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36 Years

Block 14
(Bridlewood Trails - Phase 2)

Detailed Noise Control Study

BLOCK 14
(BRIDLEWOOD TRAILS PHASE 2 SUBDIVISION)

DETAILED NOISE CONTROL STUDY

Prepared By:

NOVATECH
Suite 200, 240 Michael Cowpland Drive
Ottawa, Ontario
K2M 1P6

Novatech File: 114013
Ref: R-2014-143

Submitted: September 17, 2014
Revised: May 29, 2015
Revised: May 23, 2018
Revised: September 19, 2018

NOVATECH
Engineers, Planners & Landscape Architects

September 19, 2018

City of Ottawa
Planning and Infrastructure Approvals
110 Laurier Street West, 4th Floor
Ottawa, ON, K1P 1J1

Attention: **Rosanna Baggs**

Reference: **Block 14 (Bridlewood Trails – Phase 2 Subdivision)**
Detailed Noise Control Study
Our File No.: 114013

Enclosed for your review are three (3) copies of the revised Detailed Noise Control Study for Block 14 located in Bridlewood Trails Phase 2 subdivision.

This study evaluates the impact of noise and outlines noise attenuation measures to mitigate the impacts.

Please contact the undersigned should you have any questions or comments pertaining to the enclosed report.

Yours truly,

NOVATECH

Drew Blair

Drew Blair, P. Eng.
Project Manager, Land Development Engineering

Cc: Vincent Denomme, Claridge Homes

TABLE OF CONTENTS

1.0 INTRODUCTION

This report is submitted on behalf of the developer, Claridge Homes Inc. as part of the Site Plan Application process for the proposed Block 14 development located in Bridlewood Trails Phase 2 subdivision. This study assesses the environmental impact of noise on the proposed development and outlines the recommended mitigation measures if required.

2.0 BACKGROUND

2.1 Project Description

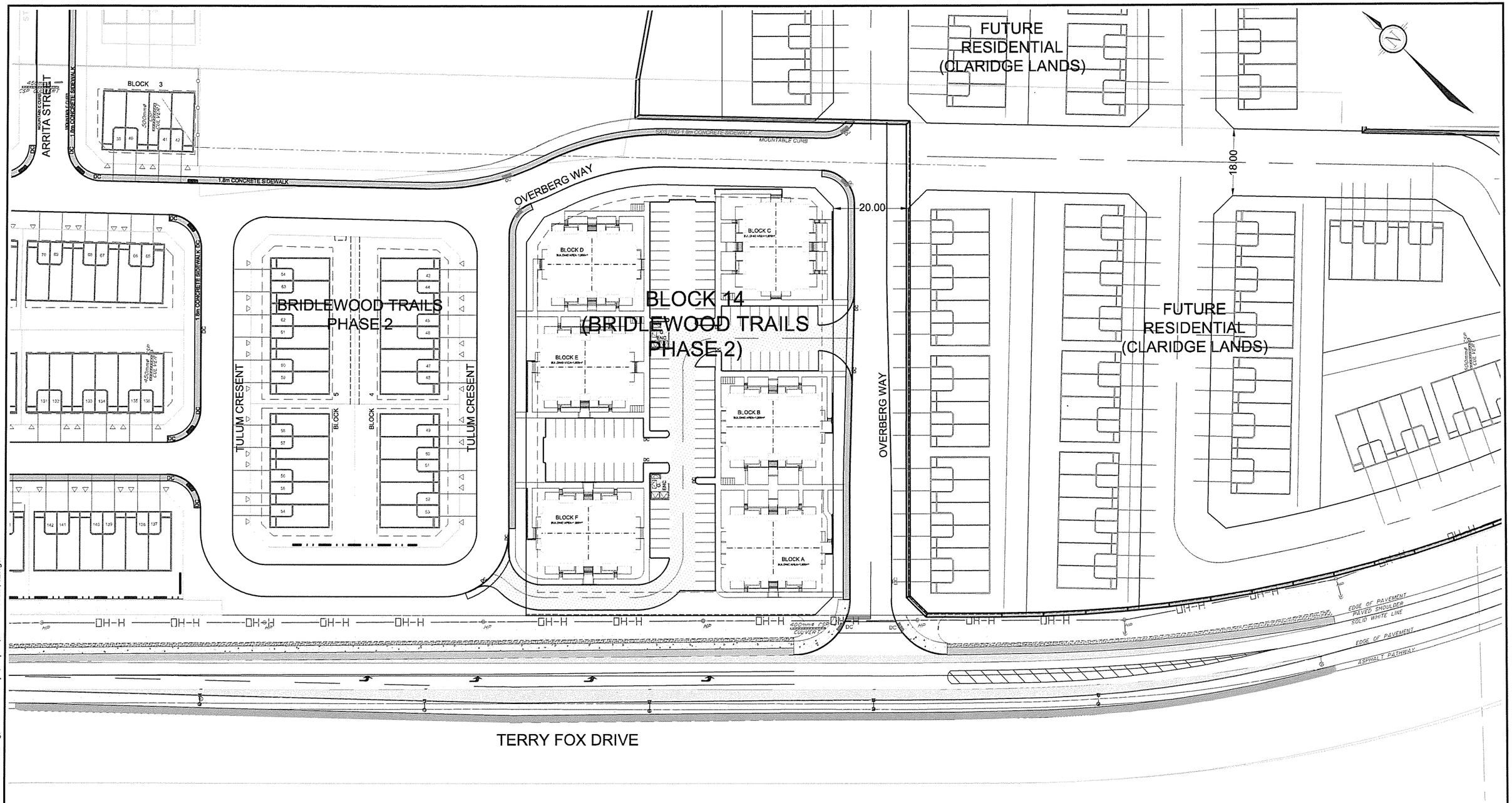
The subject site is 0.93ha and located in the Bridlewood Trails Phase 2 subdivision and is bounded by Terry Fox Drive to the southwest, vacant lands to the north and east and Bridlewood Trails Phase 2 to the northwest as shown in **Figure 1 – Key Plan.** The development will consist of six (6) Blocks containing 12 units in each building. On-site parking will be provided with access to the site from Overberg Way and Tulum Street. A site plan of the proposed development is shown in **Figure 2 – Site Plan**.

Figure 1 – Key Plan

2.2 Noise Sources

The City of Ottawa Official Plan stipulates that a noise study shall be prepared when a new development is proposed within 100 metres of an arterial or major collector roadway, or a rapid-transit corridor.

The potential surface road noise source for this site that was considered for the purposes of this study is Terry Fox Drive as all other roadways within the zone of influence were not



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SCALE
1:1000

CITY OF OTTAWA

BLOCK 14
(BRIDLEWOOD TRAILS PHASE 2)

SITE PLAN

SEPT 2018 114013 FIGURE 2

SHT11X17.DWG - 279mmX432mm

M:\2014\114013\CAD\Design\Figures\Noise\20180907\114013-FIG2.dwg, 11x17 landscape, Sep 05, 2018 - 8:35am, szorgel

arterial or major collector roadways. For the purposes of this report, Terry Fox Drive will be considered the primary noise source.

Terry Fox Drive is classified as an urban arterial roadway with a 44.5m protected ROW in the City of Ottawa Transportation Master Plan and Official Plan. Terry Fox Drive is currently a 2-lane undivided arterial road with a posted speed of 80km/hr fronting the Block 14 subject lands. As per Map 11 in the Transportation Master Plan (TMP), Road Network – 2031 Affordable Network, there are no plans to widen Terry Fox Drive to a 4-lane urban arterial prior to 2031. Therefore, for the purposes of this report, a 2-lane undivided arterial road with an AADT level of 15,000 veh/day and a posted speed of 80km/hr will be utilized. Refer to **Appendix C** for excerpt from the City of Ottawa TMP.

There is no railway ROW within 250m that impacts the site.

There is no airport noise affecting this site.

There are no stationary noise sources that affect this site.

3.0 CITY OF OTTAWA NOISE CONTROL GUIDELINES

3.1 Sound Level Criteria

The City of Ottawa is concerned with noise from aircraft, roads, transitways, and railways, as expressed in Tables 2.2a: Sound Level Limit for Outdoor Living Areas – Road and Rail, Table 2.2b: Sound Level Limit for Indoor Living Areas Road and Rail, and Table 2.2c: Supplementary Sound Level Limits for Indoor Spaces – Road and Rail of the ENCG. The maximum suggested sound levels for outdoor and indoor living areas between 7am and 11pm are 55 dBA and 45 dBA, respectively. The maximum suggested sound level for indoor bedrooms is 40dBA between 11pm and 7am. For reference, Tables 2.2a, 2.2b and 2.2c of the ENCG are included in **Appendix C**.

Outdoor Living Area and Plane of Window receivers are defined as:

- **Outdoor Living Area (OLA):** The outdoor amenity area provided for quiet enjoyment of the outdoor environment during the daytime period (i.e., backyards, terraces and patios). OLA noise levels are considered 3.0m from the building façade, 1.5m above grade.

- **Plane of Window (POW):** The indoor living space where the sound levels will affect the living room area during daytime hours and bedrooms during nighttime hours. POW noise levels are considered inside the building, 1.5m above the ground for the 1st floor, 4.5m above the ground for the 2nd floor and 7.5m for the 3rd floor units.

3.2 Alternative Methods for Noise Attenuation

When OLA sound levels are predicted to be approximately equal to or less than 55 dBA attenuation measures are not required. If the predicted noise levels are found to exceed 55

dBA, physical forms of mitigation is suggested and which may also include the provision of warning clauses to inform purchasers of the expected noise levels and specific mitigation measures.

These attenuation measures may include any or all of the following:

- Distance setback with soft ground;
- Insertion of noise insensitive land uses between the source and sensitive receptor;
- Orientation of building to provide sheltered zones;
- Construction of sound or acoustic barriers;
- Installation of air conditioning and ventilation; and
- Enhanced construction techniques and construction quality.

3.3 Noise Attenuation Requirements

When the noise attenuation measures listed above do not reduce noise levels below 55 dBA in the Outdoor Living Area, control measures (barriers) are required to reduce the Leq below or as close to 55 dBA as technically, economically and administratively feasible.

The noise barriers are to be compliant with the City standard for noise barriers and have the following characteristics:

- Minimum height of 2.2m;
- Situated 0.30m inside the private property line;
- A surface mass density not less than 20kg/sq.m; and
- No holes or gaps.

3.4 Ventilation Requirements

A forced air heating system with provision for a central air conditioning system is required if the plane of window daytime noise levels are between 55 dBA and 65 dBA and/or the nighttime noise levels are between 50 dBA and 60 dBA.

The installation of a central air conditioning system is required when the daytime noise level exceeds 65 dBA and/or the nighttime noise level exceeds 60 dBA.

3.5 Building Component Assessment

When plane of window noise levels exceeds 65 dBA (daytime) or 60 dBA (nighttime) the exterior cladding system of the building envelope must be acoustically assessed to ensure indoor sound criteria are achieved. This includes analysis of the exterior wall, door, and/or glazing system specifications as appropriate.

The NRC research *Acoustic Insulation Factor: A Rating for the Insulation of Buildings against Noise* (June 1980, JD Quirt) is used to assess the building components and the required acoustic insulation factor (AIF). This method is recognized by the City of Ottawa.

The required AIF is based on the Outside L_{eq}, Indoor L_{eq} required, and the number of exterior façade components.

Minimum Required AIF = Outside L_{eq} – Indoor L_{eq} + 10 $\log_{10}$ (Number of Components) + 2dB

Where, N = Number of components (walls, windows and roof);

L = Sound Level expressed on a common decibel scale.

3.6 Warning Clauses

When predicted noise levels exceed the specified criteria, the City of Ottawa and the MOE recommend warning clauses be registered as a notice on title and incorporated into the lease/rental/sale agreements to warn potential purchaser/buyers/tenants of the possible elevated noise levels.

Typical warning clauses should be registered as shown below. Warning clauses are extracted from Part 4, Appendix A the City of Ottawa ENCG and excerpts have been provided in **Appendix C** of this report. As stated in the City of Ottawa ENCG, due to the variation of noise impacts for any given site, it may be necessary to amend the example warning clauses to recognize the site conditions in each development.

It is recommended that the following noise clauses be registered on title and incorporated into the agreement of purchase and sales as required. Results can be found in **Table 3** from Section 4.3 of this report:

Type 1

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

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

- An acoustic barrier"

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

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

Additionally, if a tolerance of 5 dBA is being considered in some areas, it is recommended an additional noise clause be registered on title and incorporated into the agreement of purchase and sales:

Type 2

"Purchasers/tenants are advised that despite the inclusion of noise control features in the development and within the building units, sound levels due to increasing road/rail/Light Rail/transitway traffic may, on occasion, interfere with some activities

of the dwelling occupants as the sound levels exceed the sound level limits of the City and the Ministry of the Environment by up to 5 dBA."

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

- An acoustic barrier"

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

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

Type 3

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

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

- Multi-pane glass
- Double brick veneer"

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

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

Type 4

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

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

- Multi-pane glass
- Double brick veneer
- High sound transmission class walls"

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

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

For units with multiple types of warning clauses, similar/identical wording can be combined as to not duplicate wording/information.

3.7 Summary of Noise Attenuation Requirements

Table 1 summarizes the required noise attenuation measures and warning clauses should sound criteria be exceeded. Excerpts from the MOE NPC-300 and City of Ottawa ENCG documents are included in **Appendix C** for reference.

Table 1: Noise Attenuation Measure Requirements

Assessment Location	L_{eq} (dBA)	Outdoor Control Measures	Indoor Control Measures		Warning Clause
			Ventilation Requirements	Building Components	
Outdoor Living Area (OLA)	Less than 55	None required	N/A	N/A	None required
	Between 55 and 60	Control measures (barriers) may not be required but should be considered	N/A	N/A	Required if resultant L_{eq} exceeds 55 dBA Type 1* or Type 2**
	More than 60	Barriers required	N/A	N/A	Required if resultant L_{eq} exceeds 55 dBA Type 1* or Type 2*
Plane of Living Room Window (POW)	Less than 55	N/A	None Required	None Required	None Required
	Between 55 and 65	N/A	Forced air heating with provision for central air conditioning	None Required	Required Type 3
	More Than 65	N/A	Central Air Conditioning	Acoustical performance of the windows and walls should be specified	Required Type 4
Plane of Bedroom Window (POW)	Less than 50	N/A	None Required	None Required	None Required
	Between 50 and 60	N/A	Forced air heating with provision for central air conditioning	None Required	Required Type 3
	More than 60	N/A	Central Air Conditioning	Acoustical performance of the windows and walls should be specified	Required Type 4

*Type 1 warning clause refers to units requiring a noise barrier that mitigates noise below 55dBA.
**Type 2 warning clause refers to units requiring a noise barrier, but is technically or economically not feasible to reduce levels below 55dBA and a tolerance of up to 5dBA can be granted by the City.

4.0 PREDICTION OF OUTDOOR NOISE LEVELS

4.1 Roadway Traffic

Noise levels from Terry Fox Drive were assessed using the road and traffic parameters below from "Appendix B of the City of Ottawa's Environmental Noise Control Guidelines, 2016". The traffic and roadway parameters used for sound level predictions are shown in Table 2.

Table 2: Traffic and Roadway Parameters

	Terry Fox Drive
Roadway Classification	2 Lane Urban Arterial-Undivided
Annual Average Daily Traffic (AADT)	15,000 vehicles/day
Day/Night Split (%)	92/8
Medium Trucks (%)	7
Heavy Trucks (%)	5
Posted Speed	80 km/hr

For reference, excerpts from the ENCG confirming the Terry Fox Road AADT are included in **Appendix C.**

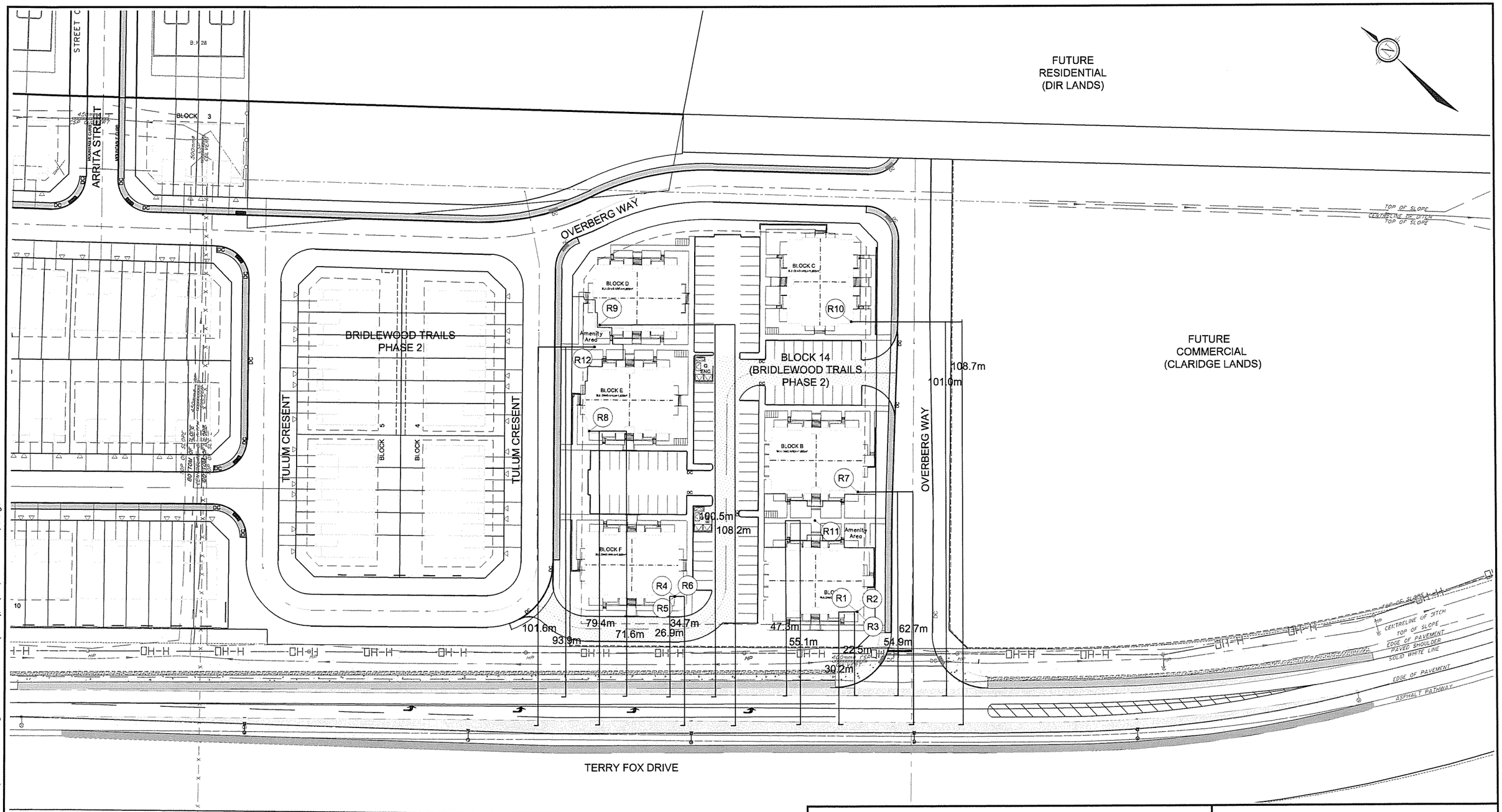
4.2 Noise Level Analysis

The noise levels were analyzed using Version 5.03 of the STAMSON computer program issued by the MOE. Proposed grades were required for the software and were obtained from elevations provided by the architect and the Grading Plan (114013-GR), both of which are included in **Appendix D and E** of this report.

For the purposes of this report, a future Claridge townhouse residential development has been accounted for to the southeast. Claridge has completed a pre-consult with the City and is in the process of finalizing their purchase and sales agreement. Townhouse units within the future development used as barriers in the noise calculations have an assumed height of 6.0m (typical 2-storey).

For the purposes of this report, the Claridge Zen units within Block 14 used as barriers in the noise calculations have an assumed height of 9.2m. This barrier height includes the height of all floors with an additional 1.2m for the roof, which represents a conservative 1/3 of the maximum height of the roof.

Receiver locations used in the noise simulations are shown on **Figure 3 – Receiver Location Plan.**



LEGEND

R1 RECEIVER LOCATION.

NOTE: UNIT NUMBERS ASSIGNED TO BLOCKS ARE IN REFERENCE TO THE NOISE CONTROL STUDY / REPORT ONLY.

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NTS

CITY OF OTTAWA

BLOCK 14
(BRIDLEWOOD TRAILS PHASE 2)

RECEIVER LOCATION PLAN

SEPT 2018 114013 FIGURE 3

4.3 Noise Level Results

Simulated noise levels for the units adjacent to Terry Fox Drive exceed the allowable noise level criteria, resulting in the requirement for air conditioning, a building façade analysis and a Type 4 warning clause.

Simulated noise levels for all the other units (not adjacent to Terry Fox Drive) exceed the allowable noise level criteria, resulting in the requirement for forced air ventilation with the provision for the installation of air conditioning and a Type 3 warning clause.

The predicted noise levels at the selected receiver locations within the development are illustrated in Table 3. Daytime and nighttime noise levels are shown.

Table 3: Simulation Results

		Noise Levels Leq (dBA)	
Location	**File/Receiver Name**	**Daytime**	**Night-time**
Block A Ground Floor	R1	70.14	62.54
Block A Middle Floor	R2	70.14	62.54
Block A Top Floor	R3	70.14	62.54
Block F Ground Floor	R4	69.43	61.84
Block F Middle Floor	R5	69.43	61.84
Block F Top Floor	R6	69.43	61.84
Block B Top Floor	R7	61.33	53.73
Block E Top Floor	R8	59.66	52.06
Block D Top Floor	R9	57.57	49.97
Block C Top Floor	R10	61.42	53.83
Outdoor Living Area – Block A/B	R11	52.03	44.43
Outdoor Living Area – Block D/E	R12	51.09	43.50

Figures in **Appendix A** show angles used in the detailed modeling calculations. The noise levels for all receiver locations generated from STAMSON are listed in **Table 3** with detailed modeling results in **Appendix A.**

4.4 Implementation

The City of Ottawa ENCG requires that noise clauses be applied when noise levels are above minimum requirements outlined in Table 1, and wall & window construction be reviewed when noise levels exceed minimum requirements outlined in Table 1. The acoustical insulation factor (AIF) method recognized by the City of Ottawa is used to assess the wall and window requirements.

The Acoustic Insulation Factor (AIF) is used as a measure of the reduction of outdoor noise provided by the elements of the outer surface of a building. The difference between the

indoor noise criterion and the outdoor noise level establishes the acoustical insulation requirement for the exterior shell. The exterior shell is comprised of primarily two components; windows and walls (patio doors are treated as windows). Canada Mortgage and Housing (CMHC) Standards [1] require that no component transmit more than 1/N of the total sound power that would give the maximum acceptable noise level inside the room. Thus, in a room with two exterior components, neither should transmit more than one-half of the total allowable sound power.

Mathematically, this Acoustical Insulation Factor can be expressed as:

Required AIF = L_{eq} (Outside) – L_{eq} (Inside) + 10 $\log_{10}$ (N) +2dBA

Where, N = Number of components;
L = Sound Level expressed on a common decibel scale.

The largest acoustical insulation factors for the building are calculated as follows:

- $AIF_{Residential(day)}$ = 71 dBA – 45 dBA + 10log(2) dBA + 2dBA = 31 dBA
- $AIF_{Residential(night)}$ = 63 dBA – 40 dBA + 10log(2) dBA + 2dBA = 28 dBA

Tables from the document entitled "Acoustic Insulation Factor: A Rating for the Insulation of Buildings Against Outdoor Noise", produced by the Division of Building Research, National Research Council of Canada, June 1980 (J.D. Quirt) were used to assess the exterior facade against the required AIF. This reference material is included in **Appendix B**.

In order to assess the façade against the required AIF respective Leq values, the number of components in a wall, the calculated required AIF, percentage of window to room areas and exterior wall to room areas are required. Exterior facade analysis data is presented in Table 4.

Table 4: Exterior Façade Analysis Data

Description	Residential Living Room	Residential Bedroom
Number and Type of Components Forming Building Envelope.	2 – Windows and Exterior Walls	2 – Windows and Exterior Walls
Percentage of Window Area to Total Floor Area of Room.	25%	47%
Percentage of Wall Area to Total Floor Area of Room.	20%	165%

Architect unit floor plans were reviewed to calculate the window and wall to floor ratios (as seen above). The architect plans are included in **Appendix D.**

Using the percentage of window area to room area, and the required acoustical insulation factor (AIF), Table 5 in **Appendix B** was used to identify the various window assemblies that

[1] Road and Rail Noise: Effects on Housing, CMHC, Ottawa. Publication NHA #185 1/78, 1978

would satisfy the required AIF. Similarly, Table 6.3 in **Appendix B** was used to select the typical wall assembly that would satisfy the required AIF. The results of this analysis requiring the largest attenuation measures are provided in Table 5.

Table 5: Selected Window and Wall Assemblies to Meet Maximum Attenuation Requirements

Description	AIF	Double Pane Window Assembly Options	Typical Wall Assembly
Typical Residential Unit	31	▪ 2 mm – 22 mm – 2 mm ▪ 3 mm – 16 mm – 3 mm ▪ 4 mm – 13mm – 4 mm ▪ 3 mm – 6 mm – 6 mm ▪ 6 mm – 6 mm – 6 mm	EW1
Notes: I. EW1 type wall consisting of 12.7mm gypsum board, vapour barrier, 38x89mm studs with 50mm (or thicker) mineral wool or glass fibre batts in inter stud cavities plus sheathing, wood siding or metal siding and fibre backer board. II. "2 mm – 63 mm – 2 mm" denotes 2 mm glass, 63 mm air space and 2 mm glass.			

The above results specify the smallest wall assembly available. If the proposed building requires larger wall assemblies such as concrete which has higher attenuation effects, the window assembly options may be reduced. In order to determine the reduction of the required window specification, the proposed wall assembly would need to be determined.

