

Attachment D

Final comments: CN

From: Umair Naveed <Umair.Naveed@cn.ca>
Sent: Monday, April 17, 2023 1:59 PM
To: Andrew Martin <andrew.martin@Wilmot.ca>
Subject: RE: 1856 Snyder's road Petersburg ON

We are ok with the re zoning as long as the land owner agrees to comply with all the requirements.

The agreement will be fully executed only upon completion of all the work by the land owner.

CN wants to make sure that all the items mentioned in the assessment report are addressed before agreement execution.

The details of work to be completed and verified prior to CN signing the agreement:

- Max 2 % approach grade for first 10m and 5 % after that is required at the approach to the crossing.
- Due to long vehicles the roadway approaches remain less than the maximum of 5 %.
- PSC will clear the vegetation and level off the ground to provide sightline of 652m from the stop position.
- CN will verify the available sightline of 652m in all four quadrants or consider installing a warning system at owner's cost.
- PSC will install an access gate that prohibits the use of crossing when sand pit operations are not running.
- PSC will consider installing asphalt crossing approaches.

You can contact me if you have any questions,

Thanks,



Umair Naveed

Officer, Public Works | Engineering - Eastern Region
T: 905-669-3184 | C: 416-436-7930 | E: umair.naveed@cn.ca

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Grade Crossing Safety Compliance Assessment

Canadian National Railway (CN)
Mile 68.56 Guelph Subdivision

Petersburg Sand Company Inc. (PSC)
Proposed Farm Crossing Relocation

Prepared by:

PARTUM Consulting Inc.
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Date: December 7, 2022



Umair Naveed
Officer Public Works – Engineering Eastern Region
Canadian National Railway
1 Administration Road
Concord, ON
L4K 1B9

Subject: Evaluating the grade crossing safety compliance of CN M68.56 Guelph subdivision's proposed relocation

Mr. Naveed,

As requested during our virtual meeting of November 3, 2022, please find enclosed the Grade Crossing Safety Compliance Assessment for the proposed relocation and reconstruction of the crossing at Mile 68.56 Guelph subdivision.

If you have any questions, please do not hesitate to contact me directly.

Sincerely,

PARTUM Consulting Inc.



Li-Lian Lui, M.Eng., P.Eng., PMP
Director
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Encl.



Disclaimer

The attached report (the Report) was prepared by PARTUM Consulting Inc. (the Consultant) for the owner of the noted crossing, Mike Hodgkinson of Petersburg Sand Company Inc. (the Client).

The information provided in this report represents the Consultant's best professional judgment of the industry standards in effect for the preparation of such Report. Information may be based on data provided to the Consultant which has not been independently verified. In addition, the recommendations and conclusions have been prepared exclusively for the purposes described in the Report and should not be used for any other purpose.

The results of this evaluation are valid for a maximum 1-year period, provided conditions remain consistent at the crossing. Should changes be sustained by the crossing, a re-assessment is recommended at that time.

The Consultant cannot be held responsible for any situation or event that has occurred since the date of preparation of this Report, or for any inaccuracy in the information provided to the Consultant.

List of Revisions

Revision #	Reviewed by	Date	Description
0	L. Lui	December 5, 2022	Draft submission to the Client
1	D. Barrett, M. Hodgkinson	December 7, 2022	Issuance for CN



Executive Summary

The Petersburg Sand Company Incorporated (PSC) and its agents have completed an application to Ministry of Northern Development, Mines, Natural Resources and Forestry (NDMNR). The application is a request to licence existing land as a new gravel pit which will operate 9 months out of the year (March to November). PSC and its development consultant (IBI Group) have also engaged Canadian National Railway's (CN) Proximity department to further the application and land use review process. A Zoning By-Law Amendment application to the Township of Wilmot was also submitted in June 2022.

To supplement the land use review, PSC is also seeking review and approval from CN's Public Works department for the proposed relocation of an existing at-grade crossing. The crossing is located at CN Mile 68.56 Guelph subdivision found at the civic address of 1856 Snyder's Road East in the community of Petersburg, Ontario.

The documents reviewed for this assessment included relevant documents from PSC's Development Application (ZCA-06-22) publicly accessible through the Township of Wilmot's website. Where referenced in this report, such documents are described should CN wish to access the documents directly.

To facilitate CN's acceptance of the proposed crossing relocation, PSC has commissioned Partum Consulting Incorporated (Partum) to complete a grade crossing assessment as requested by CN. The goal of the requested assessment was to describe the proposed conditions of the crossing and describe what would be required to ensure compliance to the relevant Transport Canada Railway Safety legislation. Supplemental to legal safety compliance, recommended safety best practices are also included in this report for consideration from all crossing stakeholders. At the time of this report, the preliminary planning for the crossing was underway. A final design for the crossing is pending. The final plans will be developed based on CN's review of this report.

This report summarizes the completed crossing assessment which confirms that a relocation and reconstruction of the crossing would be possible, provided the requirements of this report are followed.

All crossing stakeholders are encouraged to review this report and provide comment to establish a mutually agreed upon design and resultant scope of work.



