

NOISE IMPACT ASSESSMENT

**WATERSTONE DEVELOPMENT
TOWN OF COLLINGWOOD**

**PREPARED FOR:
MATRIARCH DEVELOPMENTS**

**PREPARED BY:
C.F. CROZIER & ASSOCIATES INC.
40 HURON STREET
COLLINGWOOD, ONTARIO
L9Y 4R3**

FEBRUARY 2019

CFCA FILE NO. 209-2649

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TABLE OF CONTENTS

1.0	Introduction	1
2.0	Site Description	1
3.0	Ministry of the Environment Road Noise Criteria	1
3.1	Outdoor Living Area	1
3.2	Daytime Exterior Building Façade.....	1
3.3	Nighttime Exterior Building Façade	1
4.0	Highway 26 Traffic Data	2
5.0	Projected Sound Levels	2
6.0	Mitigation Requirements	4
7.0	Warning Clauses	5
8.0	Conclusions and Recommendations	6

List of Appendices

Appendix A:	Warning Clauses
Appendix B:	Town of Collingwood Traffic Volumes
Appendix C:	Growth Rate Calculations
Appendix D:	Worksheets

List of Figures

Figure 1:	Site Location Plan
Figure 2:	Receptor Location Plan

1.0 Introduction

C.F. Crozier & Associates Inc. (Crozier) was retained by Matriarch Development Corporation to undertake a Noise Impact Assessment in support of a site plan application for the proposed Waterstone Development in the Town of Collingwood. The objective of this study was to assess the projected impact of Highway 26 transportation noise on the development and determine, if necessary, appropriate noise control measures to satisfy requirements of the Ministry of Environment (MOE), as documented in Guideline NPC-300, Environmental Noise Guidelines – Stationary and Transportation Sources – Approval and Planning.

2.0 Site Description

The site is bounded by Highway 26 to the north, existing residential dwellings to the east, Dawson Drive to the south and existing residential dwellings and Cranberry Trail East to the west. The proposed development will consist of 58 townhouse units. The site location is illustrated in **Figure 1**.

3.0 Ministry of the Environment Road Noise Criteria

3.1 Outdoor Living Area

MOE guidelines for Outdoor Living Areas (OLA) state a criterion of 55 dBA during the daytime hours of 07:00 to 23:00. If the one-hour equivalent sound level ($L_{eq}(16)$) exceeds 55 dBA by 5 dBA or less, physical control measures may be applied to achieve the required reduction, or a warning clause (Type A) shall be provided to prospective purchasers or tenants. The required wording of warning clauses has been provided in **Appendix A**.

If the sound level exceeds 60 dBA, noise control measures should be implemented to reduce the level to 55 dBA. Only in cases where the required noise control measures are not feasible would an excess between 55 and 60 dBA be acceptable with a warning clause (Type B).

3.2 Daytime Exterior Building Façade

MOE guidelines for the plane of a bedroom or living/dining room window states that noise control measures are required if the daytime (07:00-23:00) sound level ($L_{eq}(16)$) in the plane of the window is between 55 – 65 dBA, in the form of forced air heating with a provision for the future installation of central air conditioning, as well as a warning clause (Type C).

If the daytime sound level exceeds 65 dBA in the plane of a bedroom or living/dining room window, installation of central air conditioning is required with a warning clause (Type D). Furthermore, building components including windows, walls and doors, where applicable, should be designed so that the indoor sound levels are reduced to 45 dBA.

3.3 Nighttime Exterior Building Façade

MOE guidelines for the plane of a bedroom or living/dining room window states that noise control measures are required if nighttime (23:00-07:00) sound level ($L_{eq}(8)$) in the plane of the window is between 50 – 60 dBA, in the form of forced air heating with a provision for the future installation of central air conditioning, as well as a warning clause (Type C).

If the nighttime sound level is greater than 60 dBA, installation of central air conditioning is required with a warning clause (Type D). Furthermore, building components including windows, walls and doors, where applicable, should be designed so that the indoor sound levels are reduced to 45 dBA.

4.0 Highway 26 Traffic Data

Daily traffic data for Highway 26/Balsam Street near Vacation Inn Drive and between Old Mountain Road and Harbour Street was provided by the Town of Collingwood. The data recorded an average of 19,944 vehicles in the year 2018. The Town of Collingwood 2018 Traffic Volumes are included in **Appendix B** for reference.

A review of the *Environmental Study Report: Highway 26 West from 280 m West of Princeton Shores Boulevard to Harbour Street Improvements* completed by R.J. Burnside and Associates in April 2014 was reviewed. The two-way peak hour volumes were analyzed on the segment of Highway 26 immediately east of Cranberry Trail West under the “existing” 2013 conditions and future background 2028 conditions. The future background volumes include future background traffic growth and background development traffic. Growth rates of 1.49% and 1.28% compounded annually were calculated for the a.m. and p.m. peak periods, respectively.

Additionally, historical Annual Average Daily Traffic (AADT) and Summer Average Daily Traffic (SADT) volumes from 2008-2016 were analyzed on Highway 26 from Long Point Road to Grey Road 12. Average growth rates of 0.26% and 0.40% compounded annually were calculated using the AADT and SADT volumes, respectively.

Therefore, a growth rate of 1.5% compounded annually was applied to the 2018 traffic volumes. **Appendix C** contains the detailed growth rate documentation and analysis.

The 10-year (2028) traffic volume projections and characteristics are provided in **Table 1**.

Table 1
Ten Year (2028) Traffic Volume Projection and Characteristics

Roadway	SADT	Truck Percentages		Day/Night Split	Speed Limit	Road Grade
		Medium	Heavy			
Highway 26	23,146	3%	3%	85/15	60 km/h	< 2%

Truck percentages were assumed to have a 50/50 split between Medium and Heavy. Typical hourly counts from the AADT data were not available, therefore, an industry standard 85/15 day/night split was assumed.

5.0 Projected Sound Levels

Exterior building façade and outdoor living area sound levels were calculated for both the daytime and nighttime using the MOE ORNAMENT method and the STAMSON, V.5.03 program. Receptor locations are illustrated in **Figure 2**.

The following modeling assumptions were made in order to complete this assessment:

- The architectural renderings illustrate that the main living room is located on the second floor of each unit, and the master bedroom is located on the third floor of each unit. Accordingly:
 - Daytime exterior building façade was modeled on the second and third floors of the proposed buildings on the most noise susceptible window surface;
 - Nighttime exterior building façade was modeled on the third floor of the proposed buildings on the most noise susceptible bedroom window surface;
- Outdoor living area was modeled three metres offset the rear building face in the centre of the lot;
- Site grades were based on grading work done by Crozier dated February, 2019;

- Receptor locations were modeled based on the most current concept plan at the time of preparation of this report. Any material changes to the concept plan should be accompanied by updates to the noise impact model.

Table 2 provides the calculated unattenuated sound levels modeled at various receptor locations in the proposed development. Detailed worksheets are provided in **Appendix D**.

Table 2
Unattenuated Projected Sound Levels

Receptor	Description	Sound Level	
		Daytime $L_{eq}(16)$ dBA	Nighttime $L_{eq}(8)$ dBA
R-1.1	Living Room	54.94	--
R-1.2	Bedroom	55.77	51.25
R-1.3	OLA	54.39	--
R-4.1	Living Room	54.13	--
R-4.2	Bedroom	54.98	50.45
R-10.1	Living Room	53.69	--
R-10.2	Bedroom	54.52	50.00
R-10.3	OLA	54.17	--
R-11.1	Living Room	56.45	--
R-11.2	Bedroom	57.20	52.68
R-11.3	OLA	55.70	--
R-17.1	Living Room	53.62	--
R-17.2	Bedroom	54.42	49.89
R-18.1	Living Room	55.31	--
R-18.2	Bedroom	56.07	51.15
R-18.3	OLA	52.01	--
R-41.1	Living Room	53.37	--
R-41.2	Bedroom	54.22	49.69
R-42.1	Living Room	55.07	--
R-42.2	Bedroom	55.85	51.33
R-42.3	OLA	53.64	--
R-43.1	Living Room	53.30	--
R-43.2	Bedroom	54.07	49.54
R-52.1	Living Room	62.05	--
R-52.2	Bedroom	62.57	58.05
R-52.3	OLA	62.15	--
R-68.1	Living Room	61.36	--
R-68.2	Bedroom	61.93	56.84
R-68.3	OLA	61.37	--

6.0 Mitigation Requirements

The OLA sound levels of Units 52 to 68 exceed MOE guidelines of 60 dBA, and thus require mitigation measures.

To reduce the noise level for these units a sound barrier berm/wall configuration was designed to achieve MOE acceptable sound levels. A sound barrier wall with a height of 2.0 metres will be required along the rear yard of units backing to Highway 26. The design of the wall incorporates wing walls at the wall limits to provide 180 degrees of protection from the Highway 26 sound source. Refer to **Figure 2** for location, grades and height of the proposed sound barrier walls.

Due to the height of the residential units, the barrier will not provide attenuation for the noise levels at the façade of the buildings in the plane of the living room and bedroom windows for the daytime and nighttime indoor sound levels. Daytime and nighttime sound levels for units throughout the site are summarized in **Table 2**.

The daytime exterior, nighttime exterior and outdoor living area of the units affected by the proposed barrier was remodeled in Stamson to determine the attenuated sound levels. Attenuated sound levels are presented below in **Table 3**.

Table 3
Attenuated Projected Sound Levels

Unit	Description	Receptor Location	
		Daytime L_{eq} (16) dBA	Nighttime L_{eq} (8) dBA
R-52.1	Living Room	62.05	--
R-52.2	Bedroom	62.57	58.05
R-52.3	OLA	57.75	--
R-68.1	Living Room	61.36	--
R-68.2	Bedroom	61.93	56.84
R-68.3	OLA	56.46	--

The sound levels as presented in Table 3 above are based on a typical sound barrier wall design with a minimum density of 20 kg/m² constructed without any cracks or gaps and can be a combination of berm and sound barrier wall.

As the outdoor living area attenuated noise level for units 52 and 68 exceeds the 55 dBA criteria a Type 'B' warning clause will be required in any purchase and sale or lease agreement for units 52 to 68. A complete summary of the required warning clauses is summarized in **Table 4**.

The required wording of warning clauses has been provided in **Appendix A**.

7.0 Warning Clauses

Additional units were modeled for façade and outdoor living area sound levels to determine the threshold for warning clause requirements. **Table 4** summarizes the warning clause requirements for each of the proposed units.

Table 4
Warning Clause Requirements

Unit #	No Warning Clause Required	Type 'A' Un-Mitigated OLA (55-60 dBA)	Type 'B' Mitigated OLA (55-60 dBA)	Type 'C' Daytime/Nighttime Exterior Building Façade (Day: 55-65 dBA; Night: 50-60 dBA)	Type 'D' Daytime/Nighttime Exterior Building Façade (Day: >65 dBA; Night: >60 dBA)
1-4				X	
5-10	X				
11		X		X	
12-17	X				
18				X	
19-41	X				
42				X	
43-51	X				
52-68			X	X	

Sound levels at units 5-10, 12-17, 19-41, and 43-51 meet all MOE guidelines for noise levels and as such will require no further mitigation of warning clauses.

Units 1-4, 11, 18, 42 and 52-68 exceed the MOE criteria for interior sound levels and will require a Type 'C' warning clause to be included in any purchase and sale or lease agreement. Furthermore, units will require the installation of forced air heating with provisions for the future installation of central air conditioning.

Unit 11 has an OLA noise level of 55.70 dBA. Attenuation has not been provided, accordingly, a Type 'A' warning clause in any purchase and sale or lease agreement is mandatory for this unit.

Units 52-68 benefit from the implementation of a sound barrier to reduce noise levels at the outdoor living area to acceptable levels. As the design of barrier reduces sound levels between 55 and 60 dBA a Type 'B' warning clause in any purchase and sale or lease agreement is mandatory for these units.

The required wording of warning clauses has been provided in **Appendix A**.

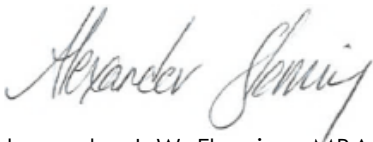
8.0 Conclusions and Recommendations

Sound levels from Highway 26 traffic volumes will result in sound levels for select units to be moderately above MOE noise criteria. Noise levels were assessed utilizing the MOE ORNAMENT method and the STAMSON, V.5.03 program. Mitigation in the form of a sound barrier wall as per Section 6 is required to reduce outdoor living area sound levels to MOE requirements. Furthermore, warning clauses per Section 7 are required for select units. Should any revisions to the concept plan be made, projected sound levels should be re-modeled to ensure the recommendations are valid.

Should you have any questions or require any further information, please do not hesitate to contact the undersigned.

Prepared by,

C.F. CROZIER & ASSOCIATES INC.



Alexander J. W. Fleming, MBA, P.Eng.
Associate

/MF

C.F. CROZIER & ASSOCIATES INC.



Madeleine Ferguson, EIT
Transportation

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APPENDIX A

Warning Clauses

warn of excesses above the sound level limits. Direction on the use of warning clauses should be included in agreements that are registered on title to the lands in question. The warning clauses would be included in agreements of Offers of Purchase and Sale, lease/rental agreements and condominium declarations. Alternatively, the use of easements in respect of noise may be appropriate in some circumstances. Additional guidance on the use of noise warning clauses is provided in Section C7.1.1, Section C7.1.2.1, Section C7.1.2.2, Section C7.3 and Section C7.4.

C8.1 Transportation Sources

The following warning clauses may be used individually or in combination:

Type A: (see Section C7.1.1)

"Purchasers/tenants are advised that sound levels due to increasing road traffic (rail traffic) (air traffic) may occasionally interfere with some activities of the dwelling occupants as the sound levels exceed the sound level limits of the Municipality and the Ministry of the Environment."

Type B: (see Section C7.1.1 and Section C7.4)

"Purchasers/tenants are advised that despite the inclusion of noise control features in the development and within the building units, sound levels due to increasing road traffic (rail traffic) (air traffic) may on occasions interfere with some activities of the dwelling occupants as the sound levels exceed the sound level limits of the Municipality and the Ministry of the Environment."