Tables 11 and 12 in **Appendix B** were used to convert the AIF values to Sound Transmission Class or STC values. The largest STC results are summarized in Table 6.

Table 6: Equivalent Sound Transmission Class, STC Values

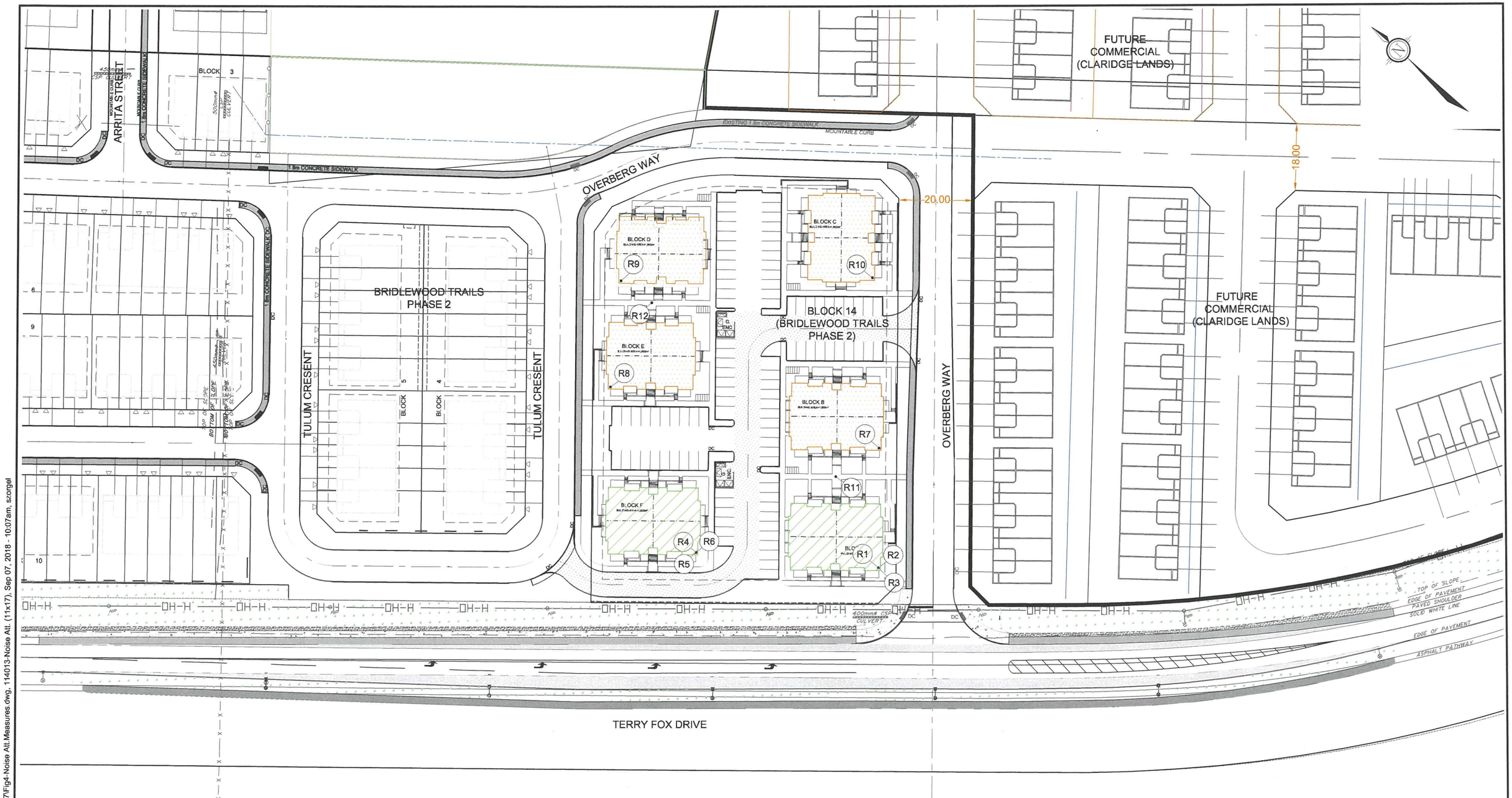
	Windows*			Walls*		
	AIF	Conversion	STC	AIF	Conversion	STC
Typical Residential Unit	31	STC = AIF	31	28	STC -9 = AIF	37

*Represents the worst case between the daytime STC and the nighttime STC values

The attenuation measures required to satisfy the City of Ottawa noise criteria and the noise clauses that are to be included on title and in the Agreement of Purchase and Sale for the various dwelling units are summarized in Table 7. Noise attenuation measures can be seen per Block in **Figure 4 – Noise Attenuation Measures Plan.**

Table 7 - Required Noise Attenuation Measures

Buildings	Attenuation Measure	Notice on Title
Block B, Block C, Block D and Block E	Forced Air Ventilation with Provision for Central Air Conditioning.	3
Block A and Block F	Central Air Conditioning. Acoustically selected walls and windows for all rooms.	4



LEGEND

MITIGATION METHODS INCLUDE:
- PROVIDE FORCED AIR VENTILATION WITH THE PROVISION OF CENTRAL AIR CONDITIONING
- WARNING CLAUSE TYPE 3 BE REGISTERED ON TITLE AND INCORPORATED INTO THE AGREEMENT OF PURCHASE AND SALES

MITIGATION METHODS INCLUDE:
- INSTALLATION OF CENTRAL AIR CONDITIONING
- WARNING CLAUSE TYPE 4 BE REGISTERED ON TITLE AND INCORPORATED INTO THE AGREEMENT OF PURCHASE AND SALES
- BUILDING FACADE ANALYSIS REQUIRED - SEE REPORT FOR DETAILS

R1 RECEIVER LOCATION.

NOTE: UNIT NUMBERS ASSIGNED TO BLOCKS ARE IN REFERENCE TO THE NOISE CONTROL STUDY / REPORT ONLY.

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BLOCK 14
(BRIDLEWOOD TRAILS PHASE 2)

NOISE ATTENUATION MEASURES PLAN

SEPT 2018 114013 FIGURE 4

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5.0 CONCLUSIONS

An analysis of the roadway traffic along Terry Fox Drive indicates attenuation measures will be necessary for the Block 14 (Bridlewood Trails Phase 2) project.

The following is a summary of the attenuation measures and notice requirements to be placed on title for the following units:

Residential – Blocks B, C, D and E

- Provide forced air ventilation with provision for central air conditioning;
- Notice on title: Type 3 Warning Clause (refer to Section 3.6)

Residential – Blocks A and F

- Provide central air conditioning;
- Provide window assembly to meet a sound transmission class, STC of 31.
- Provide wall assembly to meet a sound transmission class, STC of 37.
- Notice on title: Type 4 Warning Clause (refer to Section 3.6)

Outdoor Living Areas (OLA)

- No mitigation required. Noise Barriers and warning clauses (Type 1 or 2) are not required as the OLA noise levels do not exceed 55dBA.

In closing, Novatech respectfully requests the City of Ottawa accept the findings of this Detailed Noise Control Study for Block 14 within Bridlewood Trails Phase 2 as part of the Site Plan Approval submission.

NOVATECH

Authored by:

Steve Zorgel, P.Eng.
Project Coordinator

Reviewed by:

Drew Blair, P.Eng.
Project Manager

APPENDIX A

SOUND LEVEL CALCULATIONS

STAMSON 5.0 SUMMARY REPORT Date: 14-08-2018 09:19:06
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: r1.te Time Period: Day/Night 16/8 hours
Description:

Road data, segment # 1: Terry Fox N (day/night)

Car traffic volume	:	6072/528 veh/TimePeriod	*
Medium truck volume	:	483/42 veh/TimePeriod	*
Heavy truck volume	:	345/30 veh/TimePeriod	*
Posted speed limit	:	80 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)	:	7500
Percentage of Annual Growth	:	0.00
Number of Years of Growth	:	0.00
Medium Truck % of Total Volume	:	7.00
Heavy Truck % of Total Volume	:	5.00
Day (16 hrs) % of Total Volume	:	92.00

Data for Segment # 1: Terry Fox N (day/night)

Angle1 Angle2	:	-90.00 deg	90.00 deg
Wood depth	:	0	(No woods.)
No of house rows	:	0 / 0	
Surface	:	2	(Reflective ground surface)
Receiver source distance	:	22.50 / 22.50	m
Receiver height	:	1.50 / 1.50	m
Topography	:	1	(Flat/gentle slope; no barrier)
Reference angle	:	0.00	

Road data, segment # 2: Terry Fox S (day/night)

Car traffic volume	:	6072/528 veh/TimePeriod	*
Medium truck volume	:	483/42 veh/TimePeriod	*
Heavy truck volume	:	345/30 veh/TimePeriod	*
Posted speed limit	:	80 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)	:	7500
Percentage of Annual Growth	:	0.00
Number of Years of Growth	:	0.00
Medium Truck % of Total Volume	:	7.00
Heavy Truck % of Total Volume	:	5.00
Day (16 hrs) % of Total Volume	:	92.00

Data for Segment # 2: Terry Fox S (day/night)

Angle1 Angle2	: -90.00 deg	90.00 deg	
Wood depth	: 0	(No woods.)	
No of house rows	: 0 / 0		
Surface	: 2	(Reflective ground surface)	
Receiver source distance	: 30.20 / 30.20	m	
Receiver height	: 1.50 / 1.50	m	
Topography	: 1	(Flat/gentle slope; no barrier)	
Reference angle	: 0.00		

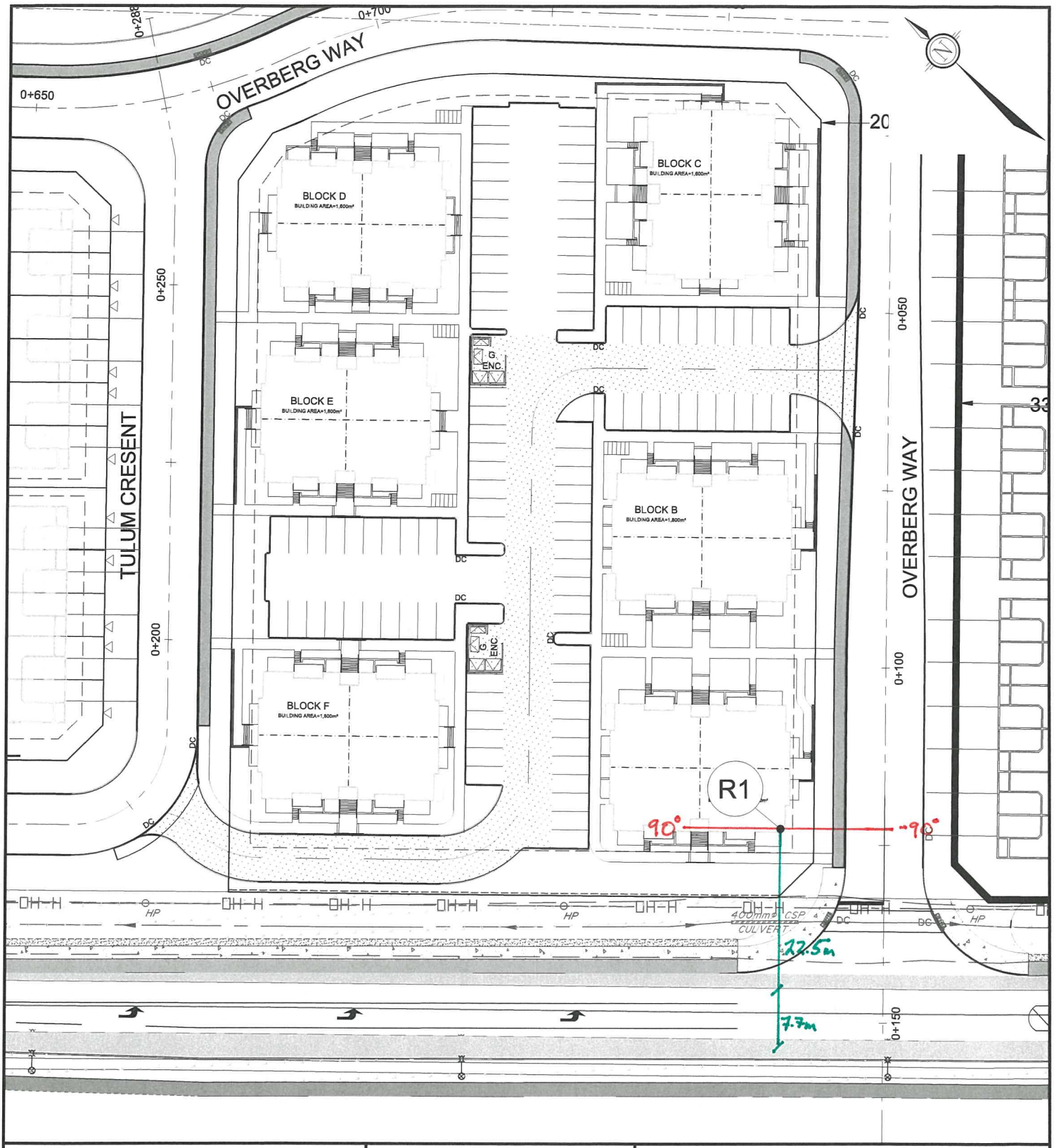
Result summary (day)

	source height (m)	Road Leq (dBA)	Total Leq (dBA)
1.Terry Fox N	1.50	67.72	67.72
2.Terry Fox S	1.50	66.44	66.44
Total			70.14 dBA

Result summary (night)

	source height (m)	Road Leq (dBA)	Total Leq (dBA)
1.Terry Fox N	1.50	60.12	60.12
2.Terry Fox S	1.50	58.84	58.84
Total			62.54 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 70.14
(NIGHT): 62.54



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BLOCK 14
(BRIDLEWOOD TRAILS PHASE 2)

RECEIVER DISTANCE AND ANGLES

SCALE 1 : 750 (0 10 20 30)

DATE SEPT 2018 | JOB 114013 | FIGURE FIG-R1

M:\2014\114013\CAD\Design\Figures\Noise\20180907\Appendix Angles.dwg, R1, May 22, 2018 - 3:08pm, szorgel

SHT8X11.DWG - 216mmx279mm

STAMSON 5.0 SUMMARY REPORT Date: 14-08-2018 09:22:44
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: r2.te Time Period: Day/Night 16/8 hours
Description:

Road data, segment # 1: Terry Fox N (day/night)

Car traffic volume	: 6072/528	veh/TimePeriod	*
Medium truck volume	: 483/42	veh/TimePeriod	*
Heavy truck volume	: 345/30	veh/TimePeriod	*
Posted speed limit	: 80 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)	: 7500
Percentage of Annual Growth	: 0.00
Number of Years of Growth	: 0.00
Medium Truck % of Total Volume	: 7.00
Heavy Truck % of Total Volume	: 5.00
Day (16 hrs) % of Total Volume	: 92.00

Data for Segment # 1: Terry Fox N (day/night)

Angle1 Angle2	: -90.00 deg	90.00 deg
Wood depth	: 0	(No woods.)
No of house rows	: 0 / 0	
Surface	: 2	(Reflective ground surface)
Receiver source distance	: 22.50 / 22.50	m
Receiver height	: 4.50 / 4.50	m
Topography	: 1	(Flat/gentle slope; no barrier)
Reference angle	: 0.00	

Road data, segment # 2: Terry Fox S (day/night)

Car traffic volume	: 6072/528	veh/TimePeriod	*
Medium truck volume	: 483/42	veh/TimePeriod	*
Heavy truck volume	: 345/30	veh/TimePeriod	*
Posted speed limit	: 80 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)	: 7500
Percentage of Annual Growth	: 0.00
Number of Years of Growth	: 0.00
Medium Truck % of Total Volume	: 7.00
Heavy Truck % of Total Volume	: 5.00
Day (16 hrs) % of Total Volume	: 92.00

Data for Segment # 2: Terry Fox S (day/night)

Angle1 Angle2	:	-90.00 deg	90.00 deg
Wood depth	:	0	(No woods.)
No of house rows	:	0 / 0	
Surface	:	2	(Reflective ground surface)
Receiver source distance	:	30.20 / 30.20	m
Receiver height	:	4.50 / 4.50	m
Topography	:	1	(Flat/gentle slope; no barrier)
Reference angle	:	0.00	

Result summary (day)

	source height (m)	Road Leq (dBA)	Total Leq (dBA)
1.Terry Fox N	1.50	67.72	67.72
2.Terry Fox S	1.50	66.44	66.44
Total			70.14 dBA

Result summary (night)

	source height (m)	Road Leq (dBA)	Total Leq (dBA)
1.Terry Fox N	1.50	60.12	60.12
2.Terry Fox S	1.50	58.84	58.84
Total			62.54 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 70.14
(NIGHT): 62.54

STAMSON 5.0 SUMMARY REPORT Date: 14-08-2018 09:27:37
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: r3.te Time Period: Day/Night 16/8 hours
Description:

Road data, segment # 1: Terry Fox N (day/night)

Car traffic volume	:	6072/528 veh/TimePeriod	*
Medium truck volume	:	483/42 veh/TimePeriod	*
Heavy truck volume	:	345/30 veh/TimePeriod	*
Posted speed limit	:	80 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)	:	7500
Percentage of Annual Growth	:	0.00
Number of Years of Growth	:	0.00
Medium Truck % of Total Volume	:	7.00
Heavy Truck % of Total Volume	:	5.00
Day (16 hrs) % of Total Volume	:	92.00

Data for Segment # 1: Terry Fox N (day/night)

Angle1 Angle2	:	-90.00 deg 90.00 deg	
Wood depth	:	0	(No woods.)
No of house rows	:	0 / 0	
Surface	:	2	(Reflective ground surface)
Receiver source distance	:	22.50 / 22.50 m	
Receiver height	:	7.50 / 7.50 m	
Topography	:	1	(Flat/gentle slope; no barrier)
Reference angle	:	0.00	

Road data, segment # 2: Terry Fox S (day/night)

Car traffic volume	:	6072/528 veh/TimePeriod	*
Medium truck volume	:	483/42 veh/TimePeriod	*
Heavy truck volume	:	345/30 veh/TimePeriod	*
Posted speed limit	:	80 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)	:	7500
Percentage of Annual Growth	:	0.00
Number of Years of Growth	:	0.00
Medium Truck % of Total Volume	:	7.00
Heavy Truck % of Total Volume	:	5.00
Day (16 hrs) % of Total Volume	:	92.00

Data for Segment # 2: Terry Fox S (day/night)

Angle1 Angle2	: -90.00 deg	90.00 deg
Wood depth	: 0	(No woods.)
No of house rows	: 0 / 0	
Surface	: 2	(Reflective ground surface)
Receiver source distance	: 30.20 / 30.20	m
Receiver height	: 7.50 / 7.50	m
Topography	: 1	(Flat/gentle slope; no barrier)
Reference angle	: 0.00	

Result summary (day)

	source height (m)	Road Leq (dBA)	Total Leq (dBA)
1.Terry Fox N	1.50	67.72	67.72
2.Terry Fox S	1.50	66.44	66.44
Total			70.14 dBA

Result summary (night)

	source height (m)	Road Leq (dBA)	Total Leq (dBA)
1.Terry Fox N	1.50	60.12	60.12
2.Terry Fox S	1.50	58.84	58.84
Total			62.54 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 70.14
(NIGHT): 62.54

STAMSON 5.0 SUMMARY REPORT Date: 14-08-2018 09:36:25
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: r4.te Time Period: Day/Night 16/8 hours
Description:

Road data, segment # 1: Terry Fox N (day/night)

Car traffic volume	:	6072/528 veh/TimePeriod	*
Medium truck volume	:	483/42 veh/TimePeriod	*
Heavy truck volume	:	345/30 veh/TimePeriod	*
Posted speed limit	:	80 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)	:	7500
Percentage of Annual Growth	:	0.00
Number of Years of Growth	:	0.00
Medium Truck % of Total Volume	:	7.00
Heavy Truck % of Total Volume	:	5.00
Day (16 hrs) % of Total Volume	:	92.00

Data for Segment # 1: Terry Fox N (day/night)

Angle1 Angle2	:	-90.00 deg	90.00 deg
Wood depth	:	0	(No woods.)
No of house rows	:	0 / 0	
Surface	:	2	(Reflective ground surface)
Receiver source distance	:	26.90 / 26.90	m
Receiver height	:	1.50 / 1.50	m
Topography	:	1	(Flat/gentle slope; no barrier)
Reference angle	:	0.00	

Road data, segment # 2: Terry Fox S (day/night)

Car traffic volume	:	6072/528 veh/TimePeriod	*
Medium truck volume	:	483/42 veh/TimePeriod	*
Heavy truck volume	:	345/30 veh/TimePeriod	*
Posted speed limit	:	80 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)	:	7500
Percentage of Annual Growth	:	0.00
Number of Years of Growth	:	0.00
Medium Truck % of Total Volume	:	7.00
Heavy Truck % of Total Volume	:	5.00
Day (16 hrs) % of Total Volume	:	92.00

Data for Segment # 2: Terry Fox S (day/night)

Angle1 Angle2	: -90.00 deg	90.00 deg	
Wood depth	: 0	(No woods.)	
No of house rows	: 0 / 0		
Surface	: 2	(Reflective ground surface)	
Receiver source distance	: 34.70 / 34.70	m	
Receiver height	: 1.50 / 1.50	m	
Topography	: 1	(Flat/gentle slope; no barrier)	
Reference angle	: 0.00		

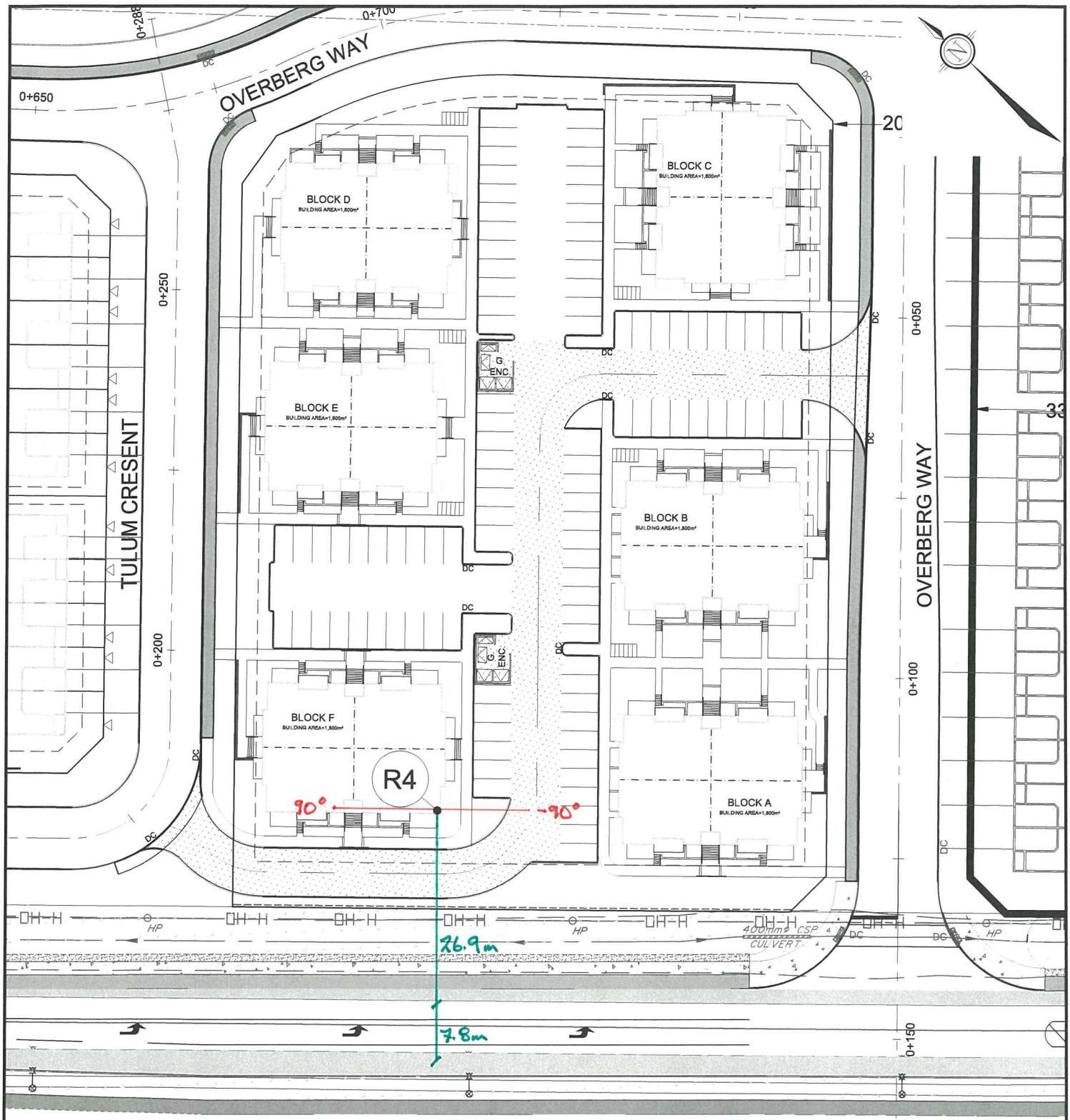
Result summary (day)

	source height (m)	Road Leq (dBA)	Total Leq (dBA)
1.Terry Fox N	1.50	66.94	66.94
2.Terry Fox S	1.50	65.83	65.83
Total			69.43 dBA

Result summary (night)

	source height (m)	Road Leq (dBA)	Total Leq (dBA)
1.Terry Fox N	1.50	59.34	59.34
2.Terry Fox S	1.50	58.24	58.24
Total			61.84 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 69.43
(NIGHT): 61.84



M:\2014\114013\CADDesign\Figures\Noise\20180907\Appendix Angles.dwg, R4, May 22, 2018 - 3:08pm, szorgel

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BLOCK 14
(BRIDLEWOOD TRAILS PHASE 2)

RECEIVER DISTANCE AND ANGLES

SCALE 1 : 750 (0 10 20 30)