Table of Contents

Executive Summary	iv
1. Introduction	6
1.1 Private Property	6
1.2 Canadian National Railway (CN).....	7
1.3 Transport Canada (TC).....	8
2. Relocation Proposal & Safety Assessment.....	10
2.1 PSC Proposed Crossing Relocation & Reconstruction.....	10
2.2 Railway Safety Compliance	12
2.3 Railway Safety Best Practices.....	14
2.4 Cost Apportionment & Responsibilities	15
3. Next Steps & Recommendations	16
4. Conclusion	17
5. References.....	18
Appendix A – Existing Conditions Plan	
Appendix B – Passive Grade Crossing: Standard Plan	
Appendix C – Operational Plan (taken from the Submission Materials of the Development Application to the Township of Wilmot)	

1. Introduction

1.1 Private Property

The crossing being assessed is located on private property found in the rural Township of Wilmot in the Regional Municipality of Waterloo just east of Kitchener, Ontario. The approximate 90 acre property has a civil address of 1856 Snyder's Road East in the community of Petersburg. The private owner of the land is Petersburg Sand Company Incorporated (PSC). The crossing is currently located at the western most limit (see **Figure 1**).



Figure 1. Subject property bordered (in red). CN railway shown in dotted-line (in yellow).¹

¹ Taken from Google Maps, November 2022 (not to scale)

The existing zoning is classified as Agricultural (Zone 1)². The land is currently agricultural with a residential dwelling, and barn on the southern portion of the property. The surrounding lands at the time of this report were observed as follows.

- The western side of the property abuts a residential and agricultural land use owner.
- The northeastern portion of the property abuts an existing sand pit.
- The northern limit of the property abuts a hydro tower right of way.
- The southern limit of the property abuts the public way of Snyder's Road East.

The public way to the south is the only direct access to the property. There are no alternatives to the crossing for accessing the larger northern portion of property.

The railway intersects the southern portion of PSC's property at an estimated 40-degree angle separating approximately two thirds of the land to the north from the remaining south portion (see **Appendix A – Existing Conditions Plan**).

1.2 Canadian National Railway (CN)

CN spans the length of Canada and Mid-America, connecting ports on three coasts to move raw materials, intermediate goods, and finished goods to market³. In addition, passenger trains including VIA Rail and Metrolinx travel on CN owned tracks.

The at-grade crossing being assessed is located at railway mileage 68.56 of the CN Guelph subdivision. **Table 1** below describes the characteristics of the existing crossing⁴.

Table 1 – Railway defined characteristics of the existing crossing

Maximum Railway Speed		Average Annual Daily Trains		# Tracks	Design Vehicle
Freight	Passenger	Freight	Passenger		
55 mph	70 mph	4	3	1	Heavy Single Unit Truck (HSU) 11.5m long ⁵

As the crossing is on private lands, train whistling is not required upon the approaches. The crossing is considered passive as it is not equipped with a railway automated advanced warning system. On December 6, 2022, CN completed work to equip the crossing with a Stop Sign, Private Crossing Sign, and Emergency Notification Sign on December 6, 2022 (see **Figure 2**). From the private owner's approaches there are currently no access gates or signage. The surface is made of rubber flangeway strips and gravel materials (see **Figure 2**). The approaches to the crossing are comprised of each and gravel.

² As provided by PSC & IBI Group, December 6 2022.

³ Taken from <https://www.cn.ca/en/about-cn/>, November 2022.

⁴ As provided by CN Public Works, November 2022.

⁵ As defined by the Transport Canada Grade Crossing Handbook, May 25, 2022 version.



Figure 2. Left taken 6-Dec-2022 showing CN installed signage. Right taken 21-Oct-2022, (Facing south) At-grade crossing at CN Mile 68.56 Guelph subdivision

1.3 Transport Canada (TC)

1.3.1 General & Compliance Requirements

TC governs the safety of all modes of transportation in the country including rail. TC's Rail Safety Program is responsible for administering the Railway Safety Act through the development and enforcement of regulations & standards. TC Rail Safety Inspectors conduct annual safety inspections of all aspects of the railway including operations, equipment, safety management, track, bridges, and crossings. Some of the primary aspects inspected include crossing sightlines, surface, signage, and signals system. Through the Grade Crossing Regulations (GCR) and Grade Crossing Standards (GCS), TC inspectors can legally enforce railway safety at grade crossings.

The GCR and GCS were introduced in 2014 to address the safe maintenance, design, and construction of public and private grade crossings. The GCR also clarifies the responsibilities of railways and road authorities at grade crossings. GCR amendments published in the summer of 2021 further describe the requirements for crossings such as the one being assessed.

As of November 2022, the crossing, also known in TC's inventory as crossing ID #51537, was ranked in the top 20% of low-risk crossings in all of Canada (17579 out of 21997). The risk ranking of crossings is based upon various factors such as crossing accident history, traffic volume, train speeds, roadway speeds, number of tracks, etc. In addition, the Transportation Safety Board's (TSB) Rail Transportation Safety Investigations and Reports index did not show any recorded incident at this crossing from the year 1900 to November 2022.

TC's inventory also classifies this crossing as a Farm crossing with an estimated Average Annual Daily Traffic (AADT) count of 2 movements. Considering this classification with the physical characteristics of the crossing, it could be further defined by the Canadian Transportation Agency (CTA) as a private and Section 102 Crossing of the Canadian Transportation Act. This would confirm the railway as fully responsible for the maintenance work and costs of this existing crossing.