Type C: (see Section C7.1.2.1, Section C7.1.2.2 and Section C7.4)

"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 in low and medium density developments will allow windows and exterior doors to remain closed, thereby ensuring that the indoor sound levels are within the sound level limits of the Municipality and the Ministry of the Environment."

Type D: (see Section C7.1.2.1, Section C7.1.2.2 and Section C7.4)

"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 Municipality and the Ministry of the Environment."

C8.2 Stationary Sources

It is not acceptable to use warning clauses in place of physical noise control measures to identify an excess over the MOE sound level limits. Warning clause (Type E) for stationary sources may identify a potential concern due to the proximity of the facility but it is not acceptable to justify exceeding the sound level limits.

Type E: (see Section C7.6)

"Purchasers/tenants are advised that due to the proximity of the adjacent industry (facility) (utility), noise from the industry (facility) (utility) may at times be audible."

C8.3 Class 4 Area Notification

Type F: (see Section B9.2 and Section C4.4.2)

APPENDIX B

Town of Collingwood Traffic Volumes

Town of Collingwood
 Traffic Data Summary --2016
 AADT (Average Annual Daily Traffic)

Location Code	Location	Description	2018
32	Balsam St.	between Old Mountain Rd. and Harbour St.	22653 F-W
44	Hwy 26 west	Outside Vacion Inn Dr.	17234 S-W

S - Summer Traffic Count
 W - Weekly - AADT based on a 7 day count
 D - Daily - AADT based on a one day count

APPENDIX C

Growth Rate Calculations

Environmental Study Report

HIGHWAY 26 WEST FROM 280 m WEST OF PRINCETON SHORES BOULEVARD TO HARBOUR STREET IMPROVEMENTS

MUNICIPAL CLASS ENVIRONMENTAL ASSESSMENT

Prepared By:

R.J. Burnside & Associates Limited
3 Ronell Crescent, Collingwood, ON L9Y 4J6

Prepared for:

Town of Collingwood

April 2014

File No: 300032131.0000

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Technical Memorandum

Memorandum No.: Traffic Memo No. 1 **File No.:** 300032131
Project: Class Environmental Assessment
Highway 26 – Harbour Street to West of Princeton Shores
Boulevard
Town of Collingwood
Date: February 20, 2013 **Revision Date:**
Submitted To: Ron Kerr, P. Eng.
Submitted By: Henry Centen, P. Eng.
Reviewed By:

This technical memorandum considers the opportunities and constraints associated with the traffic and transportation operations along the Highway 26 corridor, from Harbour Street to west of Princeton Shores Boulevard, in the Town of Collingwood. This review is completed as part of a Class Environmental Assessment for improvements to Highway 26, in the study area.

1.0 Class Environmental Assessment Considerations

The Town of Collingwood has identified the need to rehabilitate Highway 26 in the study area, due to its deteriorated condition and increasing traffic demands. This section of Highway 26 is a Highway Connecting Link, under the jurisdiction of the Town of Collingwood. Ongoing growth in background traffic, along with forecast development, requires the Town to consider traffic demands that are within the life cycle of the anticipated rehabilitation work. Therefore, for the purposes of establishing traffic constraints, the design requirements have been assessed for a fifteen year time horizon (year 2028). For comparative purposes, the existing traffic operations (2013) have also been analyzed, assuming existing lane configurations, existing traffic controls and existing development. Existing conditions are shown on Figure OV1 (aerial base drawing), attached to this technical memorandum, as well as on Figure TR1 (see Appendix A).

The Town's previous planning work (i.e. Five Year Needs Program), identifies the need to rehabilitate the existing pavement and widen the road to include a continuous centre left turn lane, at an estimated cost of \$3.5 M. Under the provisions of the Environmental Assessment Act, such a project requires environmental review as a Schedule C project, under the Class Environmental Assessment (Class EA) process. The requirements of the Class EA will be confirmed as part of the planning process.

This technical memorandum provides a preliminary assessment of the traffic and transportation operational issues along the corridor, from 280 metres west of Princeton Shores Boulevard to Harbour Street, which is the primary segment delineated by the Town's Terms of Reference (TOR), for review under the Class EA. The TOR also requests consideration of implementing a slip-by lane at the Silver Creek Drive intersection. Therefore some consideration has also been given to traffic operations in a secondary study area, from 280 metres west of Princeton Shores Boulevard to west of Silver Creek Drive. However the planning work in this secondary study area is considered to be outside of the Class EA.

This memo considers the technical environment associated with the proposed undertaking. Additional details pertaining to other environmental assessment considerations (e.g. natural, cultural, and economic environments) are not part of memo, but are dealt with under separate cover.

2.0 Analysis of Traffic Operations

2.1 Traffic Volume Forecasts

Traffic volumes along the corridor were forecast based on the following previous transportation studies:

- Transportation Study, Town of Collingwood; prepared for the Town of Collingwood by C.C. Tatham & Associates Ltd.; dated July 9, 2012.
- Comprehensive Transportation Strategic Plan; prepared for the Town of the Blue Mountains by C. C. Tatham & Associates Ltd and AECOM; dated March 2010.
- Technical Report, Traffic Operations Review, Highway 26 Planning Study; prepared for the Ministry of Transportation by McCormick Rankin Corporation; dated May 2004.
- Highway 26 Transportation Study, Georgian Triangle Area; Municipal Partners Meeting; prepared for the Ministry of Transportation by AECOM; dated December, 2011.

The studies prepared for the Town of Collingwood and the Town of the Blue Mountains have provided turning movement data for the intersections of Highway 26 / Harbour Street and for Highway 26 / Grey Road 21 (Osler Bluff Road). The traffic forecasts were adjusted to rationalize the assumptions made in the two studies, and to balance the traffic between these intersections.

Traffic volume additions/drops are made along the corridor, based on existing and proposed developments in this area. Where available, these forecasts are based on previously prepared Traffic Impact Studies (TIS). The following TIS reports were reviewed to assess background traffic data:

- Signal Warrant Analysis, Highway 26 and Gun Club Road / Cranberry Trail East; prepared by C. C. Tatham & Associates Ltd.; dated August 22, 2012.
- Traffic Impact Study, Rollings / Mundell Property; prepared by C.F. Crozier & Associates Inc.; dated February 2008

- Traffic Impact Study, The Preserve at Georgian Bay; prepared by C. F. Crozier & Associates Inc.; dated February 2007
- Master Servicing Plan, The Preserve at Georgian Bay; prepared by C.R. Crozier & Associates inc.; dated March 2012
- Traffic Impact Study Update, Balmoral Village; prepared by C. F. Crozier & Associates Inc.; dated July 2011
- Traffic Impact Study, Tanglewood at Cranberry Village; prepared by C. F. Crozier & Associates Inc.; dated June 2007
- Traffic Impact Study, Huntingwood Trails; prepared by C. F. Crozier & Associates Inc.; dated June 2009
- Traffic Impact Study, Anchorage Development; prepared by C. C. Tatham & Associates Ltd.; dated August 2011
- Site Servicing Report, Waterstone Development; prepared by C. F. Crozier & Associates Inc.; dated November 2007
- Traffic Impact Assessment, Pretty River Academy; prepared by Cansult Tatham Ltd.; dated April 2005.

The preliminary planned intersection improvements, to accommodate new development, are shown on Figure TR1 (Appendix A). It is noted that the timing and details, of the developments identified, are still subject to change as their planning process proceeds. Consideration of their completion, in this study, provides a sensitivity analysis, when compared with existing traffic operations, to inform the design requirements that may be considered under the present project. Further input should be obtained from the Town, during the detailed design process, to confirm whether the staging of development-related projects should proceed at this time as part of the improvement works (i.e. front-ended), or whether the works should be implemented as part of a future development project.

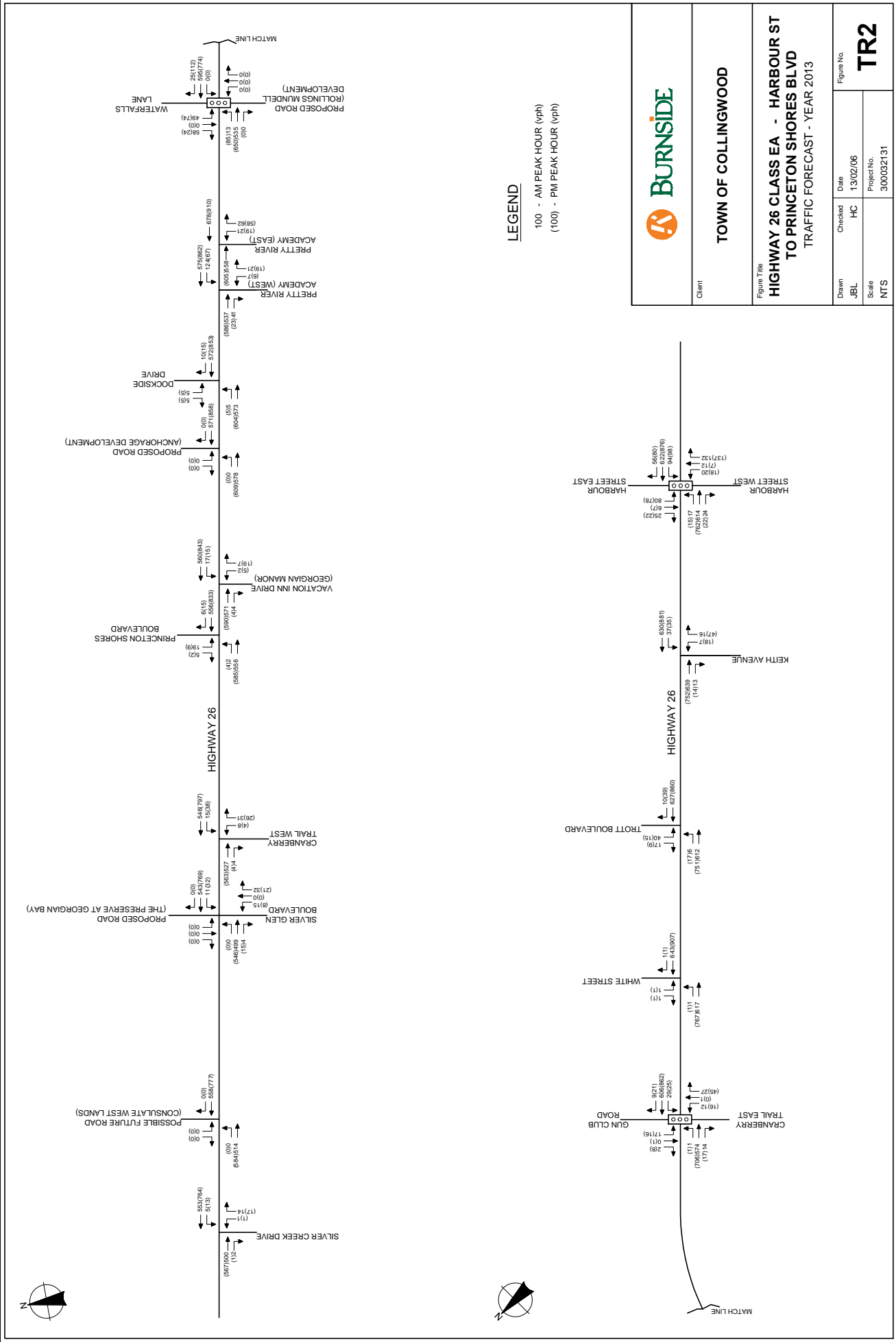
Where previous studies were not available, traffic volumes were forecast based on trip generation rates, provided in the Trip Generation Manual, 9th Edition (Institute of Transportation Engineers), and an assessment of existing / proposed development in the immediate study area.

The forecast turning movements for the primary intersections along the corridor are show on Figure TR2 (2013) and on Figure TR3 (2028).

2.2 Identification of Traffic Alternatives

In the study area, Highway 26 is a two lane arterial road, which provides access to abutting development (existing and proposed), while providing a highway connecting link for through traffic travelling to the broader area. In the study area, the posted speeds along Highway 26 are as follows:

- 50 km/h to just north of Harbour Street
- 60 km/h from just north of Harbour Street to just west of Silver Glen Boulevard
- 70 km/h from just west of Silver Glen Boulevard to just east of County Road 21 (Osler Bluff Road), where the speed decreases again to 60 km/h.