DATE	JOB	FIGURE
SEPT 2018	114013	FIG-R4

SHT8X11.DWG - 216mmx279mm

STAMSON 5.0 SUMMARY REPORT Date: 14-08-2018 09:26:08
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: r5.te Time Period: Day/Night 16/8 hours
Description:

Road data, segment # 1: Terry Fox N (day/night)

Car traffic volume	: 6072/528	veh/TimePeriod	*
Medium truck volume	: 483/42	veh/TimePeriod	*
Heavy truck volume	: 345/30	veh/TimePeriod	*
Posted speed limit	: 80 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)	:	7500
Percentage of Annual Growth	:	0.00
Number of Years of Growth	:	0.00
Medium Truck % of Total Volume	:	7.00
Heavy Truck % of Total Volume	:	5.00
Day (16 hrs) % of Total Volume	:	92.00

Data for Segment # 1: Terry Fox N (day/night)

Angle1 Angle2	: -90.00 deg	90.00 deg	
Wood depth	: 0	(No woods.)	
No of house rows	: 0 / 0		
Surface	: 2	(Reflective ground surface)	
Receiver source distance	: 26.90 / 26.90	m	
Receiver height	: 4.50 / 4.50	m	
Topography	: 1	(Flat/gentle slope; no barrier)	
Reference angle	: 0.00		

Road data, segment # 2: Terry Fox S (day/night)

Car traffic volume	: 6072/528	veh/TimePeriod	*
Medium truck volume	: 483/42	veh/TimePeriod	*
Heavy truck volume	: 345/30	veh/TimePeriod	*
Posted speed limit	: 80 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)	:	7500
Percentage of Annual Growth	:	0.00
Number of Years of Growth	:	0.00
Medium Truck % of Total Volume	:	7.00
Heavy Truck % of Total Volume	:	5.00
Day (16 hrs) % of Total Volume	:	92.00

Data for Segment # 2: Terry Fox S (day/night)

Angle1 Angle2	:	-90.00 deg	90.00 deg
Wood depth	:	0	(No woods.)
No of house rows	:	0 / 0	
Surface	:	2	(Reflective ground surface)
Receiver source distance	:	34.70 / 34.70	m
Receiver height	:	4.50 / 4.50	m
Topography	:	1	(Flat/gentle slope; no barrier)
Reference angle	:	0.00	

Result summary (day)

	source height (m)	Road Leq (dBA)	Total Leq (dBA)
1.Terry Fox N	1.50	66.94	66.94
2.Terry Fox S	1.50	65.83	65.83
Total			69.43 dBA

Result summary (night)

	source height (m)	Road Leq (dBA)	Total Leq (dBA)
1.Terry Fox N	1.50	59.34	59.34
2.Terry Fox S	1.50	58.24	58.24
Total			61.84 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 69.43
(NIGHT): 61.84

STAMSON 5.0 SUMMARY REPORT Date: 14-08-2018 09:37:19
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: r6.te Time Period: Day/Night 16/8 hours
Description:

Road data, segment # 1: Terry Fox N (day/night)

Car traffic volume	: 6072/528	veh/TimePeriod	*
Medium truck volume	: 483/42	veh/TimePeriod	*
Heavy truck volume	: 345/30	veh/TimePeriod	*
Posted speed limit	: 80 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)	: 7500
Percentage of Annual Growth	: 0.00
Number of Years of Growth	: 0.00
Medium Truck % of Total Volume	: 7.00
Heavy Truck % of Total Volume	: 5.00
Day (16 hrs) % of Total Volume	: 92.00

Data for Segment # 1: Terry Fox N (day/night)

Angle1 Angle2	: -90.00 deg 90.00 deg	
Wood depth	: 0	(No woods.)
No of house rows	: 0 / 0	
Surface	: 2	(Reflective ground surface)
Receiver source distance	: 26.90 / 26.90 m	
Receiver height	: 7.50 / 7.50 m	
Topography	: 1	(Flat/gentle slope; no barrier)
Reference angle	: 0.00	

Road data, segment # 2: Terry Fox S (day/night)

Car traffic volume	: 6072/528	veh/TimePeriod	*
Medium truck volume	: 483/42	veh/TimePeriod	*
Heavy truck volume	: 345/30	veh/TimePeriod	*
Posted speed limit	: 80 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)	: 7500
Percentage of Annual Growth	: 0.00
Number of Years of Growth	: 0.00
Medium Truck % of Total Volume	: 7.00
Heavy Truck % of Total Volume	: 5.00
Day (16 hrs) % of Total Volume	: 92.00

Data for Segment # 2: Terry Fox S (day/night)

Angle1 Angle2	: -90.00 deg	90.00 deg	
Wood depth	: 0	(No woods.)	
No of house rows	: 0 / 0		
Surface	: 2	(Reflective ground surface)	
Receiver source distance	: 34.70 / 34.70	m	
Receiver height	: 7.50 / 7.50	m	
Topography	: 1	(Flat/gentle slope; no barrier)	
Reference angle	: 0.00		

Result summary (day)

	source height (m)	Road Leq (dBA)	Total Leq (dBA)
1.Terry Fox N	1.50	66.94	66.94
2.Terry Fox S	1.50	65.83	65.83
Total			69.43 dBA

Result summary (night)

	source height (m)	Road Leq (dBA)	Total Leq (dBA)
1.Terry Fox N	1.50	59.34	59.34
2.Terry Fox S	1.50	58.24	58.24
Total			61.84 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 69.43
(NIGHT): 61.84

STAMSON 5.0 SUMMARY REPORT Date: 14-08-2018 09:41:26
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: r7.te Time Period: Day/Night 16/8 hours
Description:

Road data, segment # 1: Terry Fox N (day/night)

Car traffic volume	:	6072/528 veh/TimePeriod	*
Medium truck volume	:	483/42 veh/TimePeriod	*
Heavy truck volume	:	345/30 veh/TimePeriod	*
Posted speed limit	:	80 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)	:	7500
Percentage of Annual Growth	:	0.00
Number of Years of Growth	:	0.00
Medium Truck % of Total Volume	:	7.00
Heavy Truck % of Total Volume	:	5.00
Day (16 hrs) % of Total Volume	:	92.00

Data for Segment # 1: Terry Fox N (day/night)

Angle1 Angle2	:	-90.00 deg -40.00 deg
Wood depth	:	0 (No woods.)
No of house rows	:	0 / 0
Surface	:	2 (Reflective ground surface)
Receiver source distance	:	54.90 / 54.90 m
Receiver height	:	7.50 / 7.50 m
Topography	:	2 (Flat/gentle slope; with barrier)
Barrier angle1	:	-90.00 deg Angle2 : -40.00 deg
Barrier height	:	6.00 m
Barrier receiver distance	:	37.00 / 37.00 m
Source elevation	:	98.00 m
Receiver elevation	:	98.20 m
Barrier elevation	:	97.85 m
Reference angle	:	0.00

Road data, segment # 2: Terry Fox N (day/night)

Car traffic volume	:	6072/528 veh/TimePeriod	*
Medium truck volume	:	483/42 veh/TimePeriod	*
Heavy truck volume	:	345/30 veh/TimePeriod	*
Posted speed limit	:	80 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):   7500
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium Truck % of Total Volume     :   7.00
    Heavy Truck  % of Total Volume     :   5.00
    Day (16 hrs) % of Total Volume     :  92.00

Data for Segment # 2: Terry Fox N (day/night)
-----------------------------------------------
Angle1   Angle2           : -40.00 deg   -3.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  54.90 / 54.90  m
Receiver height           :   7.50 / 7.50   m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00


Road data, segment # 3: Terry Fox N (day/night)
-----------------------------------------------
Car traffic volume  :  6072/528   veh/TimePeriod  *
Medium truck volume :   483/42    veh/TimePeriod  *
Heavy truck volume  :   345/30    veh/TimePeriod  *
Posted speed limit  :    80 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):   7500
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium Truck % of Total Volume     :   7.00
    Heavy Truck  % of Total Volume     :   5.00
    Day (16 hrs) % of Total Volume     :  92.00

Data for Segment # 3: Terry Fox N (day/night)
-----------------------------------------------
Angle1   Angle2           :  -3.00 deg   81.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  54.90 / 54.90  m
Receiver height           :   7.50 / 7.50   m
Topography                :      2       (Flat/gentle slope; with
barrier)
Barrier angle1            :  -3.00 deg   Angle2 : 81.00 deg
Barrier height            :   9.20 m
Barrier receiver distance :  15.00 / 15.00  m
Source elevation          :  98.00 m
Receiver elevation        :  98.20 m
Barrier elevation         :  98.20 m
```

```
Reference angle          :   0.00


Road data, segment # 4: Terry Fox N (day/night)
-----------------------------------------------
Car traffic volume  :  6072/528   veh/TimePeriod  *
Medium truck volume :   483/42    veh/TimePeriod  *
Heavy truck volume  :   345/30    veh/TimePeriod  *
Posted speed limit  :    80 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):   7500
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium Truck % of Total Volume     :   7.00
    Heavy Truck  % of Total Volume     :   5.00
    Day (16 hrs) % of Total Volume     :  92.00

Data for Segment # 4: Terry Fox N (day/night)
---------------------------------------------
Angle1   Angle2          :  81.00 deg   90.00 deg
Wood depth               :      0       (No woods.)
No of house rows         :      0 / 0
Surface                  :      2       (Reflective ground surface)
Receiver source distance :  54.90 / 54.90  m
Receiver height          :   7.50 / 7.50   m
Topography               :      2       (Flat/gentle slope; with
barrier)
Barrier angle1           :  81.00 deg   Angle2 : 90.00 deg
Barrier height           :   6.00 m
Barrier receiver distance :  17.50 / 17.50  m
Source elevation         :  98.00 m
Receiver elevation       :  98.20 m
Barrier elevation        :  98.00 m
Reference angle          :   0.00


Road data, segment # 5: Terry Fox S (day/night)
-----------------------------------------------
Car traffic volume  :  6072/528   veh/TimePeriod  *
Medium truck volume :   483/42    veh/TimePeriod  *
Heavy truck volume  :   345/30    veh/TimePeriod  *
Posted speed limit  :    80 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):   7500
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
```

```
    Medium Truck % of Total Volume     :   7.00
    Heavy Truck  % of Total Volume     :   5.00
    Day (16 hrs) % of Total Volume     :  92.00

Data for Segment # 5: Terry Fox S (day/night)
-----------------------------------------------
Angle1   Angle2           : -90.00 deg   -40.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  62.70 / 62.70  m
Receiver height           :   7.50 / 7.50   m
Topography                :      2       (Flat/gentle slope; with
barrier)
Barrier angle1            : -90.00 deg   Angle2 : -40.00 deg
Barrier height            :   6.00 m
Barrier receiver distance :  37.00 / 37.00  m
Source elevation          :  98.00 m
Receiver elevation        :  98.20 m
Barrier elevation         :  97.85 m
Reference angle           :   0.00


Road data, segment # 6: Terry Fox S (day/night)
-----------------------------------------------
Car traffic volume  :  6072/528   veh/TimePeriod  *
Medium truck volume :   483/42    veh/TimePeriod  *
Heavy truck volume  :   345/30    veh/TimePeriod  *
Posted speed limit  :    80 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):   7500
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium Truck % of Total Volume     :   7.00
    Heavy Truck  % of Total Volume     :   5.00
    Day (16 hrs) % of Total Volume     :  92.00

Data for Segment # 6: Terry Fox S (day/night)
-----------------------------------------------
Angle1   Angle2           : -40.00 deg   -3.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  62.70 / 62.70  m
Receiver height           :   7.50 / 7.50   m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00
```

Road data, segment # 7: Terry Fox S (day/night)

Car traffic volume	:	6072/528 veh/TimePeriod	*
Medium truck volume	:	483/42 veh/TimePeriod	*
Heavy truck volume	:	345/30 veh/TimePeriod	*
Posted speed limit	:	80 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)	:	7500
Percentage of Annual Growth	:	0.00
Number of Years of Growth	:	0.00
Medium Truck % of Total Volume	:	7.00
Heavy Truck % of Total Volume	:	5.00
Day (16 hrs) % of Total Volume	:	92.00

Data for Segment # 7: Terry Fox S (day/night)

Angle1 Angle2	:	-3.00 deg	81.00 deg
Wood depth	:	0	(No woods.)
No of house rows	:	0 / 0	
Surface	:	2	(Reflective ground surface)
Receiver source distance	:	62.70 / 62.70	m
Receiver height	:	7.50 / 7.50	m
Topography	:	2	(Flat/gentle slope; with barrier)
Barrier angle1	:	-3.00 deg	Angle2 : 81.00 deg
Barrier height	:	9.20 m	
Barrier receiver distance	:	15.00 / 15.00	m
Source elevation	:	98.00 m	
Receiver elevation	:	98.20 m	
Barrier elevation	:	98.20 m	
Reference angle	:	0.00	

Road data, segment # 8: Terry Fox S (day/night)

Car traffic volume	:	6072/528 veh/TimePeriod	*
Medium truck volume	:	483/42 veh/TimePeriod	*
Heavy truck volume	:	345/30 veh/TimePeriod	*
Posted speed limit	:	80 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)	:	7500
Percentage of Annual Growth	:	0.00
Number of Years of Growth	:	0.00
Medium Truck % of Total Volume	:	7.00
Heavy Truck % of Total Volume	:	5.00

Day (16 hrs) % of Total Volume : 92.00

Data for Segment # 8: Terry Fox S (day/night)

```
Angle1   Angle2           :  81.00 deg   90.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  62.70 / 62.70  m
Receiver height           :   7.50 / 7.50   m
Topography                :      2       (Flat/gentle slope; with
barrier)
Barrier angle1            :  81.00 deg   Angle2 : 90.00 deg
Barrier height            :   6.00 m
Barrier receiver distance :  17.50 / 17.50  m
Source elevation          :  98.00 m
Receiver elevation        :  98.20 m
Barrier elevation         :  98.00 m
Reference angle           :   0.00
```

Result summary (day)

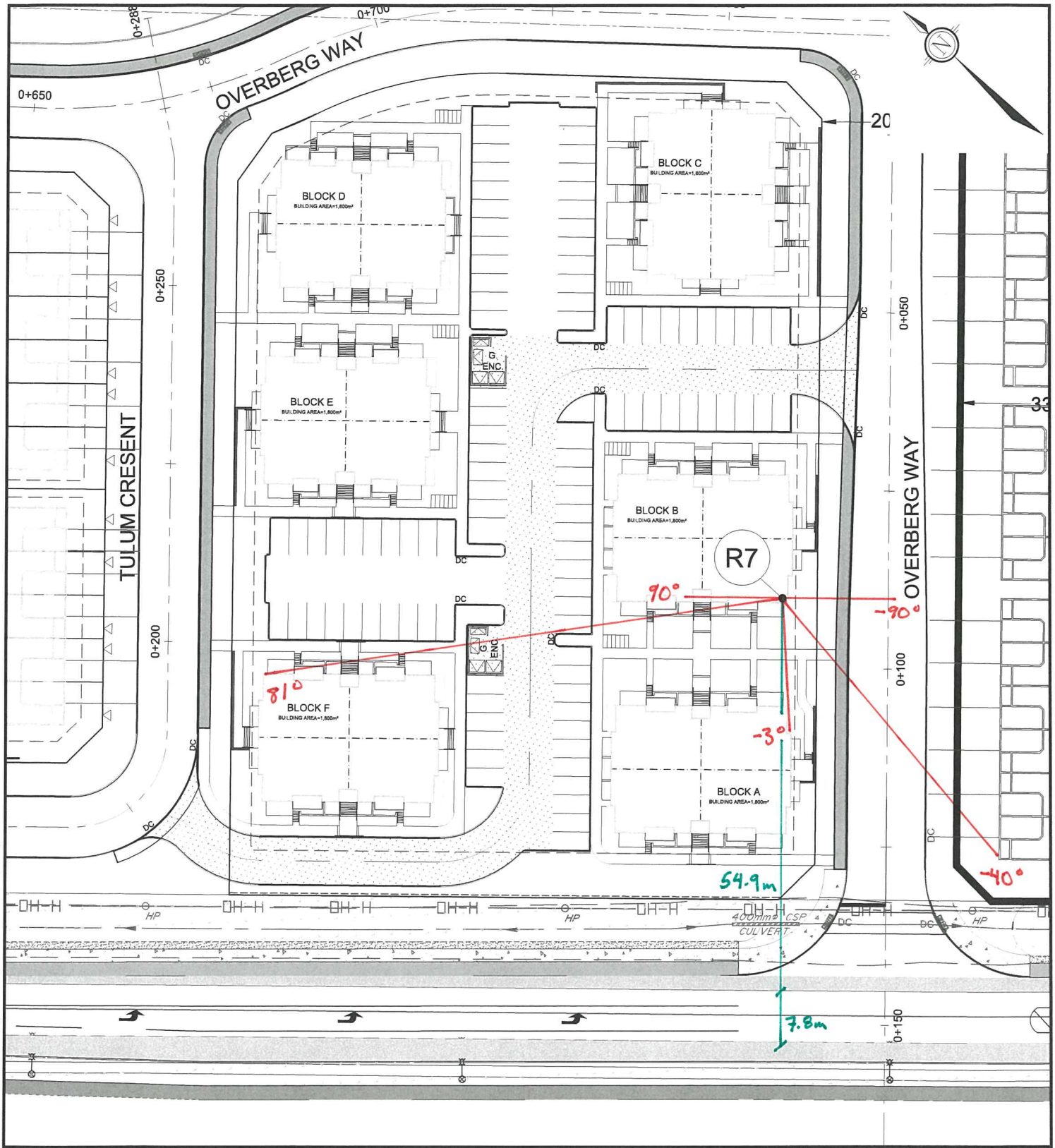
	source height (m)	Road Leq (dBA)	Total Leq (dBA)
1.Terry Fox N	1.50	50.27	50.27
2.Terry Fox N	1.50	56.97	56.97
3.Terry Fox N	1.50	47.84	47.84
4.Terry Fox N	1.50	45.82	45.82
5.Terry Fox S	1.50	50.92	50.92
6.Terry Fox S	1.50	56.39	56.39
7.Terry Fox S	1.50	47.89	47.89
8.Terry Fox S	1.50	45.25	45.25
Total			61.33 dBA

Result summary (night)

	source height (m)	Road Leq (dBA)	Total Leq (dBA)
1.Terry Fox N	1.50	42.67	42.67
2.Terry Fox N	1.50	49.37	49.37
3.Terry Fox N	1.50	40.25	40.25
4.Terry Fox N	1.50	38.22	38.22
5.Terry Fox S	1.50	43.33	43.33
6.Terry Fox S	1.50	48.80	48.80
7.Terry Fox S	1.50	40.30	40.30

8.Terry Fox S	1.50	37.66	37.66
	Total		53.73 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 61.33
(NIGHT): 53.73



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BLOCK 14
(BRIDLEWOOD TRAILS PHASE 2)

RECEIVER DISTANCE AND ANGLES

SCALE 1 : 750 (0, 10, 20, 30)

DATE	JOB	FIGURE
SEPT 2018	114013	FIG-R7

M:\2014\114013\CAD\Design\Figures\Noise\20180907\Appendix Angles.dwg, R7, May 22, 2018 - 3:08pm, szorgel

SHT8X11.DWG - 216mmx279mm

STAMSON 5.0 SUMMARY REPORT Date: 14-08-2018 09:42:19
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: r8.te Time Period: Day/Night 16/8 hours
Description:

Road data, segment # 1: Terry Fox N (day/night)

Car traffic volume	:	6072/528 veh/TimePeriod	*
Medium truck volume	:	483/42 veh/TimePeriod	*
Heavy truck volume	:	345/30 veh/TimePeriod	*
Posted speed limit	:	80 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)	:	7500
Percentage of Annual Growth	:	0.00
Number of Years of Growth	:	0.00
Medium Truck % of Total Volume	:	7.00
Heavy Truck % of Total Volume	:	5.00
Day (16 hrs) % of Total Volume	:	92.00

Data for Segment # 1: Terry Fox N (day/night)

Angle1 Angle2	:	-90.00 deg	90.00 deg
Wood depth	:	0	(No woods.)
No of house rows	:	1 / 1	
House density	:	80 %	
Surface	:	2	(Reflective ground surface)
Receiver source distance	:	71.60 / 71.60	m
Receiver height	:	7.50 / 7.50	m
Topography	:	1	(Flat/gentle slope; no barrier)
Reference angle	:	0.00	

Road data, segment # 2: Terry Fox S (day/night)

Car traffic volume	:	6072/528 veh/TimePeriod	*
Medium truck volume	:	483/42 veh/TimePeriod	*
Heavy truck volume	:	345/30 veh/TimePeriod	*
Posted speed limit	:	80 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)	:	7500
Percentage of Annual Growth	:	0.00
Number of Years of Growth	:	0.00
Medium Truck % of Total Volume	:	7.00
Heavy Truck % of Total Volume	:	5.00

Day (16 hrs) % of Total Volume : 92.00

Data for Segment # 2: Terry Fox S (day/night)

Angle1 Angle2	: -90.00 deg	90.00 deg
Wood depth	: 0	(No woods.)
No of house rows	: 1 / 1	
House density	: 80 %	
Surface	: 2	(Reflective ground surface)
Receiver source distance	: 79.40 / 79.40	m
Receiver height	: 7.50 / 7.50	m
Topography	: 1	(Flat/gentle slope; no barrier)
Reference angle	: 0.00	

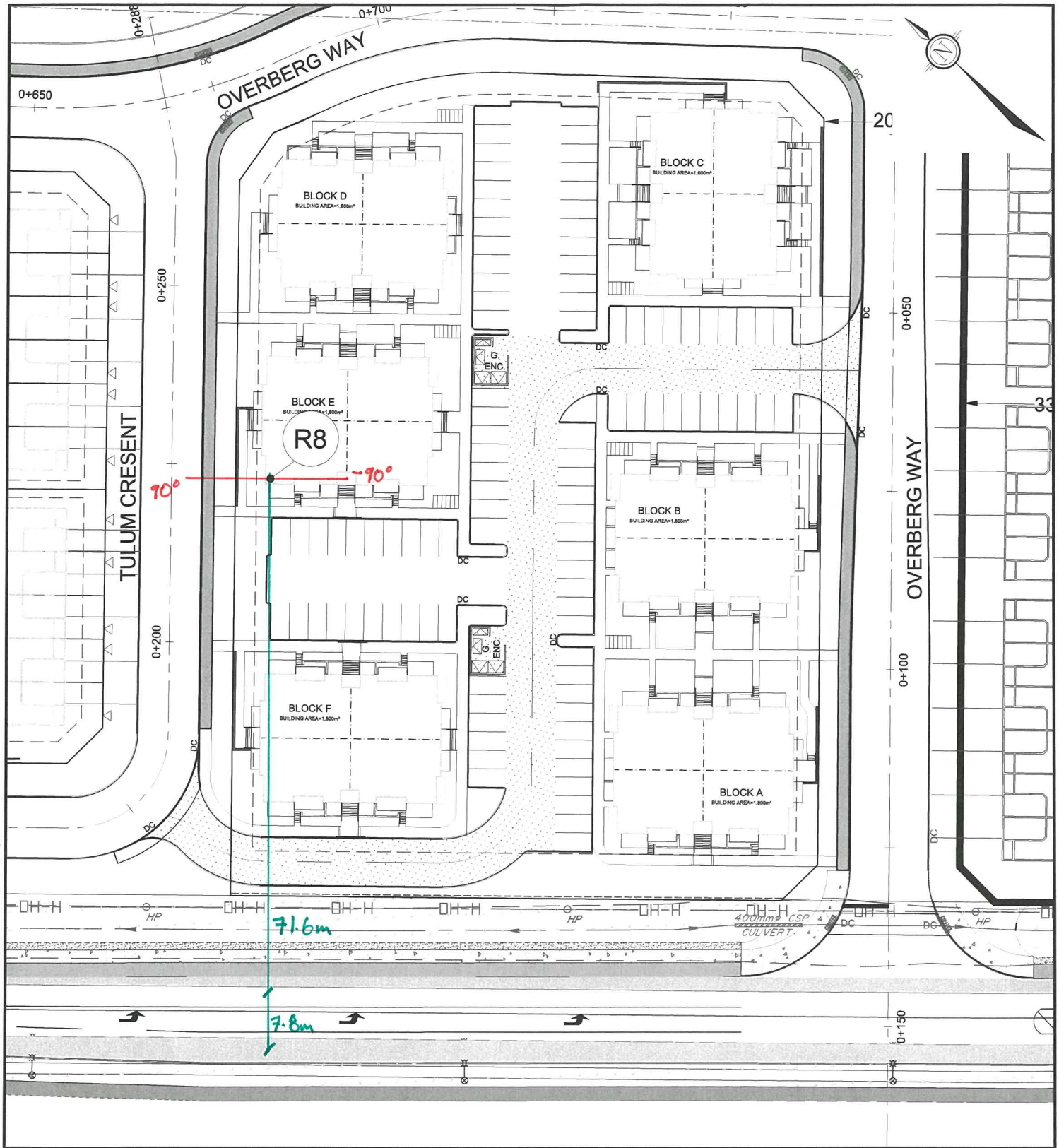
Result summary (day)

	source height (m)	Road Leq (dBA)	Total Leq (dBA)
1.Terry Fox N	1.50	56.85	56.85
2.Terry Fox S	1.50	56.44	56.44
Total			59.66 dBA

Result summary (night)

	source height (m)	Road Leq (dBA)	Total Leq (dBA)
1.Terry Fox N	1.50	49.25	49.25
2.Terry Fox S	1.50	48.84	48.84
Total			52.06 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 59.66
(NIGHT): 52.06



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BLOCK 14
(BRIDLEWOOD TRAILS PHASE 2)

RECEIVER DISTANCE AND ANGLES

SCALE 1 : 750 (0, 10, 20, 30)

DATE SEPT 2018 | JOB 114013 | FIGURE FIG-R8

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SHT8X11.DWG - 216mmx279mm

STAMSON 5.0 SUMMARY REPORT Date: 14-08-2018 09:43:45
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: r9.te Time Period: Day/Night 16/8 hours
Description:

Road data, segment # 1: Terry Fox N (day/night)

Car traffic volume	: 6072/528	veh/TimePeriod	*
Medium truck volume	: 483/42	veh/TimePeriod	*
Heavy truck volume	: 345/30	veh/TimePeriod	*
Posted speed limit	: 80	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)	:	7500
Percentage of Annual Growth	:	0.00
Number of Years of Growth	:	0.00
Medium Truck % of Total Volume	:	7.00
Heavy Truck % of Total Volume	:	5.00
Day (16 hrs) % of Total Volume	:	92.00

Data for Segment # 1: Terry Fox N (day/night)

Angle1 Angle2	: -90.00 deg	90.00 deg
Wood depth	: 0	(No woods.)
No of house rows	: 1 / 1	
House density	: 85 %	
Surface	: 2	(Reflective ground surface)
Receiver source distance	: 100.50 / 100.50	m
Receiver height	: 7.50 / 7.50	m
Topography	: 1	(Flat/gentle slope; no barrier)
Reference angle	: 0.00	

Road data, segment # 2: Terry Fox S (day/night)

Car traffic volume	: 6072/528	veh/TimePeriod	*
Medium truck volume	: 483/42	veh/TimePeriod	*
Heavy truck volume	: 345/30	veh/TimePeriod	*
Posted speed limit	: 80	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)	:	7500
Percentage of Annual Growth	:	0.00
Number of Years of Growth	:	0.00
Medium Truck % of Total Volume	:	7.00
Heavy Truck % of Total Volume	:	5.00

Day (16 hrs) % of Total Volume : 92.00

Data for Segment # 2: Terry Fox S (day/night)