From the November 2021 GCR amendments the existing private crossing must be in compliance to the requirements on or before November 28, 2024. For existing private crossing, the following items are required for minimum compliance to the GCR and GCS:

- Compliance requirements today/at the time of this report:
 - Design vehicle must be selected – For private crossings, the GCR deems this the responsibility of the railway. However, industry best practice recommends collaboration between the railway and crossing user(s) for selection of the most appropriate design vehicle.
 - Railway Crossing sign and Number of Tracks sign – If signs are present, such signage must be brought up to the GCS. If signs are not present, this requirement does not apply.
- Compliance requirements on (or before) November 28, 2024
 - Crossing Surface – To meet GCS article 5.
 - Road Approach – To meet GCS article 6.1.
 - Road Design Speed – Must be selected and defined by the crossing user(s).
 - Visibility of Signage & Advanced Warning Signage – Per GCR sections 80 & 81.

In addition, the GCR states that when changes are made to a grade crossing, the requirements of the GCS must be met. Therefore, if the proposed crossing relocation is accepted, CN and PSC will be required to meet the applicable TC requirements.

1.3.2 TC Grant Funding – Railway Safety Improvement Program (RSIP)

PSC has the intent of applying for RSIP funding to support the work associated with the relocation, where accepted by CN. As the deadline for 2023 funding has passed, the application will be submitted before August 2023 for the 2024/2025 construction season. It should be noted that the funding will only be applicable pending the timing of the actual work. A condition of the RSIP is that work commence after funding is approved by TC.

This report will be used as support for the RSIP application and will request grant funding for both PSC and CN. The funding has the potential of reimbursing PSC for 80% of the project costs and CN with 50% of the railway costs. Partum will generate high-level estimates for the application based on the general scope of work described in this report. All crossing stakeholders are encouraged to review this report and the recommended safety improvements to collaboratively select the appropriate works to be undertaken.

2. Relocation Proposal & Safety Assessment

2.1 PSC Proposed Crossing Relocation & Reconstruction

The primary goal of the crossing relocation is to add distance between the planned increase crossing use and the westerly neighbouring property. As seen in **Appendix A** the existing crossing is at the west limit of the property. PSC is proposing relocation of the crossing to approximately 0.1 miles (170 meters) to the east (see **Figure 3**).



Figure 3. Proposed crossing relocation. CN railway shown in dotted-line (in yellow)⁶

In addition to the relocation, PSC is also proposing reconstruction to a condition similar the adjacent sand pit crossing to the east at approximately CN Mile 68.20 Guelph subdivision (see **Figure 4**).



Figure 4. Adjacent existing sand pit crossing with wooden crossing surface and signage, taken October 2022.

⁶ Taken from Google Maps, November 2022 (not to scale)

Using the current AADT for trains of 7, and the proposed AADT for operational traffic of 18, the resultant cross-product is well below the Transport Canada 2,000 value warranting automated warning systems for public crossings. This further reinforces the possibility of reconstructing the crossing to the conditions of the adjacent sand pit crossing. **Table 2** summarizes the proposed crossing conditions when reconstructed in the proposed location for the sand pit operations.

Table 2 – PSC defined characteristics of the existing crossing and proposed crossing

Design Vehicle		Average Annual Daily Traffic for the crossing		# Lanes	Forecasted cross-product	Roadway Design Speed
Existing	Proposed ⁸	Existing ⁷	Proposed ⁸			
Heavy Single Unit Truck (HSU) 11.5m long ⁹	WB-20 Tractor Semi-Trailer 22.7m long ⁹	2	18	1	126	0 [Stop Sign Installation completed by CN on 6-Dec-2022]

In addition, as a best practice, **Table 3** defines all of the GCR Information Sharing aspects for the proposed crossing. **Appendix B – Passive grade crossing** also shows the typical plan for the crossing's physical conditions.

Table 3 – Proposed GCR Information Sharing for the relocated & reconstructed crossing

GCR Information Sharing- Railway Company, GCR 4(1)	
(a) precise grade crossing location	Mile 68.46 Guelph Subdivision
(b) number of tracks	1
(c) AADT – Railway	7 (est. 2023)
(d) railway design speed	70 mph (max. passenger)
(e) warning system in place	No
(f) Installed road stopping device	Yes (Stop sign)
(g) indication of railway equipment whistling upon approach	No (crossing not on public road)
GCR Information Sharing – Road Authority, GCR 12(1)	
(a) precise grade crossing location	43.418438, -80.595189
(b) number of traffic lanes that cross the crossing surface	1
(c) AADT – Road	18
(d) road crossing design/posted speed	0 (Stop Sign installed)
(e) roadway classification as set out in Table 10-2 of the GCS	Private Crossing n/a (Rural, Local, Not Divided)
(f) width of each traffic lane and shoulder on the road approach	4 (approximate)
(g) design vehicle	WB-20 Tractor Semi-Trailer

⁷ Taken from TC's Grade Crossing Inventory, November 2023.

⁸ Taken from GHD's Traffic Impact Study 1856 Snyder's Road, February 2, 2022.

