 hours
Description: Block 15 - Block 16, Unit 1 (North Face)

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

Car traffic volume : 9715/845 veh/TimePeriod *
Medium truck volume : 773/67 veh/TimePeriod *
Heavy truck volume : 552/48 veh/TimePeriod *
Posted speed limit : 50 km/h
Road gradient : 0 %
Road pavement : 1 (Typical asphalt or concrete)

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

24 hr Traffic Volume (AADT or SADT): 12000
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: Hemlock (day/night)

Angle1 Angle2 : -90.00 deg 0.00 deg
Wood depth : 0 (No woods.)
No of house rows : 1 / 1
House density : 50 %
Surface : 1 (Absorptive ground surface)
Receiver source distance : 201.00 / 201.00 m
Receiver height : 12.90 / 12.90 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

Road data, segment # 2: Mikinak (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 : 0 %
Road pavement : 1 (Typical asphalt or concrete)

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

24 hr Traffic Volume (AADT or SADT): 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: Mikinak (day/night)

Angle1 Angle2 : -90.00 deg 10.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 0
Surface : 2 (Reflective ground surface)
Receiver source distance : 46.00 / 46.00 m

```
Receiver height           :  12.90 / 12.90  m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00

Road data, segment # 3: Codds (day/night)
-----------------------------------------
Car traffic volume  :  9715/845   veh/TimePeriod  *
Medium truck volume :   773/67    veh/TimePeriod  *
Heavy truck volume  :   552/48    veh/TimePeriod  *
Posted speed limit  :    50 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

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

    24 hr Traffic Volume (AADT or SADT):  12000
    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 # 3: Codds (day/night)
---------------------------------------
Angle1   Angle2           :   0.00 deg   60.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  : 357.00 / 357.00 m
Receiver height           :  12.90 / 12.90  m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00

Results segment # 1: Hemlock (day)
----------------------------------

Source height = 1.50 m

ROAD (0.00 + 46.30 + 0.00) = 46.30 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90      0   0.32  67.51   0.00 -14.86  -3.82   0.00  -2.53   0.00  46.30
-------------------------------------------------------------------------------

Segment Leq : 46.30 dBA

Results segment # 2: Mikinak (day)
----------------------------------

Source height = 1.50 m

ROAD (0.00 + 58.33 + 0.00) = 58.33 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90     10   0.00  65.75   0.00  -4.87  -2.55   0.00   0.00   0.00  58.33
-------------------------------------------------------------------------------

Segment Leq : 58.33 dBA

Results segment # 3: Codds (day)
--------------------------------
```

Source height = 1.50 m

ROAD (0.00 + 44.32 + 0.00) = 44.32 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
0	60	0.32	67.51	0.00	-18.15	-5.05	0.00	0.00	0.00	44.32

Segment Leq : 44.32 dBA

Total Leq All Segments: 58.75 dBA

Results segment # 1: Hemlock (night)

Source height = 1.50 m

ROAD (0.00 + 38.70 + 0.00) = 38.70 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	0	0.32	59.91	0.00	-14.86	-3.82	0.00	-2.53	0.00	38.70

Segment Leq : 38.70 dBA

Results segment # 2: Mikinak (night)

Source height = 1.50 m

ROAD (0.00 + 50.74 + 0.00) = 50.74 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	10	0.00	58.16	0.00	-4.87	-2.55	0.00	0.00	0.00	50.74

Segment Leq : 50.74 dBA

Results segment # 3: Codds (night)

Source height = 1.50 m

ROAD (0.00 + 36.72 + 0.00) = 36.72 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
0	60	0.32	59.91	0.00	-18.15	-5.05	0.00	0.00	0.00	36.72

Segment Leq : 36.72 dBA

Total Leq All Segments: 51.16 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 58.75
(NIGHT): 51.16

STAMSON 5.04 NORMAL REPORT Date: 04-08-2017 11:05:44
MINISTRY OF THE ENVIRONMENT AND CLIMATE CHANGE / NOISE ASSESSMENT

Filename: b18_1_nf.te Time Period: Day/Night 16/8 hours
Description: Block 15 - Block 18, Unit 1 (North Face)

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

Car traffic volume : 9715/845 veh/TimePeriod *
Medium truck volume : 773/67 veh/TimePeriod *
Heavy truck volume : 552/48 veh/TimePeriod *
Posted speed limit : 50 km/h
Road gradient : 0 %
Road pavement : 1 (Typical asphalt or concrete)

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

24 hr Traffic Volume (AADT or SADT): 12000
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: Hemlock (day/night)

Angle1 Angle2 : -90.00 deg 0.00 deg
Wood depth : 0 (No woods.)
No of house rows : 1 / 1
House density : 50 %
Surface : 1 (Absorptive ground surface)
Receiver source distance : 256.00 / 256.00 m
Receiver height : 12.90 / 12.90 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

Road data, segment # 2: Mikinak (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 : 0 %
Road pavement : 1 (Typical asphalt or concrete)

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

24 hr Traffic Volume (AADT or SADT): 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: Mikinak (day/night)

Angle1 Angle2 : -90.00 deg 0.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 0
Surface : 2 (Reflective ground surface)
Receiver source distance : 101.00 / 101.00 m

```
Receiver height           :  12.90 / 12.90  m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00

Road data, segment # 3: Codds (day/night)
-----------------------------------------
Car traffic volume  :  9715/845   veh/TimePeriod  *
Medium truck volume :   773/67    veh/TimePeriod  *
Heavy truck volume  :   552/48    veh/TimePeriod  *
Posted speed limit  :    50 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

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

    24 hr Traffic Volume (AADT or SADT):  12000
    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 # 3: Codds (day/night)
---------------------------------------
Angle1   Angle2           :   0.00 deg   90.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  : 307.00 / 307.00 m
Receiver height           :  12.90 / 12.90  m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00

Results segment # 1: Hemlock (day)
----------------------------------

Source height = 1.50 m

ROAD (0.00 + 44.96 + 0.00) = 44.96 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90      0   0.32  67.51   0.00 -16.24  -3.82   0.00  -2.49   0.00  44.96
-------------------------------------------------------------------------------

Segment Leq : 44.96 dBA

Results segment # 2: Mikinak (day)
----------------------------------

Source height = 1.50 m

ROAD (0.00 + 54.46 + 0.00) = 54.46 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90      0   0.00  65.75   0.00  -8.28  -3.01   0.00   0.00   0.00  54.46
-------------------------------------------------------------------------------

Segment Leq : 54.46 dBA

Results segment # 3: Codds (day)
--------------------------------
```