```
Angle1   Angle2           : -90.00 deg   90.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      1 / 1
House density             :     85 %
Surface                   :      2       (Reflective ground surface)
Receiver source distance  : 108.20 / 108.20 m
Receiver height           :   7.50 / 7.50   m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00
```

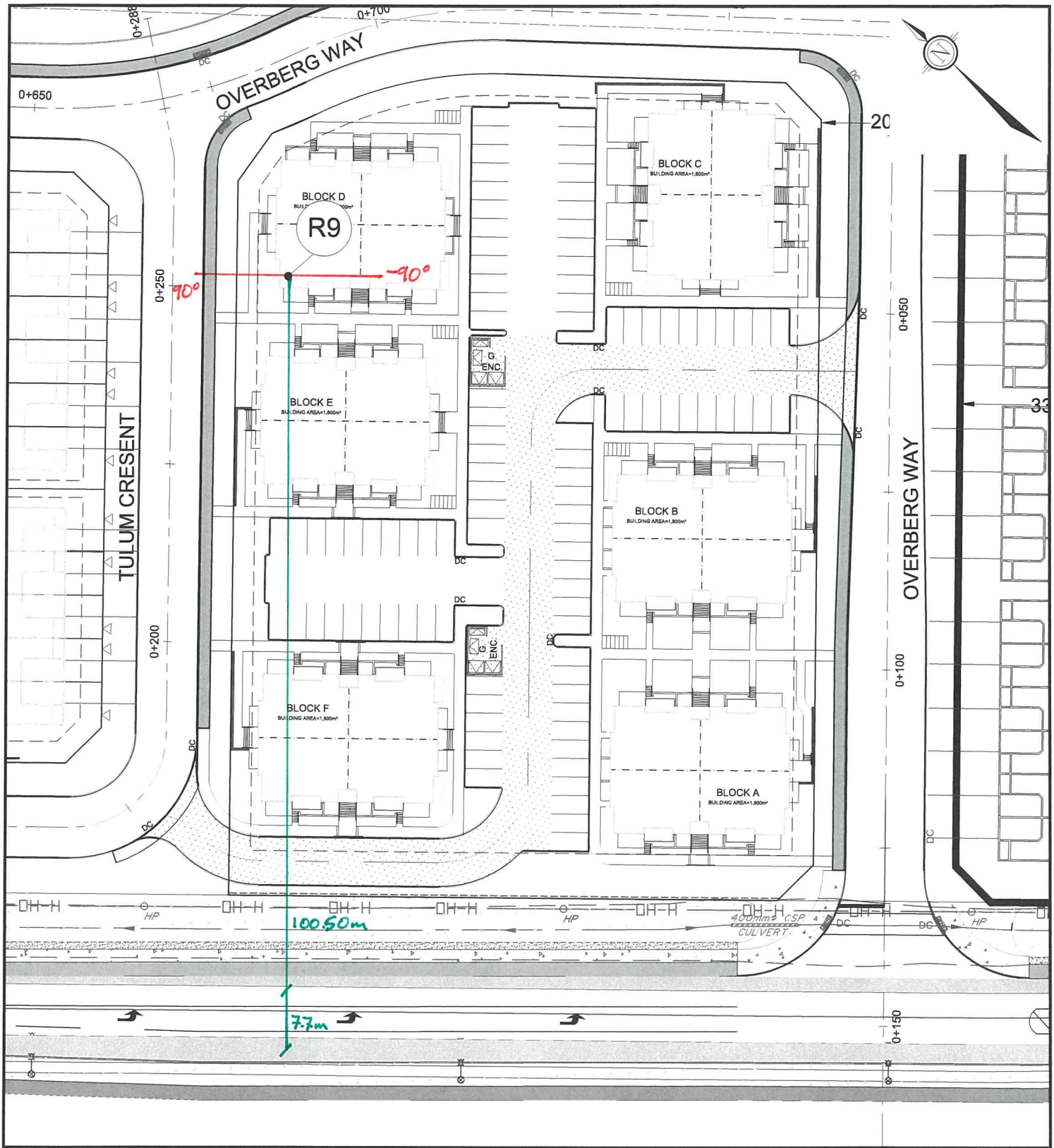
Result summary (day)

	source height (m)	Road Leq (dBA)	Total Leq (dBA)
1.Terry Fox N	1.50	54.69	54.69
2.Terry Fox S	1.50	54.42	54.42
Total			57.57 dBA

Result summary (night)

	source height (m)	Road Leq (dBA)	Total Leq (dBA)
1.Terry Fox N	1.50	47.09	47.09
2.Terry Fox S	1.50	46.82	46.82
Total			49.97 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 57.57
(NIGHT): 49.97



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BLOCK 14
(BRIDLEWOOD TRAILS PHASE 2)

RECEIVER DISTANCE AND ANGLES

SCALE 1 : 750 (0, 10, 20, 30)

DATE SEPT 2018 | JOB 114013 | FIGURE FIG-R9

SHT8X11.DWG - 216mmx279mm

STAMSON 5.0 SUMMARY REPORT Date: 14-08-2018 09:45:10
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: r10.te Time Period: Day/Night 16/8 hours
Description:

Road data, segment # 1: Terry Fox N (day/night)

Car traffic volume	:	6072/528 veh/TimePeriod	*
Medium truck volume	:	483/42 veh/TimePeriod	*
Heavy truck volume	:	345/30 veh/TimePeriod	*
Posted speed limit	:	80 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)	:	7500
Percentage of Annual Growth	:	0.00
Number of Years of Growth	:	0.00
Medium Truck % of Total Volume	:	7.00
Heavy Truck % of Total Volume	:	5.00
Day (16 hrs) % of Total Volume	:	92.00

Data for Segment # 1: Terry Fox N (day/night)

Angle1 Angle2	:	-90.00 deg	90.00 deg
Wood depth	:	0	(No woods.)
No of house rows	:	1 / 1	
House density	:	50 %	
Surface	:	2	(Reflective ground surface)
Receiver source distance	:	101.00 / 101.00 m	
Receiver height	:	7.50 / 7.50 m	
Topography	:	1	(Flat/gentle slope; no barrier)
Reference angle	:	0.00	

Road data, segment # 2: Terry Fox S (day/night)

Car traffic volume	:	6072/528 veh/TimePeriod	*
Medium truck volume	:	483/42 veh/TimePeriod	*
Heavy truck volume	:	345/30 veh/TimePeriod	*
Posted speed limit	:	80 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)	:	7500
Percentage of Annual Growth	:	0.00
Number of Years of Growth	:	0.00
Medium Truck % of Total Volume	:	7.00
Heavy Truck % of Total Volume	:	5.00

Day (16 hrs) % of Total Volume : 92.00

Data for Segment # 2: Terry Fox S (day/night)

```
Angle1   Angle2           : -90.00 deg   90.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      1 / 1
House density             :     50 %
Surface                   :      2       (Reflective ground surface)
Receiver source distance  : 108.70 / 108.70 m
Receiver height           :   7.50 / 7.50   m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00
```

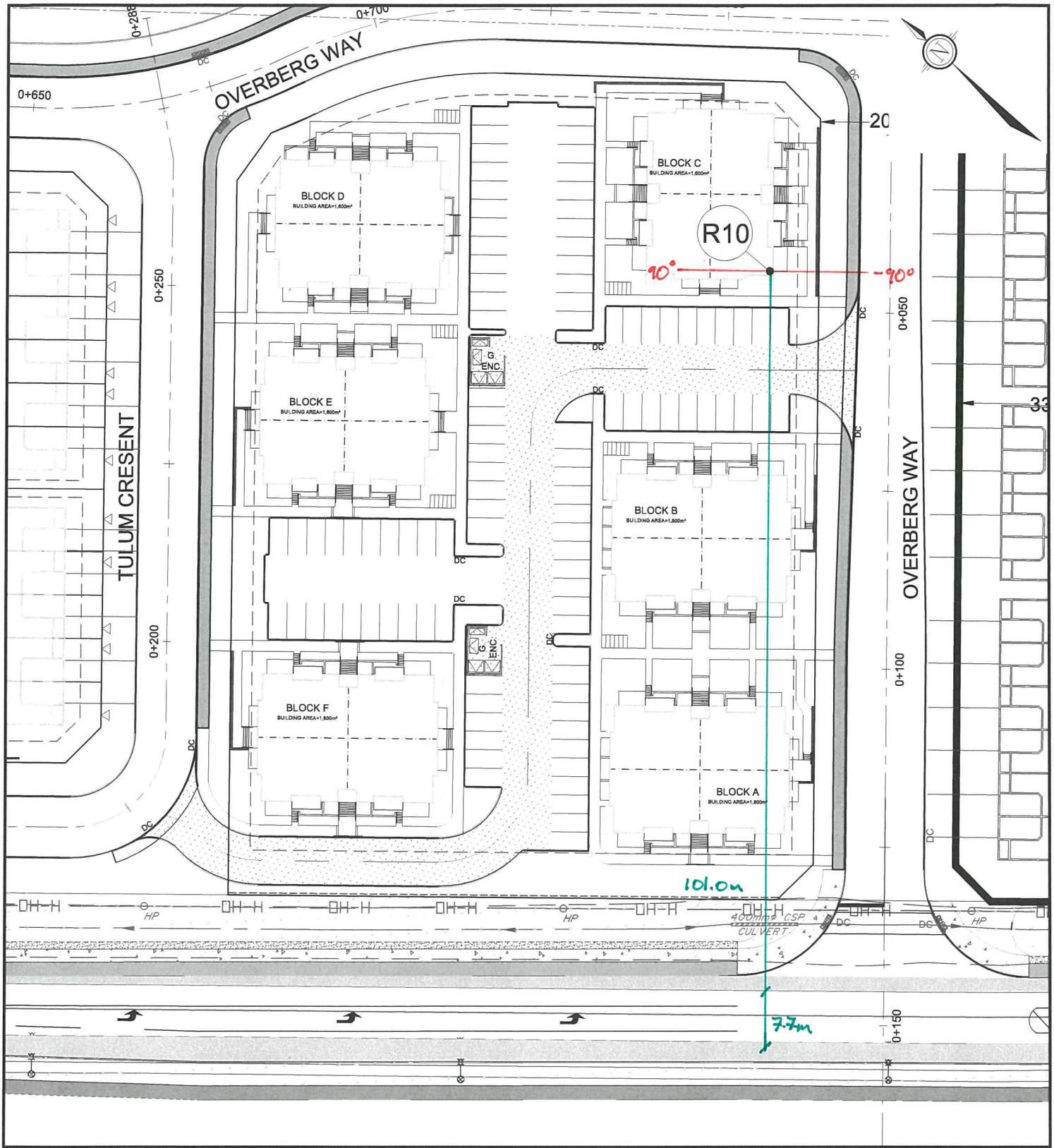
Result summary (day)

	source height (m)	Road Leq (dBA)	Total Leq (dBA)
1.Terry Fox N	1.50	58.56	58.56
2.Terry Fox S	1.50	58.26	58.26
Total			61.42 dBA

Result summary (night)

	source height (m)	Road Leq (dBA)	Total Leq (dBA)
1.Terry Fox N	1.50	50.97	50.97
2.Terry Fox S	1.50	50.66	50.66
Total			53.83 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 61.42
(NIGHT): 53.83



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BLOCK 14
(BRIDLEWOOD TRAILS PHASE 2)

RECEIVER DISTANCE AND ANGLES

SCALE 1 : 750 (0 10 20 30)

DATE	JOB	FIGURE
SEPT 2018	114013	FIG-R10

SHT8X11.DWG - 216mmx279mm

STAMSON 5.0 SUMMARY REPORT Date: 06-09-2018 10:42:42
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: r11.te Time Period: Day/Night 16/8 hours
Description:

Road data, segment # 1: Terry Fox N (day/night)

Car traffic volume	:	6072/528	veh/TimePeriod *
Medium truck volume	:	483/42	veh/TimePeriod *
Heavy truck volume	:	345/30	veh/TimePeriod *
Posted speed limit	:	80 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)	:	7500
Percentage of Annual Growth	:	0.00
Number of Years of Growth	:	0.00
Medium Truck % of Total Volume	:	7.00
Heavy Truck % of Total Volume	:	5.00
Day (16 hrs) % of Total Volume	:	92.00

Data for Segment # 1: Terry Fox N (day/night)

Angle1 Angle2	:	-90.00 deg -58.00 deg
Wood depth	:	0 (No woods.)
No of house rows	:	0 / 0
Surface	:	2 (Reflective ground surface)
Receiver source distance	:	47.30 / 47.30 m
Receiver height	:	1.50 / 1.50 m
Topography	:	2 (Flat/gentle slope; with barrier)
Barrier angle1	:	-90.00 deg Angle2 : -58.00 deg
Barrier height	:	6.00 m
Barrier receiver distance	:	29.00 / 29.00 m
Source elevation	:	97.95 m
Receiver elevation	:	98.20 m
Barrier elevation	:	97.85 m
Reference angle	:	0.00

Road data, segment # 2: Terry Fox N (day/night)

Car traffic volume	:	6072/528	veh/TimePeriod *
Medium truck volume	:	483/42	veh/TimePeriod *
Heavy truck volume	:	345/30	veh/TimePeriod *
Posted speed limit	:	80 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):   7500
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium Truck % of Total Volume     :   7.00
    Heavy Truck  % of Total Volume     :   5.00
    Day (16 hrs) % of Total Volume     :  92.00

Data for Segment # 2: Terry Fox N (day/night)
--------------------------------------------
Angle1   Angle2           : -58.00 deg   90.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  47.30 / 47.30  m
Receiver height           :   1.50 / 1.50   m
Topography                :      2       (Flat/gentle slope; with
barrier)
Barrier angle1            : -58.00 deg   Angle2 : 90.00 deg
Barrier height            :   9.20 m
Barrier receiver distance :   7.50 / 7.50   m
Source elevation          :  97.95 m
Receiver elevation        :  98.20 m
Barrier elevation         :  98.20 m
Reference angle           :   0.00


Road data, segment # 3: Terry Fox S (day/night)
-----------------------------------------------
Car traffic volume  :  6072/528   veh/TimePeriod  *
Medium truck volume :   483/42    veh/TimePeriod  *
Heavy truck volume  :   345/30    veh/TimePeriod  *
Posted speed limit  :    80 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):   7500
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium Truck % of Total Volume     :   7.00
    Heavy Truck  % of Total Volume     :   5.00
    Day (16 hrs) % of Total Volume     :  92.00

Data for Segment # 3: Terry Fox S (day/night)
--------------------------------------------
Angle1   Angle2           : -90.00 deg   -58.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  55.10 / 55.10  m
Receiver height           :   1.50 / 1.50   m
```

```
Topography                 :      2       (Flat/gentle slope; with
barrier)
Barrier angle1             : -90.00 deg   Angle2 : -58.00 deg
Barrier height             :   6.00 m
Barrier receiver distance  :  29.00 / 29.00  m
Source elevation           :  97.95 m
Receiver elevation         :  98.20 m
Barrier elevation          :  97.85 m
Reference angle            :   0.00


Road data, segment # 4: Terry Fox S (day/night)
-----------------------------------------------
Car traffic volume  :  6072/528   veh/TimePeriod  *
Medium truck volume :   483/42    veh/TimePeriod  *
Heavy truck volume  :   345/30    veh/TimePeriod  *
Posted speed limit  :    80 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):   7500
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium Truck % of Total Volume     :   7.00
    Heavy Truck  % of Total Volume     :   5.00
    Day (16 hrs) % of Total Volume     :  92.00

Data for Segment # 4: Terry Fox S (day/night)
---------------------------------------------
Angle1   Angle2            : -58.00 deg   90.00 deg
Wood depth                 :      0       (No woods.)
No of house rows           :      0 / 0
Surface                    :      2       (Reflective ground surface)
Receiver source distance   :  55.10 / 55.10  m
Receiver height            :   1.50 / 1.50   m
Topography                 :      2       (Flat/gentle slope; with
barrier)
Barrier angle1             : -58.00 deg   Angle2 : 90.00 deg
Barrier height             :   9.20 m
Barrier receiver distance  :   7.50 / 7.50   m
Source elevation           :  97.95 m
Receiver elevation         :  98.20 m
Barrier elevation          :  98.20 m
Reference angle            :   0.00
```

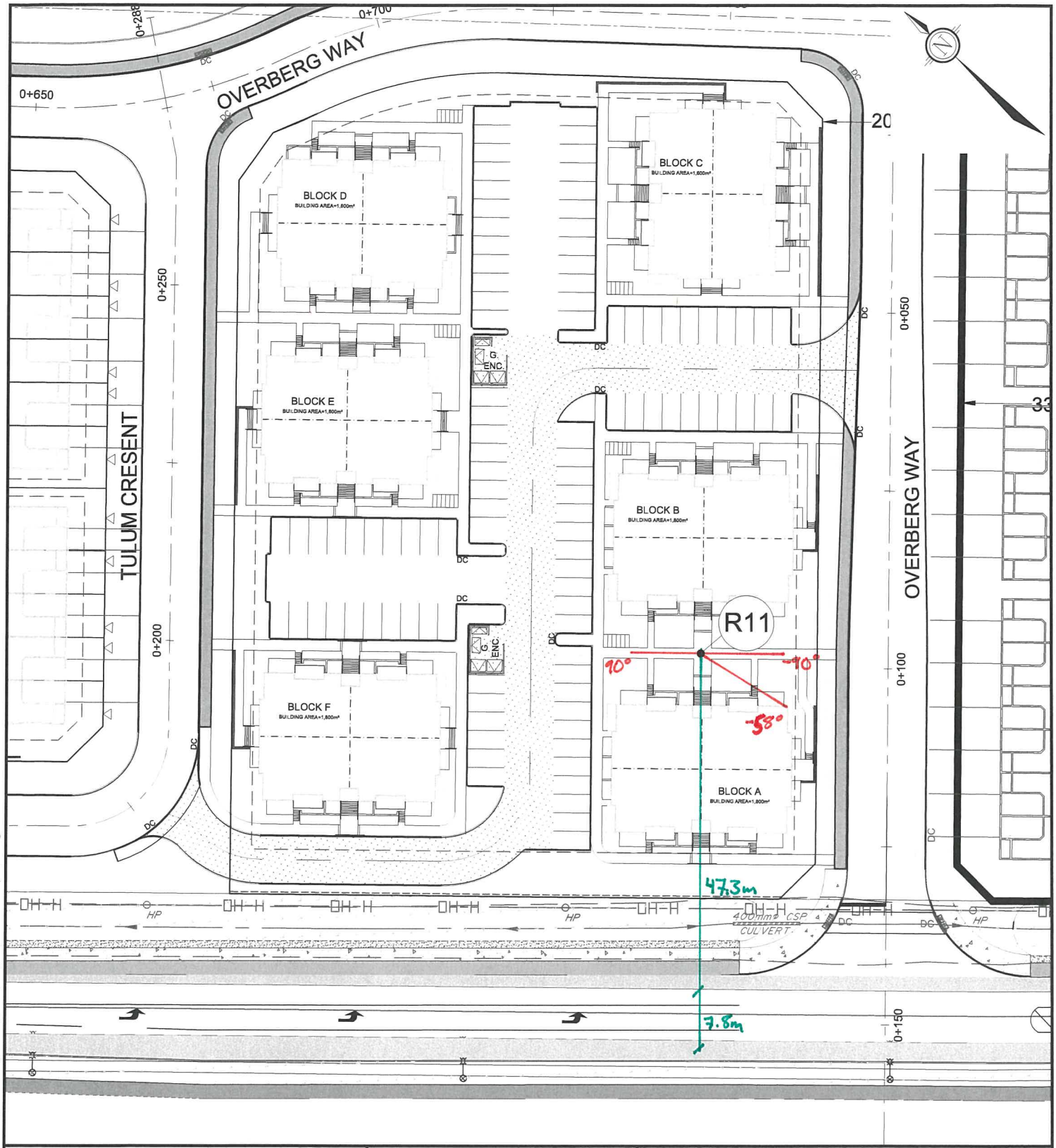
Result summary (day)

	source height (m)	Road Leq (dBA)	Total Leq (dBA)
1.Terry Fox N	1.50	46.86	46.86
2.Terry Fox N	1.50	45.33	45.33
3.Terry Fox S	1.50	46.74	46.74
4.Terry Fox S	1.50	44.72	44.72
Total			52.03 dBA

Result summary (night)

	source height (m)	Road Leq (dBA)	Total Leq (dBA)
1.Terry Fox N	1.50	39.26	39.26
2.Terry Fox N	1.50	37.74	37.74
3.Terry Fox S	1.50	39.14	39.14
4.Terry Fox S	1.50	37.12	37.12
Total			44.43 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 52.03
(NIGHT): 44.43



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BLOCK 14
(BRIDLEWOOD TRAILS PHASE 2)

RECEIVER DISTANCE AND ANGLES

SCALE 1 : 750 (0, 10, 20, 30)

DATE SEPT 2018 | JOB 114013 | FIGURE FIG-R11

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SHT8X11.DWG - 216mmx279mm

STAMSON 5.0 SUMMARY REPORT Date: 14-08-2018 09:54:19
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: r12.te Time Period: Day/Night 16/8 hours
Description:

Road data, segment # 1: Terry Fox N (day/night)

Car traffic volume	:	6072/528	veh/TimePeriod *
Medium truck volume	:	483/42	veh/TimePeriod *
Heavy truck volume	:	345/30	veh/TimePeriod *
Posted speed limit	:	80	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)	:	7500
Percentage of Annual Growth	:	0.00
Number of Years of Growth	:	0.00
Medium Truck % of Total Volume	:	7.00
Heavy Truck % of Total Volume	:	5.00
Day (16 hrs) % of Total Volume	:	92.00

Data for Segment # 1: Terry Fox N (day/night)

Angle1 Angle2	:	-90.00 deg	-71.00 deg
Wood depth	:	0	(No woods.)
No of house rows	:	0 / 0	
Surface	:	2	(Reflective ground surface)
Receiver source distance	:	93.90 / 93.90	m
Receiver height	:	1.50 / 1.50	m
Topography	:	2	(Flat/gentle slope; with barrier)
Barrier angle1	:	-90.00 deg	Angle2 : -71.00 deg
Barrier height	:	6.00	m
Barrier receiver distance	:	36.00 / 36.00	m
Source elevation	:	97.80	m
Receiver elevation	:	98.25	m
Barrier elevation	:	98.15	m
Reference angle	:	0.00	

Road data, segment # 2: Terry Fox N (day/night)

Car traffic volume	:	6072/528	veh/TimePeriod *
Medium truck volume	:	483/42	veh/TimePeriod *
Heavy truck volume	:	345/30	veh/TimePeriod *
Posted speed limit	:	80	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):   7500
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium Truck % of Total Volume     :   7.00
    Heavy Truck  % of Total Volume     :   5.00
    Day (16 hrs) % of Total Volume     :  92.00

Data for Segment # 2: Terry Fox N (day/night)
-----------------------------------------------
Angle1   Angle2           : -71.00 deg   65.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  : 101.60 / 101.60 m
Receiver height           :   1.50 / 1.50   m
Topography                :      2       (Flat/gentle slope; with
barrier)
Barrier angle1            : -71.00 deg   Angle2 : 65.00 deg
Barrier height            :   9.20 m
Barrier receiver distance :   5.50 / 5.50   m
Source elevation          :  97.80 m
Receiver elevation        :  98.25 m
Barrier elevation         :  98.20 m
Reference angle           :   0.00


Road data, segment # 3: Terry Fox N (day/night)
-----------------------------------------------
Car traffic volume  :  6072/528   veh/TimePeriod  *
Medium truck volume :   483/42    veh/TimePeriod  *
Heavy truck volume  :   345/30    veh/TimePeriod  *
Posted speed limit  :    80 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):   7500
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium Truck % of Total Volume     :   7.00
    Heavy Truck  % of Total Volume     :   5.00
    Day (16 hrs) % of Total Volume     :  92.00

Data for Segment # 3: Terry Fox N (day/night)
-----------------------------------------------
Angle1   Angle2           :  65.00 deg   90.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  93.90 / 93.90  m
Receiver height           :   1.50 / 1.50   m
```

```
Topography                 :      2       (Flat/gentle slope; with
barrier)
Barrier angle1             :  65.00 deg   Angle2 : 90.00 deg
Barrier height             :   6.00 m
Barrier receiver distance  :  57.00 / 57.00  m
Source elevation           :  97.80 m
Receiver elevation         :  98.25 m
Barrier elevation          :  98.00 m
Reference angle            :   0.00


