

June 21, 2022

Environmental Noise Feasibility Study

Argo Summer Valley

Proposed Residential Development

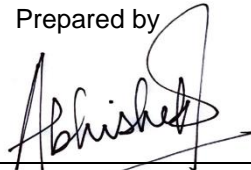
12197 Hurontario Street, Brampton
12211, 12213 & 12231 Hurontario Street, Caledon

April 22, 2022
Project: 121-0418

Prepared for

Argo Summer Valley Limited

Prepared by



Abhishek Thyagarajan, M.S.

Reviewed by



The seal is a circular stamp for a Licensed Professional Engineer in the Province of Ontario. It contains the text: "LICENSED PROFESSIONAL ENGINEER", "G.S. DU", "100098179", and "PROVINCE OF ONTARIO".

Guangsheng (Sam) Du, M.Sc., P.Eng.

VALCOUSTICS

Canada Ltd.

Version History

Version #	Date	Comments
1.0	April 22, 2022	Final – Issued for use

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12197 Hurontario Street, Brampton
12211, 12213 & 12231 Hurontario Street, Caledon

EXECUTIVE SUMMARY

Valcoustics Canada Ltd. (VCL) was retained to prepare an Environmental Noise Feasibility Study for the proposed residential development in support of the Draft Plan of Subdivision application submission to the City of Brampton and the Town of Caledon.

The site is located at the southeast corner of the Highway 410 and Hurontario Street interchange. The proposed development will consist of single detached homes and townhomes. The southern part of the site is located in the City of Brampton and the northern part is in the Town of Caledon.

The main noise source with potential for impact on the proposed development is road traffic on Hurontario Street, Highway 410, the Highway 410 Hurontario Street S-E ramp and Valleywood Boulevard. The sound levels on site have been determined and compared with the applicable Ministry of the Environment, Conservation and Parks (MECP) noise guideline limits to determine the need for noise mitigation.

To meet the applicable transportation noise source guideline limits:

- Townhouse Blocks 29, 30, 33, 34, and 35 as well as Lots 1 to 3 in the City of Brampton require mandatory air conditioning;
- All remaining townhouse units in the development and Lots 17 and 18 require provision for adding air conditioning at a later date;
- For townhouse Blocks 29 to 31, and Lot 18 in Caledon, exterior wall construction meeting STC 45 and window construction meeting STC up to 25 will be required to meet the indoor sound level criteria of the MECP noise guidelines;
- For townhouse Blocks 33 to 35 and Lot 17 in Caledon, and Lots 1 to 3 in Brampton, exterior wall construction meeting STC 45 and window construction meeting STC up to 23 will be required to meet the indoor sound level criteria of the MECP noise guidelines; and
- A 2.4 m acoustic fence on top of the proposed berm along the northern boundary of the site and a 2.2 m acoustic fence on top of the proposed berm along the western boundary of the site are required.

Final noise mitigation requirements should be checked when detailed building plans are available. This could be done as a condition of obtaining a building permit. The sound barrier requirements should be checked if the grading plan is changed.

1.0 INTRODUCTION

1.1 SCOPE

Valcoustics Canada Ltd. (VCL) was retained to prepare an Environmental Noise Feasibility Study for the proposed residential development in support of the Draft Plan of Subdivision application submission to the City of Brampton and the Town of Caledon. The potential sound levels and noise mitigation measures needed for the proposed development to comply with the MECP noise guideline requirements are outlined herein.

1.2 THE SITE AND SUROUNDING AREA

The site is located at the southeast corner of the Highway 410 and Hurontario Street interchange. The southern part of the site is located in the City of Brampton and the northern part is in the Town of Caledon. The site is bounded by:

- Hurontario Street and Highway 410 to the North;
- Existing low density residential development to the East;
- Highwood Road, with existing residential housing and future townhouse development beyond, to the South; and
- Hurontario Street, with existing residential housing and future residential and institutional development beyond, to the West.

A Key Plan of the site is included as Figure 1.

This study is based on the Composite Plan drawing prepared by Glen Schnarr & Associates Inc., dated April 11, 2022, as well as the Grading Plan received on February 11, 2022. The Composite Plan is included as Figure 2.

1.3 THE PROPOSED DEVELOPMENT

The proposed development will consist of 36 single detached house and 45 townhomes.

2.0 NOISE SOURCES

2.1 TRANSPORTATION SOURCES

The noise sources with potential to impact the proposed development is road traffic on Hurontario Street, Valleywood Boulevard, Highway 410, and the Highway 410 Hurontario Street S-E on ramp. Other area roadways including the N-E, S/E-N, N-E/W/S, S-N and E-N/S ramps and Spine Road are further removed from the subject site and/or have lower traffic volumes and as such are not expected to have a significant impact on the subject site. The roadways considered in this study are as per the Highway 410 Interchange Overall Plan dated December 09, 2018, prepared by Wood PLC.

The Brampton Airport is located just east of McLaughlin Road and about 1.5 km north of Old School Road. Based on the Brampton Airport Composite Noise Contours (2023 NEF and 2028 NEP), subject site lies outside the composite NEF/NEP 25 contour and therefore noise mitigation is not required, per the MECP noise guidelines. However, to be consistent with other sites in the general vicinity, a warning clause specific to the airport is recommended to ensure future occupants are aware of this potential noise source.

Ultimate road traffic volume on Highway 410 was obtained from the Ministry of Transportation Ontario (MTO). A day/night split and medium/heavy truck split of approximately 85%/15% and 40%/60%, respectively, for Highway 410 were obtained from a 2010 traffic count completed by Ontario Traffic Inc. for a different project completed by VCL in the general vicinity.

Traffic data for Hurontario Street was obtained from the City of Brampton. Based on the aerial imaging from Google, there are no major intersections between Mayfield Road and the Highway 410 and Hurontario interchange and therefore it is expected that the traffic volumes for Hurontario Street provided by the City of Brampton will apply to the road segment located in the Town of Caledon as well.

Future traffic volumes (2031) for the on ramp and Valleywood Boulevard were taken from “Widening of McLaughlin Road and Construction of East-West Spine Road (Mayfield West Phase 2)” Environmental Assessment (EA) report.

The traffic data applicable to the year 2031 was compounded by 2% annually to obtain data applicable to the year 2042 as 20-year traffic volume projection is required by Caledon for noise assessment purposes. In the sound level predictions, the traffic speed was increased by 10 kph from the posted speed limit for all roadways in Table 1, as required by the Town of Caledon.

Road traffic data is summarized in Table 1. Correspondence and road traffic data are included as Appendix A. Highway 410 Interchange Overall Plan is included as Appendix D.

TABLE 1 ROAD TRAFFIC DATA

Roadway	Year	24-hour Volume	% Trucks		Day/Night (%)	Posted Speed Limit (kph)
			Medium	Heavy		
Highway 410 ⁽¹⁾	Ultimate	131 300	2.8	4.2	85/15	90
S-E Ramp ⁽²⁾	2031 (2042)	2960 (3680)	1	1.5	80/20	50
Valleywood Blvd ⁽²⁾	2031 (2042)	37230 (46291)	1.4	1.4	80/20	50
Hurontario Street ⁽³⁾	Ultimate	28000	3	5	90/10	70

Notes:

- (1) Obtained from the MTO.
- (2) Obtained from EA Report for Mayfield West Phase 2.
- (3) Obtained from the City of Brampton.

2.2 STATIONARY SOURCES

There are no existing stationary noise sources with potential to impact the subject site based on a site visit conducted by VCL staff on November 09, 2021. The future institutional/commercial uses to the west across Hurontario Street must be designed to comply with the MECP stationary noise source guidelines within NPC 300, recognizing the surrounding residential development. This is typically addressed, in part, at the Site Plan Approval stage for these non-residential developments, as well as in the detailed design stages. Any resulting noise mitigation required to meet the applicable MECP guidelines would be the responsibility of the developer/builder of the non-residential uses.

Potential noise sources could consist of rooftop or other mechanical equipment and larger commercial vehicle movements on the site. These issues are typically addressed by considering equipment selections, locations, orientation of loading docks, the use of silencing components and sound barriers.

3.0 ENVIRONMENTAL NOISE GUIDELINES

The applicable noise guidelines for new residential development are those in MECP Publication NPC-300, "Environmental Noise Guideline, Stationary and Transportation Sources – Approval and Planning".

The environmental noise guidelines of the MECP, as provided in Publication NPC-300, are discussed briefly below and summarized in Appendix B.

3.1 TRANSPORTATION SOURCE NOISE GUIDELINES

3.1.1 Architectural Elements

In the daytime (0700 to 2300), the indoor criterion for road noise is $L_{eq\ Day}$ (i.e., 16-hour energy equivalent sound level (0700-2300 hours)) of 45 dBA for sensitive spaces such as living/dining rooms, dens and bedrooms. At night, the indoor criterion for road noise is $L_{eq\ Night}$ (i.e., 8-hour energy equivalent sound level (2300-0700 hours)) of 45 dBA for sensitive spaces such as living/dining rooms and dens and 40 dBA for bedrooms. The architectural design of the building envelope (walls, windows, etc.) must provide adequate sound isolation to achieve these indoor sound level limits, based on the applicable outdoor sound level on the facades.