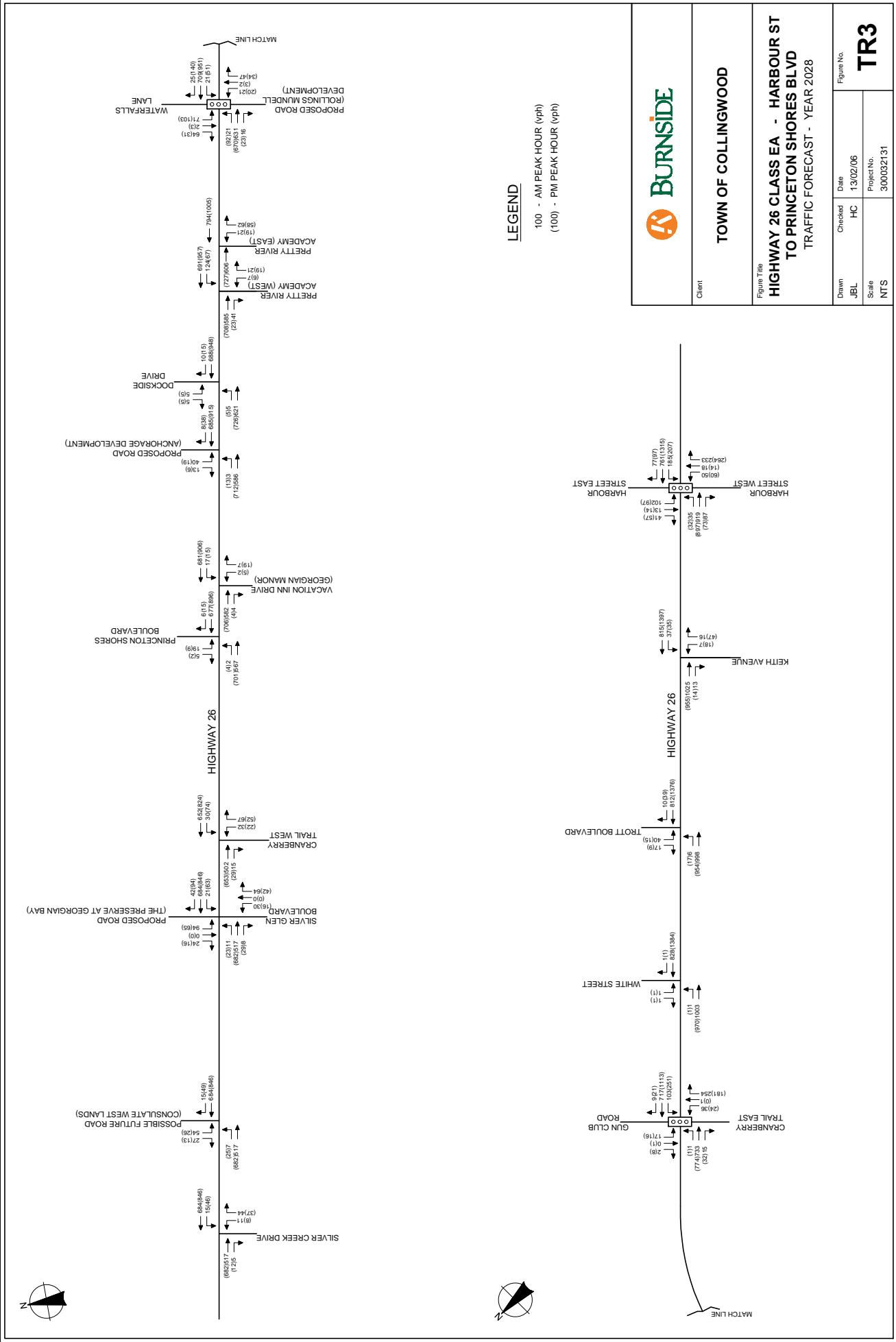
BURNSIDE

TOWN OF COLLINGWOOD

Client

Figure Title
**HIGHWAY 26 CLASS EA - HARBOR ST
 TO PRINCETON SHORES BLVD
 TRAFFIC FORECAST - YEAR 2013**

Drawn	Checked	Date	Figure No.
JBL	HC	13/02/06	TR2
Scale	Project No.		
NTS	300032131		



Highway 26 Growth Rates - ESR

Highway 26 east of Waterfalls Lane

AM Peak Period

Year	EB Volume (veh/hr)	WB volume (veh/hr)	Two-way Volume (veh/hr)	Growth Rate
2013	584	620	1204	1.49%
2028	749	755	1504	

PM Peak Period

Year	EB Volume (veh/hr)	WB volume (veh/hr)	Two-way Volume (veh/hr)	Growth Rate
2013	724	886	1610	1.28%
2028	807	1142	1949	

Eastbound volumes were determined using the eastbound "exiting" volumes at Highway 26 and Waterfalls Lane (i.e. NBR, EBT, and SBL)

Westbound volumes were determined using the westbound "entering" volumes at Highway 26 and Waterfalls Lane (i.e. WBL, WBT, and WBR)



Ministry of
Transportation

Highway
Standards
Branch

Traffic
Office

Provincial Highways

Traffic Volumes

1988-2016

King's Highways / Secondary Highways / Tertiary Roads

Ministry Contact:

Traffic Office (905)-704-2960

Abstract:

This annual publication contains averaged traffic volume information and accident rate information for each of the sections of highway under MTO jurisdiction.

Key Words:

Annual Average Daily Traffic volume (AADT), Summer Average Daily Traffic volume (SADT), Summer Average Weekday Traffic volume (SAWDT), Winter Average Daily Traffic volume (WADT), Accident Rate (AR)

Distance (KM)

The length of the section in kilometres reported to one decimal place.

Pattern Type

One of 14 pattern types that represent the seasonal variation of the traffic flow on the section indicated. A graphical presentation of these pattern types has been included on the following page.

The 14 pattern types represent the traffic flow variation on the whole network. They include:

Variation Types

LOW	UC	urban commuter
	SC	suburban commuter
	C	commuter
INTER	IC	intermediate commuter
	CR	commuter recreation
	IR	intermediate recreation
	CTR	commuter tourist recreation
	IT	intermediate tourist
HIGH	LT	low tourist
	T	tourist
	HT	high tourist
	LR	low recreation
	R	recreation
	HR	high recreation
	UNKN	unknown
	UNCL	unclassified
	NEW	new volume section

The first three are generally referred to as Low Variation Curves (or commuter travel); the next five as Intermediate Variation Curves

(a blend of all types of traffic); and the last six as High Variation Curves. For the last group, the first three represent tourist travel and the second three, recreational travel; this sub-grouping is distinguished by the relationship of weekend to weekday traffic.

There are two additional codes in the pattern type column. "UNC" indicates that the AADT was calculated using adjustment factors from an unclassified (i.e. new) permanent counting station. "NEW" indicates that this is a new volume section and there is insufficient data to assign a pattern type.

AADT

Annual Average Daily Traffic; defined as the average twenty four hour, two way traffic for the period January 1st to December 31st.

SADT

Summer Average Daily Traffic; defined as the average twenty four hour, two way traffic for the period July 1st to August 31st including weekends.

SAWDT

Summer Average Weekday Traffic; defined as the average twenty four hour, two way traffic for the period July 1st to August 31st, excluding weekends.

WADT

Winter Average Daily Traffic; defined as the average twenty four hour, two way traffic for the period January 1st to March 31st, plus December 1st to December 31st, including weekends.

Highway	Location Description	Dist. (KM)	Year	Pattern Type	AADT	SADT	SAWDT	WADT	AR
26	POPLAR SDRD ROUNDABOUT	0.9	2016	UNKN	N/A	N/A	N/A	N/A	N/A
26	6 TH LINE\OLD HWY 26 (HWY 7148) - START OF NA	10.6							
26	LONG POINT RD (N)/GREY RD 21 (S) - END OF NA	2.7	1988	CTR	6,700	8,700	8,000	5,500	1.9
			1989	CTR	7,000	8,900	8,300	5,800	1.8
			1990	CTR	7,350	9,100	8,400	6,600	1.2
			1991	CTR	7,550	9,200	8,600	6,700	1.9
			1992	CTR	7,700	9,400	8,700	6,900	1.7
			1993	CTR	7,300	9,100	8,800	6,200	1.5
			1994	CTR	7,200	9,200	8,800	6,050	1.5
			1995	CTR	7,200	9,200	8,850	6,050	1.1
			1996	CTR	7,450	9,250	8,200	6,550	1.6
			1997	CTR	7,500	9,600	9,250	6,300	0.8
			1998	CTR	7,550	9,600	9,200	6,350	0.8
			1999	CTR	7,600	9,600	9,200	6,400	1.5
			2000	CTR	7,950	10,000	9,600	6,700	0.6
			2001	CTR	8,100	10,200	9,800	6,800	1.4
			2002	CTR	8,450	10,700	10,200	7,150	1.0
			2003	CTR	8,650	10,900	10,500	7,350	0.9
			2004	CTR	8,550	10,600	10,200	7,250	1.1
			2005	CTR	8,550	10,600	10,200	7,250	0.6
			2006	CTR	8,550	10,600	10,100	7,250	1.4
			2007	CTR	8,750	10,800	10,700	7,400	1.7
			2008	CTR	8,550	10,300	10,300	7,200	0.8
			2009	CTR	8,950	10,800	10,400	7,550	1.1
			2010	CTR	8,900	10,700	10,300	7,550	1.1
			2011	CTR	8,900	10,400	10,500	7,900	N/A
			2012	CTR	8,300	9,950	9,800	7,050	N/A
			2013	CTR	8,400	10,100	10,300	7,150	N/A
			2014	CTR	8,500	10,400	10,500	7,250	N/A
			2015	CTR	8,600	10,500	10,600	7,300	N/A
			2016	CTR	8,700	10,600	10,700	7,400	N/A
26	GREY RD 19 (S)	10.2	1988	CR	5,750	6,600	6,400	5,000	0.9
			1989	CR	6,150	7,000	6,900	5,400	1.0

MTO Highway 26 - Long point Road to Grey Road 21

Year	AADT	Year-to-Year Increase	Average Increase
2008	8550	4.68%	0.26%
2009	8950	-0.56%	
2010	8900	0.00%	
2011	8900	-6.74%	
2012	8300	1.20%	
2013	8400	1.19%	
2014	8500	1.18%	
2015	8600	1.16%	
2016	8700		

Year	SADT	Year-to-Year Increase	Average Increase
2008	10300	4.85%	0.40%
2009	10800	-0.93%	
2010	10700	-2.80%	
2011	10400	-4.33%	
2012	9950	1.51%	
2013	10100	2.97%	
2014	10400	0.96%	
2015	10500	0.95%	
2016	10600		

APPENDIX D

Worksheets

Filename: prel_1.te Time Period: Day/Night 16/8 hours
 Description: Unit 1 - Facade - No Barrier

Road data, segment # 1: Hwy26 1 (day/night)

```
-----
Car traffic volume : 18494/3264 veh/TimePeriod *
Medium truck volume : 590/104 veh/TimePeriod *
Heavy truck volume : 590/104 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): 23146
Percentage of Annual Growth : 0.00
Number of Years of Growth : 10.00
Medium Truck % of Total Volume : 3.00
Heavy Truck % of Total Volume : 3.00
Day (16 hrs) % of Total Volume : 85.00
```

Data for Segment # 1: Hwy26 1 (day/night)

```
-----
Angle1 Angle2 : -90.00 deg 46.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 0
Surface : 1 (Absorptive ground surface)
Receiver source distance : 95.00 / 95.00 m
Receiver height : 4.50 / 7.50 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00
```

Results segment # 1: Hwy26 1 (day)

Source height = 1.32 m

ROAD (0.00 + 54.94 + 0.00) = 54.94 dBA
 Angle1 Angle2 Alpha RefLeq P.Adj D.Adj F.Adj W.Adj H.Adj B.Adj
 SubLeq

```
-----
---
-90 46 0.58 69.72 0.00 -12.63 -2.15 0.00 0.00 0.00
54.94
-----
---
```

Segment Leq : 54.94 dBA

Total Leq All Segments: 54.94 dBA

Results segment # 1: Hwy26 1 (night)

Source height = 1.32 m

ROAD (0.00 + 51.25 + 0.00) = 51.25 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj
--------	--------	-------	--------	-------	-------	-------	-------	-------	-------

SubLeq									

-90	46	0.49	65.19	0.00	-11.91	-2.04	0.00	0.00	0.00
51.25									

Segment Leq : 51.25 dBA

Total Leq All Segments: 51.25 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 54.94
(NIGHT): 51.25

Filename: prel_2.te Time Period: Day/Night 16/8 hours
 Description: Unit 1 - Bedroom Daytime Facade - Barrier Free

Road data, segment # 1: Hwy26 1 (day/night)

```
-----
Car traffic volume : 18494/3264 veh/TimePeriod *
Medium truck volume : 590/104 veh/TimePeriod *
Heavy truck volume : 590/104 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): 23146
Percentage of Annual Growth : 0.00
Number of Years of Growth : 10.00
Medium Truck % of Total Volume : 3.00
Heavy Truck % of Total Volume : 3.00
Day (16 hrs) % of Total Volume : 85.00
```

Data for Segment # 1: Hwy26 1 (day/night)

```
-----
Angle1 Angle2 : -90.00 deg 46.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 0
Surface : 1 (Absorptive ground surface)
Receiver source distance : 95.00 / 95.00 m
Receiver height : 7.50 / 7.50 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00
```

Results segment # 1: Hwy26 1 (day)

Source height = 1.32 m

ROAD (0.00 + 55.77 + 0.00) = 55.77 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj
-90	46	0.49	69.72	0.00	-11.91	-2.04	0.00	0.00	0.00

SubLeq	55.77
--------	-------

Segment Leq : 55.77 dBA

Total Leq All Segments: 55.77 dBA

Results segment # 1: Hwy26 1 (night)

Source height = 1.32 m

ROAD (0.00 + 51.25 + 0.00) = 51.25 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj
--------	--------	-------	--------	-------	-------	-------	-------	-------	-------

SubLeq									

-90	46	0.49	65.19	0.00	-11.91	-2.04	0.00	0.00	0.00
51.25									

Segment Leq : 51.25 dBA

Total Leq All Segments: 51.25 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 55.77
(NIGHT): 51.25

MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: prel_3.te

Time Period: Day/Night 16/8 hours

Description: Unit 1 - OLA - Barrier Free

Road data, segment # 1: Hwy26 1 (day/night)

```

-----
Car traffic volume : 18494/3264 veh/TimePeriod *
Medium truck volume : 590/104 veh/TimePeriod *
Heavy truck volume : 590/104 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): 23146
Percentage of Annual Growth : 0.00
Number of Years of Growth : 10.00
Medium Truck % of Total Volume : 3.00
Heavy Truck % of Total Volume : 3.00
Day (16 hrs) % of Total Volume : 85.00

```

Data for Segment # 1: Hwy26 1 (day/night)

```

-----
Angle1 Angle2 : -90.00 deg 46.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 0
Surface : 1 (Absorptive ground surface)
Receiver source distance : 92.00 / 92.00 m
Receiver height : 1.50 / 4.50 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

```

Results segment # 1: Hwy26 1 (day)

Source height = 1.32 m

ROAD (0.00 + 54.39 + 0.00) = 54.39 dBA

```

Angle1 Angle2 Alpha RefLeq P.Adj D.Adj F.Adj W.Adj H.Adj B.Adj
SubLeq

```

```

-----
---
-90 46 0.66 69.72 0.00 -13.08 -2.26 0.00 0.00 0.00
54.39
-----

```

Segment Leq : 54.39 dBA

Total Leq All Segments: 54.39 dBA
Results segment # 1: Hwy26 1 (night)

Source height = 1.32 m

ROAD (0.00 + 50.63 + 0.00) = 50.63 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj
--------	--------	-------	--------	-------	-------	-------	-------	-------	-------