Road data, segment # 4: Terry Fox S (day/night)
-----------------------------------------------
Car traffic volume  :  6072/528   veh/TimePeriod  *
Medium truck volume :   483/42    veh/TimePeriod  *
Heavy truck volume  :   345/30    veh/TimePeriod  *
Posted speed limit  :    80 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):   7500
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium Truck % of Total Volume     :   7.00
    Heavy Truck  % of Total Volume     :   5.00
    Day (16 hrs) % of Total Volume     :  92.00

Data for Segment # 4: Terry Fox S (day/night)
---------------------------------------------
Angle1   Angle2            : -90.00 deg   -71.00 deg
Wood depth                 :      0       (No woods.)
No of house rows           :      0 / 0
Surface                    :      2       (Reflective ground surface)
Receiver source distance   : 101.60 / 101.60 m
Receiver height            :   1.50 / 1.50   m
Topography                 :      2       (Flat/gentle slope; with
barrier)
Barrier angle1             : -90.00 deg   Angle2 : -71.00 deg
Barrier height             :   6.00 m
Barrier receiver distance  :  36.00 / 36.00  m
Source elevation           :  97.80 m
Receiver elevation         :  98.25 m
Barrier elevation          :  98.15 m
Reference angle            :   0.00


Road data, segment # 5: Terry Fox S (day/night)
-----------------------------------------------
Car traffic volume  :  6072/528   veh/TimePeriod  *
Medium truck volume :   483/42    veh/TimePeriod  *
Heavy truck volume  :   345/30    veh/TimePeriod  *
Posted speed limit  :    80 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):   7500
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium Truck % of Total Volume     :   7.00
    Heavy Truck  % of Total Volume     :   5.00
    Day (16 hrs) % of Total Volume     :  92.00

Data for Segment # 5: Terry Fox S (day/night)
-----------------------------------------------
Angle1   Angle2           : -71.00 deg   65.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  : 101.60 / 101.60 m
Receiver height           :   1.50 / 1.50   m
Topography                :      2       (Flat/gentle slope; with
barrier)
Barrier angle1            : -71.00 deg   Angle2 : 65.00 deg
Barrier height            :   9.20 m
Barrier receiver distance :   5.50 / 5.50   m
Source elevation          :  97.80 m
Receiver elevation        :  98.25 m
Barrier elevation         :  98.20 m
Reference angle           :   0.00


Road data, segment # 6: Terry Fox S (day/night)
-----------------------------------------------
Car traffic volume  :  6072/528   veh/TimePeriod  *
Medium truck volume :   483/42    veh/TimePeriod  *
Heavy truck volume  :   345/30    veh/TimePeriod  *
Posted speed limit  :    80 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):   7500
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium Truck % of Total Volume     :   7.00
    Heavy Truck  % of Total Volume     :   5.00
    Day (16 hrs) % of Total Volume     :  92.00

Data for Segment # 6: Terry Fox S (day/night)
-----------------------------------------------
Angle1   Angle2           :  65.00 deg   90.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
```

```
Surface                    :      2       (Reflective ground surface)
Receiver source distance   : 101.60 / 101.60 m
Receiver height            :   1.50 / 1.50   m
Topography                 :      2       (Flat/gentle slope; with
barrier)
Barrier angle1             :  65.00 deg   Angle2 : 90.00 deg
Barrier height             :   6.00 m
Barrier receiver distance  :  57.00 / 57.00  m
Source elevation           :  97.80 m
Receiver elevation         :  98.25 m
Barrier elevation          :  98.00 m
Reference angle            :   0.00
```

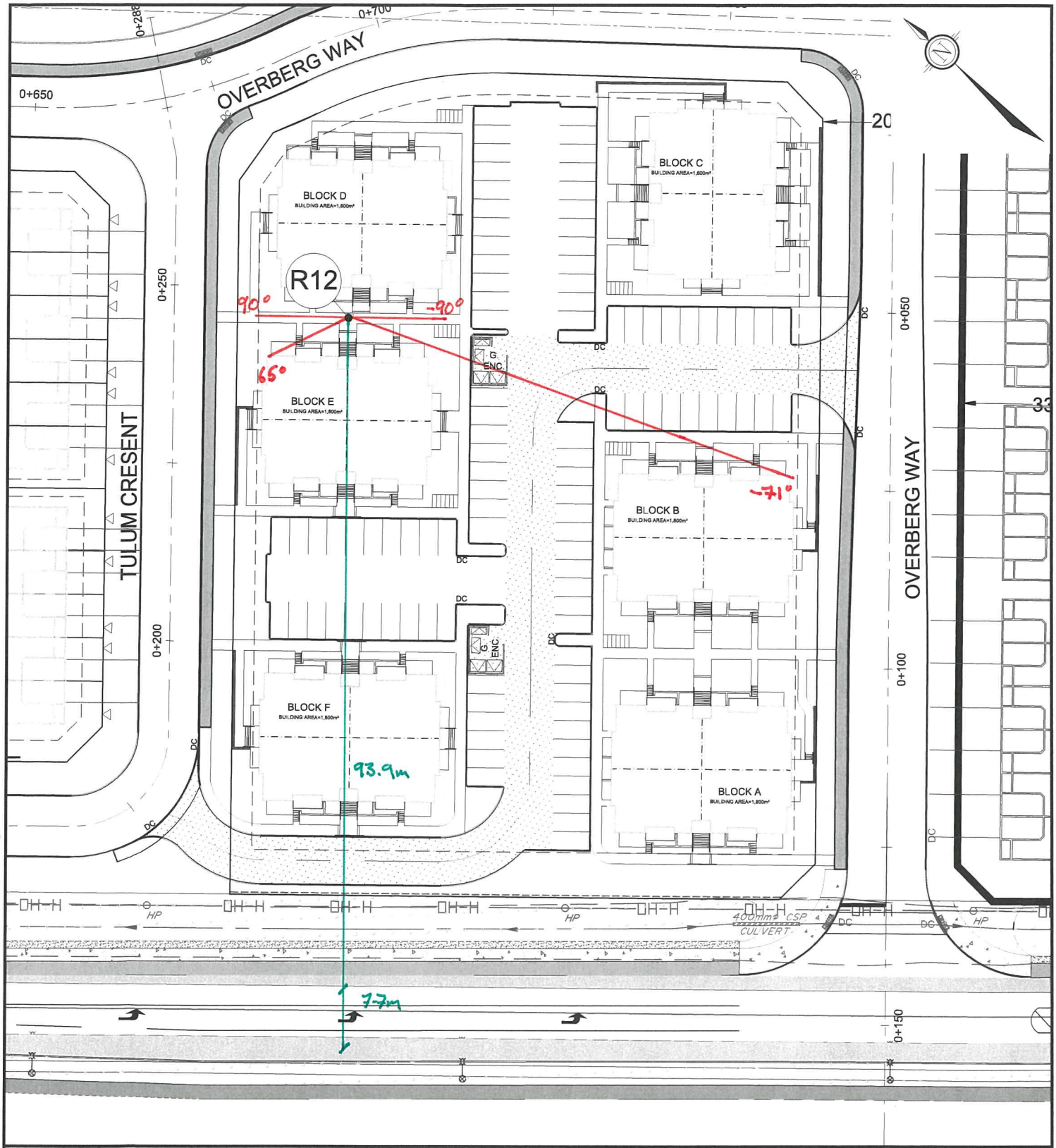
Result summary (day)

	source height (m)	Road Leq (dBA)	Total Leq (dBA)
1.Terry Fox N	1.50	44.05	44.05
2.Terry Fox N	1.50	39.97	39.97
3.Terry Fox N	1.50	44.77	44.77
4.Terry Fox S	1.50	43.80	43.80
5.Terry Fox S	1.50	39.97	39.97
6.Terry Fox S	1.50	44.67	44.67
Total			51.09 dBA

Result summary (night)

	source height (m)	Road Leq (dBA)	Total Leq (dBA)
1.Terry Fox N	1.50	36.45	36.45
2.Terry Fox N	1.50	32.37	32.37
3.Terry Fox N	1.50	37.18	37.18
4.Terry Fox S	1.50	36.21	36.21
5.Terry Fox S	1.50	32.37	32.37
6.Terry Fox S	1.50	37.07	37.07
Total			43.50 dBA