3.1.2 Ventilation

In accordance with the MECP noise guideline for road traffic sources, if the daytime sound level, $L_{eq\ Day}$, at the exterior face of a noise sensitive window is greater than 65 dBA, means must be provided so that windows can be kept closed for noise control purposes and central air conditioning is required. For daytime sound levels between 56 dBA and 65 dBA inclusive, there need only be the provision for adding air conditioning at a later date. A warning clause advising the occupant of the potential interference with some activities is also required. At nighttime, air conditioning would be required when the sound level exceeds 60 dBA ($L_{eq\ Night}$) at a noise sensitive window (provision for adding air conditioning is required when greater than 50 dBA).

3.1.3 Outdoors

For outdoor amenity areas (“Outdoor Living Areas” - OLA’s), the guideline is $L_{eq\ Day}$ of 55 dBA, with an excess not exceeding 5 dBA considered acceptable if it is technically not practicable to achieve the 55 dBA objective, providing warning clauses are registered on title. Note that for road traffic sources, a balcony is not considered an OLA, unless it is the only OLA for the occupant, and it is:

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

3.2 CITY OF BRAMPTON

The City of Brampton guidelines require more stringent ventilation requirements compared to the MECP guidelines by 1 dB i.e., mandatory air conditioning for daytime sound levels of 65 dBA or greater, and the provision for adding air conditioning for levels between 56 to 64 dBA inclusive.

The City of Brampton allows excess of up to 5 dBA over the 55 dBA guideline for OLAs provided the overall barrier height to meet the 55 dBA target would exceed 4 m relative to the road centreline elevation. The City’s standard sound barrier fence height is 2.2 m with the only exception being for a 2.0 m light duty acoustic fence for lots flanking a two-lane collector road.

A minimum 1.8 m high masonry wall is required for residential development abutting a commercial site for reasons other than noise control.

3.3 TOWN OF CALEDON

The Town of Caledon requires 20-year traffic projections and 10 kmph over posted speed limits for noise assessment purposes.

The Town requires the 55 dBA target for OLAs to be met unless sound barriers are unreasonably high to achieve this requirement. There is a maximum height of 2.4 m for acoustic barriers.

4.0 NOISE IMPACT ASSESSMENT – TRANSPORTATION SOURCES

4.1 NOISE ASSESSMENT

4.1.1 Method

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

The daytime and nighttime sound levels at the building facades were assessed at the top floor windows, the worst-case locations. Townhouses were assumed to be three stories and single detached dwellings were assumed to be two stories.

For the single detached and townhouse dwelling units, OLAs were expected to be provided in the rear yard. The OLA receptors were assessed at 1.5 m above grade 3 m from the centre of the rear facade of the dwelling units.

4.1.2 Results

The highest daytime/nighttime sound levels of 66 dBA/60 dBA are predicted to occur at the west facade of southernmost unit in townhouse Block 34. The highest daytime sound level of 60 dBA is predicted to occur in the rear yard OLA of the northernmost townhouse unit in Block 33.

Inherent screening of each building face due to its orientation to the noise source as well as that provided by proposed buildings on the subject site were taken into account.

Table 2 summarises the predicted sound levels at specific locations. A sample sound level calculation is included in Appendix C.

TABLE 2 PREDICTED UNMITIGATED SOUND LEVELS ⁽¹⁾

Location	Source	Distance (m) ⁽²⁾	L _{eq} Day (dBA)	L _{eq} Night (dBA)
R1 – Block 29 NE Corner E Facade	Highway 410 EB	157	60	56
	Highway 410 WB	178	59	55
	S-E Ramp	57	47	44
	Valleywood Blvd	136	46	43
	Total	-	63	59
R2 – Block 29 NE Corner N Facade	Highway 410 EB	157	62	57
	Highway 410 WB	178	61	57
	S-E Ramp	57	50	47
	Valleywood Blvd	136	54	51
	Hurontario Street	217	47	40
	Total	-	65	61
R3 – Block 31 N Facade	Highway 410 EB	220	59	55
	Highway 410 WB	243	58	54
	S-E Ramp	50	51	48
	Valleywood Blvd	83	57	54
	Hurontario Street	108	54	47
	Total	-	64	59
R4 – Block 31 NE Corner E Facade	Highway 410 EB	242	58	54
	Highway 410 WB	265	58	53
	S-E Ramp	39	50	47
	Valleywood Blvd	86	55	52
	Total	-	62	58
R5 – Block 31 NE Corner N Facade	Highway 410 EB	242	55	51
	Highway 410 WB	265	55	50
	S-E Ramp	39	52	49
	Valleywood Blvd	86	56	53
	Hurontario Street	88	60	53
	Total	-	63	59

.../cont'd

TABLE 2 PREDICTED UNMITIGATED SOUND LEVELS ⁽¹⁾ (continued)

Location	Source	Distance (m) ⁽²⁾	L _{eq} Day (dBA)	L _{eq} Night (dBA)
R6 – Block 33 W Facade	S-E Ramp	33	53	50
	Valleywood	144	48	45
	Hurontario Street	54	65	59
	Total	-	65	59
R7 – Block 35 W Facade	Valleywood Blvd	199	43	40
	Hurontario Street	44	66	60
	Total	-	66	60
OLA1 – Block 29 Rear OLA	Highway 410 EB	154	56	-
	Highway 410 WB	177	55	-
	S-E Ramp	56	49	-
	Valleywood Blvd	132	50	-
	Hurontario Street	215	39	-
	Total	-	59	-
OLA2 – Block 30 Rear OLA	Highway 410 EB	157	56	-
	Highway 410 WB	178	55	-
	S-E Ramp	57	43	-
	Valleywood Blvd	136	45	-
	Hurontario Street	111	45	-
	Total	-	59	-
OLA3 - Block 33 Rear OLA	S-E Ramp	30	53	-
	Valleywood Blvd	144	42	-
	Hurontario Street	51	59	-
	Total	-	60	-
OLA4 - Block 35 Rear OLA	S-E Ramp	30	44	-
	Valleywood Blvd	199	30	-
	Hurontario Street	42	55	-
	Total	-	56	-

Notes:

- (1) Daytime/nighttime receptors were taken at the top floor windows. OLA receptors were taken at 1.5 m above grade.
(2) Distance indicated is from the centreline of the noise sources to facade or OLA.

4.2 NOISE ABATEMENT REQUIREMENTS

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

- Architectural elements to achieve acceptable indoor noise guidelines for transportation sources; and
- Design features to protect the OLA's.

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

4.2.1 Indoors

The indoor sound level guidelines can be achieved by using appropriate construction for exterior walls, windows, and doors. In determining the worst-case architectural requirements for the townhouse and single-detached units, exterior wall and window areas were assumed to be 80% and 30%, respectively, of the associated floor area at a corner room with facades exposed directly or at an angle to the road traffic noise source, for both living/dining areas and sleeping quarters.

4.2.1.1 Architectural Requirements

For Townhouse Blocks 29 to 31, and Lot 18 in Caledon, exterior wall construction meeting STC 45 and window construction meeting STC up to 25 will be required to meet the indoor sound level criteria of the MECP noise guidelines.

Townhouse Blocks 33 to 35 and Lot 17 in Caledon, and Lots 1 to 3 in Brampton require exterior wall construction meeting STC 45 and window construction meeting STC up to 23 to meet the indoor sound level criteria of the MECP noise guidelines.

For all remaining residential dwellings, exterior wall and window construction meeting the minimum non-acoustical requirement of the OBC is adequate to meet the indoor sound level criteria of the MECP noise guidelines.

Note, the window frames themselves must also be designed to ensure that the overall sound isolation performance for the entire window unit meets the sound isolation requirement. This must be confirmed by the window manufacturer through the submission of acoustical test data.

The final sound isolation requirements should be reviewed when architectural plans are developed. Wall and window constructions should also be reviewed at this point to ensure that they will meet the required sound isolation performance.

4.2.1.2 Ventilation Requirements

Townhouse Blocks 29, 30, 33, 34, and 35 as well as detached units on Lots 1 to 3 in Brampton require mandatory air conditioning. All remaining townhouse units in the development and single detached units on Lots 17 and 18 in Caledon require provision for air conditioning to be installed at a later date. There are no special noise control related ventilation requirements for the other units in this development.

The final sound isolation requirements should be reviewed when architectural plans are developed. Wall and window constructions should also be reviewed at this point to ensure that they will meet the required sound isolation performance.

4.2.2 Outdoors

The unmitigated daytime sound levels at the rear yard OLAs of the residential dwellings immediately adjacent to Hurontario Street and those exposed to Highway 410 are predicted to exceed the 55 dBA design objective of the MECP noise guidelines. A 2.4 m high acoustical fence on top of the proposed berm along the northern boundary of the site and a 2.2 m high acoustical

fence on top of the proposed berm along the western boundary of the site will mitigate the daytime sound levels to be within the 55 dBA objective of the MECP guidelines.

The unmitigated daytime sound levels in the OLA's of the remaining residential dwellings are predicted to be within the MECP noise guidelines and therefore sound barriers are not required for noise control purposes.