⁹ As defined by the Transport Canada Grade Crossing Handbook, May 25, 2022 version.

GCR Information Sharing- Railway Company, GCR 4(1)	
(h) stopping sight distance	63 meters (206 feet)
(i) average gradient of the road approach	3.5% (per conservative maximums allowable See Appendix B)
(j) crossing angle	90 degrees
(k) applicable departure time	20.36 seconds
(l) activation time	Not applicable
(m) interconnection time	Not applicable
(n) indication of whether the grade crossing includes a sidewalk, path or trail, and whether designated for persons using assistive devices	No sidewalk, path or trail and no designation for persons using assistive devices

2.2 Railway Safety Compliance

As a result, the proposed new relocated crossing will improve the existing physical conditions and TC rail safety compliance as described below.

- Compliance requirements at time of construction (if before November 28, 2024)
 - Design vehicle must be selected – The WB-20 Tractor Semi-Trailer design vehicle is being defined by PSC to represent the long trucks used to service the proposed sand pit.
 - Railway Crossing sign and Number of Tracks sign – On December 6, 2022, CN completed work to install a Stop Sign, Private Crossing Sign and Emergency Notification Sign on a metal post (see **Figure 2**). However, a railway crossing sign and reflectorized strips were not installed. It is recommended that railway signage be installed as shown in **Appendix B**. A Number of Tracks sign is not required as the railway line is only one track through the crossing.

Maintenance of the signage shown in **Appendix B** will be the responsibility of the railway. Maintenance of the visibility of the signage upon the crossing approaches will be the responsibility of PSC.

- Compliance requirements on (or after) November 28, 2024
 - Crossing Surface – A wooden crossing surface as shown in **Figure 4** is proposed. This surface currently sustains sand pit trucks and could be seen as similarly adequate for the proposed crossing. **Appendix B** further describes the proposed crossing surface. It can be seen that the crossing angle will also be improved from the current condition to 90 degrees, and a 0.5-meter minimum crossing surface extension will be applied.

Maintenance of the surface from end of railway tie to end of railway tie will remain the responsibility of CN. The surface needs to be maintained to a smooth and continuous condition.

- Road Approach – Gravel roadway approaches are proposed as shown in **Appendix B**. Compared to the existing crossing, the newly relocated crossing will have approach gradients which meet the GCR & GCS requirements. Due to the long design vehicle, it is also recommended that the roadway approaches remain less than the maximum 5% gradient allowable for the minimum calculated SSD distance (i.e. 63 meters or 206 feet). This will eliminate visibility obstructions due steep horizontal gradient changes to the crossing. This will also support a consistent ability for vehicles to stop fully at the stop position without having to increase speed to accommodate for steep gradients.

Maintenance of the crossing's roadway approaches will be the responsibility of PSC. The approaches need to be maintained to a smooth and continuous condition.

- Road Design Speed – A Stop Sign was installed at the crossing on December 6, 2022. This will result in the need for all crossing users to come to a complete stop before proceeding over the crossing. As a result, sightlines will be measured from the stopped position.

Maintenance of sightlines along the railway right of way, will remain the responsibility of CN. Maintenance of sightlines along private property will be the responsibility of PSC.

- Visibility of Signage, Advanced Warning Signage & Sightlines – The Operations Plan (Sheet 2 of 5) dated November 24, 2022 (see **Appendix C**) will require update to show the crossing orientation of 90 degrees across the railway. As a conservative measurement, the Sight Stopping Distance (SSD) would be approximately 63 meters (206 feet) using an assumed roadway speed of 50km/hr. The ideal roadway approach conditions would be to maintain straight / tangent approaches for a minimum of 63 meters (206 feet) for both crossing approaches. This would help ensure clear visibility of the railway signage and crossing.

Should curvature be required in the operation road's crossing approaches, additional advanced warning signage must be installed for approaching vehicles. Advanced warning signage can include Railway Crossing Ahead and Advisory Speed Tab. Upon final design of the roadway approaches, the signage type and placement can be selected.

With the recent installation of Stop Signs at the crossing the minimum sightline distance along the tracks from the stopped position (D_{stopped}) is estimated at 637.63 meters (2091 feet) as calculated for a Tractor Semi-Trailer (WB-20) assuming the maximum allowable design conditions of **Appendix B**, and with a typical clearance distance of 9.30 meters (30 feet). During installation of the crossing, sightlines will need to be verified to ensure they are achievable and clear from obstructions (i.e. physical and vegetation).

For sightlines, no obstruction can be installed within the sightline triangles to ensure that crossing users have a clear view of approximately 637.63 meters (2091 feet) down the track (west and east) from the stopped position (see **Figure**

5). The Operations Plan in **Appendix C** shows a scale house at the northwest quadrant of the approach to the crossing. This scale house must be constructed outside of the sightline triangles, at minimum (see **Figure 5**). In addition, the location of the scale house must not promote queuing of waiting trucks over the tracks. Queuing of trucks or vehicles over the tracks can increase the risk of collisions with a train and introduce other railway safety concerns. It will be important to ensure the Operations Plan considers the correlation between the movements of trucks over the crossing and usage scale house. The crossing should not be within an area where trucks may be waiting to be weighed by the scale house.

Vegetation should also be maintained to avoid overgrowth within the D_{Stopped} sightline triangles.