```
TOTAL Leq FROM ALL SOURCES (DAY): 51.09
                           (NIGHT): 43.50
```



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BLOCK 14
(BRIDLEWOOD TRAILS PHASE 2)

RECEIVER DISTANCE AND ANGLES

SCALE 1 : 750 (0, 10, 20, 30)

DATE SEPT 2018 | JOB 114013 | FIGURE FIG-R12

SHT8X11.DWG - 216mmx279mm

APPENDIX B

ACCOUSTIC INSULATION FACTOR TABLES

Residential - Living Room

TABLE 5: Acoustic Insulation Factor for Various Types of Windows

Window area as a percentage of total floor area of room (1)														Single	Double glazing of indicated glass thickness				Triple Glazing	
4	5	6	8	10	13	16	20	25	32	40	50	63	80	glazing	2mm and 2mm glass	3mm and 3mm glass	4mm and 4mm glass	3mm and 6mm glass	6mm and 6mm glass	3mm, 3mm and 3mm glass	3mm, 3mm and 6mm glass
Acoustic Insulation Factor (AIF) (2)														Thickness	Interpane spacing in mm (3)					Interpane spacings in mm (5)	
35	34	33	32	31	30	29	28	27	26	25	24	23	22	2mm	6						
36	35	34	33	32	31	30	29	28	27	26	25	24	23		13						
37	36	35	34	33	32	31	30	29	28	27	26	25	24	3mm	15	6					
38	37	36	35	34	33	32	31	30	29	28	27	26	25	4mm, 6mm	18	13	6				
39	38	37	36	35	34	33	32	31	30	29	28	27	26		22	16	13	8	6	6,6	
40	39	38	37	36	35	34	33	32	31	30	29	28	27	9mm (4)	28	20	16	13	13	6,10	6,6
41	40	39	38	37	36	35	34	33	32	31	30	29	28		35	25	20	16	16	6,15	6,10
42	41	40	39	38	37	36	35	34	33	32	31	30	29	12mm (4)	42	32	25	20	20	6,20	6,15
43	42	41	40	39	38	37	36	35	34	33	32	31	30		50	40	32	25	24	6,30	6,20
44	43	42	41	40	39	38	37	36	35	34	33	32	31		63	50	40	32	30	6,40	6,30
45	44	43	42	41	40	39	38	37	36	35	34	33	32		80	63	50	40	37	6,50	6,40
46	45	44	43	42	41	40	39	38	37	36	35	34	33		100	80	63	55	50	6,65	6,50
47	46	45	44	43	42	41	40	39	38	37	36	35	34		125	100	80	75	70	6,80	6,65
48	47	46	45	44	43	42	41	40	39	38	37	36	35		150	125	100	95	90	6,100	6,80
49	48	47	46	45	44	43	42	41	40	39	38	37	36			150	125	110	100		6,100
50	49	48	47	46	45	44	43	42	41	40	39	38	37				150	135	125		

Source: National Research Council, Division of Building Research, June 1980.

Explanatory Notes:

1) Where the calculated percentage window area is not presented as a column heading, the nearest percentage column in the table values should be used.
2) AIF data listed in the table are for well-fitted weatherstripped units that can be opened. The AIF values apply only when the windows are closed. For windows fixed and sealed to the frame, add three (3) to the AIF given in the table.
3) If the interpane spacing or glass thickness for a specific double glazed window is not listed in the table, the nearest listed values should be used.
4) The AIF ratings for 9mm and 12mm glass are for laminated glass only; for solid glass subtract two (2) from the AIF values listed in the table.
5) If the interpane spacings for a specific triple-glazed window are not listed in the table, use the listed case whose combined spacings are nearest the actual combined spacing.
6) The AIF data listed in the table are for typical windows, but details of glass mounting, window seals, etc. may result in slightly different performance for some manufacturers' products. If laboratory sound transmission loss data (conforming to ASTM test method E-90) are available, these should be used to calculate the AIF.

Residential - Living Room

TABLE 11: Approximate conversion from STC to AIF for windows and doors:

Window (or door) area expressed as percentage of room floor area	Acoustic Insulation Factor (AIF)
80	STC-5
63	STC-4
50	STC-3
40	STC-2
32	STC-1
25	STC
20	STC+1
16	STC+2
12.5	STC+3
10	STC+4
8	STC+5
6.3	STC+6
5	STC+7
4	STC+8

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

Examples: For a window whose area = 20% of the room floor area and STC = 32 the AIF is 32 + 1 = 33.

For a window whose area = 60% of the room floor area and STC = 29 the AIF is 29 - 4 = 25.

AIF = STC

STC = 31

Residential - Living Room

Table 6.3 - Acoustic Insulation Factor for Various Types of Exterior Wall

	Percentage of exterior wall area to total floor area of room											Type of Exterior Wall
	16	20	25	32	40	50	63	80	100	125	160	
Acoustic Insulation Factor	39	38	37	36	35	34	33	32	31	30	29	EW1
	41	40	39	38	37	36	35	34	33	32	31	EW2
	44	43	42	41	40	39	38	37	36	35	34	EW3
	47	46	45	44	43	42	41	40	39	38	37	EW4
	48	47	46	45	44	43	42	41	40	39	38	EW1R
	49	48	47	46	45	44	43	42	41	40	39	EW2R
	50	49	48	47	46	45	44	43	42	41	40	EW3R
	55	54	53	52	51	50	49	48	47	46	45	EW5
	56	55	54	53	52	51	50	49	48	47	46	EW4R
	58	57	56	55	54	53	52	51	50	49	48	EW6
	59	58	57	56	55	54	53	52	51	50	49	EW7 or EW5R
	63	62	61	60	59	58	57	56	55	54	53	EW8

Source : National Research Council, Division of Building Research, December 1980

Explanatory Notes :

1) Where the calculated percentage wall area is not presented as a column heading, the nearest percentage column in the table should be used.

2) The common structure of walls EW1 to EW5 is composed of 12.7 mm gypsum board, vapour barrier, and 38 x 89 mm studs with 50 mm (or thicker) mineral wool or glass fibre batts in inter-stud cavities.

3) EW1 denotes exterior wall as in Note 2), plus sheathing, plus wood siding or metal siding and fibre backer board.
EW2 denotes exterior wall as in Note 2), plus rigid insulation (25-30 mm), and wood siding or metal siding and fibre backer board.
EW3 denotes simulated mansard with structure as in Note 2), plus sheathing, 28 x 89 mm framing, sheathing, and asphalt roofing material.
EW4 denotes exterior wall as in Note 2), plus sheathing and 20 mm stucco.
EW5 denotes exterior wall as in Note 2), plus sheathing, 25 mm air space, 100 mm brick veneer.
EW6 denotes exterior wall composed of 12.7 mm gypsum board, rigid insulation (25-50 mm), 100 mm back-up block, 100 mm face brick.
EW7 denotes exterior wall composed of 12.7 mm gypsum board, rigid insulation (25-50 mm), 140 mm back-up block, 100 mm face brick.
EW8 denotes exterior wall composed of 12.7 mm gypsum board, rigid insulation (25-50 mm), 200 mm concrete.

4) R signifies the mounting of the interior gypsum board on resilient clips.

5) An exterior wall conforming to rainscreen design principles and composed of 12.7 mm gypsum board, 100 mm concrete block, rigid insulation (25-50 mm), 25 mm air space, and 100 mm brick veneer has the same AIF as EW6.

6) An exterior wall described in EW1 with the addition of rigid insulation (25-50 mm) between the sheathing and the external finish has the same AIF as EW2.

Residential - Living Room

TABLE 12: Approximate conversion from STC to AIF for exterior walls:

Exterior wall area expressed as percentage of room floor area	Acoustic Insulation Factor (AIF)
200	STC-10
160	STC-9
125	STC-8
100	STC-7
80	STC-6
63	STC-5
50	STC-4
40	STC-3
32	STC-2
25	STC-1
20	STC
16	STC+1
12.5	STC+2
10	STC+3
8	

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

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

AIF = STC

STC = 31

Residential - Bedroom

TABLE 5: Acoustic Insulation Factor for Various Types of Windows

Window area as a percentage of total floor area of room (1)													
4	5	6	8	10	13	16	20	25	32	40	50	63	80
Acoustic Insulation Factor (AIF) (2)													
35	34	33	32	31	30	29	28	27	26	25	24	23	22
36	35	34	33	32	31	30	29	28	27	26	25	24	23
37	36	35	34	33	32	31	30	29	28	27	26	25	24
38	37	36	35	34	33	32	31	30	29	28	27	26	25
39	38	37	36	35	34	33	32	31	30	29	28	27	26
40	39	38	37	36	35	34	33	32	31	30	29	28	27
41	40	39	38	37	36	35	34	33	32	31	30	29	28
42	41	40	39	38	37	36	35	34	33	32	31	30	29
43	42	41	40	39	38	37	36	35	34	33	32	31	30
44	43	42	41	40	39	38	37	36	35	34	33	32	31
45	44	43	42	41	40	39	38	37	36	35	34	33	32
46	45	44	43	42	41	40	39	38	37	36	35	34	33
47	46	45	44	43	42	41	40	39	38	37	36	35	34
48	47	46	45	44	43	42	41	40	39	38	37	36	35
49	48	47	46	45	44	43	42	41	40	39	38	37	36
50	49	48	47	46	45	44	43	42	41	40	39	38	37

Single glazing	Double glazing of indicated glass thickness					Triple Glazing	
	2mm and 2mm glass	3mm and 3mm glass	4mm and 4mm glass	3mm and 6mm glass	6mm and 6mm glass	3mm, 3mm and 3mm glass	3mm, 3mm and 6mm glass
Thickness	Interpane spacing in mm (3)					Interpane spacings in mm (5)	
2mm	6						
	13						
3mm	15	6					
4mm, 6mm	18	13	6				
	22	16	13	6	6	6,6	
9mm (4)	28	20	16	13	13	6,10	6,6
	35	25	20	16	16	6,15	6,10
12mm (4)	42	32	25	20	20	6,20	6,15
	50	40	32	25	24	6,30	6,20
	63	50	40	32	30	6,40	6,30
	80	63	50	40	37	6,50	6,40
	100	80	63	55	50	6,65	6,50
	125	100	80	75	70	6,80	6,65
	150	125	100	95	90	6,100	6,80
		150	125	110	100		6,100
			150	135	125		

Source: National Research Council, Division of Building Research, June 1980.

Explanatory Notes:

1) Where the calculated percentage window area is not presented as a column heading, the nearest percentage column in the table values should be used.
2) AIF data listed in the table are for well-fitted weatherstripped units that can be opened. The AIF values apply only when the windows are closed. For windows fixed and sealed to the frame, add three (3) to the AIF given in the table.
3) If the interpane spacing or glass thickness for a specific double glazed window is not listed in the table, the nearest listed values should be used.
4) The AIF ratings for 9mm and 12mm glass are for laminated glass only; for solid glass subtract two (2) from the AIF values listed in the table.
5) If the interpane spacings for a specific triple-glazed window are not listed in the table, use the listed case whose combined spacings are nearest the actual combined spacing.
6) The AIF data listed in the table are for typical windows, but details of glass mounting, window seals, etc. may result in slightly different performance for some manufacturers' products. If laboratory sound transmission loss data (conforming to ASTM test method E-90) are available, these should be used to calculate the AIF.

Residential - Bedroom

TABLE 11: Approximate conversion from STC to AIF for windows and doors:

Window (or door) area expressed as percentage of room floor area	Acoustic Insulation Factor (AIF)
80	STC-5
63	STC-4
50	STC-3
40	STC-2
32	STC-1
25	STC
20	STC+1
16	STC+2
12.5	STC+3
10	STC+4
8	STC+5
6.3	STC+6
5	STC+7
4	STC+8

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

Examples: For a window whose area = 20% of the room floor area and STC = 32 the AIF is 32 + 1 = 33.

For a window whose area = 60% of the room floor area and STC = 29 the AIF is 29 - 4 = 25.

AIF = STC-3

28 = STC-3

STC = 31

Residential - Bedroom

Table 6.3 - Acoustic Insulation Factor for Various Types of Exterior Wall

Percentage of exterior wall area to total floor area of room											Type of Exterior Wall
	16	20	25	32	40	50	63	80	100	125	160	
Acoustic Insulation Factor	39	38	37	36	35	34	33	32	31	30	29	EW1
	41	40	39	38	37	36	35	34	33	32	31	EW2
	44	43	42	41	40	39	38	37	36	35	34	EW3
	47	46	45	44	43	42	41	40	39	38	37	EW4
	48	47	46	45	44	43	42	41	40	39	38	EW1R
	49	48	47	46	45	44	43	42	41	40	39	EW2R
	50	49	48	47	46	45	44	43	42	41	40	EW3R
	55	54	53	52	51	50	49	48	47	46	45	EW5
	56	55	54	53	52	51	50	49	48	47	46	EW4R
	58	57	56	55	54	53	52	51	50	49	48	EW6
	59	58	57	56	55	54	53	52	51	50	49	EW7 or EW5R
	63	62	61	60	59	58	57	56	55	54	53	EW8

Source : National Research Council, Division of Building Research, December 1980

Explanatory Notes :

1) Where the calculated percentage wall area is not presented as a column heading, the nearest percentage column in the table should be used.
2) The common structure of walls EW1 to EW5 is composed of 12.7 mm gypsum board, vapour barrier, and 38 x 89 mm studs with 50 mm (or thicker) mineral wool or glass fibre batts in inter-stud cavities.
3) EW1 denotes exterior wall as in Note 2), plus sheathing, plus wood siding or metal siding and fibre backer board.
EW2 denotes exterior wall as in Note 2), plus rigid insulation (25-30 mm), and wood siding or metal siding and fibre backer board.
EW3 denotes simulated mansard with structure as in Note 2), plus sheathing, 28 x 89 mm framing, sheathing, and asphalt roofing material.
EW4 denotes exterior wall as in Note 2), plus sheathing and 20 mm stucco.
EW5 denotes exterior wall as in Note 2), plus sheathing, 25 mm air space, 100 mm brick veneer.
EW6 denotes exterior wall composed of 12.7 mm gypsum board, rigid insulation (25-50 mm), 100 mm back-up block, 100 mm face brick.
EW7 denotes exterior wall composed of 12.7 mm gypsum board, rigid insulation (25-50 mm), 140 mm back-up block, 100 mm face brick.
EW8 denotes exterior wall composed of 12.7 mm gypsum board, rigid insulation (25-50 mm), 200 mm concrete.
4) R signifies the mounting of the interior gypsum board on resilient clips.
5) An exterior wall conforming to rainscreen design principles and composed of 12.7 mm gypsum board, 100 mm concrete block, rigid insulation (25-50 mm), 25 mm air space, and 100 mm brick veneer has the same AIF as EW6.
6) An exterior wall described in EW1 with the addition of rigid insulation (25-50 mm) between the sheathing and the external finish has the same AIF as EW2.

Residential - Bedroom

TABLE 12: Approximate conversion from STC to AIF for exterior walls:

Exterior wall area expressed as percentage of room floor area	Acoustic Insulation Factor (AIF)
200	STC-10
160	STC-9
125	STC-8
100	STC-7
80	STC-6
63	STC-5
50	STC-4
40	STC-3
32	STC-2
25	STC-1
20	STC
16	STC+1
12.5	STC+2
10	STC+3
8	

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

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

AIF = STC-9

28 = STC-9

STC = 37

APPENDIX C

EXCERPTS FROM THE CITY OF OTTAWA ENVIRONMENTAL NOISE CONTROL GUIDELINES, THE MOE'S NPC-300, THE CITY OF OTTAWA TRANSPORTATION MASTER PLAN AND OFFICIAL PLAN

PLANNING AND GROWTH MANAGEMENT
URBANISME ET GESTION DE LA CROISSANCE

ENVIRONMENTAL NOISE CONTROL GUIDELINES: Introduction and Glossary

January 2016

Table 2.2a: Sound Level Limit for Outdoor Living Areas - Road and Rail
(from NPC-300, 2013 Table C-1)

Time Period	Required L_{eq} (16) (dBA)
16-hour, 07:00 – 23:00	55

Table 2.2b: Sound Level Limit for Indoor Living Areas Road and Rail
(from NPC-300, 2013 Table C-2)

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

The Province also provides for supplementary indoor sound level limits for land uses not generally considered noise sensitive (see Table 2.2c below). These good practice design objectives should be addressed in any noise study prepared for the City. These supplementary sound level limits are based on the windows and doors to an indoor space being closed.

Table 2.2c: Supplementary Sound Level Limits for Indoor Spaces - Road and Rail (adapted from NPC-300 Table C-9)

Type of Space	Time Period	Required L_{eq} (dBA) Road	Rail
General offices, reception areas, retail stores, etc.	16 hours between 07:00 – 23:00	50	45
Theatres, places of worship, libraries, individual or semi- private offices, conference rooms, reading rooms, etc.	16 hours between 07:00 – 23:00	45	40
Sleeping quarters of hotels/motels	8 hours between 23:00 – 07:00	45	40
Sleeping quarters of residences, hospitals, nursing/retirement homes, etc.	8 hours between 23:00 – 07:00	40	35

Appendix B: Table of Traffic and Road Parameters To Be Used For Sound Level Predictions

Table B1 Traffic And Road Parameters To Be Used For Sound Level Predictions

Row Width (m)	Implied Roadway Class	AADT Vehicles/Day	Posted Speed Km/Hr	Day/Night Split %	Medium Trucks %	Heavy Trucks % [1]
NA [2]	Freeway, Queensway, Highway	18,333 per lane	100	92/8	7	5
37.5-44.5	6-Lane Urban Arterial-Divided (6 UAD)	50,000	50-80	92/8	7	5
34-37.5	4-Lane Urban Arterial-Divided (4-UAD)	35,000	50-80	92/8	7	5
23-34	4-Lane Urban Arterial-Undivided (4-UAU)	30,000	50-80	92/8	7	5
23-34	4-Lane Major Collector (4-UMCU)	24,000	40-60	92/8	7	5
30-35.5	2-Lane Rural Arterial (2-RAU)	15,000	50-80	92/8	7	5
20-30	2-Lane Urban Arterial (2-UAU)	15,000	50-80	92/8	7	5
20-30	2-Lane Major Collector (2-UMCU)	12,000	40-60	92/8	7	5
30-35.5	2-Lane Outer Rural Arterial (near the extremities of the City) (2-RAU)	10,000	50-80	92/8	7	5
20-30	2-Lane Urban Collector (2-UCU)	8,000	40-50	92/8	7	5

[1] The MOE Vehicle Classification definitions should be used to estimate automobiles, medium trucks and heavy trucks.

[2] The number of lanes is determined by the future mature state of the roadway.

Appendix A: Warning Clauses

Under the Official Plan and this guideline warning clauses may be required to be incorporated into development through development agreements, registration on title and inclusion in Agreements of Purchase and Sale. This requirement may be included in any development, regardless of whether it is considered a noise sensitive land use.

A warning clause provides recognition for the City, Province landowner or tenants that noise may be a concern, that noise may be audible at times or even quite loud, and, depending on the type of development, provincial guidelines for noise may be exceeded. Warning clauses also recognize that environmental noise is a potential health hazard that does impact people and neighbourhoods. It is for this reason that, unless a non-noise sensitive land use is established, a warning clause should also include noise mitigation.

A warning clause is not considered a form of noise mitigation. It is not acceptable therefore to use warning clauses in place of physical noise control measures to identify an excess over the MOE or City noise limits. The reason for a warning clause on all development is twofold. Firstly, it is important to note that a land use that although the development may not be considered noise sensitive it may include employees or tenants that are personally sensitive to noise. A warning clause provides protection against complaints to the ministry of Environment should provincial guidelines be exceeded. Secondly, a warning clause on title could obviate the need for a new noise study in the future. In a redevelopment scenario the warning clause would provide recognition of the extent noise conditions.

Given the variation in potential intensity and impact of noise it will often be necessary to amend warning clauses to recognize the site specific conditions in each development. Final wording of any warning clause is to be approved by the City.