Note, the above sound barrier requirements are based on the grading plan received on February 11, 2022 and should be checked/confirmed if the grading plan is changed.

4.3 WARNING CLAUSES

Warning clauses are a tool to inform prospective owners/occupants of potential annoyance due to existing noise sources. Where the guideline sound level limits are exceeded, appropriate warning clauses should be registered on title or included in the development agreement that is registered on title. The warning clauses should also be included in agreements of Offers of Purchase and Sale and lease/rental agreements to make future occupants aware of the potential noise situation.

Table 3 and the notes to Table 3 summarize the warning clauses for the site.

TABLE 3 MINIMUM NOISE ABATEMENT MEASURES

Location	Air Conditioning ⁽¹⁾	Exterior Wall ⁽²⁾	Window STC Rating ⁽³⁾	Sound Barrier ⁽⁴⁾	Warning Clauses ⁽⁵⁾
Townhouse Blocks 29, 30 and Lot 18	Provision for adding	45	Up to 25	2.4 m High	A + B + D + F
Townhouse Block 31	Provision for adding	45	Up to 25	2.4 m High	A + B + D + F
Townhouse Blocks 33 to 35	Mandatory	45	Up to 23	2.2 m High	A + C + D + F
Lots 1 to 3	Mandatory	45	Up to 23	2.2 m High	A + C + E + F
Lot 17	Provision for adding	45	Up to 23	-	A + B + F
Remaining townhouse units	Provision for adding	OBC	OBC	-	A + B + F
Remaining single detached dwelling units	None	OBC	OBC	-	F

Notes to Table 3 on the following page.

Notes to Table 3:

- (1) Where methods must be provided to allow windows to remain closed for noise control purposes, a commonly used technique is that of air conditioning.
- (2) STC - Sound Transmission Class Rating (Reference ASTM-E413). Analyses were based upon the assumption that wall and window areas are as indicated in Section 4.2.1 of text. Requirements should be checked once floor plans have been finalized and exterior wall construction details are defined.
- (3) STC values are based upon the assumption that all wall and window areas are as indicated in Section 4.2.1.1 of text. Requirements should be checked once floor plans have been finalized and exterior wall construction details are defined.
- (4) Sound barriers must be of solid construction with no gaps cracks or holes and must meet a minimum surface density of 20 kg/m². Suitable material can include wood, concrete metal sandwich panel, glazing or a combination of these.
- (5) The warning clauses to be registered on title and be included in Offers of Purchase and Sale for designated lots:
 - A. "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 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, Conservation and Parks."
 - B. This dwelling unit has been designed with the provision for adding central air conditioning at the occupant's discretion. Installation of central air conditioning by the occupant 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."
 - C. "This dwelling unit has been supplied with an 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 the Municipality and the Ministry of the Environment, Conservation and Parks."
 - D. "Purchasers/tenants are advised that a noise barrier wall is located at the rear/side of this property. The owner of this property also owns his/her section of the noise barrier wall. The noise barrier wall is not in public ownership. Monitoring, maintenance, inspection, repair and replacement of this noise barrier wall, including any associated costs, are the sole responsibility of the property owner. The Town of Caledon is in no way responsible for this noise barrier wall. Should this noise barrier wall fall, it is the property owner's responsibility to repair or replace his/her section of the wall, at his/her cost. If the property owner fails to maintain the noise barrier wall, the Town of Caledon will notify the requirement to repair in writing. If the property owner does not comply with the Town's request, the Town will correct the deficiency and bill the property owner accordingly."
 - E. "Purchasers are advised that the acoustical berm and/or barrier as installed shall be maintained, repaired or replaced by the owner. Any maintenance repair or replacement shall be with the same material, to the same standards, and having the same colour and appearance of the original."
 - F. "Purchases/tenants are advised that due to the proximity of the Brampton Airport, noise from aircraft from using this facility may at times be audible."

5.0 CONCLUSIONS

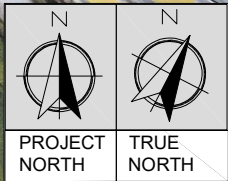
With the incorporation of the recommended noise mitigation measures, the indoor noise guidelines can be met. Future occupants will be made aware of the potential noise situation through warning clauses, as per MECP guidelines.

The approvals and administrative procedures are available to ensure that the noise requirements are implemented.

6.0 REFERENCES

1. PC STAMSON 5.04, "Computer Program for Road Traffic Noise Assessment", Ontario Ministry of the Environment.
2. Building Practice Note No. 56: "Controlling Sound Transmission into Buildings", by J. D. Quirt, Division of Building Research, National Council of Canada, September 1985.
3. "Environmental Noise Guideline, Stationary and Transportation Sources – Approval and Planning", Ontario Ministry of the Environment, Publication NPC-300, August 2013.

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No.	Revision/Issue	Date



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Title

Key Plan

Project Name

Argo Summer Valley

Project No.

121-0418

Date

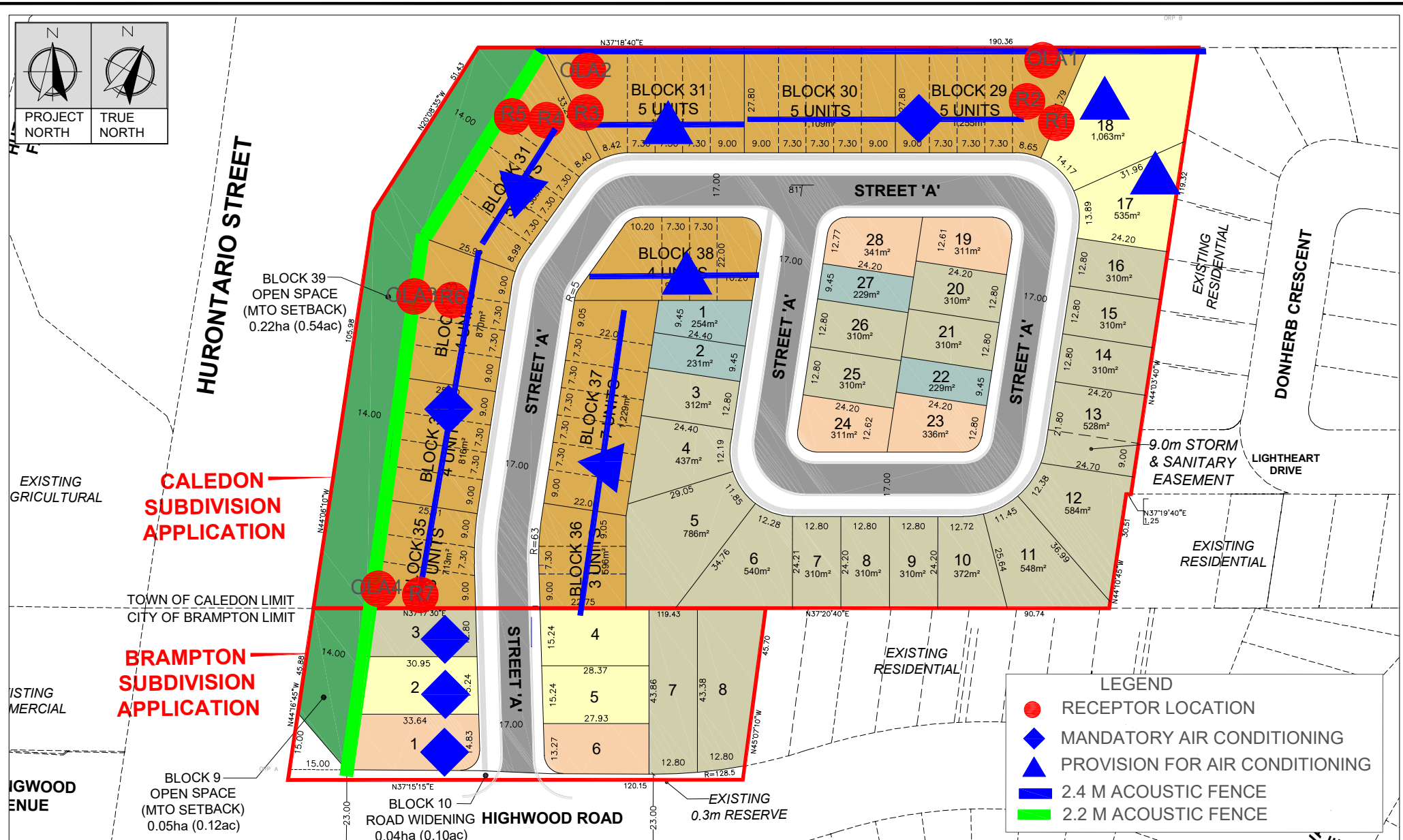
Apr 22, 2022

Scale

N.T.S.

Figure

1



			Title		Project No.	Date
			Composite Plan		121-0418	Apr 22, 2022
			Project Name		Scale	Figure
			Argo Summer Valley		N.T.S.	2
No.	Revision/Issue	Date				



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APPENDIX A

ROAD TRAFFIC DATA

Abhishek Thyagarajan

From: Adiga, Smeeta <Smeeta.Adiga@brampton.ca>
Sent: October 19, 2021 9:03 AM
To: Abhishek Thyagarajan
Cc: Sam Du
Subject: RE: [EXTERNAL]Road traffic data request - Brampton (VCL File: 1210418.000)

Hi Abhishek,

Further to your request for information, the table below summarizes the traffic data for ultimate conditions on the specified sections. Please note that proposed development in 12197 Hurontario Street is also in City of Caledon. Contact City of Caledon for traffic data.