Source height = 1.50 m

ROAD (0.00 + 46.41 + 0.00) = 46.41 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
0	90	0.32	67.51	0.00	-17.28	-3.82	0.00	0.00	0.00	46.41

Segment Leq : 46.41 dBA

Total Leq All Segments: 55.49 dBA

Results segment # 1: Hemlock (night)

Source height = 1.50 m

ROAD (0.00 + 37.36 + 0.00) = 37.36 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	0	0.32	59.91	0.00	-16.24	-3.82	0.00	-2.49	0.00	37.36

Segment Leq : 37.36 dBA

Results segment # 2: Mikinak (night)

Source height = 1.50 m

ROAD (0.00 + 46.86 + 0.00) = 46.86 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	0	0.00	58.16	0.00	-8.28	-3.01	0.00	0.00	0.00	46.86

Segment Leq : 46.86 dBA

Results segment # 3: Codds (night)

Source height = 1.50 m

ROAD (0.00 + 38.81 + 0.00) = 38.81 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
0	90	0.32	59.91	0.00	-17.28	-3.82	0.00	0.00	0.00	38.81

Segment Leq : 38.81 dBA

Total Leq All Segments: 47.89 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 55.49
(NIGHT): 47.89

STAMSON 5.04 NORMAL REPORT Date: 04-08-2017 11:07:16
MINISTRY OF THE ENVIRONMENT AND CLIMATE CHANGE / NOISE ASSESSMENT

Filename: b2_6_nf.te Time Period: Day/Night 16/8 hours
Description: Block 22 - Block 2, Unit 6 (North Face)

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

Car traffic volume : 9715/845 veh/TimePeriod *
Medium truck volume : 773/67 veh/TimePeriod *
Heavy truck volume : 552/48 veh/TimePeriod *
Posted speed limit : 50 km/h
Road gradient : 0 %
Road pavement : 1 (Typical asphalt or concrete)

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

24 hr Traffic Volume (AADT or SADT): 12000
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: Hemlock (day/night)

Angle1 Angle2 : -90.00 deg 90.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 0
Surface : 2 (Reflective ground surface)
Receiver source distance : 13.00 / 13.00 m
Receiver height : 12.90 / 12.90 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

Road data, segment # 2: Burma (day/night)

Car traffic volume : 9715/845 veh/TimePeriod *
Medium truck volume : 773/67 veh/TimePeriod *
Heavy truck volume : 552/48 veh/TimePeriod *
Posted speed limit : 50 km/h
Road gradient : 0 %
Road pavement : 1 (Typical asphalt or concrete)

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

24 hr Traffic Volume (AADT or SADT): 12000
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: Burma (day/night)

Angle1 Angle2 : -90.00 deg 20.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 0
Surface : 1 (Absorptive ground surface)
Receiver source distance : 305.00 / 305.00 m
Receiver height : 12.90 / 12.90 m

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

Road data, segment # 3: Codds (day/night)
-----------------------------------------
Car traffic volume  :  9715/845   veh/TimePeriod  *
Medium truck volume :   773/67    veh/TimePeriod  *
Heavy truck volume  :   552/48    veh/TimePeriod  *
Posted speed limit  :    50 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

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

    24 hr Traffic Volume (AADT or SADT):  12000
    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 # 3: Codds (day/night)
---------------------------------------
Angle1   Angle2           :   0.00 deg   90.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  : 328.00 / 328.00 m
Receiver height           :  12.90 / 12.90  m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00

Results segment # 1: Hemlock (day)
----------------------------------

Source height = 1.50 m

ROAD (0.00 + 68.13 + 0.00) = 68.13 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90     90   0.00  67.51   0.00   0.62   0.00   0.00   0.00   0.00  68.13
-------------------------------------------------------------------------------

Segment Leq : 68.13 dBA

Results segment # 2: Burma (day)
--------------------------------

Source height = 1.50 m

ROAD (0.00 + 47.47 + 0.00) = 47.47 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90     20   0.32  67.51   0.00 -17.24  -2.80   0.00   0.00   0.00  47.47
-------------------------------------------------------------------------------