SubLeq

-90 46 0.58 65.19 0.00 -12.41 -2.15 0.00 0.00 0.00
50.63

Segment Leq : 50.63 dBA

Total Leq All Segments: 50.63 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 54.39
 (NIGHT): 50.63

Filename: pre4_1.te Time Period: Day/Night 16/8 hours
 Description: Unit 4 - Facade - No Barrier

Road data, segment # 1: Hwy26 1 (day/night)

```
-----
Car traffic volume : 18494/3264 veh/TimePeriod *
Medium truck volume : 590/104 veh/TimePeriod *
Heavy truck volume : 590/104 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): 23146
Percentage of Annual Growth : 0.00
Number of Years of Growth : 10.00
Medium Truck % of Total Volume : 3.00
Heavy Truck % of Total Volume : 3.00
Day (16 hrs) % of Total Volume : 85.00
```

Data for Segment # 1: Hwy26 1 (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 : 95.00 / 95.00 m
Receiver height : 4.50 / 7.50 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00
```

Results segment # 1: Hwy26 1 (day)

Source height = 1.32 m

ROAD (0.00 + 54.13 + 0.00) = 54.13 dBA
 Angle1 Angle2 Alpha RefLeq P.Adj D.Adj F.Adj W.Adj H.Adj B.Adj
 SubLeq

```
-----
---
-90 25 0.58 69.72 0.00 -12.63 -2.96 0.00 0.00 0.00
54.13
-----
---
```

Segment Leq : 54.13 dBA
 Total Leq All Segments: 54.13 dBA

Results segment # 1: Hwy26 1 (night)

Source height = 1.32 m

ROAD (0.00 + 50.45 + 0.00) = 50.45 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj
--------	--------	-------	--------	-------	-------	-------	-------	-------	-------

SubLeq									

-90	25	0.49	65.19	0.00	-11.91	-2.84	0.00	0.00	0.00
50.45									

Segment Leq : 50.45 dBA

Total Leq All Segments: 50.45 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 54.13
(NIGHT): 50.45

Filename: pre4_2.te Time Period: Day/Night 16/8 hours
 Description: Unit 4 - Bedroom Daytime Facade - Barrier Free

Road data, segment # 1: Hwy26 1 (day/night)

```
-----
Car traffic volume : 18494/3264 veh/TimePeriod *
Medium truck volume : 590/104 veh/TimePeriod *
Heavy truck volume : 590/104 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): 23146
Percentage of Annual Growth : 0.00
Number of Years of Growth : 10.00
Medium Truck % of Total Volume : 3.00
Heavy Truck % of Total Volume : 3.00
Day (16 hrs) % of Total Volume : 85.00
```

Data for Segment # 1: Hwy26 1 (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 : 95.00 / 95.00 m
Receiver height : 7.50 / 7.50 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00
```

Results segment # 1: Hwy26 1 (day)

Source height = 1.32 m

ROAD (0.00 + 54.98 + 0.00) = 54.98 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj
-90	25	0.49	69.72	0.00	-11.91	-2.84	0.00	0.00	0.00
SubLeq									

54.98									

Segment Leq : 54.98 dBA

Total Leq All Segments: 54.98 dBA

Results segment # 1: Hwy26 1 (night)

Source height = 1.32 m

ROAD (0.00 + 50.45 + 0.00) = 50.45 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj
--------	--------	-------	--------	-------	-------	-------	-------	-------	-------

SubLeq									

-90	25	0.49	65.19	0.00	-11.91	-2.84	0.00	0.00	0.00
50.45									

Segment Leq : 50.45 dBA

Total Leq All Segments: 50.45 dBA

TOTAL Leq FROM ALL SOURCES (DAY) : 54.98
(NIGHT) : 50.45

Filename: pre10_1.te Time Period: Day/Night 16/8 hours
 Description: Unit 10 - Facade - No Barrier

Road data, segment # 1: Hwy26 1 (day/night)

```
-----
Car traffic volume : 18494/3264 veh/TimePeriod *
Medium truck volume : 590/104 veh/TimePeriod *
Heavy truck volume : 590/104 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): 23146
Percentage of Annual Growth : 0.00
Number of Years of Growth : 10.00
Medium Truck % of Total Volume : 3.00
Heavy Truck % of Total Volume : 3.00
Day (16 hrs) % of Total Volume : 85.00
```

Data for Segment # 1: Hwy26 1 (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 : 83.00 / 83.00 m
Receiver height : 4.50 / 7.50 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00
```

Results segment # 1: Hwy26 1 (day)

Source height = 1.32 m

ROAD (0.00 + 53.69 + 0.00) = 53.69 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj
-90	0	0.58	69.72	0.00	-11.71	-4.32	0.00	0.00	0.00

```
-----
SubLeq
-----
53.69
-----
```

Segment Leq : 53.69 dBA

Total Leq All Segments: 53.69 dBA

Results segment # 1: Hwy26 1 (night)

Source height = 1.32 m

ROAD (0.00 + 50.00 + 0.00) = 50.00 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj
--------	--------	-------	--------	-------	-------	-------	-------	-------	-------

SubLeq									

-90	0	0.49	65.19	0.00	-11.04	-4.16	0.00	0.00	0.00
50.00									

Segment Leq : 50.00 dBA

Total Leq All Segments: 50.00 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 53.69
(NIGHT): 50.00

Filename: pre10_2.te Time Period: Day/Night 16/8 hours
 Description: Unit 10 - Bedroom Daytime Facade - Barrier Free

Road data, segment # 1: Hwy26 1 (day/night)

```
-----
Car traffic volume : 18494/3264 veh/TimePeriod *
Medium truck volume : 590/104 veh/TimePeriod *
Heavy truck volume : 590/104 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): 23146
Percentage of Annual Growth : 0.00
Number of Years of Growth : 10.00
Medium Truck % of Total Volume : 3.00
Heavy Truck % of Total Volume : 3.00
Day (16 hrs) % of Total Volume : 85.00
```

Data for Segment # 1: Hwy26 1 (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 : 83.00 / 83.00 m
Receiver height : 7.50 / 7.50 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00
```

Results segment # 1: Hwy26 1 (day)

Source height = 1.32 m

ROAD (0.00 + 54.52 + 0.00) = 54.52 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj
-90	0	0.49	69.72	0.00	-11.04	-4.16	0.00	0.00	0.00

SubLeq	54.52
--------	-------

Segment Leq : 54.52 dBA

Total Leq All Segments: 54.52 dBA

Results segment # 1: Hwy26 1 (night)

Source height = 1.32 m

ROAD (0.00 + 50.00 + 0.00) = 50.00 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj
--------	--------	-------	--------	-------	-------	-------	-------	-------	-------

SubLeq									

-90	0	0.49	65.19	0.00	-11.04	-4.16	0.00	0.00	0.00
50.00									

Segment Leq : 50.00 dBA

Total Leq All Segments: 50.00 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 54.52
(NIGHT): 50.00

Filename: pre10_3.te Time Period: Day/Night 16/8 hours
 Description: Unit 10 - OLA - Barrier Free

Road data, segment # 1: Hwy26 1 (day/night)

```
-----
Car traffic volume : 18494/3264 veh/TimePeriod *
Medium truck volume : 590/104 veh/TimePeriod *
Heavy truck volume : 590/104 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): 23146
Percentage of Annual Growth : 0.00
Number of Years of Growth : 10.00
Medium Truck % of Total Volume : 3.00
Heavy Truck % of Total Volume : 3.00
Day (16 hrs) % of Total Volume : 85.00
```

Data for Segment # 1: Hwy26 1 (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 : 82.00 / 82.00 m
Receiver height : 1.50 / 4.50 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00
```

Results segment # 1: Hwy26 1 (day)

Source height = 1.32 m

ROAD (0.00 + 54.17 + 0.00) = 54.17 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj
-90	20	0.66	69.72	0.00	-12.25	-3.31	0.00	0.00	0.00

SubLeq	54.17
--------	-------

Segment Leq : 54.17 dBA

Total Leq All Segments: 54.17 dBA

Results segment # 1: Hwy26 1 (night)

Source height = 1.32 m

ROAD (0.00 + 50.38 + 0.00) = 50.38 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj
--------	--------	-------	--------	-------	-------	-------	-------	-------	-------

SubLeq									

-90	20	0.58	65.19	0.00	-11.62	-3.19	0.00	0.00	0.00
50.38									

Segment Leq : 50.38 dBA

Total Leq All Segments: 50.38 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 54.17
(NIGHT): 50.38

Filename: pre11_1.te Time Period: Day/Night 16/8 hours
 Description: Unit 11 - Facade - Barrier Free

Road data, segment # 1: Hwy26 1 (day/night)

```
-----
Car traffic volume : 18494/3264 veh/TimePeriod *
Medium truck volume : 590/104 veh/TimePeriod *
Heavy truck volume : 590/104 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): 23146
Percentage of Annual Growth : 0.00
Number of Years of Growth : 10.00
Medium Truck % of Total Volume : 3.00
Heavy Truck % of Total Volume : 3.00
Day (16 hrs) % of Total Volume : 85.00
```

Data for Segment # 1: Hwy26 1 (day/night)

```
-----
Angle1 Angle2 : -90.00 deg 47.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 0
Surface : 1 (Absorptive ground surface)
Receiver source distance : 76.50 / 76.50 m
Receiver height : 4.50 / 7.50 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00
```

Results segment # 1: Hwy26 1 (day)

Source height = 1.32 m

ROAD (0.00 + 56.45 + 0.00) = 56.45 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj
-90	47	0.58	69.72	0.00	-11.15	-2.12	0.00	0.00	0.00

SubLeq	56.45
--------	-------

Segment Leq : 56.45 dBA

Total Leq All Segments: 56.45 dBA

Results segment # 1: Hwy26 1 (night)

Source height = 1.32 m

ROAD (0.00 + 52.68 + 0.00) = 52.68 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj
--------	--------	-------	--------	-------	-------	-------	-------	-------	-------

SubLeq									

-90	47	0.49	65.19	0.00	-10.51	-2.00	0.00	0.00	0.00
52.68									

Segment Leq : 52.68 dBA

Total Leq All Segments: 52.68 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 56.45
(NIGHT): 52.68

Filename: pre11_2.te Time Period: Day/Night 16/8 hours
 Description: Unit 11 - Bedroom Daytime Facade - Barrier Free

Road data, segment # 1: Hwy26 1 (day/night)

```
-----
Car traffic volume : 18494/3264 veh/TimePeriod *
Medium truck volume : 590/104 veh/TimePeriod *
Heavy truck volume : 590/104 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): 23146
Percentage of Annual Growth : 0.00
Number of Years of Growth : 10.00
Medium Truck % of Total Volume : 3.00
Heavy Truck % of Total Volume : 3.00
Day (16 hrs) % of Total Volume : 85.00
```

Data for Segment # 1: Hwy26 1 (day/night)

```
-----
Angle1 Angle2 : -90.00 deg 47.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 0
Surface : 1 (Absorptive ground surface)
Receiver source distance : 76.50 / 76.50 m
Receiver height : 7.50 / 7.50 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00
```

Results segment # 1: Hwy26 1 (day)

Source height = 1.32 m

ROAD (0.00 + 57.20 + 0.00) = 57.20 dBA
 Angle1 Angle2 Alpha RefLeq P.Adj D.Adj F.Adj W.Adj H.Adj B.Adj
 SubLeq

```
-----
---
-90 47 0.49 69.72 0.00 -10.51 -2.00 0.00 0.00 0.00
57.20
-----
---
```

Segment Leq : 57.20 dBA

Total Leq All Segments: 57.20 dBA

Results segment # 1: Hwy26 1 (night)

Source height = 1.32 m

ROAD (0.00 + 52.68 + 0.00) = 52.68 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj
--------	--------	-------	--------	-------	-------	-------	-------	-------	-------

SubLeq									

-90	47	0.49	65.19	0.00	-10.51	-2.00	0.00	0.00	0.00
52.68									

Segment Leq : 52.68 dBA

Total Leq All Segments: 52.68 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 57.20
(NIGHT): 52.68

Filename: pre11_3.te Time Period: Day/Night 16/8 hours
 Description: Unit 11 - OLA - Barrier Free

Road data, segment # 1: Hwy26 1 (day/night)

```
-----
Car traffic volume : 18494/3264 veh/TimePeriod *
Medium truck volume : 590/104 veh/TimePeriod *
Heavy truck volume : 590/104 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): 23146
Percentage of Annual Growth : 0.00
Number of Years of Growth : 10.00
Medium Truck % of Total Volume : 3.00
Heavy Truck % of Total Volume : 3.00
Day (16 hrs) % of Total Volume : 85.00
```

Data for Segment # 1: Hwy26 1 (day/night)

```
-----
Angle1 Angle2 : -90.00 deg 50.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 0
Surface : 1 (Absorptive ground surface)
Receiver source distance : 78.00 / 78.00 m
Receiver height : 1.50 / 4.50 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00
```

Results segment # 1: Hwy26 1 (day)

Source height = 1.32 m

ROAD (0.00 + 55.70 + 0.00) = 55.70 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj
SubLeq									

```
-----
-90      50      0.66    69.72    0.00   -11.89   -2.13    0.00    0.00    0.00
55.70
```

Segment Leq : 55.70 dBA

Total Leq All Segments: 55.70 dBA

Results segment # 1: Hwy26 1 (night)

Source height = 1.32 m

ROAD (0.00 + 51.88 + 0.00) = 51.88 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj
--------	--------	-------	--------	-------	-------	-------	-------	-------	-------

SubLeq									

-90	50	0.58	65.19	0.00	-11.28	-2.03	0.00	0.00	0.00
51.88									

Segment Leq : 51.88 dBA

Total Leq All Segments: 51.88 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 55.70
(NIGHT): 51.88

Filename: pre17_1.te Time Period: Day/Night 16/8 hours
 Description: Unit 17 - Facade - No Barrier

Road data, segment # 1: Hwy26 1 (day/night)

```
-----
Car traffic volume : 18494/3264 veh/TimePeriod *
Medium truck volume : 590/104 veh/TimePeriod *
Heavy truck volume : 590/104 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): 23146
Percentage of Annual Growth : 0.00
Number of Years of Growth : 10.00
Medium Truck % of Total Volume : 3.00
Heavy Truck % of Total Volume : 3.00
Day (16 hrs) % of Total Volume : 85.00
```

Data for Segment # 1: Hwy26 1 (day/night)