Location	ROW Width (m)	Posted Speed (km/h)	Projected Number of Lanes	Projected Volume (AADT)	Assumed % Trucks (med/heavy)
Hurontario Street, north of Mayfield Drive	40-45	70	4	28,000	3-5%
Hurontario Street, south of Hwy 410	City of Caledon				

If you have any further questions or concerns, please contact the undersigned.

Thanks,

Smeeta Adiga

Transportation Planning Analyst
Public Works and Engineering | City of Brampton
1975 Williams Parkway, Brampton, ON L6S 6E5
T: 905.874.3452 Cell: 437.230.9025

Thankyou for your message. I am currently working remotely due to building occupancy limits during COVID-19. For information on safety, closures and reopening, please visit www.brampton.ca/reopening.

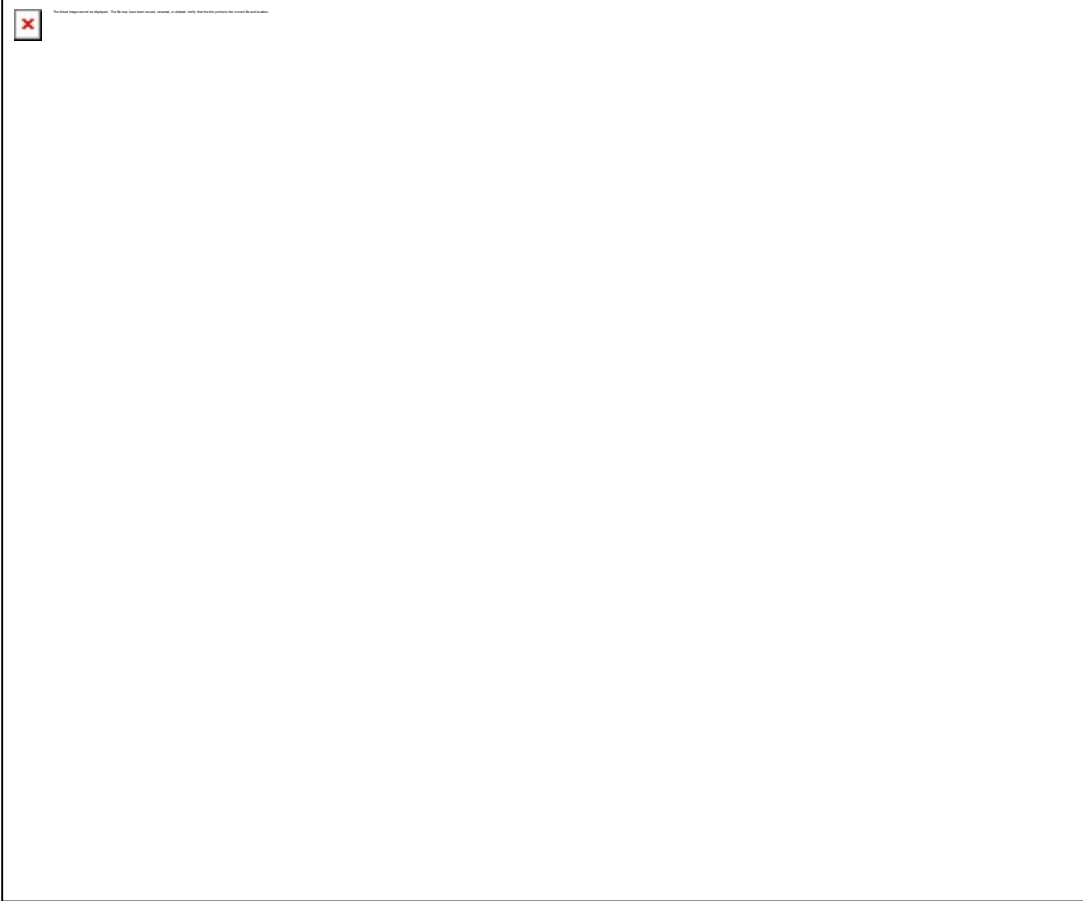
Nevertheless, I will continue to tend to business duties and be available remotely via 437-230-9025 and smeeta.adiga@brampton.ca. Please reach out to me between the business hours of 8:30 AM until 4:30 PM on weekdays. I will be reachable via email or my cell phone and I will be delighted to assist you.

From: Abhishek Thyagarajan <abhishek@valcoustics.com>
Sent: 2021/10/18 1:35 PM
To: Monaghan, David <David.Monaghan@brampton.ca>
Cc: Sam Du <sam@valcoustics.com>
Subject: [EXTERNAL]Road traffic data request - Brampton (VCL File: 1210418.000)

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Hello David,

We are working on a noise study for a proposed development in 12197 Hurontario Street (Please see image below)



We will need road traffic data for Hurontario Street between Mayfield Drive and Highway 410 (including AADT, no. of lanes, speed limits, day/night split, incline etc.).

Would you please be able to provide this information?

Please let me know if you have any questions.

Thanks,
Abhishek Thyagarajan, M.S.
Acoustic Specialist
(He/Him)



30 Wertheim Court, Unit 25
Richmond Hill, Ontario
Canada L4B 1B9
Tel: 905-764-5223 ext. 247
Fax: 905-764-6813
abhishek@valcoustics.com

Our staff are working remotely during this period while our office is closed. We will continue to respond to emails and telephone inquiries at our regular extensions. The health and safety of our staff and clients is our top priority surrounding this uncertain period regarding COVID-19. We are closely monitoring the situation and have implemented policies to minimize the risk of exposure.

To help us stop the spread of viruses, we request that all e-mails sent to our office includes project name, number and recipient's name in the subject line.

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Abhishek Thyagarajan

From: Du, Shuming (MTO) <Shuming.Du@ontario.ca>
Sent: October 29, 2021 5:08 PM
To: Abhishek Thyagarajan
Cc: Sam Du; Tai, Arthur (MTO); Wells, Kara (MTO)
Subject: RE: Road traffic data request - MTO (VCL File: 1210418.000)

Hi Abhishek,

In response to your request please find below the information available from this office for Highway 410 near 12197 Hurontario St.

2016 AADT: 59600
2016 SADT: 71900
Number of Through Lanes: 4
Ultimate AADT: 108800
Ultimate SADT: 131300
Ultimate Number of Lanes: 4
Posted Speed: 90 km/h
Percentage of Trucks: 7%

Please note that the above information is estimated based upon our current knowledge of the area, which may be subject to change in the future. Other information related to day/night traffic split may be available from other offices.

If you require further information, please don't hesitate to contact me.

Thank you

Regards

Shuming

From: Abhishek Thyagarajan <abhishek@valcoustics.com>
Sent: October 28, 2021 8:51 AM
To: Du, Shuming (MTO) <Shuming.Du@ontario.ca>
Cc: Sam Du <sam@valcoustics.com>; Wang, Zach (MTO) <Zach.Wang@ontario.ca>
Subject: RE: Road traffic data request - MTO (VCL File: 1210418.000)

CAUTION -- EXTERNAL E-MAIL - Do not click links or open attachments unless you recognize the sender.

Hello Shuming,

I am following up on the traffic data request for Highway 410 (Please see correspondence below). This is regarding a proposed residential development at 12197 Hurontario Street in Brampton. Could you please let me know if you will be able to provide this information?

Thank you,
Abhishek Thyagarajan, M.S.
Acoustic Specialist



30 Wertheim Court, Unit 25
Richmond Hill, Ontario
Canada L4B 1B9
Tel: 905-764-5223 ext. 247
Fax: 905-764-6813
abhishek@valcoustics.com

From: Wang, Zach (MTO) <Zach.Wang@ontario.ca>
Sent: October 18, 2021 1:38 PM
To: Abhishek Thyagarajan <abhishek@valcoustics.com>; Du, Shuming (MTO) <Shuming.Du@ontario.ca>
Cc: Sam Du <sam@valcoustics.com>
Subject: RE: Road traffic data request - MTO (VCL File: 1210418.000)

Hi Abhishek,

I will forward this request to Shuming for him to process.