Segment Leq : 47.47 dBA

Results segment # 3: Codds (day)
--------------------------------
```

Source height = 1.50 m

ROAD (0.00 + 46.03 + 0.00) = 46.03 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
0	90	0.32	67.51	0.00	-17.66	-3.82	0.00	0.00	0.00	46.03

Segment Leq : 46.03 dBA

Total Leq All Segments: 68.19 dBA

Results segment # 1: Hemlock (night)

Source height = 1.50 m

ROAD (0.00 + 60.53 + 0.00) = 60.53 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.00	59.91	0.00	0.62	0.00	0.00	0.00	0.00	60.53

Segment Leq : 60.53 dBA

Results segment # 2: Burma (night)

Source height = 1.50 m

ROAD (0.00 + 39.87 + 0.00) = 39.87 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	20	0.32	59.91	0.00	-17.24	-2.80	0.00	0.00	0.00	39.87

Segment Leq : 39.87 dBA

Results segment # 3: Codds (night)

Source height = 1.50 m

ROAD (0.00 + 38.43 + 0.00) = 38.43 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
0	90	0.32	59.91	0.00	-17.66	-3.82	0.00	0.00	0.00	38.43

Segment Leq : 38.43 dBA

Total Leq All Segments: 60.59 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 68.19
(NIGHT): 60.59

STAMSON 5.04 NORMAL REPORT Date: 04-08-2017 11:07:46
MINISTRY OF THE ENVIRONMENT AND CLIMATE CHANGE / NOISE ASSESSMENT

Filename: b3_1_wf.te Time Period: Day/Night 16/8 hours
Description: Block 22 - Block 3, Unit 1 (West Face)

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

Car traffic volume : 9715/845 veh/TimePeriod *
Medium truck volume : 773/67 veh/TimePeriod *
Heavy truck volume : 552/48 veh/TimePeriod *
Posted speed limit : 50 km/h
Road gradient : 0 %
Road pavement : 1 (Typical asphalt or concrete)

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

24 hr Traffic Volume (AADT or SADT): 12000
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: Hemlock (day/night)

Angle1 Angle2 : -90.00 deg 0.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 0
Surface : 2 (Reflective ground surface)
Receiver source distance : 40.00 / 40.00 m
Receiver height : 12.70 / 12.70 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

Road data, segment # 2: Mikinak (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 : 0 %
Road pavement : 1 (Typical asphalt or concrete)

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

24 hr Traffic Volume (AADT or SADT): 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: Mikinak (day/night)

Angle1 Angle2 : 0.00 deg 90.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 0
Surface : 1 (Absorptive ground surface)
Receiver source distance : 116.00 / 116.00 m
Receiver height : 12.70 / 12.70 m

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

Road data, segment # 3: Codds (day/night)
-----------------------------------------
Car traffic volume  :  9715/845   veh/TimePeriod  *
Medium truck volume :   773/67    veh/TimePeriod  *
Heavy truck volume  :   552/48    veh/TimePeriod  *
Posted speed limit  :    50 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

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

    24 hr Traffic Volume (AADT or SADT):  12000
    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 # 3: Codds (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  : 272.00 / 272.00 m
Receiver height           :  12.70 / 12.70  m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00

Results segment # 1: Hemlock (day)
----------------------------------

Source height = 1.50 m

ROAD (0.00 + 60.24 + 0.00) = 60.24 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90      0   0.00  67.51   0.00  -4.26  -3.01   0.00   0.00   0.00  60.24
-------------------------------------------------------------------------------

Segment Leq : 60.24 dBA

Results segment # 2: Mikinak (day)
----------------------------------

Source height = 1.50 m

ROAD (0.00 + 50.15 + 0.00) = 50.15 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
     0     90   0.32  65.75   0.00 -11.76  -3.83   0.00   0.00   0.00  50.15
-------------------------------------------------------------------------------

Segment Leq : 50.15 dBA

Results segment # 3: Codds (day)
--------------------------------
```

Source height = 1.50 m

ROAD (0.00 + 50.03 + 0.00) = 50.03 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.32	67.51	0.00	-16.66	-0.82	0.00	0.00	0.00	50.03

Segment Leq : 50.03 dBA

Total Leq All Segments: 61.01 dBA

Results segment # 1: Hemlock (night)

Source height = 1.50 m

ROAD (0.00 + 52.64 + 0.00) = 52.64 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	0	0.00	59.91	0.00	-4.26	-3.01	0.00	0.00	0.00	52.64

Segment Leq : 52.64 dBA

Results segment # 2: Mikinak (night)

Source height = 1.50 m

ROAD (0.00 + 42.56 + 0.00) = 42.56 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
0	90	0.32	58.16	0.00	-11.76	-3.83	0.00	0.00	0.00	42.56

Segment Leq : 42.56 dBA

Results segment # 3: Codds (night)

Source height = 1.50 m

ROAD (0.00 + 42.43 + 0.00) = 42.43 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.32	59.91	0.00	-16.66	-0.82	0.00	0.00	0.00	42.43

Segment Leq : 42.43 dBA

Total Leq All Segments: 53.41 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 61.01
(NIGHT): 53.41

STAMSON 5.04 NORMAL REPORT Date: 04-08-2017 11:08:02
MINISTRY OF THE ENVIRONMENT AND CLIMATE CHANGE / NOISE ASSESSMENT

Filename: b4_1_ef.te Time Period: Day/Night 16/8 hours
Description: Block 22 - Block 4, Unit 1 (East Face)

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

Car traffic volume : 9715/845 veh/TimePeriod *
Medium truck volume : 773/67 veh/TimePeriod *
Heavy truck volume : 552/48 veh/TimePeriod *
Posted speed limit : 50 km/h
Road gradient : 0 %
Road pavement : 1 (Typical asphalt or concrete)

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

24 hr Traffic Volume (AADT or SADT): 12000
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: Hemlock (day/night)

Angle1 Angle2 : 0.00 deg 50.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 0
Surface : 2 (Reflective ground surface)
Receiver source distance : 40.00 / 40.00 m
Receiver height : 12.70 / 12.70 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

Road data, segment # 2: Mikinak (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 : 0 %
Road pavement : 1 (Typical asphalt or concrete)

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

24 hr Traffic Volume (AADT or SADT): 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: Mikinak (day/night)

Angle1 Angle2 : -20.00 deg 0.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 0
Surface : 2 (Reflective ground surface)
Receiver source distance : 116.00 / 116.00 m
Receiver height : 12.70 / 12.70 m

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

Results segment # 1: Hemlock (day)

Source height = 1.50 m

ROAD (0.00 + 57.69 + 0.00) = 57.69 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
0	50	0.00	67.51	0.00	-4.26	-5.56	0.00	0.00	0.00	57.69

Segment Leq : 57.69 dBA

Results segment # 2: Mikinak (day)

Source height = 1.50 m

ROAD (0.00 + 47.32 + 0.00) = 47.32 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-20	0	0.00	65.75	0.00	-8.88	-9.54	0.00	0.00	0.00	47.32

Segment Leq : 47.32 dBA

Total Leq All Segments: 58.07 dBA

Results segment # 1: Hemlock (night)

Source height = 1.50 m

ROAD (0.00 + 50.09 + 0.00) = 50.09 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
0	50	0.00	59.91	0.00	-4.26	-5.56	0.00	0.00	0.00	50.09