```
-----
Angle1 Angle2 : -80.00 deg 0.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 0
Surface : 1 (Absorptive ground surface)
Receiver source distance : 82.00 / 82.00 m
Receiver height : 4.50 / 7.50 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00
```

Results segment # 1: Hwy26 1 (day)

Source height = 1.32 m

ROAD (0.00 + 53.62 + 0.00) = 53.62 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj
-80	0	0.58	69.72	0.00	-11.62	-4.48	0.00	0.00	0.00

SubLeq	53.62
--------	-------

Segment Leq : 53.62 dBA

Total Leq All Segments: 53.62 dBA

Results segment # 1: Hwy26 1 (night)

Source height = 1.32 m

ROAD (0.00 + 49.89 + 0.00) = 49.89 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj
--------	--------	-------	--------	-------	-------	-------	-------	-------	-------

SubLeq									

-80	0	0.49	65.19	0.00	-10.96	-4.34	0.00	0.00	0.00
49.89									

Segment Leq : 49.89 dBA

Total Leq All Segments: 49.89 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 53.62
(NIGHT): 49.89

Filename: pre17_2.te Time Period: Day/Night 16/8 hours
 Description: Unit 17 - Bedroom Daytime Facade - Barrier Free

Road data, segment # 1: Hwy26 1 (day/night)

```
-----
Car traffic volume : 18494/3264 veh/TimePeriod *
Medium truck volume : 590/104 veh/TimePeriod *
Heavy truck volume : 590/104 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): 23146
Percentage of Annual Growth : 0.00
Number of Years of Growth : 10.00
Medium Truck % of Total Volume : 3.00
Heavy Truck % of Total Volume : 3.00
Day (16 hrs) % of Total Volume : 85.00
```

Data for Segment # 1: Hwy26 1 (day/night)

```
-----
Angle1 Angle2 : -80.00 deg 0.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 0
Surface : 1 (Absorptive ground surface)
Receiver source distance : 82.00 / 82.00 m
Receiver height : 7.50 / 7.50 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00
```

Results segment # 1: Hwy26 1 (day)

Source height = 1.32 m

ROAD (0.00 + 54.42 + 0.00) = 54.42 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj
-80	0	0.49	69.72	0.00	-10.96	-4.34	0.00	0.00	0.00

SubLeq	54.42
--------	-------

Segment Leq : 54.42 dBA

Total Leq All Segments: 54.42 dBA

Results segment # 1: Hwy26 1 (night)

Source height = 1.32 m

ROAD (0.00 + 49.89 + 0.00) = 49.89 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj
--------	--------	-------	--------	-------	-------	-------	-------	-------	-------

SubLeq

-80 0 0.49 65.19 0.00 -10.96 -4.34 0.00 0.00 0.00
49.89

Segment Leq : 49.89 dBA

Total Leq All Segments: 49.89 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 54.42
 (NIGHT): 49.89

Filename: pre18_1.te Time Period: Day/Night 16/8 hours
 Description: Unit 18 - Facade - Barrier Free

Road data, segment # 1: Hwy26 1 (day/night)

```
-----
Car traffic volume : 18494/3264 veh/TimePeriod *
Medium truck volume : 590/104 veh/TimePeriod *
Heavy truck volume : 590/104 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): 23146
Percentage of Annual Growth : 0.00
Number of Years of Growth : 10.00
Medium Truck % of Total Volume : 3.00
Heavy Truck % of Total Volume : 3.00
Day (16 hrs) % of Total Volume : 85.00
```

Data for Segment # 1: Hwy26 1 (day/night)

```
-----
Angle1 Angle2 : -90.00 deg 15.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 0
Surface : 1 (Absorptive ground surface)
Receiver source distance : 74.50 / 74.50 m
Receiver height : 4.50 / 7.50 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00
```

Results segment # 1: Hwy26 1 (day)

Source height = 1.32 m

ROAD (0.00 + 55.31 + 0.00) = 55.31 dBA
 Angle1 Angle2 Alpha RefLeq P.Adj D.Adj F.Adj W.Adj H.Adj B.Adj
 SubLeq

```
-----
---
-90 15 0.58 69.72 0.00 -10.97 -3.45 0.00 0.00 0.00
55.31
-----
---
```

Segment Leq : 55.31 dBA

Total Leq All Segments: 55.31 dBA

Results segment # 1: Hwy26 1 (night)

Source height = 1.32 m

ROAD (0.00 + 51.54 + 0.00) = 51.54 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj
--------	--------	-------	--------	-------	-------	-------	-------	-------	-------

SubLeq									

-90	15	0.49	65.19	0.00	-10.34	-3.31	0.00	0.00	0.00
51.54									

Segment Leq : 51.54 dBA

Total Leq All Segments: 51.54 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 55.31
(NIGHT): 51.54

Filename: pre18_2.te Time Period: Day/Night 16/8 hours
 Description: Unit 18 - Bedroom Daytime Facade - Barrier Free

Road data, segment # 1: Hwy26 1 (day/night)

```
-----
Car traffic volume : 18494/3264 veh/TimePeriod *
Medium truck volume : 590/104 veh/TimePeriod *
Heavy truck volume : 590/104 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): 23146
Percentage of Annual Growth : 0.00
Number of Years of Growth : 10.00
Medium Truck % of Total Volume : 3.00
Heavy Truck % of Total Volume : 3.00
Day (16 hrs) % of Total Volume : 85.00
```

Data for Segment # 1: Hwy26 1 (day/night)

```
-----
Angle1 Angle2 : -90.00 deg 15.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 0
Surface : 1 (Absorptive ground surface)
Receiver source distance : 74.50 / 74.50 m
Receiver height : 7.50 / 7.50 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00
```

Results segment # 1: Hwy26 1 (day)

Source height = 1.32 m

ROAD (0.00 + 56.07 + 0.00) = 56.07 dBA
 Angle1 Angle2 Alpha RefLeq P.Adj D.Adj F.Adj W.Adj H.Adj B.Adj
 SubLeq

```
-----
---
-90 15 0.49 69.72 0.00 -10.34 -3.31 0.00 0.00 0.00
56.07
-----
---
```

Segment Leq : 56.07 dBA

Total Leq All Segments: 56.07 dBA

Results segment # 1: Hwy26 1 (night)

Source height = 1.32 m

ROAD (0.00 + 51.54 + 0.00) = 51.54 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj
--------	--------	-------	--------	-------	-------	-------	-------	-------	-------

SubLeq									

-90	15	0.49	65.19	0.00	-10.34	-3.31	0.00	0.00	0.00
51.54									

Segment Leq : 51.54 dBA

Total Leq All Segments: 51.54 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 56.07
(NIGHT): 51.54

Filename: pre18_3.te Time Period: Day/Night 16/8 hours
 Description: Unit 18 - OLA - Barrier Free

Road data, segment # 1: Hwy26 1 (day/night)

```
-----
Car traffic volume : 18494/3264 veh/TimePeriod *
Medium truck volume : 590/104 veh/TimePeriod *
Heavy truck volume : 590/104 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): 23146
Percentage of Annual Growth : 0.00
Number of Years of Growth : 10.00
Medium Truck % of Total Volume : 3.00
Heavy Truck % of Total Volume : 3.00
Day (16 hrs) % of Total Volume : 85.00
```

Data for Segment # 1: Hwy26 1 (day/night)

```
-----
Angle1 Angle2 : -49.00 deg 1.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 0
Surface : 1 (Absorptive ground surface)
Receiver source distance : 77.00 / 77.00 m
Receiver height : 1.50 / 4.50 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00
```

Results segment # 1: Hwy26 1 (day)

Source height = 1.32 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
-49	1	0.66	69.72	0.00	-11.79	-5.92	0.00	0.00	0.00

SubLeq
52.01

Segment Leq : 52.01 dBA

Total Leq All Segments: 52.01 dBA

Results segment # 1: Hwy26 1 (night)

Source height = 1.32 m

ROAD (0.00 + 48.12 + 0.00) = 48.12 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj
--------	--------	-------	--------	-------	-------	-------	-------	-------	-------

SubLeq

-49 1 0.58 65.19 0.00 -11.19 -5.88 0.00 0.00 0.00
48.12

Segment Leq : 48.12 dBA

Total Leq All Segments: 48.12 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 52.01
 (NIGHT): 48.12

Filename: pre41_1.te Time Period: Day/Night 16/8 hours
 Description: Unit 41 - Facade - No Barrier

Road data, segment # 1: Hwy26 1 (day/night)

```
-----
Car traffic volume : 18494/3264 veh/TimePeriod *
Medium truck volume : 590/104 veh/TimePeriod *
Heavy truck volume : 590/104 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): 23146
Percentage of Annual Growth : 0.00
Number of Years of Growth : 10.00
Medium Truck % of Total Volume : 3.00
Heavy Truck % of Total Volume : 3.00
Day (16 hrs) % of Total Volume : 85.00
```

Data for Segment # 1: Hwy26 1 (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 : 87.00 / 87.00 m
Receiver height : 4.50 / 7.50 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00
```

Results segment # 1: Hwy26 1 (day)

Source height = 1.32 m

ROAD (0.00 + 53.37 + 0.00) = 53.37 dBA
 Angle1 Angle2 Alpha RefLeq P.Adj D.Adj F.Adj W.Adj H.Adj B.Adj
 SubLeq

```
-----
0 90 0.58 69.72 0.00 -12.03 -4.32 0.00 0.00 0.00
53.37
-----
```

Segment Leq : 53.37 dBA

Total Leq All Segments: 53.37 dBA

Results segment # 1: Hwy26 1 (night)

Source height = 1.32 m

ROAD (0.00 + 49.69 + 0.00) = 49.69 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj
--------	--------	-------	--------	-------	-------	-------	-------	-------	-------

SubLeq

 0 90 0.49 65.19 0.00 -11.34 -4.16 0.00 0.00 0.00
49.69

Segment Leq : 49.69 dBA

Total Leq All Segments: 49.69 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 53.37
 (NIGHT): 49.69

Filename: pre41_2.te Time Period: Day/Night 16/8 hours
 Description: Unit 41 - Bedroom Daytime Facade - Barrier Free

Road data, segment # 1: Hwy26 1 (day/night)

```
-----
Car traffic volume : 18494/3264 veh/TimePeriod *
Medium truck volume : 590/104 veh/TimePeriod *
Heavy truck volume : 590/104 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): 23146
Percentage of Annual Growth : 0.00
Number of Years of Growth : 10.00
Medium Truck % of Total Volume : 3.00
Heavy Truck % of Total Volume : 3.00
Day (16 hrs) % of Total Volume : 85.00
```

Data for Segment # 1: Hwy26 1 (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 : 87.00 / 87.00 m
Receiver height : 7.50 / 7.50 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00
```

Results segment # 1: Hwy26 1 (day)

Source height = 1.32 m

ROAD (0.00 + 54.22 + 0.00) = 54.22 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj
SubLeq									

```
-----
---
0 90 0.49 69.72 0.00 -11.34 -4.16 0.00 0.00 0.00
54.22
-----
---
```

Segment Leq : 54.22 dBA

Total Leq All Segments: 54.22 dBA

Results segment # 1: Hwy26 1 (night)

Source height = 1.32 m

ROAD (0.00 + 49.69 + 0.00) = 49.69 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj
--------	--------	-------	--------	-------	-------	-------	-------	-------	-------

SubLeq

 0 90 0.49 65.19 0.00 -11.34 -4.16 0.00 0.00 0.00
49.69

Segment Leq : 49.69 dBA

Total Leq All Segments: 49.69 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 54.22
 (NIGHT): 49.69

Filename: pre42_1.te Time Period: Day/Night 16/8 hours
 Description: Unit 42 - Facade - Barrier Free

Road data, segment # 1: Hwy26 1 (day/night)

```
-----
Car traffic volume : 18494/3264 veh/TimePeriod *
Medium truck volume : 590/104 veh/TimePeriod *
Heavy truck volume : 590/104 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): 23146
Percentage of Annual Growth : 0.00
Number of Years of Growth : 10.00
Medium Truck % of Total Volume : 3.00
Heavy Truck % of Total Volume : 3.00
Day (16 hrs) % of Total Volume : 85.00
```

Data for Segment # 1: Hwy26 1 (day/night)

```
-----
Angle1 Angle2 : -20.00 deg 90.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 0
Surface : 1 (Absorptive ground surface)
Receiver source distance : 80.00 / 80.00 m
Receiver height : 4.50 / 7.50 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00
```

Results segment # 1: Hwy26 1 (day)

Source height = 1.32 m

ROAD (0.00 + 55.07 + 0.00) = 55.07 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj
-20	90	0.58	69.72	0.00	-11.45	-3.19	0.00	0.00	0.00

SubLeq	55.07
--------	-------

Segment Leq : 55.07 dBA

Total Leq All Segments: 55.07 dBA

Results segment # 1: Hwy26 1 (night)

Source height = 1.32 m

ROAD (0.00 + 51.33 + 0.00) = 51.33 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj
--------	--------	-------	--------	-------	-------	-------	-------	-------	-------

SubLeq									

-20	90	0.49	65.19	0.00	-10.80	-3.06	0.00	0.00	0.00
51.33									

Segment Leq : 51.33 dBA

Total Leq All Segments: 51.33 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 55.07
(NIGHT): 51.33

Filename: pre42_2.te Time Period: Day/Night 16/8 hours
 Description: Unit 42 - Bedroom Daytime Facade - Barrier Free

Road data, segment # 1: Hwy26 1 (day/night)

```
-----
Car traffic volume : 18494/3264 veh/TimePeriod *
Medium truck volume : 590/104 veh/TimePeriod *
Heavy truck volume : 590/104 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): 23146
Percentage of Annual Growth : 0.00
Number of Years of Growth : 10.00
Medium Truck % of Total Volume : 3.00
Heavy Truck % of Total Volume : 3.00
Day (16 hrs) % of Total Volume : 85.00
```

Data for Segment # 1: Hwy26 1 (day/night)