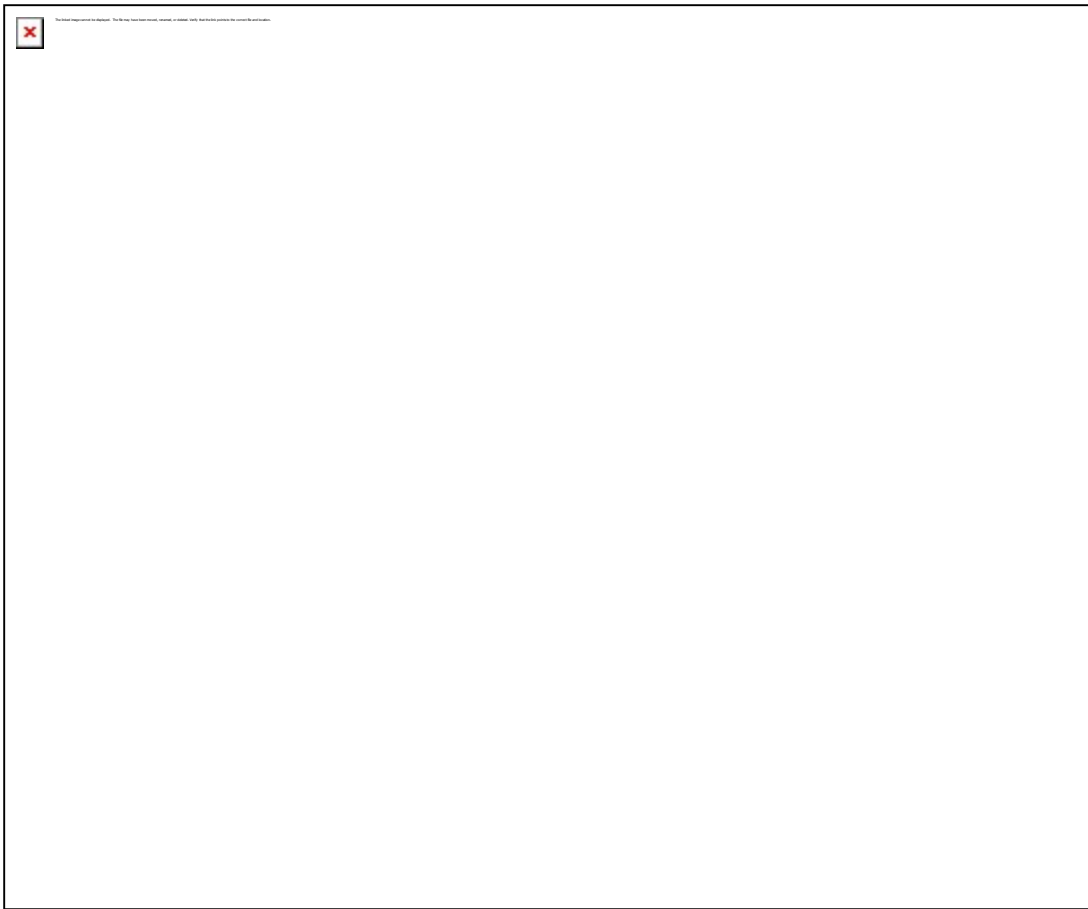
Regards,
Zach

From: Abhishek Thyagarajan <abhishek@valcoustics.com>
Sent: October 18, 2021 1:35 PM
To: Wang, Zach (MTO) <Zach.Wang@ontario.ca>
Cc: Sam Du <sam@valcoustics.com>
Subject: Road traffic data request - MTO (VCL File: 1210418.000)

CAUTION -- EXTERNAL E-MAIL - Do not click links or open attachments unless you recognize the sender.

Hello Zach,

We are working on a noise study for a proposed development at 12197 Hurontario Street in Brampton (Please see image below).



We will need road traffic data for Highway 410 both north and south of Hurontario Street (including AADT, no. of lanes, speed limits, day/night split) for this study.

Could you please provide this information? Please let me know if you have any questions.

Thanks,
Abhishek Thyagarajan, M.S.
Acoustic Specialist
(He/Him)



30 Wertheim Court, Unit 25
Richmond Hill, Ontario
Canada L4B 1B9
Tel: 905-764-5223 ext. 247
Fax: 905-764-6813
abhishek@valcoustics.com

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APPENDIX B

ENVIRONMENTAL NOISE GUIDELINES

ENVIRONMENTAL NOISE GUIDELINES

MINISTRY OF THE ENVIRONMENT, CONSERVATION AND PARKS (MECP)

Reference: MECP Publication NPC-300, October 2013: “*Environmental Noise Guideline, Stationary and Transportation Sources – Approval and Planning*”.

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

..../cont'd

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

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

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

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

APPENDIX C

SAMPLE SOUND LEVEL CALCULATIONS

STAMSON 5.04 NORMAL REPORT Date: 15-03-2022 14:40:31
MINISTRY OF ENVIRONMENT, CONSERVATION AND PARKS / NOISE ASSESSMENT

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

Road data, segment # 1: 410 EB (day/night)

Car traffic volume : 51896/9158 veh/TimePeriod *
Medium truck volume : 1562/276 veh/TimePeriod *
Heavy truck volume : 2344/414 veh/TimePeriod *
Posted speed limit : 100 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): 65650
Percentage of Annual Growth : 2.00
Number of Years of Growth : 0.00
Medium Truck % of Total Volume : 2.80
Heavy Truck % of Total Volume : 4.20
Day (16 hrs) % of Total Volume : 85.00

Data for Segment # 1: 410 EB (day/night)

Angle1 Angle2 : 0.00 deg 90.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 0
Surface : 1 (Absorptive ground surface)
Receiver source distance : 157.00 / 157.00 m
Receiver height : 7.50 / 7.50 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

Road data, segment # 2: 410 WB (day/night)

Car traffic volume : 51896/9158 veh/TimePeriod *
Medium truck volume : 1562/276 veh/TimePeriod *
Heavy truck volume : 2344/414 veh/TimePeriod *
Posted speed limit : 100 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): 65650
Percentage of Annual Growth : 2.00
Number of Years of Growth : 0.00
Medium Truck % of Total Volume : 2.80
Heavy Truck % of Total Volume : 4.20
Day (16 hrs) % of Total Volume : 85.00

Data for Segment # 2: 410 WB (day/night)

Angle1 Angle2 : 0.00 deg 90.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 0
Surface : 1 (Absorptive ground surface)
Receiver source distance : 178.00 / 178.00 m
Receiver height : 7.50 / 7.50 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

Road data, segment # 3: On Ramp (day/night)

Car traffic volume : 2871/718 veh/TimePeriod *
Medium truck volume : 29/7 veh/TimePeriod *
Heavy truck volume : 44/11 veh/TimePeriod *
Posted speed limit : 60 km/h
Road gradient : 0 %
Road pavement : 1 (Typical asphalt or concrete)

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

24 hr Traffic Volume (AADT or SADT): 2960
Percentage of Annual Growth : 2.00
Number of Years of Growth : 11.00
Medium Truck % of Total Volume : 1.00
Heavy Truck % of Total Volume : 1.50
Day (16 hrs) % of Total Volume : 80.00

Data for Segment # 3: On Ramp (day/night)

Angle1 Angle2 : 0.00 deg 90.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 0
Surface : 1 (Absorptive ground surface)
Receiver source distance : 57.00 / 57.00 m
Receiver height : 7.50 / 7.50 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

Road data, segment # 4: Valleywood (day/night)

Car traffic volume : 35996/8999 veh/TimePeriod *
Medium truck volume : 518/130 veh/TimePeriod *
Heavy truck volume : 518/130 veh/TimePeriod *
Posted speed limit : 60 km/h
Road gradient : 0 %
Road pavement : 1 (Typical asphalt or concrete)

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

24 hr Traffic Volume (AADT or SADT): 37230
Percentage of Annual Growth : 2.00
Number of Years of Growth : 11.00
Medium Truck % of Total Volume : 1.40
Heavy Truck % of Total Volume : 1.40
Day (16 hrs) % of Total Volume : 80.00

Data for Segment # 4: Valleywood (day/night)

Angle1 Angle2 : 32.00 deg 53.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 0
Surface : 1 (Absorptive ground surface)
Receiver source distance : 136.00 / 136.00 m
Receiver height : 7.50 / 7.50 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

Results segment # 1: 410 EB (day)

Source height = 1.43 m

ROAD (0.00 + 60.28 + 0.00) = 60.28 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
0	90	0.48	79.54	0.00	-15.11	-4.15	0.00	0.00	0.00	60.28

Segment Leq : 60.28 dBA

Results segment # 2: 410 WB (day)

Source height = 1.43 m

ROAD (0.00 + 59.47 + 0.00) = 59.47 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
0	90	0.48	79.54	0.00	-15.92	-4.15	0.00	0.00	0.00	59.47

Segment Leq : 59.47 dBA

Results segment # 3: On Ramp (day)

Source height = 1.11 m

ROAD (0.00 + 46.80 + 0.00) = 46.80 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
0	90	0.49	59.62	0.00	-8.65	-4.17	0.00	0.00	0.00	46.80

Segment Leq : 46.80 dBA

Results segment # 4: Valleywood (day)

Source height = 1.09 m

ROAD (0.00 + 46.35 + 0.00) = 46.35 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
32	53	0.49	70.63	0.00	-14.29	-10.00	0.00	0.00	0.00	46.35

Segment Leq : 46.35 dBA

Total Leq All Segments: 63.10 dBA

Results segment # 1: 410 EB (night)

Source height = 1.43 m

ROAD (0.00 + 55.76 + 0.00) = 55.76 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
0	90	0.48	75.02	0.00	-15.11	-4.15	0.00	0.00	0.00	55.76

Segment Leq : 55.76 dBA

Results segment # 2: 410 WB (night)

Source height = 1.43 m

ROAD (0.00 + 54.95 + 0.00) = 54.95 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
0	90	0.48	75.02	0.00	-15.92	-4.15	0.00	0.00	0.00	54.95