Segment Leq : 50.09 dBA

Results segment # 2: Mikinak (night)

Source height = 1.50 m

ROAD (0.00 + 39.73 + 0.00) = 39.73 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-20	0	0.00	58.16	0.00	-8.88	-9.54	0.00	0.00	0.00	39.73

Segment Leq : 39.73 dBA

Total Leq All Segments: 50.47 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 58.07
(NIGHT): 50.47

STAMSON 5.04 NORMAL REPORT Date: 04-08-2017 11:12:49
MINISTRY OF THE ENVIRONMENT AND CLIMATE CHANGE / NOISE ASSESSMENT

Filename: b1_1_nf.te Time Period: Day/Night 16/8 hours
Description: Block 24 - Block 1, Unit 1 (North Face)

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

Car traffic volume : 9715/845 veh/TimePeriod *
Medium truck volume : 773/67 veh/TimePeriod *
Heavy truck volume : 552/48 veh/TimePeriod *
Posted speed limit : 50 km/h
Road gradient : 0 %
Road pavement : 1 (Typical asphalt or concrete)

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

24 hr Traffic Volume (AADT or SADT): 12000
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: Hemlock (day/night)

Angle1 Angle2 : -90.00 deg 90.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 0
Surface : 2 (Reflective ground surface)
Receiver source distance : 13.00 / 13.00 m
Receiver height : 12.90 / 12.90 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

Road data, segment # 2: Burma (day/night)

Car traffic volume : 9715/845 veh/TimePeriod *
Medium truck volume : 773/67 veh/TimePeriod *
Heavy truck volume : 552/48 veh/TimePeriod *
Posted speed limit : 50 km/h
Road gradient : 0 %
Road pavement : 1 (Typical asphalt or concrete)

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

24 hr Traffic Volume (AADT or SADT): 12000
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: Burma (day/night)

Angle1 Angle2 : -90.00 deg 20.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 0
Surface : 1 (Absorptive ground surface)
Receiver source distance : 274.00 / 274.00 m
Receiver height : 12.90 / 12.90 m

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

Road data, segment # 3: Codds (day/night)
-----------------------------------------
Car traffic volume  :  9715/845   veh/TimePeriod  *
Medium truck volume :   773/67    veh/TimePeriod  *
Heavy truck volume  :   552/48    veh/TimePeriod  *
Posted speed limit  :    50 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

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

    24 hr Traffic Volume (AADT or SADT):  12000
    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 # 3: Codds (day/night)
---------------------------------------
Angle1   Angle2           :   0.00 deg   90.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  : 362.00 / 362.00 m
Receiver height           :  12.90 / 12.90  m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00

Results segment # 1: Hemlock (day)
----------------------------------

Source height = 1.50 m

ROAD (0.00 + 68.13 + 0.00) = 68.13 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90     90   0.00  67.51   0.00   0.62   0.00   0.00   0.00   0.00  68.13
-------------------------------------------------------------------------------

Segment Leq : 68.13 dBA

Results segment # 2: Burma (day)
--------------------------------

Source height = 1.50 m

ROAD (0.00 + 48.09 + 0.00) = 48.09 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90     20   0.32  67.51   0.00 -16.63  -2.80   0.00   0.00   0.00  48.09
-------------------------------------------------------------------------------