```
-----
Angle1 Angle2 : -20.00 deg 90.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 0
Surface : 1 (Absorptive ground surface)
Receiver source distance : 80.00 / 80.00 m
Receiver height : 7.50 / 7.50 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00
```

Results segment # 1: Hwy26 1 (day)

Source height = 1.32 m

ROAD (0.00 + 55.85 + 0.00) = 55.85 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj
-20	90	0.49	69.72	0.00	-10.80	-3.06	0.00	0.00	0.00

SubLeq	55.85
--------	-------

Segment Leq : 55.85 dBA

Total Leq All Segments: 55.85 dBA

Results segment # 1: Hwy26 1 (night)

Source height = 1.32 m

ROAD (0.00 + 51.33 + 0.00) = 51.33 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj
--------	--------	-------	--------	-------	-------	-------	-------	-------	-------

SubLeq									

-20	90	0.49	65.19	0.00	-10.80	-3.06	0.00	0.00	0.00
51.33									

Segment Leq : 51.33 dBA

Total Leq All Segments: 51.33 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 55.85
(NIGHT): 51.33

Filename: pre42_3.te Time Period: Day/Night 16/8 hours
 Description: Unit 42 - OLA - Barrier Free

Road data, segment # 1: Hwy26 1 (day/night)

```
-----
Car traffic volume : 18494/3264 veh/TimePeriod *
Medium truck volume : 590/104 veh/TimePeriod *
Heavy truck volume : 590/104 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): 23146
Percentage of Annual Growth : 0.00
Number of Years of Growth : 10.00
Medium Truck % of Total Volume : 3.00
Heavy Truck % of Total Volume : 3.00
Day (16 hrs) % of Total Volume : 85.00
```

Data for Segment # 1: Hwy26 1 (day/night)

```
-----
Angle1 Angle2 : -30.00 deg 90.00 deg
Wood depth : 0 (No woods.)
No of house rows : 1 / 0
Surface : 1 (Absorptive ground surface)
Receiver source distance : 83.00 / 83.00 m
Receiver height : 1.50 / 7.50 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00
```

Results segment # 1: Hwy26 1 (day)

Source height = 1.32 m

ROAD (0.00 + 53.64 + 0.00) = 53.64 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj
-30	90	0.66	69.72	0.00	-12.33	-2.85	0.00	-0.90	0.00

SubLeq	53.64
--------	-------

Segment Leq : 53.64 dBA

Total Leq All Segments: 53.64 dBA

Results segment # 1: Hwy26 1 (night)

Source height = 1.32 m

ROAD (0.00 + 51.53 + 0.00) = 51.53 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj
--------	--------	-------	--------	-------	-------	-------	-------	-------	-------

SubLeq									

-30	90	0.49	65.19	0.00	-11.04	-2.62	0.00	0.00	0.00
51.53									

Segment Leq : 51.53 dBA

Total Leq All Segments: 51.53 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 53.64
(NIGHT): 51.53

Filename: pre43_1.te Time Period: Day/Night 16/8 hours
 Description: Unit 43 - Facade - No Barrier

Road data, segment # 1: Hwy26 1 (day/night)

```
-----
Car traffic volume : 18494/3264 veh/TimePeriod *
Medium truck volume : 590/104 veh/TimePeriod *
Heavy truck volume : 590/104 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): 23146
Percentage of Annual Growth : 0.00
Number of Years of Growth : 10.00
Medium Truck % of Total Volume : 3.00
Heavy Truck % of Total Volume : 3.00
Day (16 hrs) % of Total Volume : 85.00
```

Data for Segment # 1: Hwy26 1 (day/night)

```
-----
Angle1 Angle2 : -90.00 deg 90.00 deg
Wood depth : 0 (No woods.)
No of house rows : 1 / 1
House density : 70 %
Surface : 1 (Absorptive ground surface)
Receiver source distance : 70.00 / 70.00 m
Receiver height : 4.50 / 7.50 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00
```

Results segment # 1: Hwy26 1 (day)

Source height = 1.32 m

ROAD (0.00 + 53.30 + 0.00) = 53.30 dBA
 Angle1 Angle2 Alpha RefLeq P.Adj D.Adj F.Adj W.Adj H.Adj B.Adj
 SubLeq

```
-----
---
-90 90 0.58 69.72 0.00 -10.54 -1.31 0.00 -4.57 0.00
53.30
-----
```

Segment Leq : 53.30 dBA

Total Leq All Segments: 53.30 dBA

Results segment # 1: Hwy26 1 (night)

Source height = 1.32 m

ROAD (0.00 + 49.54 + 0.00) = 49.54 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj
--------	--------	-------	--------	-------	-------	-------	-------	-------	-------

SubLeq									

-90	90	0.49	65.19	0.00	-9.94	-1.15	0.00	-4.57	0.00
49.54									

Segment Leq : 49.54 dBA

Total Leq All Segments: 49.54 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 53.30
(NIGHT): 49.54

Filename: pre43_2.te Time Period: Day/Night 16/8 hours
 Description: Unit 43 - Bedroom Daytime Facade - Barrier Free

Road data, segment # 1: Hwy26 1 (day/night)

```
-----
Car traffic volume : 18494/3264 veh/TimePeriod *
Medium truck volume : 590/104 veh/TimePeriod *
Heavy truck volume : 590/104 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): 23146
Percentage of Annual Growth : 0.00
Number of Years of Growth : 10.00
Medium Truck % of Total Volume : 3.00
Heavy Truck % of Total Volume : 3.00
Day (16 hrs) % of Total Volume : 85.00
```

Data for Segment # 1: Hwy26 1 (day/night)

```
-----
Angle1 Angle2 : -90.00 deg 90.00 deg
Wood depth : 0 (No woods.)
No of house rows : 1 / 1
House density : 70 %
Surface : 1 (Absorptive ground surface)
Receiver source distance : 70.00 / 70.00 m
Receiver height : 7.50 / 7.50 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00
```

Results segment # 1: Hwy26 1 (day)

Source height = 1.32 m

ROAD (0.00 + 54.07 + 0.00) = 54.07 dBA
 Angle1 Angle2 Alpha RefLeq P.Adj D.Adj F.Adj W.Adj H.Adj B.Adj
 SubLeq

```
-----
---
-90 90 0.49 69.72 0.00 -9.94 -1.15 0.00 -4.57 0.00
54.07
-----
---
```

Segment Leq : 54.07 dBA
 Total Leq All Segments: 54.07 dBA

Results segment # 1: Hwy26 1 (night)

Source height = 1.32 m

ROAD (0.00 + 49.54 + 0.00) = 49.54 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj
--------	--------	-------	--------	-------	-------	-------	-------	-------	-------

SubLeq									

-90	90	0.49	65.19	0.00	-9.94	-1.15	0.00	-4.57	0.00
49.54									

Segment Leq : 49.54 dBA

Total Leq All Segments: 49.54 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 54.07
(NIGHT): 49.54

Filename: pre52_1.te Time Period: Day/Night 16/8 hours
 Description: Unit 52 - Facade - Barrier Free

Road data, segment # 1: Hwy26 1 (day/night)

```
-----
Car traffic volume : 18494/3264 veh/TimePeriod *
Medium truck volume : 590/104 veh/TimePeriod *
Heavy truck volume : 590/104 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): 23146
Percentage of Annual Growth : 0.00
Number of Years of Growth : 10.00
Medium Truck % of Total Volume : 3.00
Heavy Truck % of Total Volume : 3.00
Day (16 hrs) % of Total Volume : 85.00
```

Data for Segment # 1: Hwy26 1 (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 : 38.00 / 38.00 m
Receiver height : 4.50 / 7.50 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00
```

Results segment # 1: Hwy26 1 (day)

Source height = 1.32 m

ROAD (0.00 + 62.05 + 0.00) = 62.05 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj
-90	90	0.58	69.72	0.00	-6.36	-1.31	0.00	0.00	0.00

SubLeq	62.05
--------	-------

Segment Leq : 62.05 dBA

Total Leq All Segments: 62.05 dBA

Results segment # 1: Hwy26 1 (night)

Source height = 1.32 m

ROAD (0.00 + 58.05 + 0.00) = 58.05 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj
--------	--------	-------	--------	-------	-------	-------	-------	-------	-------

SubLeq									

-90	90	0.49	65.19	0.00	-6.00	-1.15	0.00	0.00	0.00
58.05									

Segment Leq : 58.05 dBA

Total Leq All Segments: 58.05 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 62.05
(NIGHT): 58.05

Filename: pre52_2.te Time Period: Day/Night 16/8 hours
 Description: Unit 52 - Bedroom Daytime Facade - Barrier Free

Road data, segment # 1: Hwy26 1 (day/night)

```
-----
Car traffic volume : 18494/3264 veh/TimePeriod *
Medium truck volume : 590/104 veh/TimePeriod *
Heavy truck volume : 590/104 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): 23146
Percentage of Annual Growth : 0.00
Number of Years of Growth : 10.00
Medium Truck % of Total Volume : 3.00
Heavy Truck % of Total Volume : 3.00
Day (16 hrs) % of Total Volume : 85.00
```

Data for Segment # 1: Hwy26 1 (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 : 38.00 / 38.00 m
Receiver height : 7.50 / 7.50 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00
```

Results segment # 1: Hwy26 1 (day)

Source height = 1.32 m

ROAD (0.00 + 62.57 + 0.00) = 62.57 dBA
 Angle1 Angle2 Alpha RefLeq P.Adj D.Adj F.Adj W.Adj H.Adj B.Adj
 SubLeq

```
-----
---
-90 90 0.49 69.72 0.00 -6.00 -1.15 0.00 0.00 0.00
62.57
-----
---
```

Segment Leq : 62.57 dBA

Total Leq All Segments: 62.57 dBA

Results segment # 1: Hwy26 1 (night)

Source height = 1.32 m

ROAD (0.00 + 58.05 + 0.00) = 58.05 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj
--------	--------	-------	--------	-------	-------	-------	-------	-------	-------

SubLeq

-90 90 0.49 65.19 0.00 -6.00 -1.15 0.00 0.00 0.00
58.05

Segment Leq : 58.05 dBA

Total Leq All Segments: 58.05 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 62.57
 (NIGHT): 58.05

Filename: pre52_3.te Time Period: Day/Night 16/8 hours
 Description: Unit 52 - OLA - Barrier Free

Road data, segment # 1: Hwy26 1 (day/night)

```
-----
Car traffic volume : 18494/3264 veh/TimePeriod *
Medium truck volume : 590/104 veh/TimePeriod *
Heavy truck volume : 590/104 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): 23146
Percentage of Annual Growth : 0.00
Number of Years of Growth : 10.00
Medium Truck % of Total Volume : 3.00
Heavy Truck % of Total Volume : 3.00
Day (16 hrs) % of Total Volume : 85.00
```

Data for Segment # 1: Hwy26 1 (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 : 35.00 / 35.00 m
Receiver height : 1.50 / 4.50 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00
```

Results segment # 1: Hwy26 1 (day)

Source height = 1.32 m

ROAD (0.00 + 62.15 + 0.00) = 62.15 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj
-90	90	0.66	69.72	0.00	-6.11	-1.46	0.00	0.00	0.00

SubLeq	62.15
--------	-------

Segment Leq : 62.15 dBA

Total Leq All Segments: 62.15 dBA

Results segment # 1: Hwy26 1 (night)

Source height = 1.32 m

ROAD (0.00 + 58.08 + 0.00) = 58.08 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj
--------	--------	-------	--------	-------	-------	-------	-------	-------	-------

SubLeq

-90 90 0.58 65.19 0.00 -5.80 -1.31 0.00 0.00 0.00
58.08

Segment Leq : 58.08 dBA

Total Leq All Segments: 58.08 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 62.15
 (NIGHT): 58.08

Filename: pre68_1.te Time Period: Day/Night 16/8 hours
 Description: Unit 68 - Facade - Barrier Free

Road data, segment # 1: Hwy26 1 (day/night)

```
-----
Car traffic volume : 18494/3264 veh/TimePeriod *
Medium truck volume : 590/104 veh/TimePeriod *
Heavy truck volume : 590/104 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): 23146
Percentage of Annual Growth : 0.00
Number of Years of Growth : 10.00
Medium Truck % of Total Volume : 3.00
Heavy Truck % of Total Volume : 3.00
Day (16 hrs) % of Total Volume : 85.00
```

Data for Segment # 1: Hwy26 1 (day/night)

```
-----
Angle1 Angle2 : -90.00 deg 90.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 0
Surface : 1 (Absorptive ground surface)
Receiver source distance : 42.00 / 42.00 m
Receiver height : 4.50 / 4.50 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00
```

Results segment # 1: Hwy26 1 (day)

Source height = 1.32 m

ROAD (0.00 + 61.36 + 0.00) = 61.36 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj
-90	90	0.58	69.72	0.00	-7.05	-1.31	0.00	0.00	0.00

SubLeq	61.36
--------	-------

Segment Leq : 61.36 dBA

Total Leq All Segments: 61.36 dBA

Results segment # 1: Hwy26 1 (night)

Source height = 1.32 m

ROAD (0.00 + 56.84 + 0.00) = 56.84 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj
--------	--------	-------	--------	-------	-------	-------	-------	-------	-------

SubLeq									

-90	90	0.58	65.19	0.00	-7.05	-1.31	0.00	0.00	0.00
56.84									

Segment Leq : 56.84 dBA

Total Leq All Segments: 56.84 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 61.36
(NIGHT): 56.84

Filename: pre68_3.te Time Period: Day/Night 16/8 hours
 Description: Unit 68 - OLA - Barrier Free

Road data, segment # 1: Hwy26 1 (day/night)

```
-----
Car traffic volume : 18494/3264 veh/TimePeriod *
Medium truck volume : 590/104 veh/TimePeriod *
Heavy truck volume : 590/104 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): 23146
Percentage of Annual Growth : 0.00
Number of Years of Growth : 10.00
Medium Truck % of Total Volume : 3.00
Heavy Truck % of Total Volume : 3.00
Day (16 hrs) % of Total Volume : 85.00
```