Segment Leq : 54.95 dBA

Results segment # 3: On Ramp (night)

Source height = 1.11 m

ROAD (0.00 + 43.78 + 0.00) = 43.78 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
0	90	0.49	56.60	0.00	-8.65	-4.17	0.00	0.00	0.00	43.78

Segment Leq : 43.78 dBA

Results segment # 4: Valleywood (night)

Source height = 1.09 m

ROAD (0.00 + 43.34 + 0.00) = 43.34 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
32	53	0.49	67.63	0.00	-14.29	-10.00	0.00	0.00	0.00	43.34

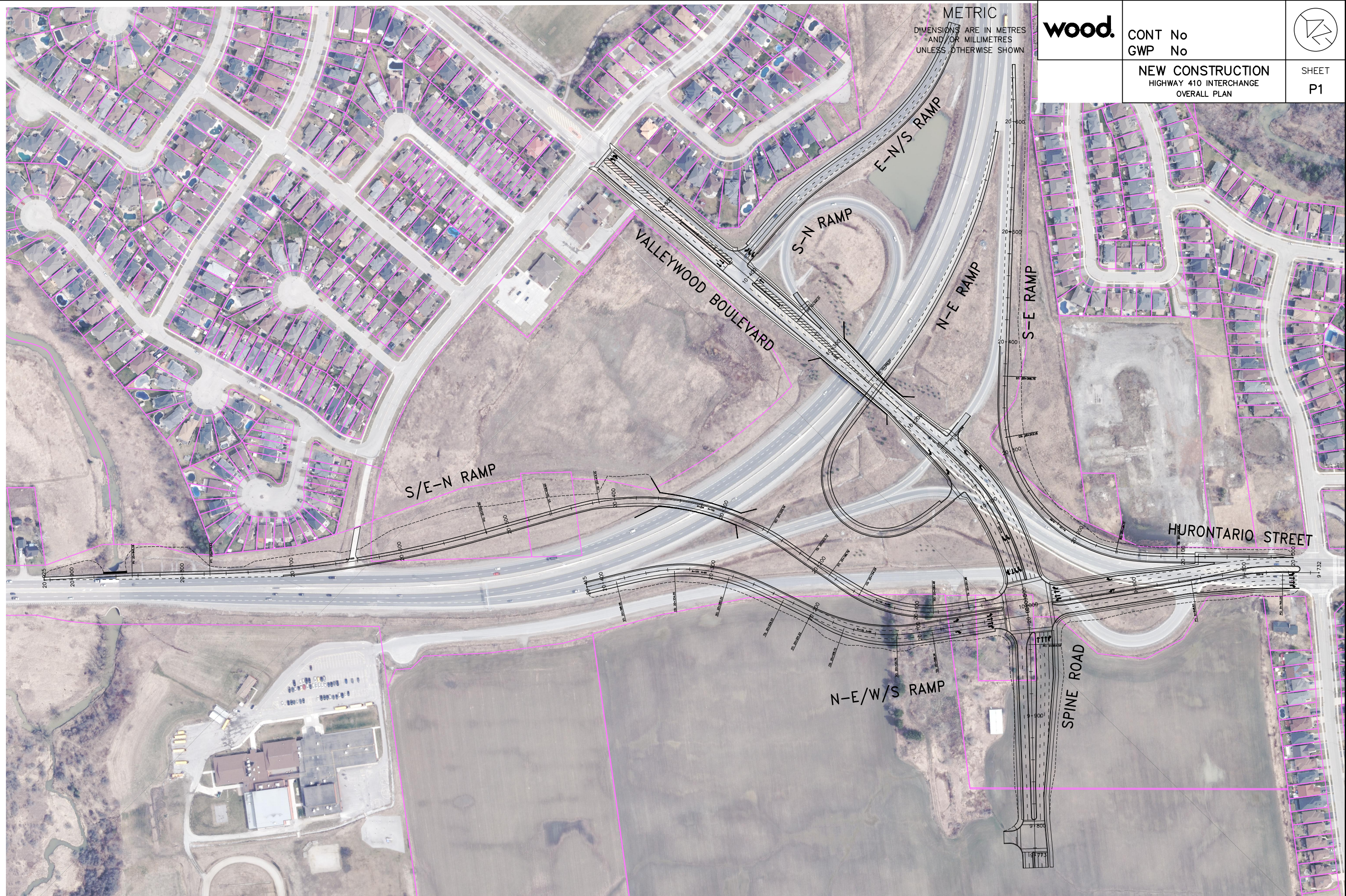
Segment Leq : 43.34 dBA

Total Leq All Segments: 58.66 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 63.10
(NIGHT): 58.66

APPENDIX D

HIGHWAY 410 INTERCHANGE OVERALL PLAN



METRIC
DIMENSIONS ARE IN METRES
AND/OR MILLIMETRES
UNLESS OTHERWISE SHOWN

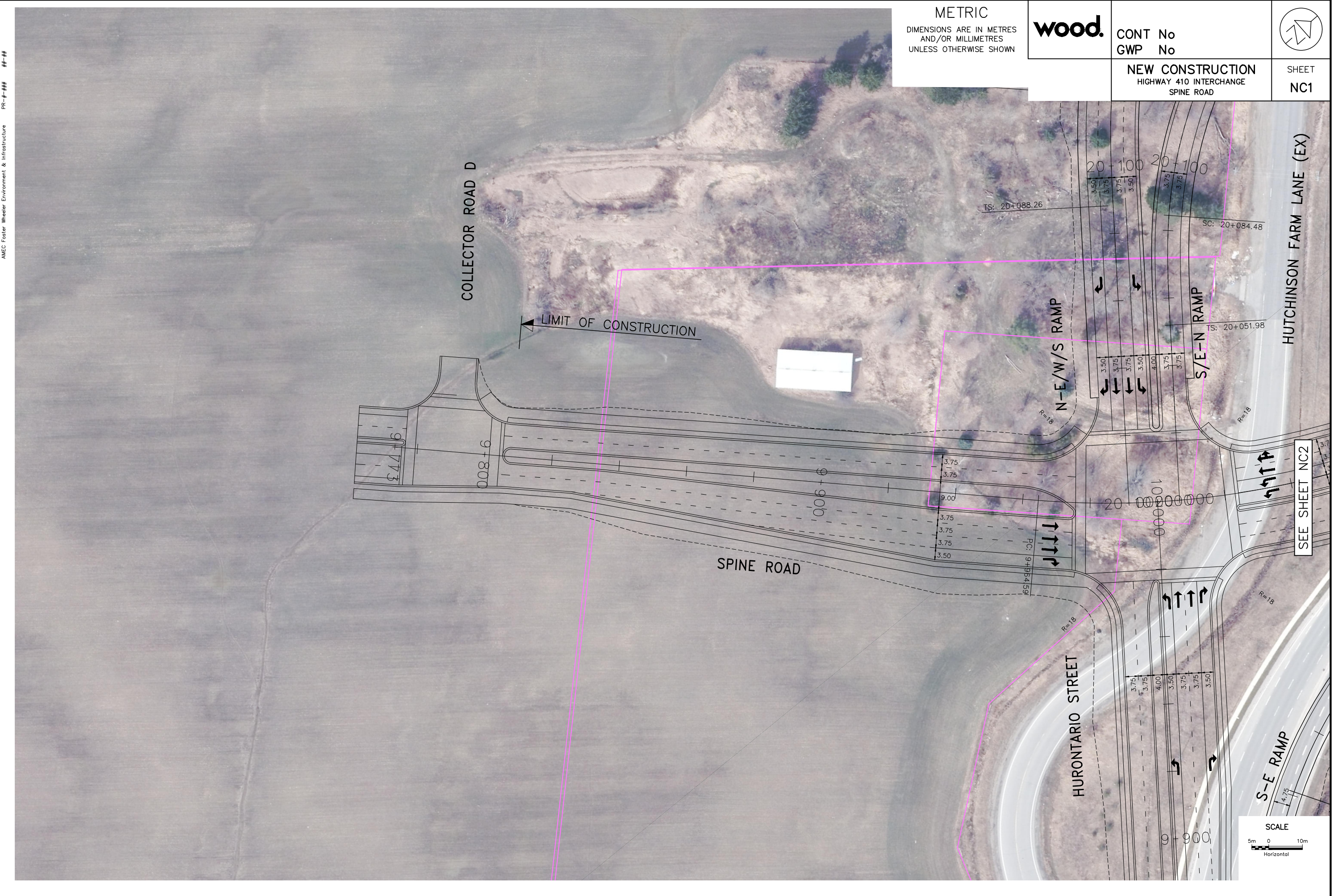


CONT No
GWP No

NEW CONSTRUCTION
HIGHWAY 410 INTERCHANGE
OVERALL PLAN



SHEET
P1

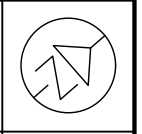


METRIC
DIMENSIONS ARE IN METRES
AND/OR MILLIMETRES
UNLESS OTHERWISE SHOWN



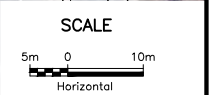
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GWP No

NEW CONSTRUCTION
HIGHWAY 410 INTERCHANGE
SPINE ROAD

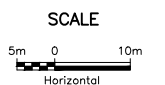


SHEET
NC1

SEE SHEET NC2



SHEET
NC2



SEE SHEET NC2

N-E RAMP

SEE SHEET NC2

HIGHWAY 410

SEE SHEET NC5

S-N RAMP (EX)

E-N/S RAMP

VALLEYWOOD BOULEVARD

SNELCREST DRIVE

ROYAL VALLEY DRIVE

TREEVIEW CRESCENT

LIMIT OF CONSTRUCTION

METRIC

DIMENSIONS ARE IN METRES
AND/OR MILLIMETRES
UNLESS OTHERWISE SHOWN

wood.