Segment Leq : 48.09 dBA

Results segment # 3: Codds (day)
--------------------------------
```

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
0	90	0.32	67.51	0.00	-18.22	-3.82	0.00	0.00	0.00	45.47

Segment Leq : 45.47 dBA

Total Leq All Segments: 68.20 dBA

Results segment # 1: Hemlock (night)

Source height = 1.50 m

ROAD (0.00 + 60.53 + 0.00) = 60.53 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.00	59.91	0.00	0.62	0.00	0.00	0.00	0.00	60.53

Segment Leq : 60.53 dBA

Results segment # 2: Burma (night)

Source height = 1.50 m

ROAD (0.00 + 40.49 + 0.00) = 40.49 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	20	0.32	59.91	0.00	-16.63	-2.80	0.00	0.00	0.00	40.49

Segment Leq : 40.49 dBA

Results segment # 3: Codds (night)

Source height = 1.50 m

ROAD (0.00 + 37.87 + 0.00) = 37.87 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
0	90	0.32	59.91	0.00	-18.22	-3.82	0.00	0.00	0.00	37.87

Segment Leq : 37.87 dBA

Total Leq All Segments: 60.60 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 68.20
(NIGHT): 60.60

STAMSON 5.04 NORMAL REPORT Date: 04-08-2017 11:13:24
MINISTRY OF THE ENVIRONMENT AND CLIMATE CHANGE / NOISE ASSESSMENT

Filename: b3_7_nf.te Time Period: Day/Night 16/8 hours
Description: Block 24 - Block 3, Unit 7 (North Face)

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

Car traffic volume : 9715/845 veh/TimePeriod *
Medium truck volume : 773/67 veh/TimePeriod *
Heavy truck volume : 552/48 veh/TimePeriod *
Posted speed limit : 50 km/h
Road gradient : 0 %
Road pavement : 1 (Typical asphalt or concrete)

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

24 hr Traffic Volume (AADT or SADT): 12000
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: Hemlock (day/night)

Angle1 Angle2 : -90.00 deg 90.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 0
Surface : 2 (Reflective ground surface)
Receiver source distance : 13.00 / 13.00 m
Receiver height : 12.90 / 12.90 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

Road data, segment # 2: Burma (day/night)

Car traffic volume : 9715/845 veh/TimePeriod *
Medium truck volume : 773/67 veh/TimePeriod *
Heavy truck volume : 552/48 veh/TimePeriod *
Posted speed limit : 50 km/h
Road gradient : 0 %
Road pavement : 1 (Typical asphalt or concrete)

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

24 hr Traffic Volume (AADT or SADT): 12000
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: Burma (day/night)

Angle1 Angle2 : -90.00 deg 20.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 0
Surface : 1 (Absorptive ground surface)
Receiver source distance : 168.00 / 168.00 m
Receiver height : 12.90 / 12.90 m

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

Results segment # 1: Hemlock (day)

Source height = 1.50 m

ROAD (0.00 + 68.13 + 0.00) = 68.13 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.00	67.51	0.00	0.62	0.00	0.00	0.00	0.00	68.13

Segment Leq : 68.13 dBA

Results segment # 2: Burma (day)

Source height = 1.50 m

ROAD (0.00 + 50.89 + 0.00) = 50.89 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	20	0.32	67.51	0.00	-13.83	-2.80	0.00	0.00	0.00	50.89

Segment Leq : 50.89 dBA

Total Leq All Segments: 68.21 dBA

Results segment # 1: Hemlock (night)

Source height = 1.50 m

ROAD (0.00 + 60.53 + 0.00) = 60.53 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.00	59.91	0.00	0.62	0.00	0.00	0.00	0.00	60.53

Segment Leq : 60.53 dBA

Results segment # 2: Burma (night)

Source height = 1.50 m

ROAD (0.00 + 43.29 + 0.00) = 43.29 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	20	0.32	59.91	0.00	-13.83	-2.80	0.00	0.00	0.00	43.29

Segment Leq : 43.29 dBA

Total Leq All Segments: 60.61 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 68.21
(NIGHT): 60.61

STAMSON 5.04 NORMAL REPORT Date: 04-08-2017 11:15:30
MINISTRY OF THE ENVIRONMENT AND CLIMATE CHANGE / NOISE ASSESSMENT

Filename: b4_1_nf.te Time Period: Day/Night 16/8 hours
Description: Block 24 - Block 4, Unit 1 (North Face)

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

Car traffic volume : 9715/845 veh/TimePeriod *
Medium truck volume : 773/67 veh/TimePeriod *
Heavy truck volume : 552/48 veh/TimePeriod *
Posted speed limit : 50 km/h
Road gradient : 0 %
Road pavement : 1 (Typical asphalt or concrete)

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

24 hr Traffic Volume (AADT or SADT): 12000
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: Hemlock (day/night)

Angle1 Angle2 : -45.00 deg 10.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 0
Surface : 2 (Reflective ground surface)
Receiver source distance : 43.00 / 43.00 m
Receiver height : 12.90 / 12.90 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

Results segment # 1: Hemlock (day)

Source height = 1.50 m

ROAD (0.00 + 57.79 + 0.00) = 57.79 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-45	10	0.00	67.51	0.00	-4.57	-5.15	0.00	0.00	0.00	57.79

Segment Leq : 57.79 dBA

Total Leq All Segments: 57.79 dBA

Results segment # 1: Hemlock (night)

Source height = 1.50 m

ROAD (0.00 + 50.19 + 0.00) = 50.19 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-45	10	0.00	59.91	0.00	-4.57	-5.15	0.00	0.00	0.00	50.19

Segment Leq : 50.19 dBA

Total Leq All Segments: 50.19 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 57.79
(NIGHT): 50.19

STAMSON 5.04 NORMAL REPORT Date: 04-08-2017 11:16:31
MINISTRY OF THE ENVIRONMENT AND CLIMATE CHANGE / NOISE ASSESSMENT

Filename: b5_6_wf.te Time Period: Day/Night 16/8 hours
Description: Block 24 - Block 5, Unit 6 (West Face)

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

Car traffic volume : 9715/845 veh/TimePeriod *
Medium truck volume : 773/67 veh/TimePeriod *
Heavy truck volume : 552/48 veh/TimePeriod *
Posted speed limit : 50 km/h
Road gradient : 0 %
Road pavement : 1 (Typical asphalt or concrete)

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

24 hr Traffic Volume (AADT or SADT): 12000
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: Hemlock (day/night)

Angle1 Angle2 : -90.00 deg 0.00 deg
Wood depth : 0 (No woods.)
No of house rows : 1 / 1
House density : 50 %
Surface : 2 (Reflective ground surface)
Receiver source distance : 113.00 / 113.00 m
Receiver height : 12.90 / 12.90 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

Road data, segment # 2: Mikinak (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 : 0 %
Road pavement : 1 (Typical asphalt or concrete)

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

24 hr Traffic Volume (AADT or SADT): 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: Mikinak (day/night)

Angle1 Angle2 : 0.00 deg 90.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 0
Surface : 2 (Reflective ground surface)
Receiver source distance : 43.00 / 43.00 m

```
Receiver height           :  12.90 / 12.90  m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00

Road data, segment # 3: Codds (day/night)
-----------------------------------------
Car traffic volume  :  9715/845   veh/TimePeriod  *
Medium truck volume :   773/67    veh/TimePeriod  *
Heavy truck volume  :   552/48    veh/TimePeriod  *
Posted speed limit  :    50 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

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

    24 hr Traffic Volume (AADT or SADT):  12000
    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 # 3: Codds (day/night)
---------------------------------------
Angle1   Angle2           : -90.00 deg   25.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  : 360.00 / 360.00 m
Receiver height           :  12.90 / 12.90  m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00

Results segment # 1: Hemlock (day)
----------------------------------

Source height = 1.50 m

ROAD (0.00 + 53.12 + 0.00) = 53.12 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90      0   0.00  67.51   0.00  -8.77  -3.01   0.00  -2.61   0.00  53.12
-------------------------------------------------------------------------------

Segment Leq : 53.12 dBA

Results segment # 2: Mikinak (day)
----------------------------------

Source height = 1.50 m

ROAD (0.00 + 58.17 + 0.00) = 58.17 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
     0     90   0.00  65.75   0.00  -4.57  -3.01   0.00   0.00   0.00  58.17
-------------------------------------------------------------------------------