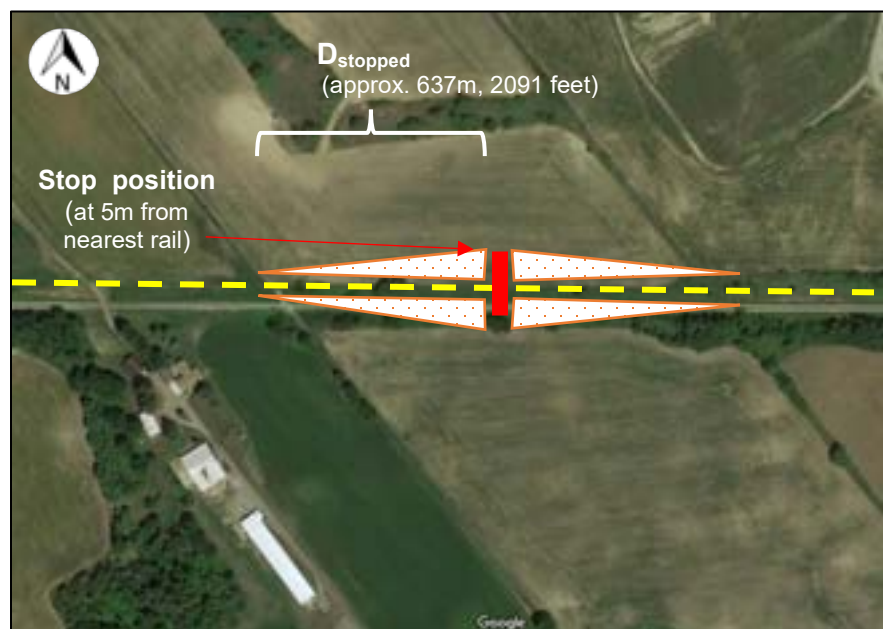


Figure 5 – Estimated D_{stopped} (in orange with dotted fill) required sightlines (NTS). CN railway shown in dotted-line (in yellow) ¹⁰

2.3 Railway Safety Best Practices

In addition to the minimum requirements for legislated compliance as described above, additional best safety practices could also be considered. Such practices, include, and are not limited to:

- **Signage & Access Gates** - It is recommended that PSC consider installing Private Property and/or No Trespassing signage upon the crossing approaches. Installation of an access gate to upon the north approach is shown in the Operations Plan (**Appendix C**). This access gate will prohibit crossing use when the sand pit operations are not running (i.e. December to February). The signage mentioned could be installed on the gates. Maintenance of such signage will be the responsibility of PSC.

¹⁰ Taken from Google Maps, November 2022 (not to scale)

- Asphalt roadway approaches – It is recommended that PSC consider asphalt crossing approaches to avoid rutting of roadway approaches overtime, and to help with ensuring the travelled way remains smooth and continuous. If asphalt is used, installation of a stop bar pavement marking is also recommended.
- Installation of operational / crossing use rules – It is recommended that PSC consider imposing operational / crossing use rules, where appropriate. Such rules could include, only one truck / vehicle crossing at a time; closure of the crossing under low visibility conditions (i.e. due to weather, dusk, etc.); mandatory crossing use training / orientation for drivers; establishing reporting procedures if the crossing surface becomes rough; etc.
- Continual monitoring of crossing use – It is recommended that continual monitoring of the crossing use be conducted to validate the estimated use, traffic counts, and overall safety conditions. Corrective actions can then be address if / as deficiencies are observed.
- Trespassing and future development review – It is recommended that all crossing stakeholders monitor the instances of trespassing along the railway right of way to ensure the instances remains low / non-existent. This monitoring also relates to future adjacent developments and ensuring that they do not promote unauthorized access to the crossing or CN's right-of-way.

Both parties are encouraged to collaborate to further explore other relevant safety best practices for the crossing.

2.4 Cost Apportionment & Responsibilities

The overall costs of crossing projects are typically placed on the initiator, provided conditions remain consistent at the crossing. At the time of this review, CN confirmed that a 2.5% increase in railway traffic per year for the next 10 years is anticipated. In addition, CN confirmed that within the next 5 years there are no plans for adding additional tracks through the crossing. From the crossing owner (PSC)'s plans, it can be seen that the proposed change in land use is the primary driver for this crossing relocation and reconstruction. As a result, it is anticipated that PSC will be responsible for the majority of costs for this project. Railway resources will also be required to perform the installation of railway signage and the crossing surface, at minimum.

Both parties will be required to collaborate to come to an agreement on the responsibilities and cost apportionment for construction and maintenance of the relocated & reconstructed crossing.

3. Next Steps & Recommendations

At the time of this report, the approvals for both the NDMNRF license and Township of Wilmot land development application were pending. However, PSC commissioned this report to support the development application. As a result, this report will be provided to the relevant stakeholders.

The immediate next steps will be for CN to review this report and provide feedback on acceptance of the proposal, as well as any other requirements. PSC will continue to pursue approvals, licensing, permitting, and all other relevant processes required for their proposed sand pit.

Table 4 summarizes the next steps & recommendations towards completing the relocation & reconstruction of the crossing, once PSC obtains all the required approvals, licensing, permitting.