CONT	No
GWP	No

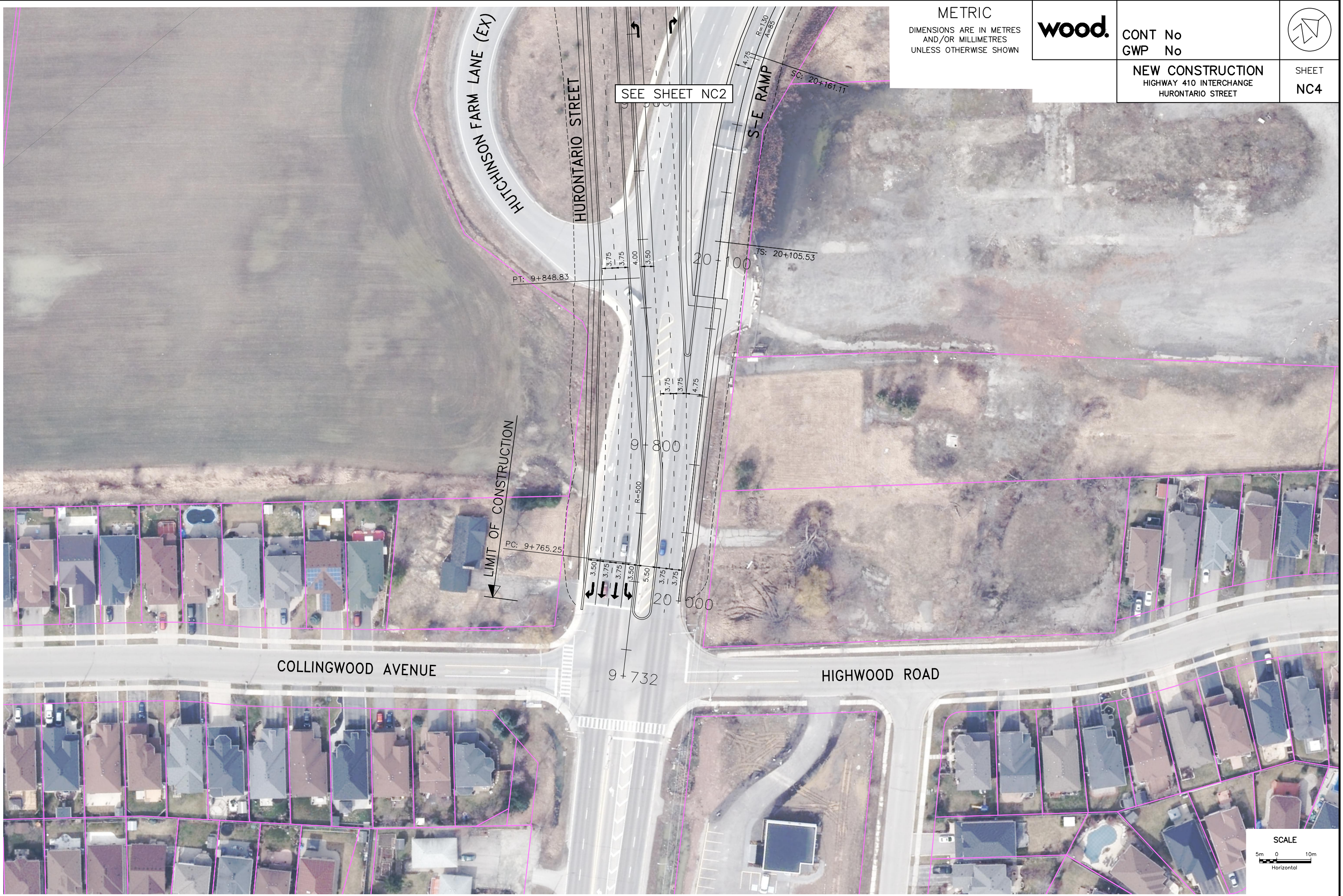
NEW CONSTRUCTION
HIGHWAY 410 INTERCHANGE
VALLEYWOOD BOULEVARD

SHEET
NC3



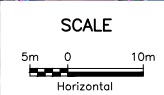
SCALE

Horizontal



METRIC
DIMENSIONS ARE IN METRES
AND/OR MILLIMETRES
UNLESS OTHERWISE SHOWN

	CONT No	
	GWP No	
NEW CONSTRUCTION HIGHWAY 410 INTERCHANGE HURONTARIO STREET		SHEET NC4

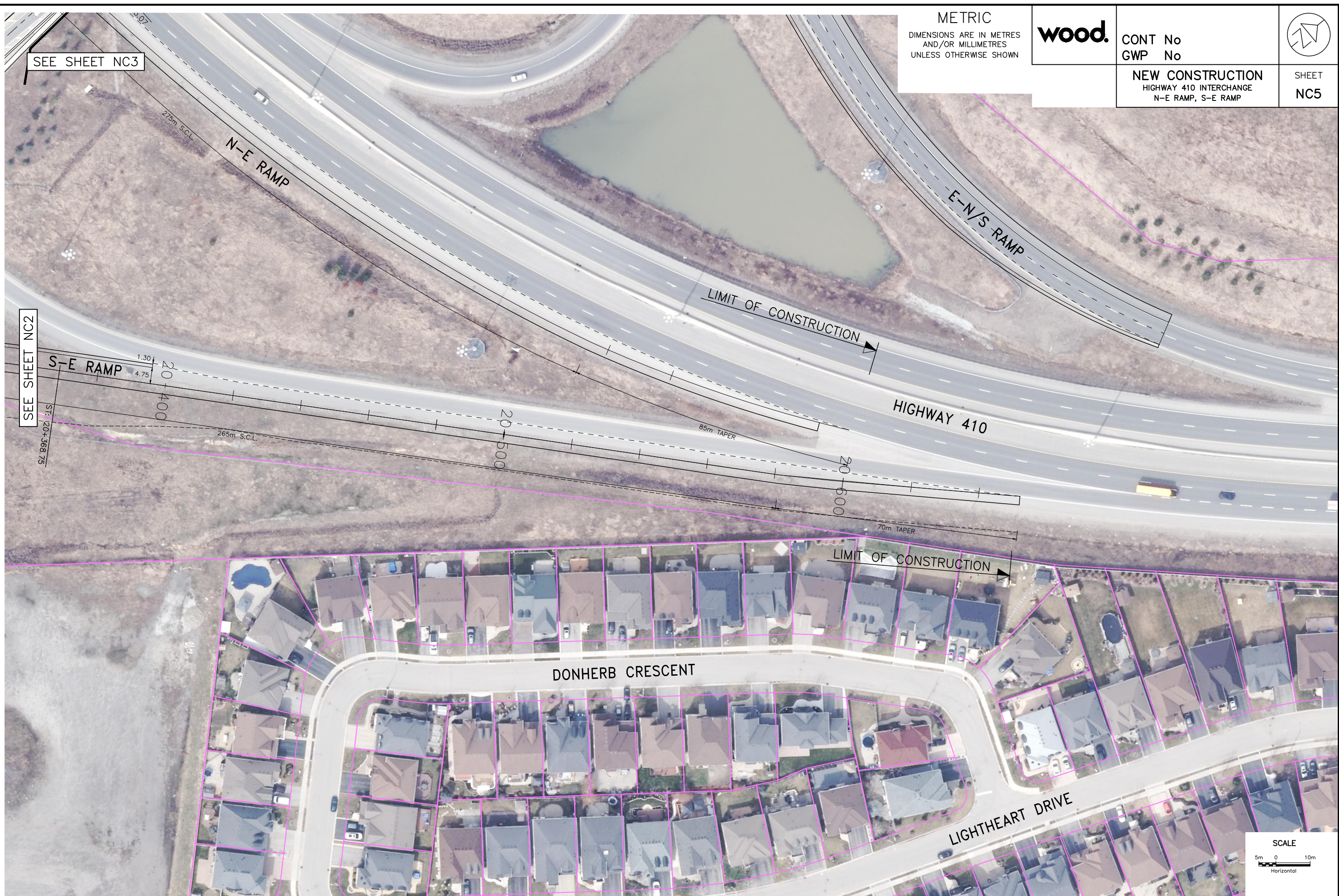


P:\2016\Projects\TPB 66090 - Caledon McLaughlin Road\06_DES-ENG\01_CAD\02_DWG\04_TRANS\01_PROJ\NC_1_v4.dwg