Segment Leq : 58.17 dBA

Results segment # 3: Codds (day)
--------------------------------
```

Source height = 1.50 m

ROAD (0.00 + 46.74 + 0.00) = 46.74 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	25	0.32	67.51	0.00	-18.19	-2.58	0.00	0.00	0.00	46.74

Segment Leq : 46.74 dBA

Total Leq All Segments: 59.58 dBA

Results segment # 1: Hemlock (night)

Source height = 1.50 m

ROAD (0.00 + 45.52 + 0.00) = 45.52 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	0	0.00	59.91	0.00	-8.77	-3.01	0.00	-2.61	0.00	45.52

Segment Leq : 45.52 dBA

Results segment # 2: Mikinak (night)

Source height = 1.50 m

ROAD (0.00 + 50.57 + 0.00) = 50.57 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
0	90	0.00	58.16	0.00	-4.57	-3.01	0.00	0.00	0.00	50.57

Segment Leq : 50.57 dBA

Results segment # 3: Codds (night)

Source height = 1.50 m

ROAD (0.00 + 39.14 + 0.00) = 39.14 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	25	0.32	59.91	0.00	-18.19	-2.58	0.00	0.00	0.00	39.14

Segment Leq : 39.14 dBA

Total Leq All Segments: 51.98 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 59.58
(NIGHT): 51.98

STAMSON 5.04 NORMAL REPORT Date: 04-08-2017 11:15:54
MINISTRY OF THE ENVIRONMENT AND CLIMATE CHANGE / NOISE ASSESSMENT

Filename: b10_1_ef.te Time Period: Day/Night 16/8 hours
Description: Block 24 - Block 10, Unit 1 (East Face)

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

Car traffic volume : 9715/845 veh/TimePeriod *
Medium truck volume : 773/67 veh/TimePeriod *
Heavy truck volume : 552/48 veh/TimePeriod *
Posted speed limit : 50 km/h
Road gradient : 0 %
Road pavement : 1 (Typical asphalt or concrete)

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

24 hr Traffic Volume (AADT or SADT): 12000
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: Hemlock (day/night)

Angle1 Angle2 : 0.00 deg 90.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 0
Surface : 1 (Absorptive ground surface)
Receiver source distance : 41.00 / 41.00 m
Receiver height : 12.70 / 12.70 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

Road data, segment # 2: Mikinak (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 : 0 %
Road pavement : 1 (Typical asphalt or concrete)

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

24 hr Traffic Volume (AADT or SADT): 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: Mikinak (day/night)

Angle1 Angle2 : -90.00 deg 0.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 0
Surface : 1 (Absorptive ground surface)
Receiver source distance : 114.00 / 114.00 m
Receiver height : 12.70 / 12.70 m

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

Road data, segment # 3: Burma (day/night)
-----------------------------------------
Car traffic volume  :  9715/845   veh/TimePeriod  *
Medium truck volume :   773/67    veh/TimePeriod  *
Heavy truck volume  :   552/48    veh/TimePeriod  *
Posted speed limit  :    50 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

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

    24 hr Traffic Volume (AADT or SADT):  12000
    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 # 3: Burma (day/night)
---------------------------------------
Angle1   Angle2           : -70.00 deg   90.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  : 179.00 / 179.00 m
Receiver height           :  12.70 / 12.70  m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00

Results segment # 1: Hemlock (day)
----------------------------------

Source height = 1.50 m

ROAD (0.00 + 57.90 + 0.00) = 57.90 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
     0     90   0.32  67.51   0.00  -5.78  -3.83   0.00   0.00   0.00  57.90
-------------------------------------------------------------------------------

Segment Leq : 57.90 dBA

Results segment # 2: Mikinak (day)
----------------------------------

Source height = 1.50 m

ROAD (0.00 + 50.25 + 0.00) = 50.25 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90      0   0.32  65.75   0.00 -11.66  -3.83   0.00   0.00   0.00  50.25
-------------------------------------------------------------------------------

Segment Leq : 50.25 dBA

Results segment # 3: Burma (day)
--------------------------------
```

Source height = 1.50 m

ROAD (0.00 + 52.11 + 0.00) = 52.11 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-70	90	0.32	67.51	0.00	-14.26	-1.15	0.00	0.00	0.00	52.11

Segment Leq : 52.11 dBA

Total Leq All Segments: 59.47 dBA

Results segment # 1: Hemlock (night)

Source height = 1.50 m

ROAD (0.00 + 50.30 + 0.00) = 50.30 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
0	90	0.32	59.91	0.00	-5.78	-3.83	0.00	0.00	0.00	50.30

Segment Leq : 50.30 dBA

Results segment # 2: Mikinak (night)

Source height = 1.50 m

ROAD (0.00 + 42.66 + 0.00) = 42.66 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	0	0.32	58.16	0.00	-11.66	-3.83	0.00	0.00	0.00	42.66

Segment Leq : 42.66 dBA

Results segment # 3: Burma (night)

Source height = 1.50 m

ROAD (0.00 + 44.51 + 0.00) = 44.51 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-70	90	0.32	59.91	0.00	-14.26	-1.15	0.00	0.00	0.00	44.51

Segment Leq : 44.51 dBA

Total Leq All Segments: 51.87 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 59.47
(NIGHT): 51.87

STAMSON 5.04 NORMAL REPORT Date: 04-08-2017 11:16:55
MINISTRY OF THE ENVIRONMENT AND CLIMATE CHANGE / NOISE ASSESSMENT

Filename: b11_6_ef.te Time Period: Day/Night 16/8 hours
Description: Block 24 - Block 11, Unit 6 (East Face)

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

Car traffic volume : 9715/845 veh/TimePeriod *
Medium truck volume : 773/67 veh/TimePeriod *
Heavy truck volume : 552/48 veh/TimePeriod *
Posted speed limit : 50 km/h
Road gradient : 0 %
Road pavement : 1 (Typical asphalt or concrete)

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

24 hr Traffic Volume (AADT or SADT): 12000
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: Hemlock (day/night)

Angle1 Angle2 : 0.00 deg 90.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 0
Surface : 1 (Absorptive ground surface)
Receiver source distance : 114.00 / 114.00 m
Receiver height : 12.70 / 12.70 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

Road data, segment # 2: Mikinak (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 : 0 %
Road pavement : 1 (Typical asphalt or concrete)

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

24 hr Traffic Volume (AADT or SADT): 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: Mikinak (day/night)