The following subsections provide example text to be adapted into warning clauses.

Surface Transportation Warning Clauses

Table A1 Surface Transportation Warning Clauses

Type	Example	Notes
Generic	*Purchasers/tenants are advised that sound levels due to increasing road/rail/Light Rail/transitway traffic may occasionally interfere with some outdoor activities as the sound levels may exceed the sound level limits of the City and the Ministry of the Environment.* *To help address the need for sound attenuation this development has been designed so as to provide an outdoor amenity area that is within provincial guidelines. Measures for sound attenuation include:* • *A setback of buildings from the noise source and* • *An acoustic barrier.* *To ensure that provincial sound level limits are not exceeded it is important to maintain sound attenuation features.* *The acoustic barrier shall be maintained and kept in good repair by the property owner. Any maintenance, repair or replacement is the responsibility of the owner and shall be with the same material or to the same standards, having the same colour, appearance and function of the original.* *Additionally this development includes trees and shrubs to screen the source of noise from occupants.*	The generic warning clause outlines that MOE sound levels may be exceeded but the indoor environment and outdoor amenity areas are within guidelines. Mitigation measures are described including urban design features. Mention is also made of landscaping to screen the development visually from the source of noise.
Extensive mitigation of indoor and	*"Purchasers/tenants are advised that despite the inclusion of noise control features in the development and within the building units,*	The warning clause makes reference to MOE sound levels

Table A1 Surface Transportation Warning Clauses

Type	Example	Notes
outdoor amenity area	*sound levels due to increasing road/rail/Light Rail/transitway traffic may, on occasion, interfere with some activities of the dwelling occupants as the sound levels exceed the sound level limits of the City and the Ministry of the Environment.* *To help address the need for sound attenuation this development includes:* • *multi-pane glass;* • *double brick veneer;* • *an earth berm; and* • *an acoustic barrier.* *To ensure that provincial sound level limits are not exceeded it is important to maintain these sound attenuation features.* *The acoustic barrier shall be maintained and kept in good repair by the property owner. Any maintenance, repair or replacement is the responsibility of the owner and shall be with the same material or to the same standards, having the same colour, appearance and function of the original.* *This dwelling unit has also been designed with the provision for adding central air conditioning at the occupant's discretion. Installation of central air conditioning will allow windows and exterior doors to remain closed, thereby ensuring that the indoor sound levels are within the sound level limits of the City and the Ministry of the Environment.*	being exceeded from time to time and that there are sound attenuation features and landscaping within the development that should be maintained. An option for air conditioning is noted as well as landscaping to screen the source of noise.

Table A1 Surface Transportation Warning Clauses

Type	Example	Notes
	Additionally this development includes trees and shrubs to screen the source of noise from occupants.	
No outdoor amenity area	*Purchasers/tenants are advised that sound levels due to increasing road/rail/Light Rail/transitway traffic will interfere with outdoor activities as the sound levels exceed the sound level limits of the City and the Ministry of the Environment.* *To help address the need for sound attenuation this development includes:* • *multi-pane glass;* • *double brick veneer;* • *high sound transmission class walls.* *To ensure that provincial sound level limits are not exceeded it is important to maintain these sound attenuation features.* *This dwelling unit has been supplied with a central air conditioning system and other measures which will allow windows and exterior doors to remain closed, thereby ensuring that the indoor sound levels are within the sound level limits of the City and the Ministry of the Environment*	This warning clause notes that only an indoor environment is being provided for.

Stationary Source Warning Clauses

The Province notes that 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 for stationary sources. The generic warning clause for stationary sources (called Type E in NPC-300) may identify a potential concern due to the proximity of the facility but it is not possible to justify exceeding the sound level limits.
The wording of the generic stationary noise warning clause may also be used as the basis for new development adjacent to areas licensed for mineral aggregate extraction.

Environmental Noise Guideline

Stationary and Transportation Sources – Approval and Planning

Publication NPC-300

Ontario

Table C-10
Supplementary Indoor Aircraft Noise Limits
(Applicable over 24-hour period)

Type of Space	Indoor NEF/NEP*
General offices, reception areas, retail stores, etc.	15
Individual or semi-private offices, conference rooms, etc.	10
Living/dining areas of residences, sleeping quarters of hotels/motels, theatres, libraries, schools, daycare centres, places of worship, etc.	5
Sleeping quarters of residences, hospitals, nursing/retirement homes, etc.	0

* The indoor NEF/NEP values listed in Table C-10 are not obtained from NEF/NEP contour maps. The values are representative of the indoor sound levels and are used as assessment criteria for the evaluation of acoustical insulation requirements.

C7 Noise Control Measures

The following sections provide MOE guidance for appropriate noise control measures. These sections constitute requirements that are applied to MOE approvals for stationary sources. This information is also provided as guidance which land use planning authorities may consider adopting.

The definition in Part A describes the various types and application of noise control measures. All the noise control measures described in the definition are appropriate to address the impact of noise of transportation sources (road, rail and aircraft) on planned sensitive land uses. Only some of the noise control measures described in the definition are appropriate to address the noise impact of stationary sources on planned sensitive land uses.

C7.1 Road Noise Control Measures

C7.1.1 Outdoor Living Areas

If the 16-Hour Equivalent Sound Level, L_{eq} (16) in the OLA is greater than 55 dBA and less than or equal to 60 dBA, noise control measures may be applied to reduce the sound level to 55 dBA. If measures are not provided, prospective purchasers or tenants should be informed of potential noise problems by a warning clause Type A.

If the 16-Hour Equivalent Sound Level, L_{eq} (16) in the OLA is greater than 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 for technical, economic or administrative reasons would an excess above the limit (55 dBA) be acceptable with a warning clause Type B. In the above situations, any excess above the limit will not be acceptable if it exceeds 5 dBA.

C7.1.2 Plane of a Window – Ventilation Requirements

C7.1.2.1 Daytime Period, 07:00 – 23:00 Hours

Noise control measures may not be required if the L_{eq} (16) daytime sound level in the plane of a bedroom or living/dining room window is less than or equal to 55 dBA. If the sound level in the plane of a bedroom or living/dining room window is greater than 55 dBA and less than or equal to 65 dBA, the dwelling should be designed with a provision for the installation of central air conditioning in the future, at the occupant's discretion. Warning clause Type C is also recommended.

If the daytime sound level in the plane of a bedroom or living/dining room window is greater than 65 dBA, installation of central air conditioning should be implemented with a warning clause Type D. In addition, building components including windows, walls and doors, where applicable, should be designed so that the indoor sound levels comply with the sound level limits in Table C-2. The location and installation of the outdoor air conditioning device should comply with sound level limits of Publication NPC-216, Reference [32], and guidelines contained in Environmental Noise Guidelines for Installation of Residential Air Conditioning Devices, Reference [6], or should comply with other criteria specified by the municipality.

C7.1.2.2 Nighttime Period, 23:00 – 07:00 Hours

Noise control measures may not be required if the L_{eq} (8) nighttime sound level in the plane of a bedroom or living/dining room window is less than or equal to 50 dBA. If the sound level in the plane of a bedroom or living/dining room window is greater than 50 dBA and less than or equal to 60 dBA, the dwelling should be designed with a provision for the installation of central air conditioning in the future, at the occupant's discretion. Warning clause Type C is also recommended.

If the nighttime sound level in the plane of a bedroom or living/dining room window is greater than 60 dBA, installation of central air conditioning should be implemented, with a warning clause Type D. In addition, building components including windows, walls and doors, where applicable, should be designed so that the indoor sound levels comply with the sound level limits in Table C-2. The location and installation of the outdoor air conditioning device should comply with sound level limits of Publication NPC-216, Reference [32], and guidelines contained in Environmental Noise Guidelines for Installation of Residential Air Conditioning Devices, Reference [6], or should comply with other criteria specified by the municipality.

C7.1.3 Indoor Living Areas – Building Components

If the nighttime sound level outside the bedroom or living/dining room windows exceeds 60 dBA or the daytime sound level outside the bedroom or living/dining area windows exceeds 65 dBA, building components including windows, walls and doors, where applicable, should be designed so that the indoor sound levels comply with the

sound level limits in Table C-2. The acoustical performance of the building components (windows, doors and walls) should be specified.

C7.2 Rail Noise Control Measures

C7.2.1 Outdoor Living Areas

Whistle noise is not included in the determination of the outdoor daytime sound level due to railway trains. All the provisions of Section C7.1.1 apply also to noise control requirements for rail noise.

C7.2.2 Plane of a Window – Ventilation Requirements

Whistle noise is not included in the determination of the sound level in the plane of a window. All the provisions of Section C7.1.2 apply also to noise control requirements for rail noise.

C7.2.3 Indoor Living Areas – Building Components

The sound level, L_{eq}, during the daytime (16-hour) and nighttime (8-hour) periods is determined using the prediction method STEAM, Reference [34], immediately outside the dwelling envelope. Whistle noise is included in the determination of the sound level.

If the nighttime sound level outside the bedroom or living/dining room windows exceeds 55 dBA or the daytime sound level outside the bedroom or living/dining area windows exceeds 60 dBA, building components including windows, walls and doors, where applicable, need to be designed so that the indoor sound levels comply with the sound level limits in Table C-2. The acoustical performance of the building components (windows, doors and walls) needs to be specified.

In addition, the exterior walls of the first row of dwellings next to railway tracks are to be built to a minimum of brick veneer or masonry equivalent construction, from the foundation to the rafters when the rail traffic L_{eq} (24-hour), estimated at a location of a nighttime receptor, is greater than 60 dBA, and when the first row of dwellings is within 100 metres of the tracks.

C7.3 Combination of Road and Rail Noise

The noise impact in the OLA and in the plane of a window, and the requirements for outdoor measures, ventilation measures and warning clauses, should be determined by combining road and rail traffic sound levels.

The assessment of the indoor sound levels and the resultant requirement for the acoustical descriptors of the building components should be done separately for road

In Class 4 areas, where windows for noise sensitive spaces are assumed to be closed, the use of central air conditioning may be acceptable if it forms an essential part of the overall building designs.

C7.9 Verification of Noise Control Measures

It is recommended that the implementation of noise control measures be verified by qualified individuals with experience in environmental acoustics.

C8 Warning Clauses

The use of warning clauses or easements in respect of noise are recommended when circumstances warrant. Noise warning clauses may be used to warn of potential annoyance due to an existing source of noise and/or to 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

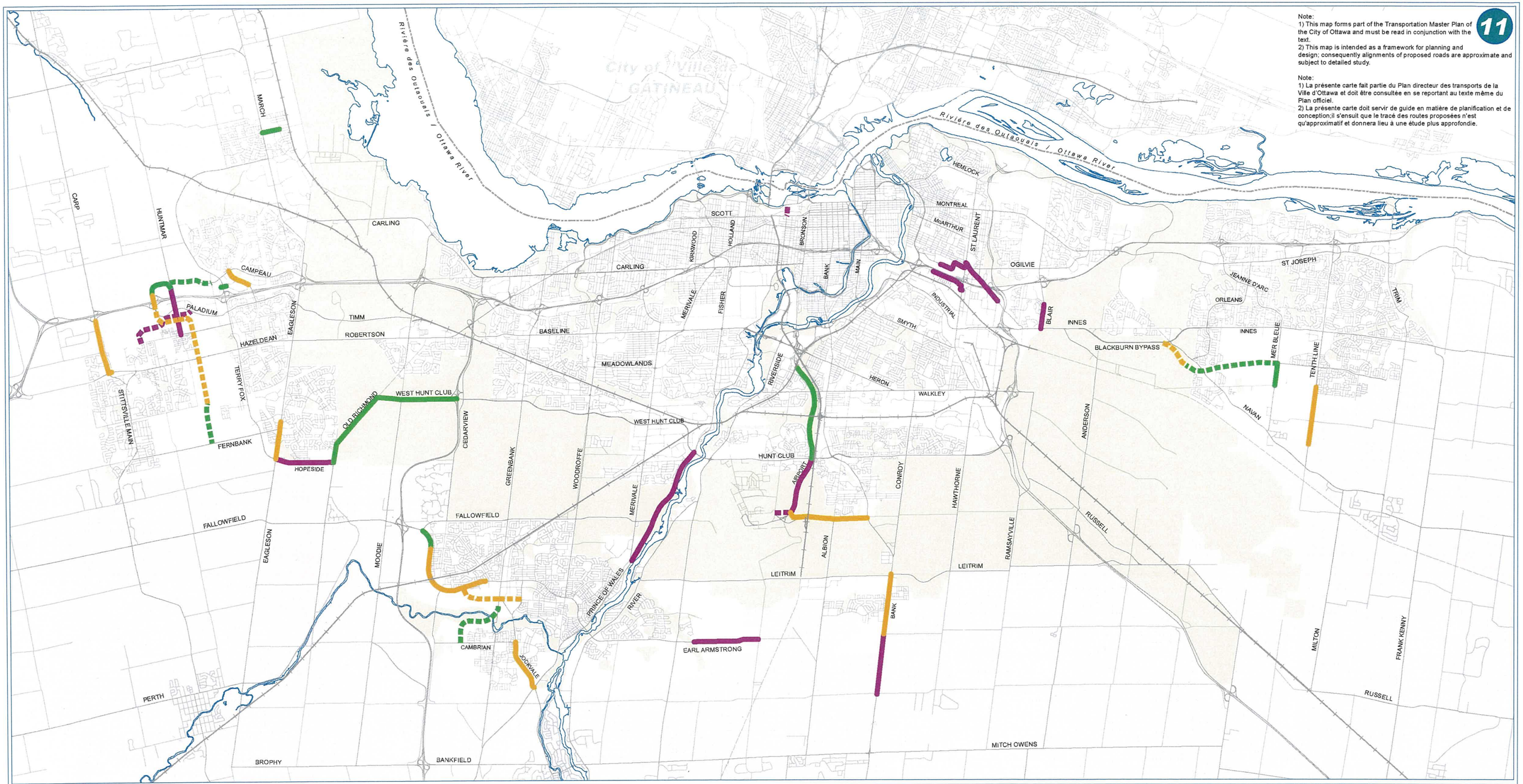
TYPE F: (see Section B9.2 and Section C4.4.2)

"Purchasers/tenants are advised that sound levels due to the adjacent industry (facility) (utility) are required to comply with sound level limits that are protective of indoor areas and are based on the assumption that windows and exterior doors are closed. This dwelling unit has been supplied with a ventilation/air conditioning system which will allow windows and exterior doors to remain closed."

11

Note:
1) This map forms part of the Transportation Master Plan of the City of Ottawa and must be read in conjunction with the text.
2) This map is intended as a framework for planning and design; consequently alignments of proposed roads are approximate and subject to detailed study.

Note:
1) La présente carte fait partie du Plan directeur des transports de la Ville d'Ottawa et doit être consultée en se reportant au texte même du Plan officiel.
2) La présente carte doit servir de guide en matière de planification et de conception;il s'ensuit que le tracé des routes proposées n'est qu'approximatif et donnera lieu à une étude plus approfondie.



Phase 1 (2014 - 2019) Widening
Phase 1 (2014 - 2019) New Road
Phase 1 (2014 - 2019) Élargissement
Phase 1 (2014 - 2019) Nouvelle route

Phase 2 (2020 - 2025) Widening
Phase 2 (2020 - 2025) New Road
Phase 2 (2020 - 2025) Élargissement
Phase 2 (2020 - 2025) Nouvelle route

Phase 3 (2026 - 2031) Widening
Phase 3 (2026 - 2031) New Road
Phase 3 (2026 - 2031) Élargissement
Phase 3 (2026 - 2031) Nouvelle route

Ottawa

1 0.5 0 1 2 3 km

Prepared by: Planning and Growth Management Department, Mapping & Graphics Unit, 2015 Revision
Préparé par: Service de l'urbanisme et de la gestion de la croissance, Unité de la cartographie et des graphiques, Révision 2015

TRANSPORTATION MASTER PLAN - Map 11

ROAD NETWORK – 2031 AFFORDABLE NETWORK

PLAN DIRECTEUR DES TRANSPORTS - Carte 11

RÉSEAU ROUTIER - RÉSEAU ABORDABLE 2031

Note:
1) This schedule forms part of the Official Plan of the City of Ottawa and must be read in conjunction with the text.
2) This schedule is intended as a framework for planning and design;consequently alignments of proposed roads are approximate and subject to detailed study.
3) An unidentified new facility from Highway 416 to Highway 417 East is not shown.

Note:
1) La présente annexe fait partie du Plan officiel de la Ville d'Ottawa et doit être consultée en se reportant au texte même du Plan officiel.
2) La présente annexe doit servir de guide en matière de planification et de conception;il s'ensuit que le tracé des routes proposées n'est qu'approximatif et donnera lieu à une étude plus approfondie.
3) **Une nouvelle installation non identifiée et située entre l'autoroute 416 et l'autoroute 417E n'apparaît pas.**

E

SEE SCHEDULE F
VOIR ANNEXE F

Rivière des Outaouais / Ottawa River

City of / Ville de GATINEAU

Fallowfield

Richmond

Manotick

Macdonald-Cartier International Airport
Aéroport International Macdonald-Cartier

Notre-Dame-des-Champs

Navan

Carlsbad Springs

City of Ottawa Official Plan Consolidation and Amendments

Ville d'Ottawa Plan officiel Amendement au plan directeur approuvé

# 14 (09/2004)	# 96 (03/2012)	# 192 (08/2017)
# 44 (06/2006)	# 97 (03/2012)	
# 50 (06/2006)	#113 (11/2012)	
# 77 (06/2009)	#123 (09/2019)	
# 76	#173 (01/2017)	

OMB decision/Décision de la CAMO - N° 1787; 2711;PL#160875

Official Plan - Schedule E
Urban Road Network

Prepared by: Planning and Growth Management Department, Mapping & Graphics Unit

Plan officiel - Annexe E
Routes Arterial - Urbain

Preparé par : Service de l'urbanisme et de la gestion de la croissance, Unité de la cartographie et des graphiques

Provincial Highway / **Route provinciale**
City Freeway / **Autoroute de ville**

Federally Owned Road / **Chemins de propriété fédéral**
Existing / Établie
Proposed / Proposé
(Alignment defined) / (Alignement déterminée)

Arterials / **Artère**
Existing / Établie
Proposed / Proposé
(Alignment Defined) / (Alignement déterminée)
Conceptual / Conceptuelle
(Alignment Undefined) / (Alignement à déterminée)

Major Collectors / **Grande collectrice**
Existing / Établie
Proposed / Proposé

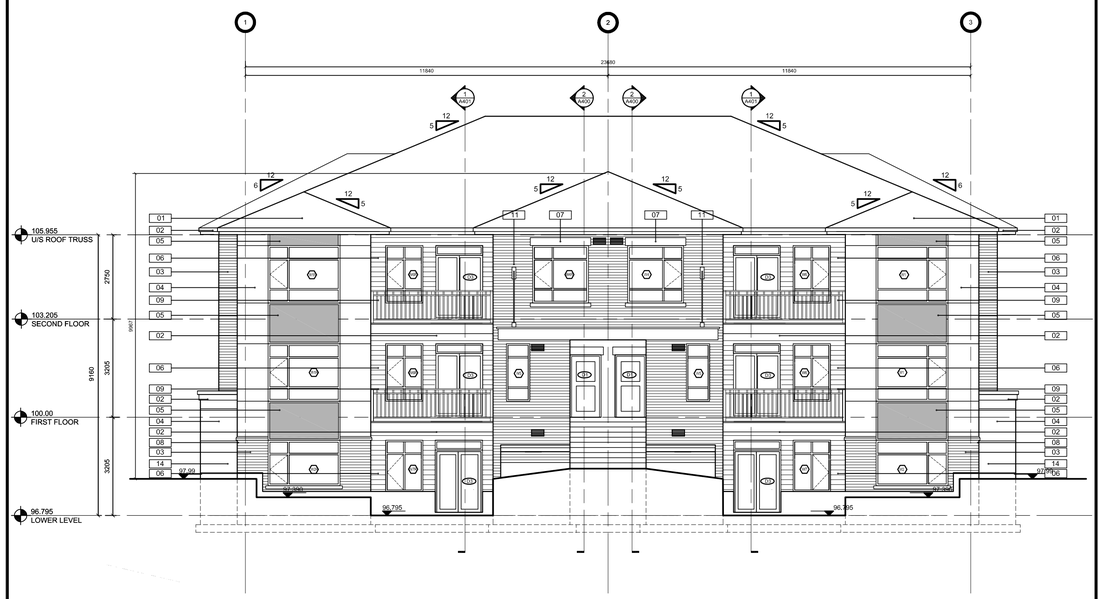
Collectors / **Collectrice**
Existing / Établie
Proposed / Proposé

Ottawa

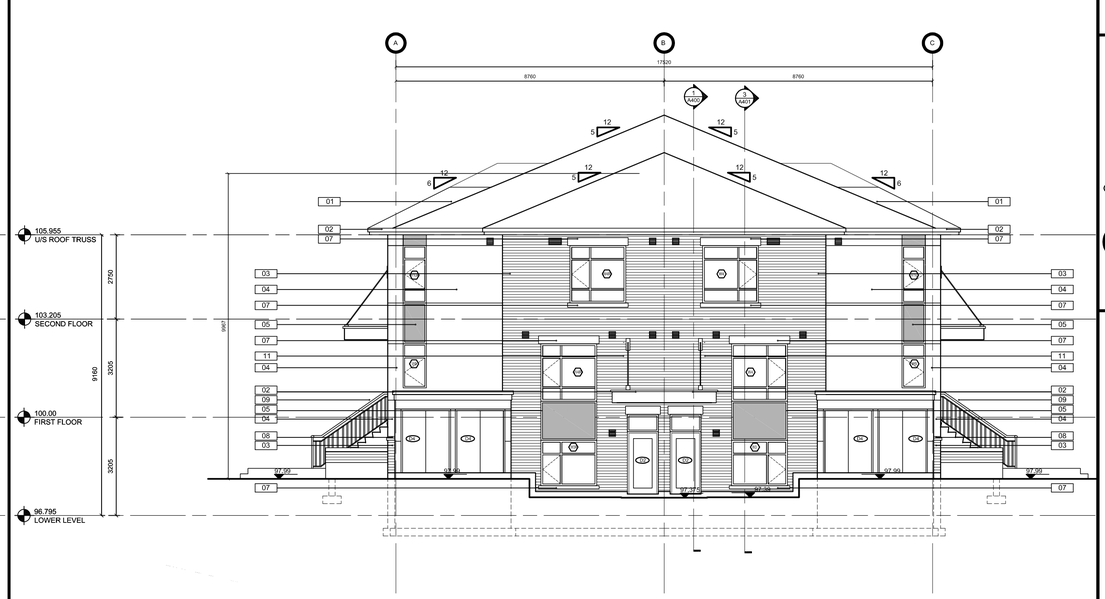
Scale / Échelle
2km 1 0 1 2 3 4km

APPENDIX D

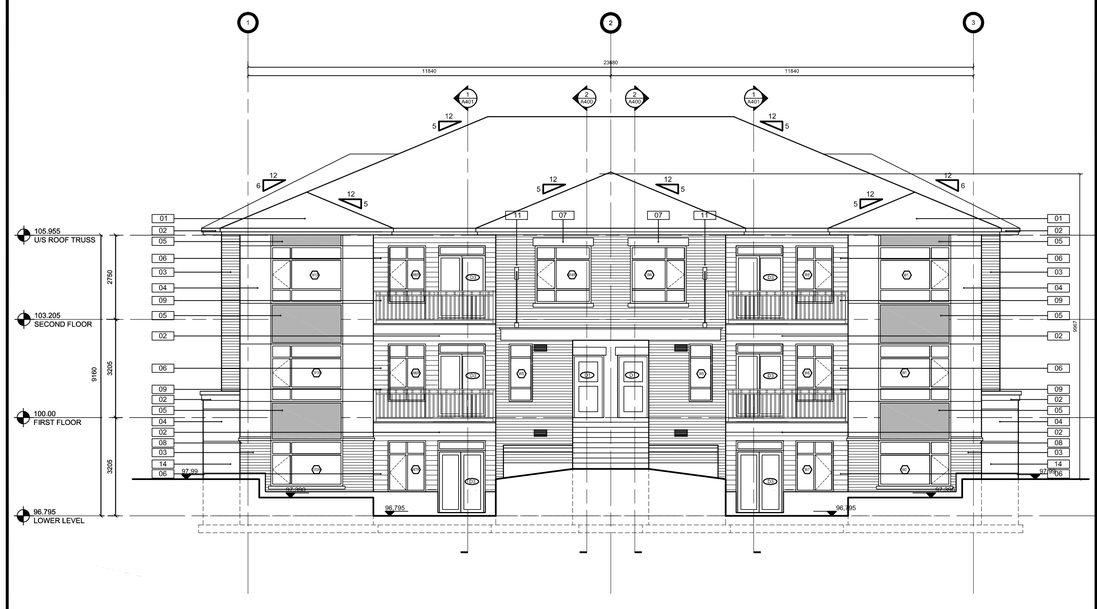
ARCHITECT ELEVATIONS AND FLOOR PLAN



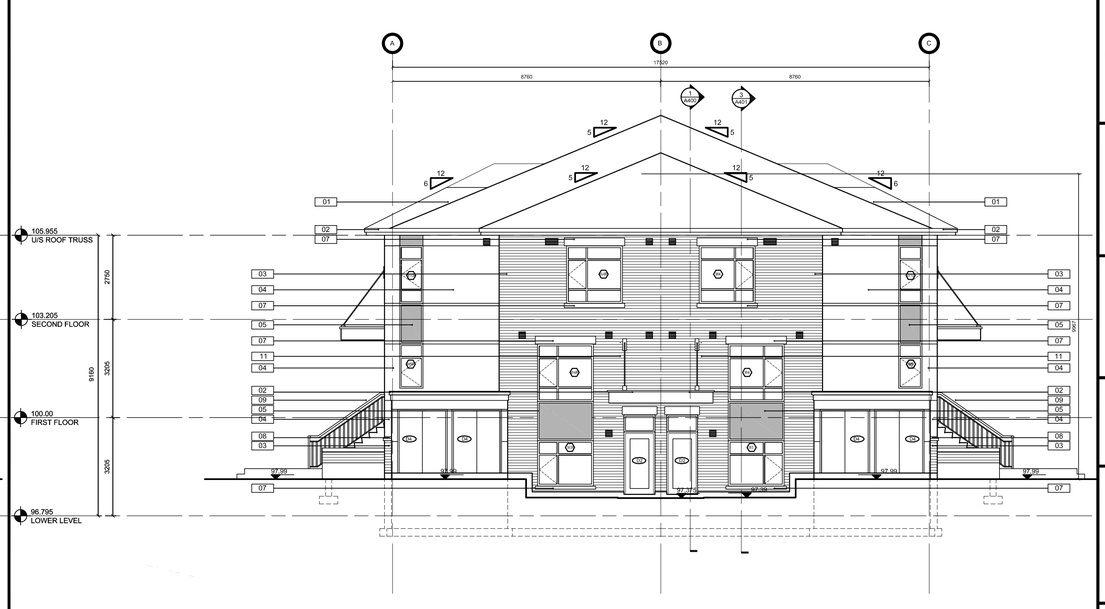
FRONT ELEVATIONS
BUILDINGS A, B & F



SIDE ELEVATIONS
BUILDINGS A, B & F



FRONT ELEVATIONS
BUILDINGS A, B & F



SIDE ELEVATIONS
BUILDINGS A, B & F

IT IS THE RESPONSIBILITY OF THE APPROPRIATE CONTRACTOR TO CHECK AND VERIFY ALL DIMENSIONS ON SITE AND TO REPORT ALL ERRORS AND/OR OMISSIONS TO THE ARCHITECT.