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PR-1-###

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METRIC
DIMENSIONS ARE IN METRES
AND/OR MILLIMETRES
UNLESS OTHERWISE SHOWN



CONT No
GWP No

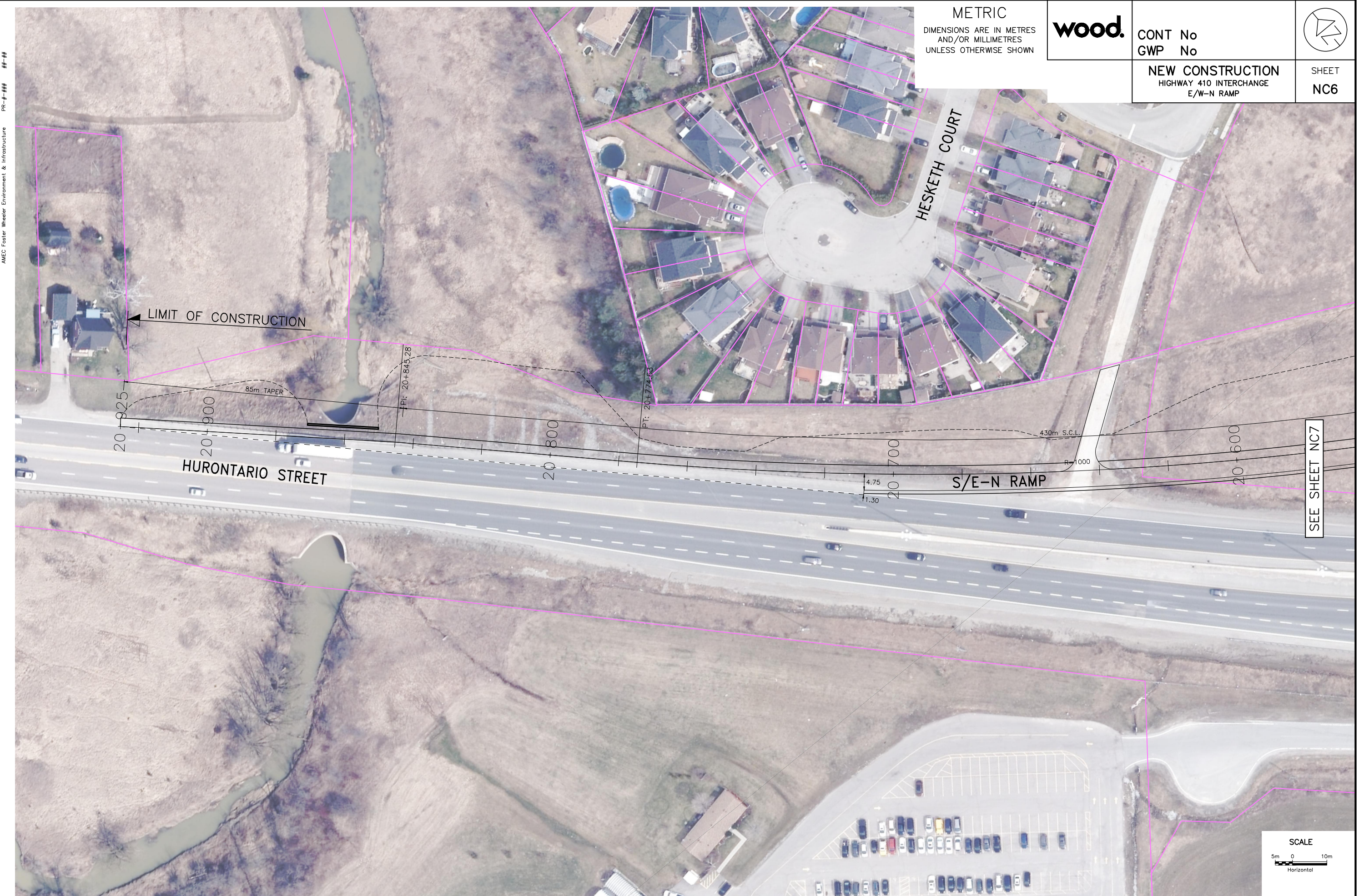
NEW CONSTRUCTION
HIGHWAY 410 INTERCHANGE
N-E RAMP, S-E RAMP

SHEET
NC5



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AMEC Foster Wheeler Environment & Infrastructure PR-1-###

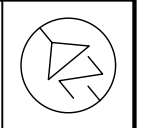


METRIC
DIMENSIONS ARE IN METRES
AND/OR MILLIMETRES
UNLESS OTHERWISE SHOWN



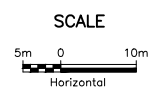
CONT No
GWP No

NEW CONSTRUCTION
HIGHWAY 410 INTERCHANGE
E/W-N RAMP



SHEET
NC6

SEE SHEET NC7

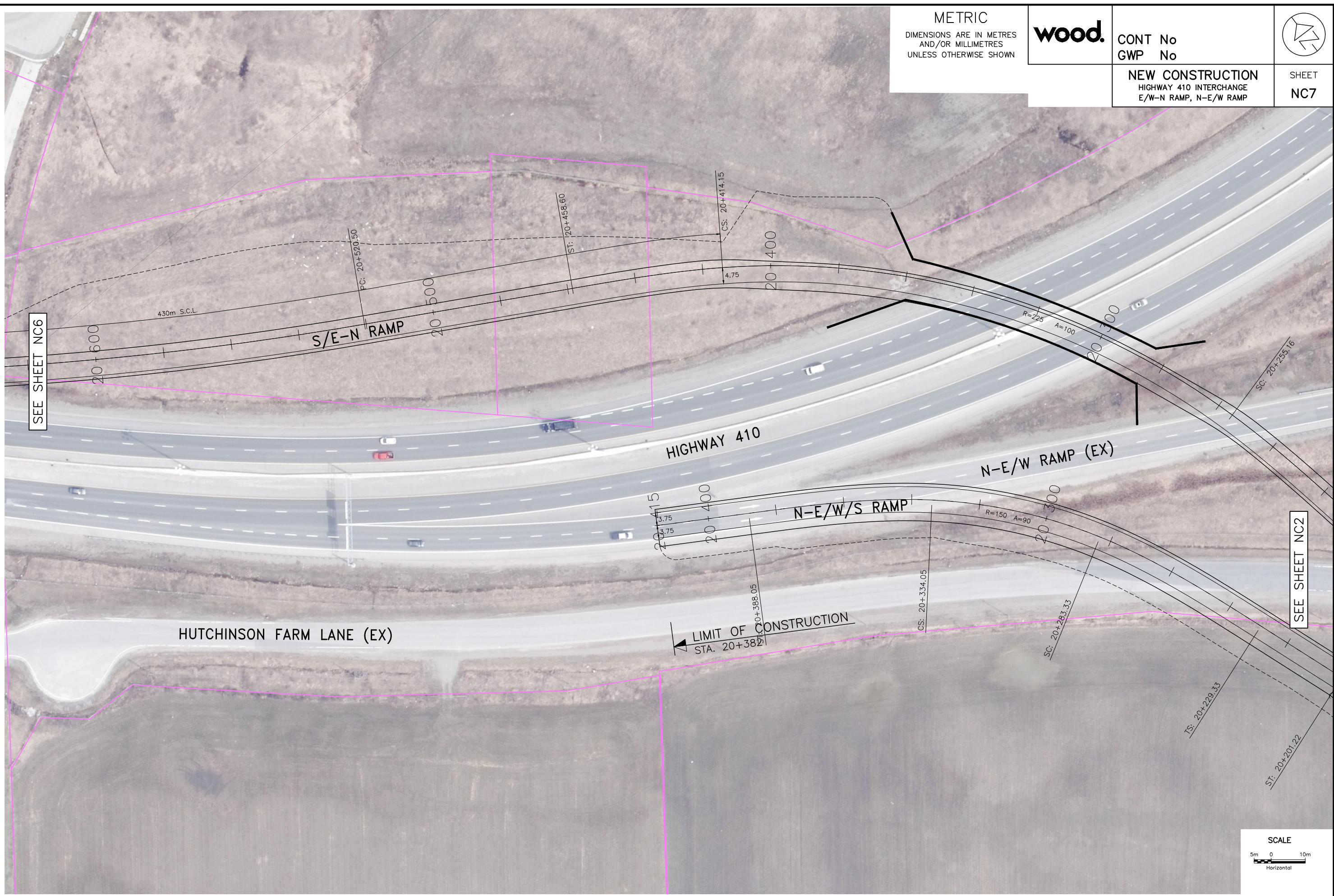


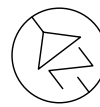
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AMEC Foster Wheeler Environment & Infrastructure

PR-1-###

##-##



<p>METRIC</p> <p>DIMENSIONS ARE IN METRES AND/OR MILLIMETRES UNLESS OTHERWISE SHOWN</p>	<p>wood.</p>	<p>CONT No</p> <p>GWP No</p> <p>NEW CONSTRUCTION</p> <p>HIGHWAY 410 INTERCHANGE</p> <p>E/W-N RAMP, N-E/W RAMP</p>	<p></p> <p>SHEET</p> <p>NC7</p>
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SEE SHEET NC6

SEE SHEET NC2