Angle1 Angle2 : -90.00 deg 0.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 0
Surface : 1 (Absorptive ground surface)
Receiver source distance : 41.00 / 41.00 m
Receiver height : 12.70 / 12.70 m

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

Road data, segment # 3: Burma (day/night)
-----------------------------------------
Car traffic volume  :  9715/845   veh/TimePeriod  *
Medium truck volume :   773/67    veh/TimePeriod  *
Heavy truck volume  :   552/48    veh/TimePeriod  *
Posted speed limit  :    50 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

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

    24 hr Traffic Volume (AADT or SADT):  12000
    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 # 3: Burma (day/night)
---------------------------------------
Angle1   Angle2           : -70.00 deg   90.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  : 206.00 / 206.00 m
Receiver height           :  12.70 / 12.70  m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00

Results segment # 1: Hemlock (day)
----------------------------------

Source height = 1.50 m

ROAD (0.00 + 52.01 + 0.00) = 52.01 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
     0     90   0.32  67.51   0.00 -11.66  -3.83   0.00   0.00   0.00  52.01
-------------------------------------------------------------------------------

Segment Leq : 52.01 dBA

Results segment # 2: Mikinak (day)
----------------------------------

Source height = 1.50 m

ROAD (0.00 + 56.13 + 0.00) = 56.13 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90      0   0.32  65.75   0.00  -5.78  -3.83   0.00   0.00   0.00  56.13
-------------------------------------------------------------------------------