Table 4. Summary of next steps & recommendations

Item	Report Reference(s)	Responsible Part(ies)	Recommended Actions
1	<ul style="list-style-type: none"> Subsection 1.3.2 	PSC	Apply for 2024/25 RSIP grant funding for potential partial reimbursement of costs associated with the relocation & reconstruction (for both PSC and CN).
2	<ul style="list-style-type: none"> Section 2.2 	PSC	Update the Operational Plan to show the proposed crossing orientation of 90 degrees and exact location of scale house. Complete roadway design taking into consideration the compliance aspects of this report.
3	<ul style="list-style-type: none"> Subsection 2.4 	CN & PSC	Ensure the proper approvals and agreements are in place prior to the start of work, as mutually agreed.
4	<ul style="list-style-type: none"> Subsection 2.2 	CN	Installation and maintenance of Railway Crossing Sign, and Reflectorized Strips per Appendix B .
5	<ul style="list-style-type: none"> Subsection 2.2 	CN	Installation and maintenance of wooden plank crossing surface at 90 degrees angle per Appendix B . Ensure sightlines are achievable and clear of obstruction on the railway right of way.
6	<ul style="list-style-type: none"> Subsection 2.2 	PSC	<p>Installation and maintenance of roadway and approaches to the crossing. Ensure sightlines are achievable and clear of obstruction on PSC lands.</p> <p>Installation and maintenance of access gate and signage as required, as well as installation of access gate as shown in Appendix C.</p>
7	<ul style="list-style-type: none"> Subsection 2.3 	CN & PSC	Consider safety best practices to further pursue railway and public safety at the crossing.

4. Conclusion

This assessment confirmed that relocation and reconstruction of the crossing is feasible and could improve some of the physical conditions when compared to the existing crossing. The relocation will also allow for a complete reconstruction of the crossing with the requirements of the GCR and GCS in mind. This should also improve rail safety compliance of the crossing once relocated and installed to the legislated standards.

The proposed relocation will require in-depth coordination between PSC and CN. Such collaboration will also ensure the improvements recommended herein are practical to both the PSC and CN. A value engineering workshop can be held to review this report and select the final scope of work. However, at a minimum PSC is highly encouraged to prioritize the GCR & GCS compliance aspects detailed in this report.

Railway crossing management is an ongoing process of continuous improvement. Once the relocation and reconstruction are completed, PSC and CN are encouraged to continually monitor the new crossing to validate the level of safety. This will also confirm whether additional actions should be considered to work towards continual improvement and maintenance of safety at the crossing.

5. References

1. Transport Canada, Grade Crossing Regulations, November 26, 2021.
2. Transport Canada, Grade Crossing Standards, January 2019.
3. Transport Canada, Grade Crossing Handbook, May 25, 2021.

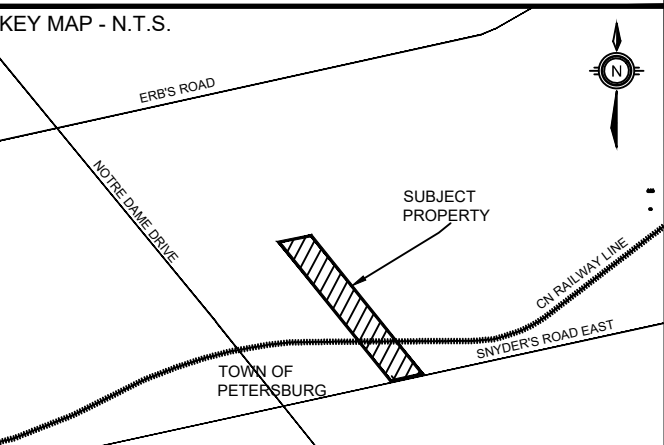


Appendix A – Existing Conditions Plan

MIDDLE STREET PIT
EXISTING CONDITIONS PLAN
SHEET 1 OF 5

CLIENT
PETERSBURG SAND
COMPANY INC.

SIGNATURE: MIKE HODGKINSON - PRESIDENT
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- LEGEND
- SUBJECT PROPERTY BOUNDARY
 - EXISTING POST & WIRE FENCE
 - LICENSED AREA
 - EXTRACTION LIMIT
 - SURROUNDING PROPERTY BOUNDARY
 - ZONING BY-LAW BOUNDARY
 - EXISTING TREELINE
 - EXISTING CONTOUR (masl) (1m INTERVAL)
 - GRAND RIVER SOURCE PROTECTION AREA BOUNDARY
 - HYDRO EASEMENT
 - G.R.C.A. REGULATION LIMIT
 - EXISTING MONITORING WELL
 - EXISTING WATER LOGGER
 - EXISTING ENTRANCE / EXIT
 - EXISTING BUILDING
 - FODM5-1 DRY-FRESH SUGAR MAPLE DECIDUOUS FOREST
 - MAS02-1 MIXED FORB ORGANIC SHALLOW MARSH
 - OA0 OPEN AQUATIC
 - MAS02-4 BEGGAR'S TICKS ORGANIC SHALLOW MARSH
 - MAS01-4 REED CANARY GRASS ORGANIC SHALLOW MARSH
 - DIRECTION OF SURFACE-WATER FLOW