Data for Segment # 1: Hwy26 1 (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 : 39.00 / 39.00 m
Receiver height : 1.50 / 4.50 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00
```

Results segment # 1: Hwy26 1 (day)

Source height = 1.32 m

ROAD (0.00 + 61.37 + 0.00) = 61.37 dBA
 Angle1 Angle2 Alpha RefLeq P.Adj D.Adj F.Adj W.Adj H.Adj B.Adj
 SubLeq

```
-----
---
-90 90 0.66 69.72 0.00 -6.89 -1.46 0.00 0.00 0.00
61.37
-----
---
```

Segment Leq : 61.37 dBA

Total Leq All Segments: 61.37 dBA

Results segment # 1: Hwy26 1 (night)

Source height = 1.32 m

ROAD (0.00 + 57.34 + 0.00) = 57.34 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj
SubLeq									

-90 90 0.58 65.19 0.00 -6.54 -1.31 0.00 0.00 0.00
57.34

Segment Leq : 57.34 dBA

Total Leq All Segments: 57.34 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 61.37
 (NIGHT): 57.34

POST

STAMSON 5.0 NORMAL REPORT Date: 31-01-2019 16:24:43
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: post52_1.te Time Period: Day/Night 16/8 hours
Description: Unit 52 - Facade - With Barrier

Road data, segment # 1: Hwy26 1 (day/night)

Car traffic volume : 18494/3264 veh/TimePeriod *
Medium truck volume : 590/104 veh/TimePeriod *
Heavy truck volume : 590/104 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): 23146
Percentage of Annual Growth : 0.00
Number of Years of Growth : 10.00
Medium Truck % of Total Volume : 3.00
Heavy Truck % of Total Volume : 3.00
Day (16 hrs) % of Total Volume : 85.00

Data for Segment # 1: Hwy26 1 (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 : 38.00 / 38.00 m
Receiver height : 4.50 / 7.50 m
Topography : 2 (Flat/gentle slope; with
barrier)
Barrier angle1 : -90.00 deg Angle2 : 90.00 deg
Barrier height : 2.00 m
Barrier receiver distance : 9.00 / 9.00 m
Source elevation : 179.54 m
Receiver elevation : 180.49 m
Barrier elevation : 179.80 m
Reference angle : 0.00

Results segment # 1: Hwy26 1 (day)

Source height = 1.32 m

Barrier height for grazing incidence

Source ! Receiver ! Barrier ! Elevation of
Height (m) ! Height (m) ! Height (m) ! Barrier Top (m)
-----+-----+-----+-----
1.32 ! 4.50 ! 4.21 ! 184.01

ROAD (0.00 + 62.05 + 0.00) = 62.05 dBA

Angle1 Angle2 Alpha RefLeq P.Adj D.Adj F.Adj W.Adj H.Adj B.Adj
SubLeq

-90 90 0.46 69.72 0.00 -5.88 -1.09 0.00 0.00 -0.25
62.51*
-90 90 0.58 69.72 0.00 -6.36 -1.31 0.00 0.00 0.00
62.05

* Bright Zone !

Segment Leq : 62.05 dBA

Total Leq All Segments: 62.05 dBA

Barrier table for segment # 1: Hwy26 1 (day)

Barrier ! Elev of ! Road ! Tot Leq !
Height ! Barr Top! dBA ! dBA !
-----+-----+-----+-----
3.50 ! 183.30 ! 62.05 ! 62.05 !
4.00 ! 183.80 ! 62.05 ! 62.05 !
4.50 ! 184.30 ! 58.47 ! 58.47 !
5.00 ! 184.80 ! 57.58 ! 57.58 !
5.50 ! 185.30 ! 56.28 ! 56.28 !
6.00 ! 185.80 ! 55.00 ! 55.00 !
6.50 ! 186.30 ! 53.87 ! 53.87 !
7.00 ! 186.80 ! 52.90 ! 52.90 !
7.50 ! 187.30 ! 52.08 ! 52.08 !
8.00 ! 187.80 ! 51.36 ! 51.36 !

Results segment # 1: Hwy26 1 (night)

Source height = 1.32 m

Barrier height for grazing incidence

Source ! Receiver ! Barrier ! Elevation of
Height (m) ! Height (m) ! Height (m) ! Barrier Top (m)
-----+-----+-----+-----
1.32 ! 7.50 ! 6.50 ! 186.30

ROAD (0.00 + 58.05 + 0.00) = 58.05 dBA

Angle1 Angle2 Alpha RefLeq P.Adj D.Adj F.Adj W.Adj H.Adj B.Adj
SubLeq

-90 90 0.37 65.19 0.00 -5.51 -0.91 0.00 0.00 -0.06
58.71*
-90 90 0.49 65.19 0.00 -6.00 -1.15 0.00 0.00 0.00
58.05

* Bright Zone !

Segment Leq : 58.05 dBA

Total Leq All Segments: 58.05 dBA

Barrier table for segment # 1: Hwy26 1 (night)

Barrier ! Elev of ! Road ! Tot Leq !
Height ! Barr Top! dBA ! dBA !
-----+-----+-----+-----
3.50 ! 183.30 ! 58.05 ! 58.05 !
4.00 ! 183.80 ! 58.05 ! 58.05 !
4.50 ! 184.30 ! 58.05 ! 58.05 !
5.00 ! 184.80 ! 58.05 ! 58.05 !
5.50 ! 185.30 ! 58.05 ! 58.05 !
6.00 ! 185.80 ! 58.05 ! 58.05 !
6.50 ! 186.30 ! 58.05 ! 58.05 !
7.00 ! 186.80 ! 55.16 ! 55.16 !
7.50 ! 187.30 ! 54.07 ! 54.07 !
8.00 ! 187.80 ! 52.78 ! 52.78 !

TOTAL Leq FROM ALL SOURCES (DAY): 62.05
(NIGHT): 58.05

STAMSON 5.0 NORMAL REPORT Date: 04-02-2019 11:15:14
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: post52_2.te Time Period: Day/Night 16/8 hours
Description: Unit 52 - Bedroom Daytime Facade - With Barrier

Road data, segment # 1: Hwy26 1 (day/night)

Car traffic volume : 18494/3264 veh/TimePeriod *
Medium truck volume : 590/104 veh/TimePeriod *
Heavy truck volume : 590/104 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): 23146
Percentage of Annual Growth : 0.00
Number of Years of Growth : 10.00
Medium Truck % of Total Volume : 3.00
Heavy Truck % of Total Volume : 3.00
Day (16 hrs) % of Total Volume : 85.00

Data for Segment # 1: Hwy26 1 (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 : 38.00 / 38.00 m
Receiver height : 7.50 / 7.50 m
Topography : 2 (Flat/gentle slope; with
barrier)
Barrier angle1 : -90.00 deg Angle2 : 90.00 deg
Barrier height : 2.00 m
Barrier receiver distance : 9.00 / 9.00 m
Source elevation : 179.54 m
Receiver elevation : 180.49 m
Barrier elevation : 179.80 m
Reference angle : 0.00

* Bright Zone !

Segment Leq : 58.05 dBA

Total Leq All Segments: 58.05 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 62.57
(NIGHT): 58.05

STAMSON 5.0 NORMAL REPORT Date: 31-01-2019 15:57:01
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: post52_3.te Time Period: Day/Night 16/8 hours
Description: Unit 52 - OLA - With Barrier

Road data, segment # 1: Hwy26 1 (day/night)

Car traffic volume : 18494/3264 veh/TimePeriod *
Medium truck volume : 590/104 veh/TimePeriod *
Heavy truck volume : 590/104 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): 23146
Percentage of Annual Growth : 0.00
Number of Years of Growth : 10.00
Medium Truck % of Total Volume : 3.00
Heavy Truck % of Total Volume : 3.00
Day (16 hrs) % of Total Volume : 85.00

Data for Segment # 1: Hwy26 1 (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 : 35.00 / 35.00 m
Receiver height : 1.50 / 4.50 m
Topography : 2 (Flat/gentle slope; with
barrier)
Barrier angle1 : -90.00 deg Angle2 : 90.00 deg
Barrier height : 2.00 m
Barrier receiver distance : 6.00 / 5.75 m
Source elevation : 179.54 m
Receiver elevation : 180.40 m
Barrier elevation : 179.80 m
Reference angle : 0.00

Results segment # 1: Hwy26 1 (day)

Source height = 1.32 m

Barrier height for grazing incidence

Source Height (m)	Receiver Height (m)	Barrier Height (m)	Elevation of Barrier Top (m)
1.32	1.50	1.92	181.72

ROAD (0.00 + 57.75 + 0.00) = 57.75 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj
-90	90	0.55	69.72	0.00	-5.69	-1.26	0.00	0.00	-5.02
SubLeq									
57.75									

Segment Leq : 57.75 dBA

Total Leq All Segments: 57.75 dBA

Results segment # 1: Hwy26 1 (night)

Source height = 1.32 m

Barrier height for grazing incidence

Source Height (m)	Receiver Height (m)	Barrier Height (m)	Elevation of Barrier Top (m)
1.32	4.50	4.44	184.24

ROAD (0.00 + 58.08 + 0.00) = 58.08 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj
-90	90	0.46	65.19	0.00	-5.36	-1.09	0.00	0.00	-0.15
SubLeq									
58.60*									
-90	90	0.58	65.19	0.00	-5.80	-1.31	0.00	0.00	0.00
SubLeq									
58.08									

* Bright Zone !

Segment Leq : 58.08 dBA

Total Leq All Segments: 58.08 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 57.75

(NIGHT): 58.08

STAMSON 5.0 NORMAL REPORT Date: 31-01-2019 16:28:25
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: post68_1.te Time Period: Day/Night 16/8 hours
Description: Unit 68 - Facade - With Barrier

Road data, segment # 1: Hwy26 1 (day/night)

Car traffic volume : 18494/3264 veh/TimePeriod *
Medium truck volume : 590/104 veh/TimePeriod *