ALL CONTRACTORS MUST COMPLY WITH ALL PERTINENT CODES AND BY-LAWS.

THIS DRAWING MAY NOT BE USED FOR CONSTRUCTION UNTIL SIGNED BY THE ARCHITECT.

DO NOT SCALE DRAWINGS.

NOTATION SYMBOLS:

- (00) INDICATES DRAWING NOTES, LISTED ON EACH SHEET.
- ◇00 INDICATES ASSEMBLIE TYPE; REFER TO TYPICAL ASSEMBLIES SCHEDUAL.
- ⬡00 INDICATES WINDOW TYPE; REFER TO WINDOW ELEVATIONS AND DETAILS ON A900 SERIES.
- (000) INDICATES DOOR TYPE; REFER TO DOOR SCHEDULE AND DETAILS ON A900 SERIES.
- 00 / A000 — DETAIL NUMBER / TITLE / SCALE / DETAIL REFERENCE PAGE

No.	DESCRIPTION	DATE
3	REVISED AS PER SPC COMMENTS	Aug 29, 18
2	REVISED AS PER SPC COMMENTS	May 4, 18
1	ISSUED FOR BUILDING PERMIT	FEB 6 2018

REVISIONS:

ARCHITECT SEAL:
ONTARIO ASSOCIATION of ARCHITECTS
RODERICK J. LAHEY
LICENCE
4375
SEAL DATE: STAMP DATE

NORTH ARROW:

CLIENT:
CLARIDGE HOMES

ARCHITECT:
RODERICKLAHEY
ARCHITECT INC
56 Beech Street, Ottawa, Ontario K1S 3J6
t.613.724.9932 f.613.724.1209 www.rodericklahey.ca

PROJECT TITLE:
25 Overberg Way
BRIDLEWOOD TRAILS (BLOCK 14)
OTTAWA ONTARIO

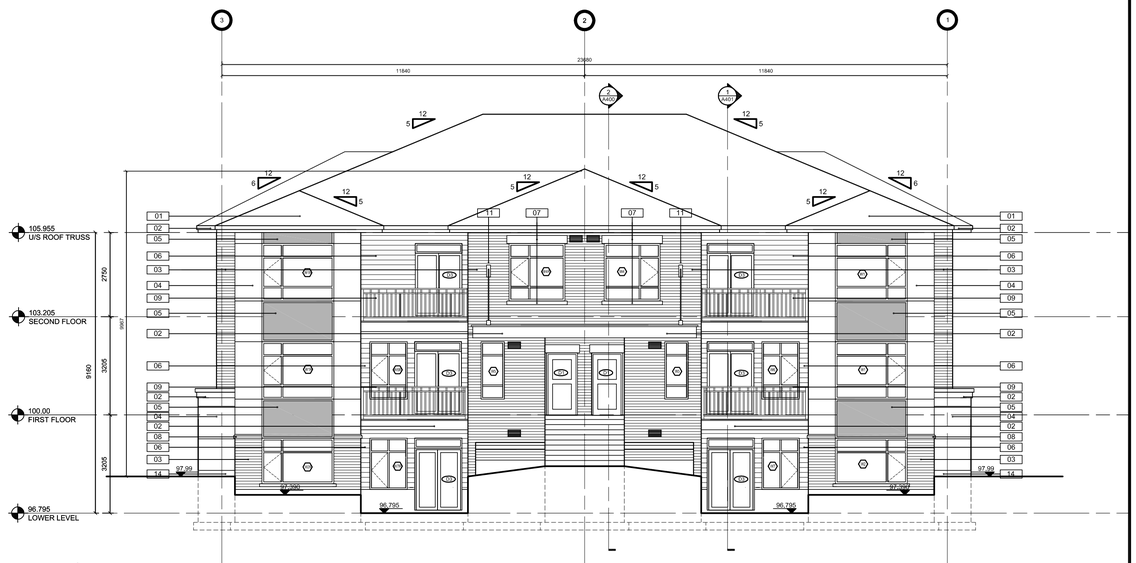
SHEET TITLE:
LARGE BLOCK
BUILDING ELEVATIONS

DRAWN:	CHECKED:
LL	LL
SCALE: 1:100	SHEET No. A200
PROJECT No. 1721	

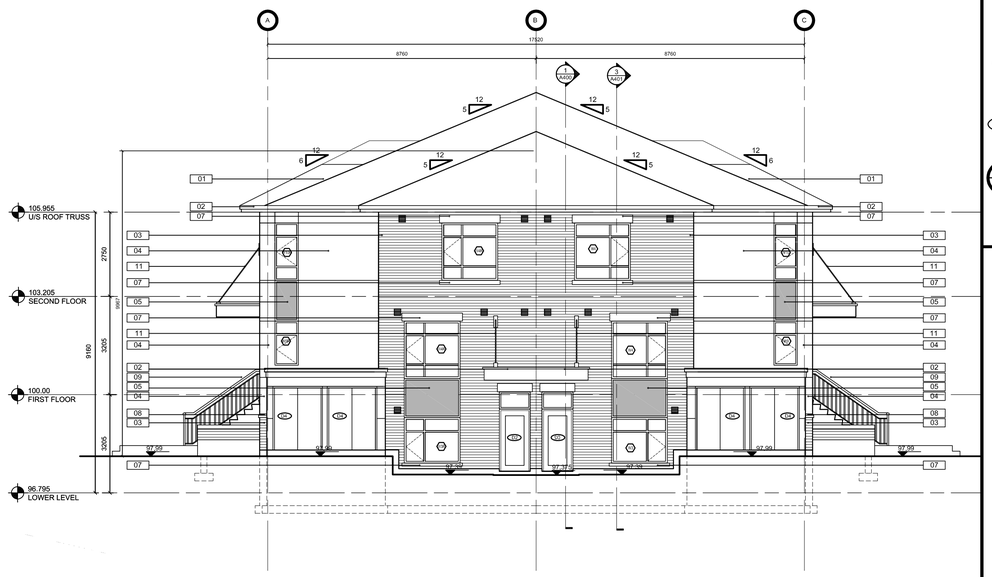
D07-12-14-0154

#17669

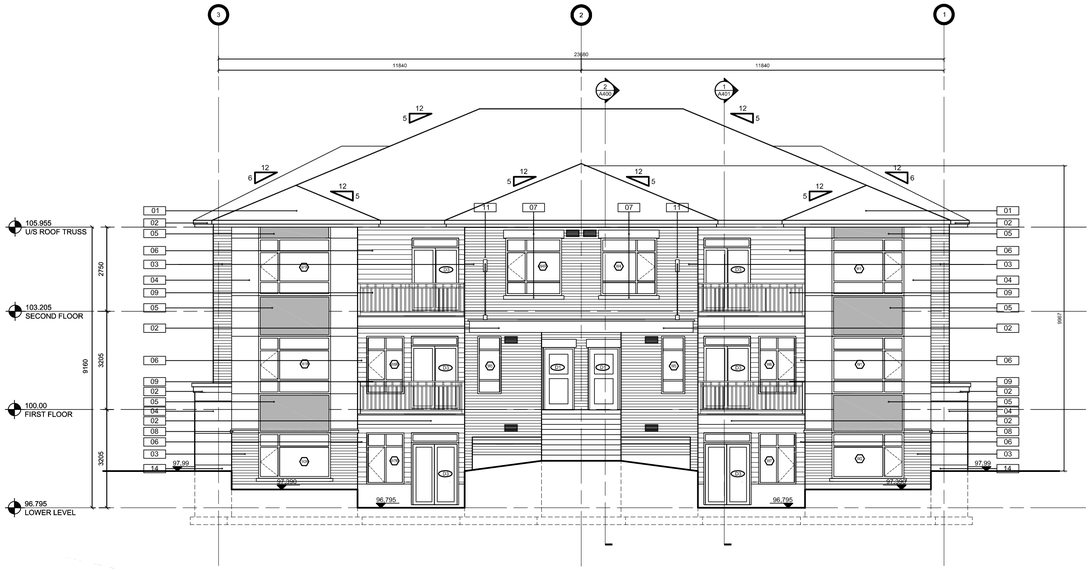
PAPER SIZE: A1 | PLOT DATE: Wednesday, August 29, 2018 | PLOT SCALE: 1:1 | PEN STYLE: 0-RLA-MASTER-100%.ctb | F:\2017\1721 Claridge\Working Drawings\Block A\1721 Block A Working Drawings.dwg



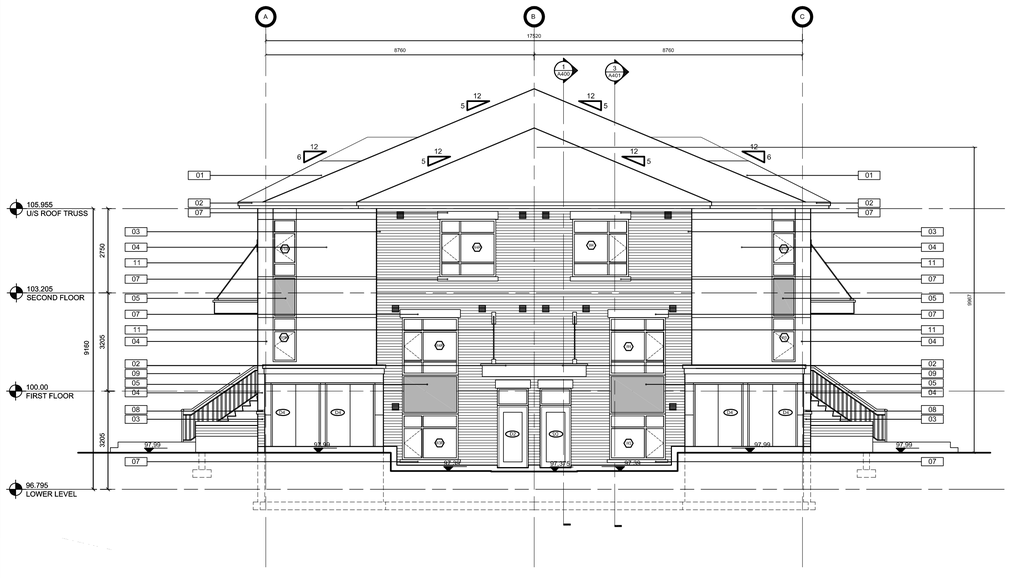
FRONT ELEVATIONS
BUILDINGS C, D & E



SIDE ELEVATIONS
BUILDINGS C, D & E



FRONT ELEVATIONS
BUILDINGS C, D & E



SIDE ELEVATIONS
BUILDINGS C, D & E

IT IS THE RESPONSIBILITY OF THE APPROPRIATE CONTRACTOR TO CHECK AND VERIFY ALL DIMENSIONS ON SITE AND TO REPORT ALL ERRORS AND/OR OMISSIONS TO THE ARCHITECT.

ALL CONTRACTORS MUST COMPLY WITH ALL PERTINENT CODES AND BY-LAWS.

THIS DRAWING MAY NOT BE USED FOR CONSTRUCTION UNTIL SIGNED BY THE ARCHITECT.

DO NOT SCALE DRAWINGS.

NOTATION SYMBOLS:

- (00) INDICATES DRAWING NOTES, LISTED ON EACH SHEET.
- ◇ 00 INDICATES ASSEMBLIE TYPE; REFER TO TYPICAL ASSEMBLIES SCHEDUAL.
- ◇ 00 INDICATES WINDOW TYPE; REFER TO WINDOW ELEVATIONS AND DETAILS ON A900 SERIES.
- (000) INDICATES DOOR TYPE; REFER TO DOOR SCHEDULE AND DETAILS ON A900 SERIES.
- 00 / A000 — 00: DETAIL NUMBER; TITLE; SCALE; A000: DETAIL REFERENCE PAGE

No.	DESCRIPTION	DATE
3	REVISED AS PER SPC COMMENTS	Aug 29, 18
2	REVISED AS PER SPC COMMENTS	May 4, 18
1	ISSUED FOR BUILDING PERMIT	FEB 6 2018

REVISIONS:

ARCHITECT SEAL:
ONTARIO ASSOCIATION of ARCHITECTS
RODERICK J. LAHEY
LICENCE
4375
SEAL DATE: STAMP DATE

NORTH ARROW:

CLIENT:
CLARIDGE HOMES

ARCHITECT:
RODERICKLAHEY
ARCHITECT INC
56 Beech Street, Ottawa, Ontario K1S 3J6
t.613.724.9932 f.613.724.1209 www.rodericklahey.ca

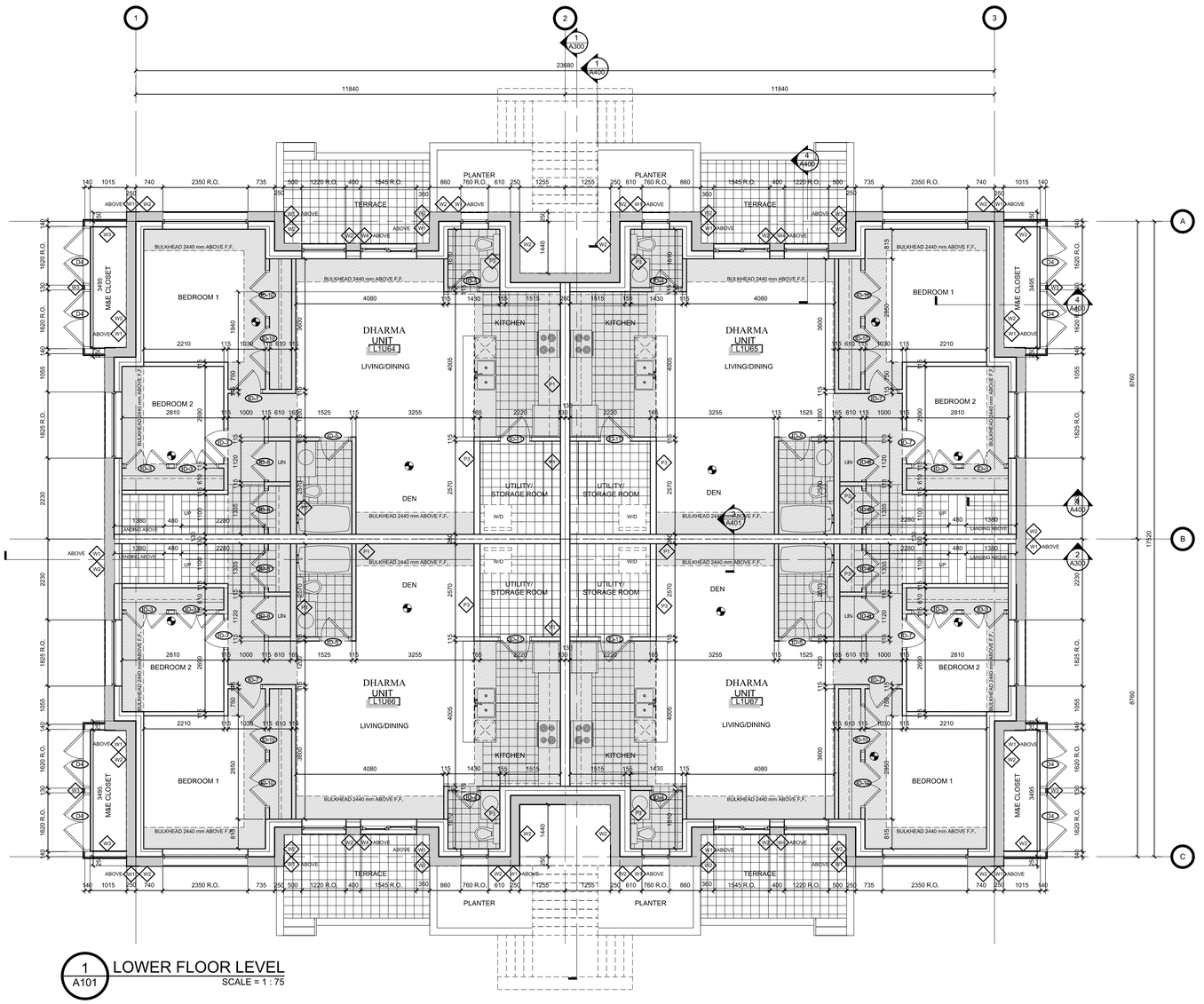
PROJECT TITLE:
25 Overberg Way
BRIDLEWOOD TRAILS (BLOCK 14)
OTTAWA ONTARIO

SHEET TITLE:
SMALL BLOCK
BUILDING ELEVATIONS

DRAWN:	CHECKED:
LL	LL
SCALE: 1:100	SHEET No. A200
PROJECT No. 1721	

D07-12-14-0154

PAPER SIZE: A1 | PLOT DATE: Wednesday, August 29, 2018 | PLOT SCALE: 1:1 | PEN STYLE: 0-RLA-MASTER-100%.ctb | F:\2017\1721 Claridge Zen Flats\02_Working Drawings\Block C\1721 Block C Zen Working Drawings SPC Elev.dwg | #17669



1 A101 LOWER FLOOR LEVEL
SCALE = 1 : 75

GENERAL NOTES:

1. ALL ENTRY CLOSETS TO RECIEVE 1 ROD AND SHELF. ALL BEDROOM CLOSETS TO RECIEVE 2 RODS AND 1 SHELF. ALL LINENS TO RECIEVE 5 SHELVES.

2. STRUCTURE LOCATED IN FLOOR ASSEMBLY MAY VARY DUE TO FINAL TRUSS LAYOUT. FINAL LOCATION TO BE CONFIRMED ON FLOOR LAYOUT SHOP DWG'S.TRUSS MANUFACTURERS TO INCLUDE REQUIRED TRUSS DETAILS IN SHOP DWG'S

3. ALL WINDOWS AND DOORS TO BE FOAMED IN PLACE WITH LOW-EXPANDING POLY URATHANE FOAM INSULATION.

4. STAIR STRINGER NOT TO BE FASTENED TO WALL ADJACENT TO UNIT, 15mm AIR SPACE REQUIRED, ADD ACOUSTICAL SEALANT TOP & BOTTOM OF SUPPORT MEMBER

5. BRICK TO OVER HANG FOUNDATION WALL 15mm.

6. THROUGH WALL FLASHINGS TO RUN UNDER "TYVEK", JOINT TO BE TAPED.

7. ALL EXPOSED STEEL TO BE TREATED WITH CORROSION RESISTANT PAINT COMPATIBLE PRIMER AND FINISH COAT

8. SUPPLY AND INSTALL COMBINED CO2/ STROBE TYPE SMOKE DETECTORS AS PER O.B.C 9,10,19. REQUIREMENTS; SEE PLAN FOR GENERAL LOCATIONS; EXACT LOCATIONS TO BE CONFIRMED ON SITE.
COMBINED CO2/ SMOKE STROBE TYPE DETECTOR SYMBOL

9. ALL INTERIOR PARTITION WALLS TO BE WALL TYPE P4 UNLESS OTHERWISE NOTED

10. ALL INTERIOR DIMENSIONS TAKEN FROM FACE OF FINISH GYPSUM BOARD

11. ALL EXTERIOR DIMENSIONS TAKEN FROM FACE OF STUDS OR CONCRETE

12. ALL GUARDS AND HANDRAILS TO BE INSTALLED IN ACCORDANCE WITH O.B.C; 9,8,7 AND 9,8,8.MANUFACTURER TO PROVIDE SHOP DWG'S C/W CONNECTION DETAILS TO ARCHITECT FOR REVIEW PRIOR TO FABRICATION.

13. FINISH FLOORING TO BE CARPET OR LAMINATE FLOORING IN ALL DRY LIVING SPACES, CERAMIC TILE IN ALL WET AREAS AND SHEET VINYL IN M&E CLOSETS.

14. ALL CLOTHES WASHING MACHINES TO BE C/W GALVANIZED METAL PAN AND DRAIN. WASHERS LOCATED AT BASEMENT LEVEL TO BE LOCATED ABOVE A FLOOR DRAIN.

15. ALL AIR BARRIERS TO BE CONTINUOUS AND RUN INTO DOOR & WINDOW OPENINGS

16. PROVIDE DRAINAGE TILE AT PERIMETER OF FOUNDATION WALL AND UNDERSLAB DRAINAGE AS PER MECHANICAL DWGS.

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No.	DESCRIPTION	DATE
1	ISSUED FOR BUILDING PERMIT	FEB 6 2018

REVISIONS:

ARCHITECT SEAL:

SEAL DATE: STAMP DATE

NORTH ARROW:

CLIENT:

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CONSTRUCTION ASSEMBLIES

CONSTRUCT ALL ASSEMBLIES IN ACCORDANCE WITH THE REQUIREMENTS OF THE LABELING AGENCY, i.e. WH, UL, ULC etc.

EXTERIOR WALLS

WALL TYPE - W1
EXTERIOR BRICK WALL
1 HOUR F.R.R. AS PER OBC SB-3 EW1a R=22
BEIGE BRICK: FORTERRA, MAX SIZE, RUTHERFORD; REFER TO ELEVATIONS (H=79mm x D=90mm x L=257mm) c/w ADJUSTABLE UNIT TIES @ 400mm O.C. HOR. & 600mm O.C. VERT.
& WEEPHOLES @ 600mm O.C @ BOTTOM.
BLUESKIN THROUGH WALL FLASHING MIN.150mm HIGH
25mm AIR SPACE.
TYVEK AIR/WEATHER BARRIER + ALL JOINTS SEALED.
10mm OSB SHEATHING
140mm WOOD STUDS @400mm O.C.
140 mm R24 BATT INSULATION.
6 mil POLY VAPOUR BARRIER.
16mm TYPE 'X' GYPSUM BOARD, PRIME & PAINT FINISH.
TYPICAL 15mm OVERHANG FROM EXTERIOR FACE OF CONCRETE FOUNDATION WALLS.

WALL TYPE - W2
TYPICAL FOUNDATION WALL (BACKFILLED) R20
PARGING ABOVE GRADE EXTEND 150mm BELOW GRADE ONLY
DIMPLE DRAINAGE BOARD CCMC APPROVED
DAMPROOFING (TYPE III) EXTENDING DOWN AND OVER FOOTINGS
CONCRETE FOUNDATION WALL
140mm R20 CONTINUOUS BATT INSULATION.BLANKET INSTALLATION.
64mm WOOD STUDS @ 400mm O.C.
6 mil POLY VAPOUR BARRIER.
13mm TYPE 'X' GYPSUM BOARD, PRIME & PAINT FINISH.

WALL TYPE - W3
HARDIE BOARD PANEL SIDING
1 HOUR F.R.R. AS PER OBC SB-3 EW1a R=22
HARDIE BOARD PANEL SIDING
(REFER TO ELEVATIONS FOR COLOUR / PATTERN)
19mm WOOD STRAPPING
TYVEK AIR/WEATHER BARRIER - SHINGLED AND ALL JOINTS SEALED.
BLUESKIN THROUGH WALL FLASHING MIN.150mm HIGH AT BASE OF ASSEMBLY
10mm OSB SHEATHING
140mm WOOD STUDS @400mm O.C.
140 mm R24 BATT INSULATION.
6 mil POLY VAPOUR BARRIER.
16mm TYPE 'X' GYPSUM BOARD, PRIME & PAINT FINISH.
ALL CUT JH EDGES TO BE PAINTED PRIOR TO USE, FOLLOW MANUFACTURER INSTALLATION DETAILS.

WALL TYPE - W4
VINYL SIDING
1 HOUR F.R.R. AS PER OBC SB-3 EW1a R=22
VINYL SIDING: COLOUR STORM
(REFER TO ELEVATIONS FOR COLOR / PATTERN)
19mm WOOD STRAPPING
TYVEK AIR/WEATHER BARRIER - SHINGLED AND ALL JOINTS SEALED.
BLUESKIN THROUGH WALL FLASHING MIN.150mm HIGH AT BASE OF ASSEMBLY
10mm OSB SHEATHING
140mm WOOD STUDS @400mm O.C.
140 mm R24 BATT INSULATION.
6 mil POLY VAPOUR BARRIER.
16mm TYPE 'X' GYPSUM BOARD, PRIME & PAINT FINISH.

WALL TYPE - W5
TYPICAL FOUNDATION WALL (BACKFILLED)
DAMPROOFING (TYPE III) EXTENDING DOWN AND OVER FOOTINGS
CONCRETE FOUNDATION WALL
DAMPROOFING (TYPE III) EXTENDING DOWN AND OVER FOOTINGS

PARTITION TYPES

PARTITION TYPE - P1
DOUBLE STUD PARTY WALL
LOADBEARING
45MIN F.R.R.; STC 65 AS PER SB-3: W15b
2-13mm TYPE 'X' GYPSUM BOARD c/w PRIME & PAINT FINISH.
89mm WOOD STUDS @ 400 o/c, 89 PLATE
89mm SOUND BATT INSULATION
25mm SPACE
89mm WOOD STUDS @ 400 o/c, 89 PLATE
89mm SOUND BATT INSULATION.
2-13mm TYPE 'X' GYPSUM BOARD c/w PRIME & PAINT FINISH.
USE WATER RESISTANT GYPSUM BOARD IN WET AREAS.

PARTITION TYPE - P2
PARTY WALL / STAIR WALL
1.5 HOUR F.R.R.; STC 58 AS PER SB-3 W6b
2-16mm TYPE 'X' GYPSUM BOARD c/w PRIME & PAINT FINISH.
12mm RESILIENT CHANNELS @ 600 o/c.
140mm WOOD STUDS @ 400 o/c
140mm BATT INSULATION.
2-16mm TYPE 'X' GYPSUM BOARD c/w PRIME & PAINT FINISH.
NOTES:
WHERE ELECTRICAL OUTLETS ARE REQUIRED ON THE UNIT SIDE ADD 38mm STUDS @ 400mmO/C
13mm GYPSUM BOARD
WHERE 13mm PLYWOOD IS REQUIRED FOR SHEAR BOTH LAYERS OF 16mm TYPE 'X' DRYWALL ARE STILL REQUIRED. PLYWOOD TO BE INSTALLED IN LIEU OF RESILIENT ;SEE STRUCTURAL PLANS FOR REQUIRED LOCATIONS.
STAIR SIDE

PARTITION TYPE - P3
TYPICAL INTERIOR PLUMBING WALL
1HR F.R.R.; STC 32 AS PER SB-3 W1d
16mm TYPE 'X' GYPSUM BOARD c/w PRIME & PAINT FINISH.
140 WOOD STUDS @ 400 mm O.C.
16mm TYPE 'X' GYPSUM BOARD c/w PRIME & PAINT FINISH.
USE WATER RESISTANT GYPSUM BOARD IN WET AREAS.

PARTITION TYPE - P4
TYPICAL INTERIOR PARTITION
1HR. F.R.R.; STC 32 AS PER SB-3 W1d
16mm TYPE 'X' GYPSUM BOARD c/w PRIME & PAINT FINISH.
89 WOOD STUDS @ 400 mm O.C.
16mm TYPE 'X' GYPSUM BOARD c/w PRIME & PAINT FINISH.
USE WATER RESISTANT GYPSUM BOARD IN WET AREAS.

PARTITION TYPE - P5
ATTIC PARTITION 1HR FRR AS PER SB-2
16 mm TYPE X GYPSUM BOARD TAPE& MUD ALL JOINTS
WOOD TRUSS
16 mm TYPE X GYPSUM BOARD
TAPE&MUD ALL JOINTS
WOOD TRUSS
16 mm TYPE X GYPSUM BOARD TAPE& MUD ALL JOINTS

FLOOR TYPES

FLOOR TYPE - F1
TYPICAL FLOOR CONSTRUCTION
1 HR. F.R.R., STC 58; AS PER SB-3 F11h
FLOOR FINISH AS NOTED ON FLOOR PLANS
6mm FOAM IMPACT ISOLATION BARRIER
13mm PLYWOOD
16mm OSB SHEATHING (GLUED AND SCREWED)
406mm PRE ENGINEERED FLOOR JOISTS @ 400 O.C.
200mm BATT INSULATION WITHIN JOIST SPACES
13mm RESILIENT CHANNEL @ 600 O.C.
2 - 13mm TYPE 'X' GYPSUM BOARD c/w PRIME & PAINT FINISH

FLOOR TYPE - F2
WARM FLOOR ABOVE FRONT ENTRY
1 HR F.R.R. AS PER SB2 STC 58+; R48
FLOOR FINISH AS NOTED ON PLAN
6mm FOAM IMPACT ISOLATION BARRIER
13mm PLYWOOD
16mm OSB SHEATHING (GLUED AND SCREWED)
406mm PRE ENGINEERED FLOOR JOISTS @ 400 O.C.
6 mil POLY VAPOUR BARRIER
406mm BATT INSULATION WITHIN JOIST SPACES
13mm RESILIENT CHANNEL @ 600 O.C.
2 - 13mm TYPE 'X' GYPSUM BOARD
DROPPED 356x6mm FRAMING @ 400mm O.C.
200mm BATT INSULATION
13mm DENSGLASS GOLD EXT. SHEATHING
TYVEK
19mm PT STRAPPING
PREFINISHED ALUMINUM NON VENTED SOFFIT

FLOOR TYPE - F3
UNDERSIDE OF STAIR CONSTRUCTION
1 HOUR F.R.R.
WOOD STRINGER
38X89mm STUDS FILL ENTIRE CAVITY WITH BATT INSULATION.
13mm RESILIENT CHANNEL @ 600 O.C.
2-16mm TYPE 'X' GYPSUM BOARD c/w PRIME & PAINT FINISH.
UNDERSIDE OF STAIR CONSTRUCTION BTW UNITS 1 HOUR F.R.R. STC 50+

FLOOR TYPE - F7
1 HOUR F.R.R. (ULC W462) SYSTEM B
USED IN HORIZONTAL APPLICATION UNDER: OBMEC AUTHORITY #89-1-118
25mm TYPE 'X' GYPSUM SHAFTLINER PANEL.
64mm C-T STEEL STUDS.
2-13mm TYPE 'X' GYPSUM BOARD c/w PRIME & PAINT FINISH.
USE 75mm MINERAL FIBER INSULATION WHEN ASSEMBLY SEPARATES STAIR WELL AND UNITS.

FLOOR TYPE - F4
CONCRETE SLAB
1 HOUR F.R.R. 2006 OBC SB-2 CALCULATIONS; STC 63
CARPETING
6mm FOAM IMPACT ISOLATION BARRIER
150mm CONCRETE SLAB ON GRADE PROVIDE 20mm SAW CUTS
@ MAX SPACING OF 5000mm WITHIN 24HRS AFTER POUR
152mmX152mm M/V 18.7mm x18.7mm AT MID WIDTH OF SLAB
13mm ASPHALT IMPREGNATED FIBERBOARD OR 2 LAYERS OF 6MIL POLY BETWEEN SLAB AND FOUNDATION WALLS 10 mil POLY VAPOUR BARRIER
50mm R10 RIGID INSULATION
150mm COMPACTED GRANULAR 'A' TO 95%

FLOOR TYPE - F5
EXTERIOR STRUCTURAL ENTRY SLAB
RESOFLEX TRAWELED ON WATERPROOFING COATING (CARRY UP CONCRETE UPSTANDS)
PRIMER (DUOCEL 4 OR DUOCHEM 6030)
150 mm CONCRETE SLAB C/W BROOMED FINISH AND SLOPED AWAY FROM BUILDING
150mm COMPACTED GRANULAR 'A' TO 95%

FLOOR TYPE - F6
BALCONY DECK
DURADEK MEMBRANE
3/4" SANDED GOOD ONE SIDE PLYWOOD
SLOPE AWAY FROM BUILDING AND PIERS
2X10 P.T. JOISTS @ 400mm O/C
PRE-FINISHED ALUMINUM SOFFIT (CHARCOAL)

ROOFING TYPES

ROOF TYPE - R1
SHINGLED ROOF; R=40
1 HOUR FRR PER OBC SB-2 2,3,12,
IKO 25 YEAR ASPHALT ROOFING SHINGLES, COLOUR DRIFTWOOD
CONT'S ICE & WATER SHIELD EAVE PROTECTION IN 6' FROM LINE OF EXTERIOR WALL AND AT ALL VALLEYS
#15 CONT'S BUILDING PAPER
16mm EXTERIOR PLYWOOD C/W CH CLIPS BETWEEN JOINTS
PRE ENGINEERED ROOF TRUSS (OUTSIDE)
PT BLOCKING
PREFINISHED ALUMINUM VENTED SOFFIT
OR
(INTERIOR HEATED SPACES)
R60 BATT FIBEROLASS INSULATION
6 mil POLY VAPOUR BARRIER,
13mm RESILIENT CHANNEL @ 600 O.C.
16mm GYPSUM BOARD c/w PRIME & PAINT FINISH.

ROOF TYPE - R2
FLAT ROOF;
1 HOUR FRR PER OBC SB-2 2,3,12,
2-PLY MODIFIED BITUMEN ROOFING SYSTEM.
16mm EXTERIOR PLYWOOD C/W CH CLIPS BETWEEN JOINTS
38x89 P.T. SLEEPERS @ 16" O.C. SLOPED TO SCUPPER (MIN.2%)
38mmX385mm WOOD FRAMING
TYVEK
PT WOOD STRAPPING @ 600 O.C.
PREFINISHED ALUMINUM VENTED SOFFIT

ARCHITECT:

F:\000_RLA Standards 2010\RLA LOGO (Beech Street).jpg

PROJECT TITLE:
(LARGE)
SUNDNCE ZEN
BLOCK A
OTTAWA ONTARIO

SHEET TITLE:
LOWER LEVEL PLAN & DOOR SCHEDULES

DRAWN:	CHECKED:
LL	RLA

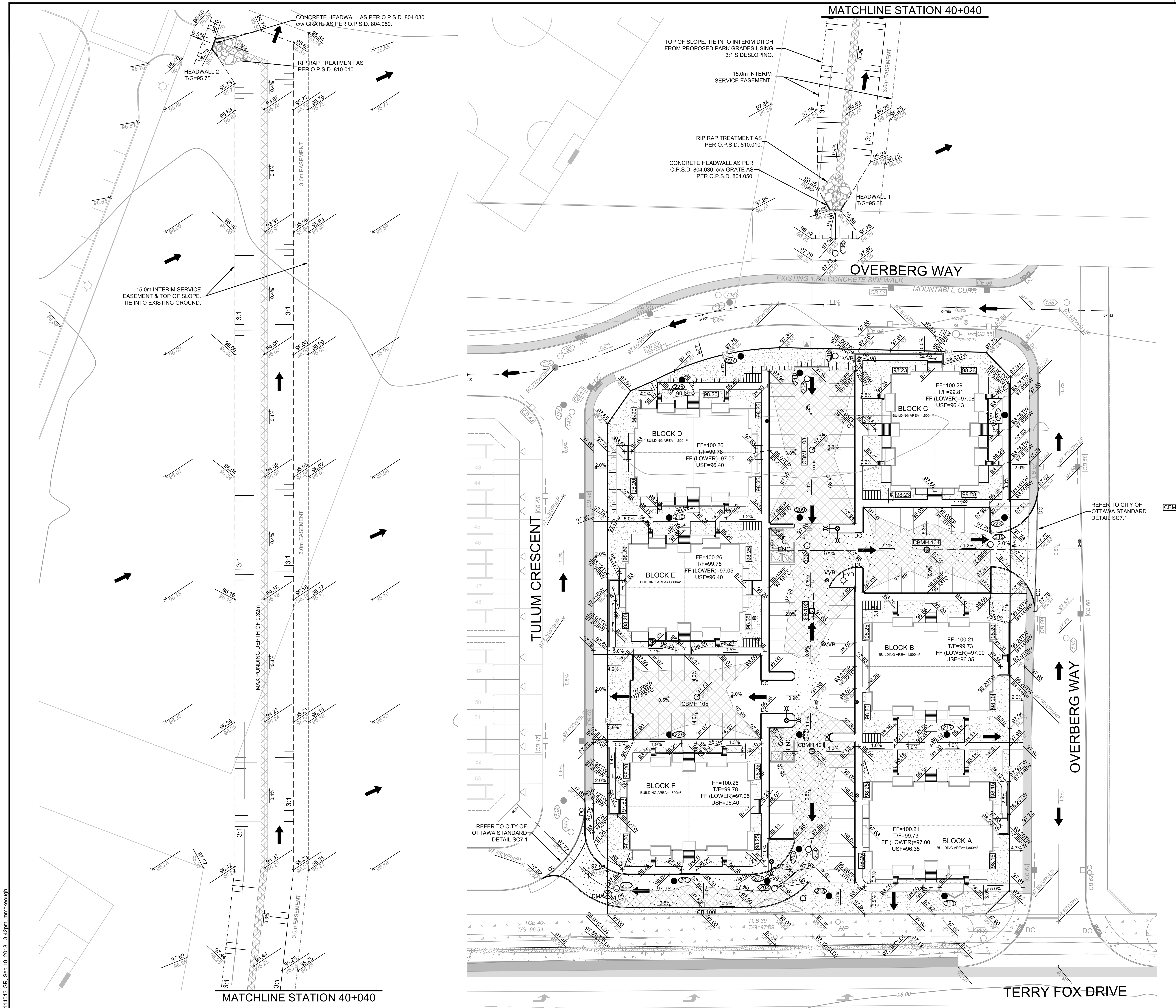
SCALE: 1:75

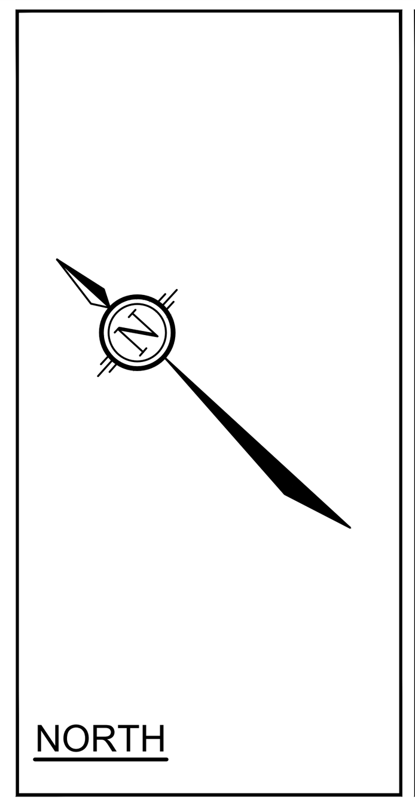
PROJECT No. 1721

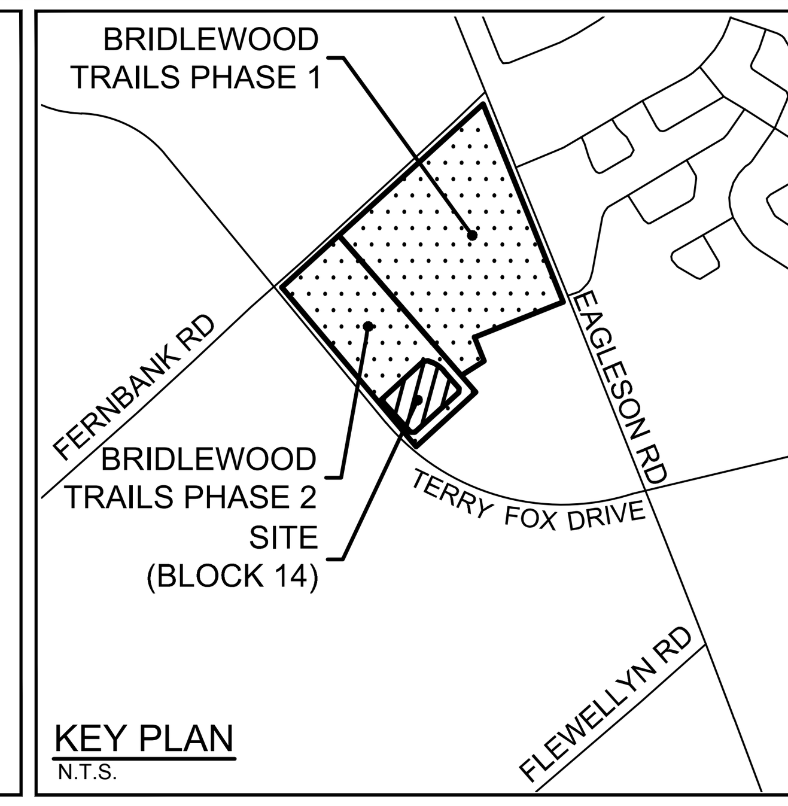
SHEET No. A101

APPENDIX E

GRADING PLAN – 114013-GR







GEODETIC BENCHMARK
NCC MON 42
N: 5013455
E: 355641
ELEV: 96.939

LEGEND

- 97.32 / 96.52(ASB) — PROPOSED ELEVATION / EXISTING ELEVATION (AS BUILT)
- 97.75(VPI) — PROPOSED POINT OF VERTICAL INFLECTION
- 98.90TW / 98.00BW — PROPOSED TOP OF WALL ELEVATION / PROPOSED BOTTOM OF WALL ELEVATION
- 98.05EP / 98.20TC — PROPOSED EDGE OF PAVEMENT ELEVATION / PROPOSED TOP OF CURB ELEVATION
- PROPOSED RETAINING WALL
- FF= FINISHED FLOOR ELEVATION
- T/F= TOP OF FOUNDATION ELEVATION
- USF= UNDERSIDE OF FOOTING ELEVATION
- MUSF= MINIMUM UNDERSIDE OF FOOTING ELEVATION
- 127.55 — PROPOSED TERRACE ELEVATION
- MAXIMUM 3:1 SIDESLOPE
- PROPOSED CENTRELINE SWALE
- 2.0% — PROPOSED GRADE AND DIRECTION
- MAJOR OVERLAND FLOW ROUTE
- HYD — PROPOSED HYDRANT LOCATION
- T/F=127.55 — PROPOSED TOP OF BOTTOM FLANGE
- V&VB — PROPOSED VALVE AND VALVE BOX
- 819 — PROPOSED SANITARY MANHOLE
- 820 — PROPOSED STORM MANHOLE
- CB 100 — PROPOSED ROAD CATCHBASIN WITH 3.0m SUBDRAIN IN TWO DIRECTIONS (PARALLEL WITH CURB FACE)
- CBMH 101 — PROPOSED CATCHBASIN MANHOLE
- M — PROPOSED WATER METER LOCATION
- R — PROPOSED REMOTE WATER METER LOCATION
- PROPOSED HEADWALL C/W RAILING
- PROPOSED LIMITS OF 300mm AMENDED TOPSOIL (OR APPROVED EQUIVALENT) SEE AMENDED TOPSOIL TABLE
- PROPOSED SERVICE LOCATION (REFER TO DETAIL)
- CMB — PROPOSED COMMUNITY MAIL BOX
- PROPOSED STREET LIGHT
- PROPOSED SILT FENCE
- 92.08 — PONDING AREA WITH SPILLWAY ELEVATION
- 98.00 / 97.50 / 97.00 — *EXISTING* CONTOUR LINE AND CONTOUR ELEVATION
- 97.75(VPI)HP — *EXISTING POINT OF VERTICAL INFLECTION (HIGH POINT) FROM BRIDLEWOOD TRAILS GRADING PLAN*
- 97.75(VPI)LP — *EXISTING POINT OF VERTICAL INFLECTION (LOW POINT) FROM BRIDLEWOOD TRAILS GRADING PLAN*
- *EXISTING OVERHEAD HYDRO*
- *EXISTING FIRE HYDRANT*
- 109 — *EXISTING SANITARY MANHOLE*
- 110 — *EXISTING STORMMANHOLE*
- *EXISTING VALVE*
- HP — *EXISTING HYDRO POLE*
- CB 59 — *EXISTING ROADSIDE CATCH BASIN WITH 3.0m SUBDRAIN IN TWO DIRECTIONS (PARALLEL WITH CURB FACE)*
- CB 60 — *EXISTING ROADSIDE CATCH BASIN WITH INLET CONTROL DEVICE*
- V — *EXISTING ROGERS VAULT ON 1m X 2m EASEMENT*
- V V — *EXISTING ROGERS VAULTS ON 1m X 4m EASEMENT*
- *EXISTING PADMOUNT HYDRO TRANSFORMER*
- B — *EXISTING BELL PEDESTAL*
- *EXISTING CABLE TELEVISION PEDESTAL*
- *EXISTING CONCRETE SIDEWALK*

PAVEMENT STRUCTURE DETAILS

REFER TO GEOTECHNICAL REPORT FOR SUBSURFACE CONDITIONS AND CONSTRUCTION RECOMMENDATIONS.

HEAVY DUTY/DRIVING AILES

- 40mm HL3
- 50mm HL8
- 150mm GRANULAR 'A'
- 450mm GRANULAR 'B' TYPE II
- SUBGRADE TO BE FILL, IN SITU SOIL, OR O.P.S.S. GRANULAR 'B' TYPE 1 OR 2 MATERIAL PLACED OVER IN SITU SOIL OR FILL

LIGHT DUTY/PARKING STALLS

- 50mm HL8
- 150mm GRANULAR 'A'
- 375mm GRANULAR 'B' TYPE II
- SUBGRADE TO BE FILL, IN SITU SOIL, OR O.P.S.S. GRANULAR 'B' TYPE 1 OR 2 MATERIAL PLACED OVER IN SITU SOIL OR FILL

AMENDED TOPSOIL TABLE

COMPONENT	PERCENT BY WEIGHT
SAND (2.0 TO 0.050mm DIA.)	85 TO 88%
FINES (< 0.050mm DIA.)	8 TO 12%
ORGANIC MATTER	3 TO 5%

APPROVED ☐ REFUSED ☐

THIS _____ DAY OF ____________, 20____

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

REFER TO 114013-NL AND 106121-GR2 DRAWINGS FOR ADDITIONAL NOTES AND DETAILS

D07-12-14-0154

M:\2014\114013\CAD\Design\114013-GR.dwg, 114013-GR, Sep 19, 2018 - 3:42pm, mmckeough

NOTE:
THE POSITION OF ALL POLE LINES, CONDUITS, WATERMAINS, SEWERS AND OTHER UNDERGROUND AND OVERGROUND UTILITIES AND STRUCTURES IS NOT NECESSARILY SHOWN ON THE CONTRACT DRAWINGS, AND WHERE SHOWN, THE ACCURACY OF THE POSITION OF SUCH UTILITIES AND STRUCTURES IS NOT GUARANTEED. BEFORE STARTING WORK, DETERMINE THE EXACT LOCATION OF ALL SUCH UTILITIES AND STRUCTURES AND ASSUME ALL LIABILITY FOR DAMAGE TO THEM.

CLARIDGE CONDOS
210 Gladstone Avenue, Suite 2001
Ottawa, Ontario K2P OY6
Tel : (613) 233 6030
Fax : (613) 233 8290

No.	REVISION	DATE	BY
9.	REVISED AS PER SITE PLAN & CITY OF OTTAWA COMMENTS	SEPT 7/18	DDB
8.	ISSUED FOR TEAM REVIEW	AUG 29/18	DDB
7.	REVISED AS PER SITE PLAN & CITY OF OTTAWA COMMENTS	MAY 8/18	DDB
6.	REVISED SITE PLAN LAYOUT - CIRCULATED FOR REVIEW	APR 4/18	DDB
5.	REVISED SITE PLAN LAYOUT - CIRCULATED FOR REVIEW	MAR 21/18	JAG
4.	REVISED SITE PLAN LAYOUT - CIRCULATED FOR REVIEW	MAR 13/18	JAG
3.	REVISED AS PER CITY OF OTTAWA COMMENTS	APR 22/16	DDB
2.	REVISED AS PER SITE PLAN & CITY OF OTTAWA COMMENTS	MAY 29/15	JAG
1.	ISSUED FOR SITE PLAN APPLICATION	SEPT. 17/14	JAG

SCALE 1:400
1:400 (0 4 8 12 16)

DESIGN JAG/SAZ
CHECKED DDB
DRAWN RBG
CHECKED JAG
APPROVED DDB

FOR REVIEW ONLY

LICENSED PROFESSIONAL ENGINEER
D.D. BLAIR
100122737
Sept. 7/2018
PROVINCE OF ONTARIO

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CITY of OTTAWA
BLOCK 14 (BRIDLEWOOD TRAILS PHASE 2)
25 OVERBERG WAY

DRAWING NAME
GRADING PLAN

PROJECT No. 114013
REV # 9
DRAWING No. 114013-GR

PLANA1.DWG - 841mmx594mm

#17669