Segment Leq : 56.13 dBA

Results segment # 3: Burma (day)
--------------------------------
```

Source height = 1.50 m

ROAD (0.00 + 51.30 + 0.00) = 51.30 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-70	90	0.32	67.51	0.00	-15.07	-1.15	0.00	0.00	0.00	51.30

Segment Leq : 51.30 dBA

Total Leq All Segments: 58.48 dBA

Results segment # 1: Hemlock (night)

Source height = 1.50 m

ROAD (0.00 + 44.42 + 0.00) = 44.42 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
0	90	0.32	59.91	0.00	-11.66	-3.83	0.00	0.00	0.00	44.42

Segment Leq : 44.42 dBA

Results segment # 2: Mikinak (night)

Source height = 1.50 m

ROAD (0.00 + 48.54 + 0.00) = 48.54 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	0	0.32	58.16	0.00	-5.78	-3.83	0.00	0.00	0.00	48.54

Segment Leq : 48.54 dBA

Results segment # 3: Burma (night)

Source height = 1.50 m

ROAD (0.00 + 43.70 + 0.00) = 43.70 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-70	90	0.32	59.91	0.00	-15.07	-1.15	0.00	0.00	0.00	43.70

Segment Leq : 43.70 dBA

Total Leq All Segments: 50.88 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 58.48
(NIGHT): 50.88

STAMSON 5.04 NORMAL REPORT Date: 04-08-2017 11:17:42
MINISTRY OF THE ENVIRONMENT AND CLIMATE CHANGE / NOISE ASSESSMENT

Filename: b12_1_sf.te Time Period: Day/Night 16/8 hours
Description: Block 24 - Block 12, Unit 1 (South Face)

Road data, segment # 1: Mikinak (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 : 0 %
Road pavement : 1 (Typical asphalt or concrete)

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

24 hr Traffic Volume (AADT or SADT): 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: Mikinak (day/night)

Angle1 Angle2 : -90.00 deg 90.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 0
Surface : 2 (Reflective ground surface)
Receiver source distance : 13.00 / 13.00 m
Receiver height : 12.90 / 12.90 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

Road data, segment # 2: Codds (day/night)

Car traffic volume : 9715/845 veh/TimePeriod *
Medium truck volume : 773/67 veh/TimePeriod *
Heavy truck volume : 552/48 veh/TimePeriod *
Posted speed limit : 50 km/h
Road gradient : 0 %
Road pavement : 1 (Typical asphalt or concrete)

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

24 hr Traffic Volume (AADT or SADT): 12000
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: Codds (day/night)

Angle1 Angle2 : -65.00 deg 25.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 0
Surface : 1 (Absorptive ground surface)
Receiver source distance : 358.00 / 358.00 m
Receiver height : 12.90 / 12.90 m

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

Results segment # 1: Mikinak (day)

Source height = 1.50 m

ROAD (0.00 + 66.37 + 0.00) = 66.37 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.00	65.75	0.00	0.62	0.00	0.00	0.00	0.00	66.37

Segment Leq : 66.37 dBA

Results segment # 2: Codds (day)

Source height = 1.50 m

ROAD (0.00 + 46.09 + 0.00) = 46.09 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-65	25	0.32	67.51	0.00	-18.16	-3.26	0.00	0.00	0.00	46.09

Segment Leq : 46.09 dBA

Total Leq All Segments: 66.41 dBA

Results segment # 1: Mikinak (night)

Source height = 1.50 m

ROAD (0.00 + 58.78 + 0.00) = 58.78 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.00	58.16	0.00	0.62	0.00	0.00	0.00	0.00	58.78

Segment Leq : 58.78 dBA

Results segment # 2: Codds (night)

Source height = 1.50 m

ROAD (0.00 + 38.49 + 0.00) = 38.49 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-65	25	0.32	59.91	0.00	-18.16	-3.26	0.00	0.00	0.00	38.49

Segment Leq : 38.49 dBA

Total Leq All Segments: 58.82 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 66.41
(NIGHT): 58.82

STAMSON 5.04 NORMAL REPORT Date: 04-08-2017 11:18:13
MINISTRY OF THE ENVIRONMENT AND CLIMATE CHANGE / NOISE ASSESSMENT

Filename: b14_7_sf.te Time Period: Day/Night 16/8 hours
Description: Block 24 - Block 14, Unit 7 (South Face)

Road data, segment # 1: Mikinak (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 : 0 %
Road pavement : 1 (Typical asphalt or concrete)

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

24 hr Traffic Volume (AADT or SADT): 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: Mikinak (day/night)

Angle1 Angle2 : -90.00 deg 90.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 0
Surface : 2 (Reflective ground surface)
Receiver source distance : 13.00 / 13.00 m
Receiver height : 12.90 / 12.90 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

Road data, segment # 2: Burma (day/night)

Car traffic volume : 9715/845 veh/TimePeriod *
Medium truck volume : 773/67 veh/TimePeriod *
Heavy truck volume : 552/48 veh/TimePeriod *
Posted speed limit : 50 km/h
Road gradient : 0 %
Road pavement : 1 (Typical asphalt or concrete)

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

24 hr Traffic Volume (AADT or SADT): 12000
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: Burma (day/night)

Angle1 Angle2 : 20.00 deg 70.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 0
Surface : 1 (Absorptive ground surface)
Receiver source distance : 215.00 / 215.00 m
Receiver height : 12.90 / 12.90 m

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

Results segment # 1: Mikinak (day)

Source height = 1.50 m

ROAD (0.00 + 66.37 + 0.00) = 66.37 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.00	65.75	0.00	0.62	0.00	0.00	0.00	0.00	66.37

Segment Leq : 66.37 dBA

Results segment # 2: Burma (day)

Source height = 1.50 m

ROAD (0.00 + 46.15 + 0.00) = 46.15 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
20	70	0.32	67.51	0.00	-15.24	-6.12	0.00	0.00	0.00	46.15

Segment Leq : 46.15 dBA

Total Leq All Segments: 66.41 dBA

Results segment # 1: Mikinak (night)

Source height = 1.50 m

ROAD (0.00 + 58.78 + 0.00) = 58.78 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.00	58.16	0.00	0.62	0.00	0.00	0.00	0.00	58.78

Segment Leq : 58.78 dBA

Results segment # 2: Burma (night)

Source height = 1.50 m

ROAD (0.00 + 38.55 + 0.00) = 38.55 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
20	70	0.32	59.91	0.00	-15.24	-6.12	0.00	0.00	0.00	38.55

Segment Leq : 38.55 dBA

Total Leq All Segments: 58.82 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 66.41
(NIGHT): 58.82

APPENDIX D

SAMPLE STC CALCULATION DETAILS

Find/Change Required STC for Components

04-Aug-17

File # 117-0363

Indoor Sound Level 45 dB(A)

Room Absorption Category Intermediate

Outdoor Sound Level 68 dB(A) +3dB = 71 dB(A) (plus 0 dB from Table 2 to for 0 to 90 Degrees) for surface 1 (North)
65 dB(A) +3dB = 68 dB(A) (plus 0 dB from Table 2 to for 0 to 90 Degrees) for surface 2 (East)

Spectrum D (Mixed Road Traffic, or Distant Aircraft)

Calc Location Block 24 - Townhouse Block 3 - Unit 7

Components:			Surf.	After Step 2	From Table 3 (% Energy)	From Table 4 (% floor area)	From Table 5 (spectrum)	STC	Calc
1	North	(8 , Exterior Wall)	1	26	4.0 (40 %)	0.0 (80 %)	7.0	37	By STC
2	East	(8 , Exterior Wall)	2	23	7.0 (20 %)	0.0 (80 %)	7.0	37	By STC
3	North	(4 , Window, openable thin, dou)	1	26	6.0 (25 %)	-4.3 (30 %)	2.0	30	By Energy
4	East	(4 , Window, openable thin, dou)	2	23	8.3 (15 %)	-4.3 (30 %)	2.0	29	By STC

APPENDIX D

TYPICAL STC RATINGS OF SOME WINDOW CONFIGURATIONS

STC Rating	Single Glazing	Double Glazing					Triple Glazing	
		Glass Thickness					Glass Thickness	
	Thickness (mm)	2 mm & 2 mm	3 mm & 3 mm	4 mm & 4 mm	3 mm & 6 mm	6 mm & 6 mm	3 mm, 3 mm & 3 mm	3 mm, 3 mm & 6 mm
		Interpane Spacing (mm)					Interpane Spacing (mm)	
27	2	6						
28		13						
29	3	15	6					
30	4 to 6	18	13	6				
31		22	16	13	6	6	6, 6	
32	9	28	20	16	13	13	6, 10	6, 6
33		35	25	20	16	16	6, 15	6, 10
34	12	42	32	25	20	20	6, 20	6, 15
35		50	40	32	25	24	6, 30	6, 20
36		63	50	40	32	30	6, 40	6, 30
37		80	63	50	40	37	6, 50	6, 40
38		100	80	63	55	50	6, 65	6, 50
39		125	100	80	75	70	6, 80	6, 65
40		150	125	100	95	90	6, 100	6, 80
41			150	125	110	100		6, 100
42				150	125			

For Explanatory Notes to this table, see following page.

Example:

STC 34 can be met by using:

a) a 12 mm thick, laminated single glazed openable window

or b) a 2 mm glass, 42 mm air space, 2 mm glass openable window

or c) a 3 mm glass, 6 mm air space, 3 mm glass, 20 mm air space, 3 mm glass openable window

or d) a 4 mm glass, 13 mm air space, 4 mm glass window fixed and sealed to the frame.

SOURCE: National Research Council, Division of Building Research.

EXPLANATORY NOTES:

1. STC data listed in the table are for well-fitted weatherstripped units that can be opened. The STC values apply only when the windows are closed. For windows fixed and sealed to the frame, add three to the STC given in the table.

2. If the interpane spacing or glass thickness for a specific double-glazed window is not listed in the table, the nearest listed values should be used.

3. The STC ratings for 9 mm and 12 mm glass are for laminated glass only; for solid glass, subtract two from the STC values listed in the table.

4. If the interpane spacings for a specific triple-glazed window are not listed in the table, use the listed case whose combined spacings are nearest the actual combined spacing.

5. The STC data listed in the table are for typical windows, but details of glass mounting, window seals, etc., may result in slightly different performance for some manufacturers' products. If laboratory sound transmission loss data (conforming to ASTM test method E-90) are available, these should be used.