Heavy truck volume : 590/104 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): 23146
Percentage of Annual Growth : 0.00
Number of Years of Growth : 10.00
Medium Truck % of Total Volume : 3.00
Heavy Truck % of Total Volume : 3.00
Day (16 hrs) % of Total Volume : 85.00

Data for Segment # 1: Hwy26 1 (day/night)

Angle1 Angle2 : -90.00 deg 90.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 0
Surface : 1 (Absorptive ground surface)
Receiver source distance : 42.00 / 42.00 m
Receiver height : 4.50 / 7.50 m
Topography : 2 (Flat/gentle slope; with
barrier)
Barrier angle1 : -90.00 deg Angle2 : 90.00 deg
Barrier height : 2.00 m
Barrier receiver distance : 9.50 / 9.50 m
Source elevation : 179.74 m
Receiver elevation : 180.75 m
Barrier elevation : 180.45 m
Reference angle : 0.00

Results segment # 1: Hwy26 1 (day)

Source height = 1.32 m

Barrier height for grazing incidence

Source ! Receiver ! Barrier ! Elevation of
Height (m) ! Height (m) ! Height (m) ! Barrier Top (m)
-----+-----+-----+-----
1.32 ! 4.50 ! 3.85 ! 184.30

ROAD (0.00 + 61.36 + 0.00) = 61.36 dBA

Angle1 Angle2 Alpha RefLeq P.Adj D.Adj F.Adj W.Adj H.Adj B.Adj
SubLeq

-90 90 0.46 69.72 0.00 -6.51 -1.09 0.00 0.00 -0.38
61.74*
-90 90 0.58 69.72 0.00 -7.05 -1.31 0.00 0.00 0.00
61.36

* Bright Zone !

Segment Leq : 61.36 dBA

Total Leq All Segments: 61.36 dBA

Barrier table for segment # 1: Hwy26 1 (day)

Barrier ! Elev of ! Road ! Tot Leq !
Height ! Barr Top! dBA ! dBA !
-----+-----+-----+-----
3.50 ! 183.95 ! 61.36 ! 61.36 !
4.00 ! 184.45 ! 57.85 ! 57.85 !
4.50 ! 184.95 ! 57.25 ! 57.25 !
5.00 ! 185.45 ! 56.08 ! 56.08 !
5.50 ! 185.95 ! 54.83 ! 54.83 !
6.00 ! 186.45 ! 53.69 ! 53.69 !
6.50 ! 186.95 ! 52.70 ! 52.70 !
7.00 ! 187.45 ! 51.86 ! 51.86 !
7.50 ! 187.95 ! 51.13 ! 51.13 !
8.00 ! 188.45 ! 50.50 ! 50.50 !

Results segment # 1: Hwy26 1 (night)

Source height = 1.32 m

Barrier height for grazing incidence

Source ! Receiver ! Barrier ! Elevation of
Height (m) ! Height (m) ! Height (m) ! Barrier Top (m)
-----+-----+-----+-----
1.32 ! 7.50 ! 6.17 ! 186.62

ROAD (0.00 + 57.40 + 0.00) = 57.40 dBA

Angle1 Angle2 Alpha RefLeq P.Adj D.Adj F.Adj W.Adj H.Adj B.Adj
SubLeq

-90 90 0.37 65.19 0.00 -6.11 -0.91 0.00 0.00 -0.08
58.10*
-90 90 0.49 65.19 0.00 -6.64 -1.15 0.00 0.00 0.00
57.40

* Bright Zone !

Segment Leq : 57.40 dBA

Total Leq All Segments: 57.40 dBA

Barrier table for segment # 1: Hwy26 1 (night)

Barrier ! Elev of ! Road ! Tot Leq !
Height ! Barr Top! dBA ! dBA !
-----+-----+-----+-----
3.50 ! 183.95 ! 57.40 ! 57.40 !
4.00 ! 184.45 ! 57.40 ! 57.40 !
4.50 ! 184.95 ! 57.40 ! 57.40 !
5.00 ! 185.45 ! 57.40 ! 57.40 !
5.50 ! 185.95 ! 57.40 ! 57.40 !
6.00 ! 186.45 ! 57.40 ! 57.40 !
6.50 ! 186.95 ! 54.79 ! 54.79 !
7.00 ! 187.45 ! 53.96 ! 53.96 !
7.50 ! 187.95 ! 52.75 ! 52.75 !
8.00 ! 188.45 ! 51.55 ! 51.55 !

TOTAL Leq FROM ALL SOURCES (DAY): 61.36
(NIGHT): 57.40

Filename: post68_2.te Time Period: Day/Night 16/8 hours
Description: Unit 68 - Bedroom Daytime Facade - With Barrier

Road data, segment # 1: Hwy26 1 (day/night)

Car traffic volume : 18494/3264 veh/TimePeriod *
Medium truck volume : 590/104 veh/TimePeriod *
Heavy truck volume : 590/104 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): 23146
Percentage of Annual Growth : 0.00
Number of Years of Growth : 10.00
Medium Truck % of Total Volume : 3.00
Heavy Truck % of Total Volume : 3.00
Day (16 hrs) % of Total Volume : 85.00

Data for Segment # 1: Hwy26 1 (day/night)

Angle1 Angle2 : -90.00 deg 90.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 0
Surface : 1 (Absorptive ground surface)
Receiver source distance : 42.00 / 42.00 m
Receiver height : 7.50 / 7.50 m
Topography : 2 (Flat/gentle slope; with
barrier)
Barrier angle1 : -90.00 deg Angle2 : 90.00 deg
Barrier height : 2.00 m
Barrier receiver distance : 9.50 / 9.50 m
Source elevation : 179.74 m
Receiver elevation : 180.75 m
Barrier elevation : 180.45 m
Reference angle : 0.00

* Bright Zone !

Segment Leq : 57.40 dBA

Total Leq All Segments: 57.40 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 61.93
(NIGHT): 57.40

STAMSON 5.0 NORMAL REPORT Date: 31-01-2019 15:56:37
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: post68_3.te Time Period: Day/Night 16/8 hours
Description: Unit 68 - OLA - With Barrier

Road data, segment # 1: Hwy26 1 (day/night)

Car traffic volume : 18494/3264 veh/TimePeriod *
Medium truck volume : 590/104 veh/TimePeriod *
Heavy truck volume : 590/104 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): 23146
Percentage of Annual Growth : 0.00
Number of Years of Growth : 10.00
Medium Truck % of Total Volume : 3.00
Heavy Truck % of Total Volume : 3.00
Day (16 hrs) % of Total Volume : 85.00

Data for Segment # 1: Hwy26 1 (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 : 39.00 / 39.00 m
Receiver height : 1.50 / 4.50 m
Topography : 2 (Flat/gentle slope; with
barrier)
Barrier angle1 : -90.00 deg Angle2 : 90.00 deg
Barrier height : 2.00 m
Barrier receiver distance : 6.50 / 5.75 m
Source elevation : 179.74 m
Receiver elevation : 180.69 m
Barrier elevation : 180.45 m
Reference angle : 0.00

Results segment # 1: Hwy26 1 (day)

Source height = 1.32 m

Barrier height for grazing incidence

Source ! Receiver ! Barrier ! Elevation of
Height (m) ! Height (m) ! Height (m) ! Barrier Top (m)
-----+-----+-----+-----
1.32 ! 1.50 ! 1.55 ! 182.00

ROAD (0.00 + 56.46 + 0.00) = 56.46 dBA

Angle1 Angle2 Alpha RefLeq P.Adj D.Adj F.Adj W.Adj H.Adj B.Adj
SubLeq

-90 90 0.55 69.72 0.00 -6.41 -1.26 0.00 0.00 -5.58
56.46

Segment Leq : 56.46 dBA

Total Leq All Segments: 56.46 dBA

Barrier table for segment # 1: Hwy26 1 (day)

Barrier ! Elev of ! Road ! Tot Leq !
Height ! Barr Top! dBA ! dBA !
-----+-----+-----+-----+
3.50 ! 183.95 ! 52.27 ! 52.27 !
4.00 ! 184.45 ! 51.14 ! 51.14 !
4.50 ! 184.95 ! 50.19 ! 50.19 !
5.00 ! 185.45 ! 49.39 ! 49.39 !
5.50 ! 185.95 ! 48.69 ! 48.69 !
6.00 ! 186.45 ! 48.08 ! 48.08 !
6.50 ! 186.95 ! 47.79 ! 47.79 !
7.00 ! 187.45 ! 47.52 ! 47.52 !
7.50 ! 187.95 ! 47.33 ! 47.33 !
8.00 ! 188.45 ! 47.20 ! 47.20 !

Results segment # 1: Hwy26 1 (night)

Source height = 1.32 m

Barrier height for grazing incidence

Source ! Receiver ! Barrier ! Elevation of
Height (m) ! Height (m) ! Height (m) ! Barrier Top (m)
-----+-----+-----+-----
1.32 ! 4.50 ! 4.13 ! 184.58

ROAD (0.00 + 57.34 + 0.00) = 57.34 dBA

Angle1 Angle2 Alpha RefLeq P.Adj D.Adj F.Adj W.Adj H.Adj B.Adj
SubLeq

-90 90 0.46 65.19 0.00 -6.04 -1.09 0.00 0.00 -0.19
57.87*
-90 90 0.58 65.19 0.00 -6.54 -1.31 0.00 0.00 0.00
57.34

* Bright Zone !

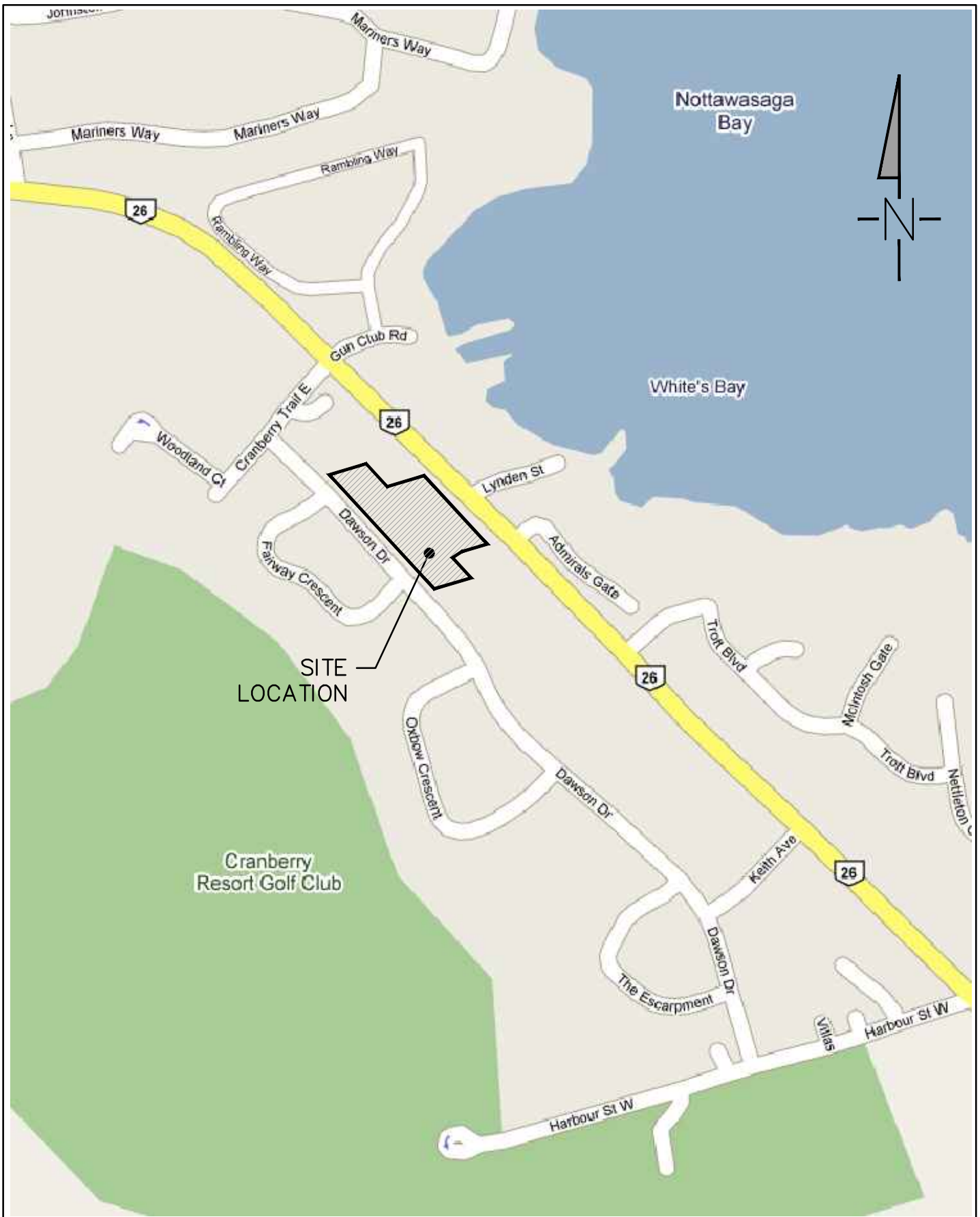
Segment Leq : 57.34 dBA


Total Leq All Segments: 57.34 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 56.46
(NIGHT): 57.34


FIGURES

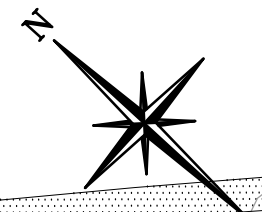
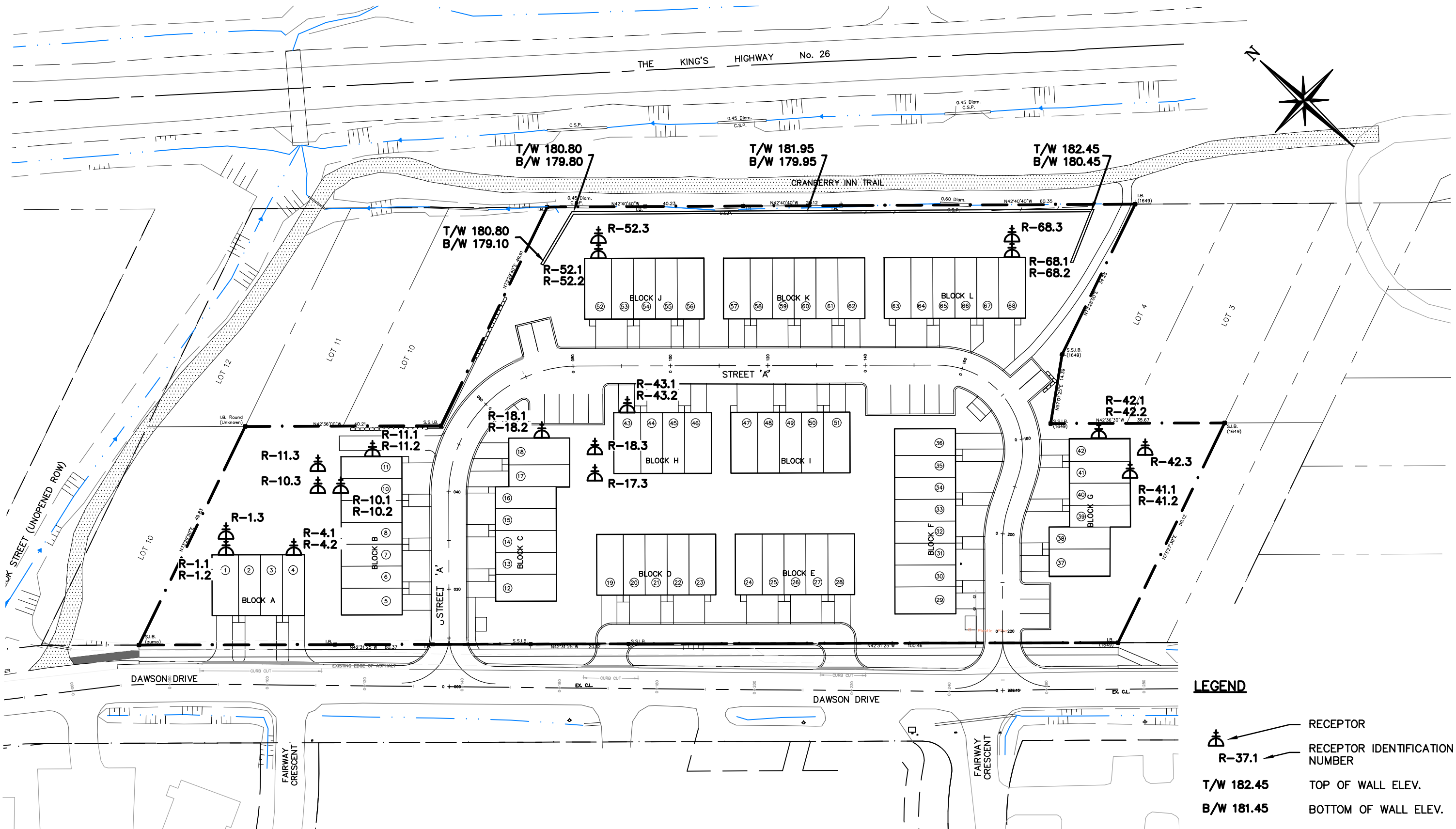
- Figure 1:** Site Location Plan
Figure 2: Receptor Location Plan





Legend	
	= SUBJECT LANDS


Project	WATERSTONE DEVELOPMENT	
Drawing	SITE LOCATION	

 CROZIER & ASSOCIATES Consulting Engineers	THE HARBOUREDGE BUILDING, 40 HURON STREET, SUITE 301, COLLINGWOOD, ON L9Y 4R3 705-446-3510 T 705-446-3520 F WWW.CFCROZIER.CA INFO@CFCROZIER.CA	
	Drawn By J.O. Scale N.T.S.	Design By M.F. Date Feb. 4, 2019



LEGEND

-  RECEPTOR
-  RECEPTOR IDENTIFICATION NUMBER
- T/W 182.45** TOP OF WALL ELEV.
- B/W 181.45** BOTTOM OF WALL ELEV.

WATERSTONE DEVELOPMENT		 CROZIER & ASSOCIATES Consulting Engineers	THE HARBOUREDGE BUILDINGS, 40 HURON STREET, SUITE 301, COLLINGWOOD, ON L9Y 4R3	705-446-3510 T 705-446-3520 F WWW.CFCROZIER.CA INFO@CFCROZIER.CA
RECEPTOR LOCATIONS			Drawn By: J.O. Design By: M.F. Project: 209-2649 Scale: 1:750 Date: Feb. 4, 2019 Check By: A.F. Drawing: FIG 2	