REVISIONS PRIOR TO APPROVAL		
No.	DATE	DESCRIPTION
1	17/05/2022	NDMNR FIRST COMMENTS 12/05/2022
2	24/11/2022	REVISIONS FROM AGENCY CIRCULATION

SITE PLAN AMENDMENTS		
No.	DATE	DESCRIPTION

SITE DATA	
AREA TO BE LICENSED	27.54 ha
AREA TO BE EXTRACTION	22.50 ha
EX. DISTURBED AREA	Nil
TOTAL LAND PARCEL	36.38 ha

THIS SITE PLAN IS PREPARED UNDER THE AGGREGATE RESOURCES ACT FOR A CLASS A LICENSE FOR A PIT ABOVE THE GROUND WATER TABLE. THIS SITE PLAN IS CERTIFIED BY THE UNDERSIGNED BY THE AUTHORITY OF MINISTERIAL APPROVAL AS SPECIFIED IN THE AGGREGATE RESOURCES ACT SECTION 8 (4).

APRIL 22, 2022
DATE
DAVE BARRETT, MCIP, RPP

SCALE
30 0 20 40 80
1:2000 (m)

IBI GROUP
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Waterloo ON N2L 3V3 Canada
tel 519 585 2255
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PROJECT
1856 SNYDER'S ROAD EAST
PART OF LOT 5, NORTH OF SNYDER'S ROAD, TOWNSHIP OF WILMOT, REGIONAL MUNICIPALITY OF WATERLOO

PROJECT NO: 132496	SCALE: 1 : 1,500
DRAWN BY: E.T.J.M.	CHECKED BY: C.T.
PROJECT MGR: D.B.	APPROVED BY: D.B.

SHEET TITLE
EXISTING CONDITIONS

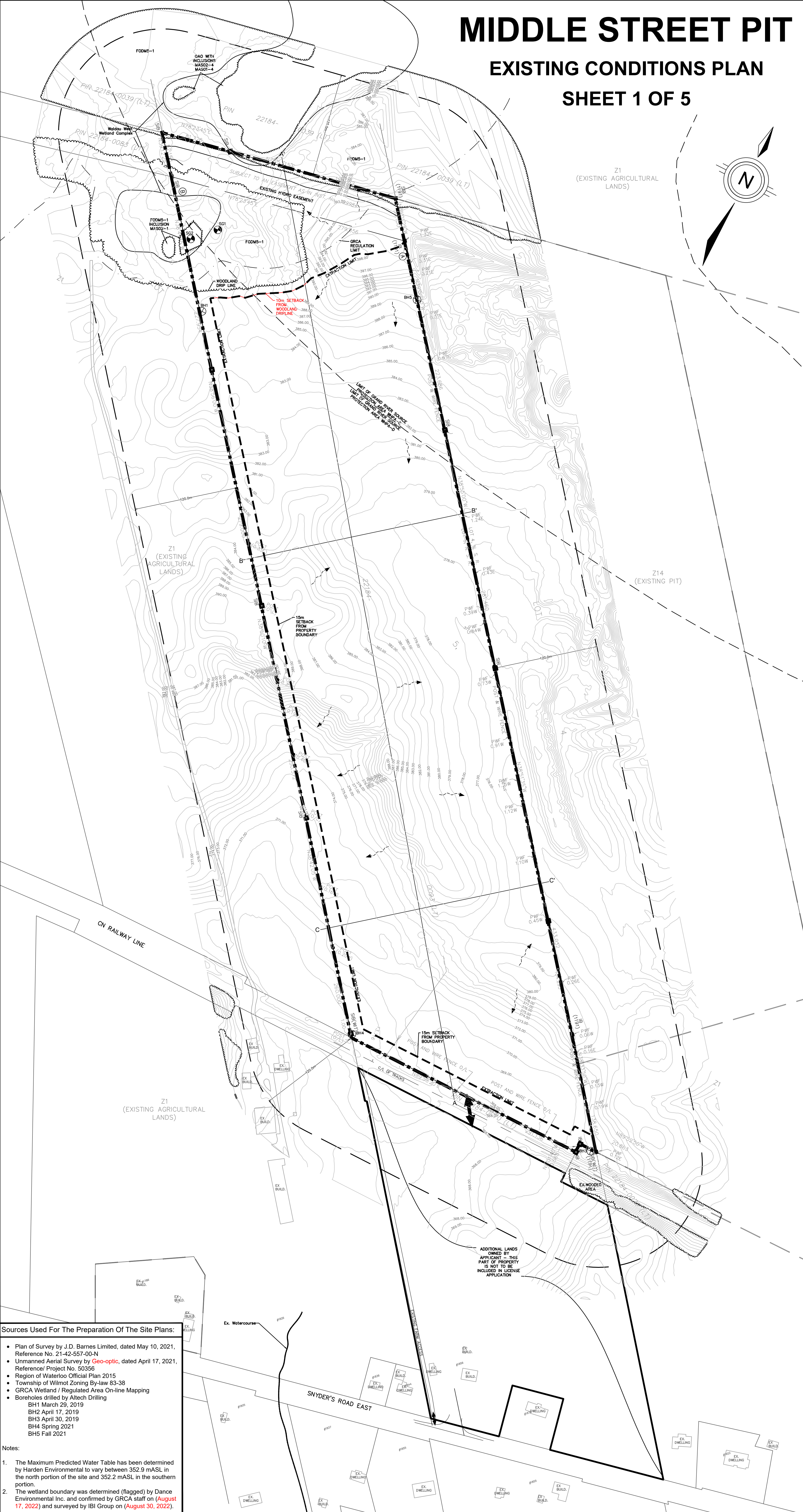
SHEET NUMBER 1 of 5	ISSUE 1
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Sources Used For The Preparation Of The Site Plans:

- Plan of Survey by J.D. Barnes Limited, dated May 10, 2021, Reference No. 21-42-557-00-N
- Unmanned Aerial Survey by Geo-optic, dated April 17, 2021, Reference/ Project No. 50356
- Region of Waterloo Official Plan 2015
- Township of Wilmot Zoning By-law 83-38
- GRCA Wetland / Regulated Area On-line Mapping
- Boreholes drilled by Altech Drilling
BH1 March 29, 2019
BH2 April 17, 2019
BH3 April 30, 2019
BH4 Spring 2021
BH5 Fall 2021

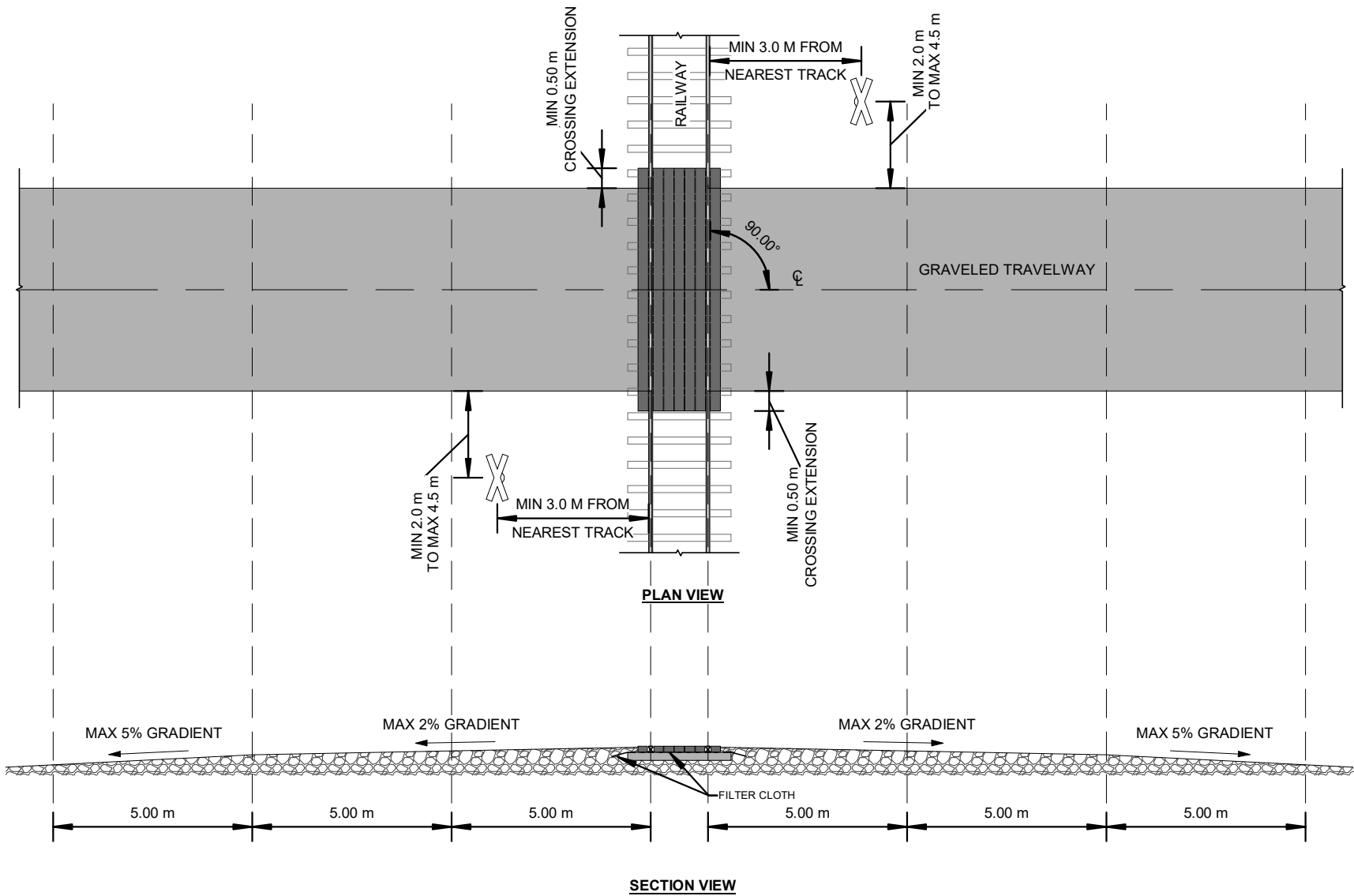
Notes:

- The Maximum Predicted Water Table has been determined by Harden Environmental to vary between 352.9 mASL in the north portion of the site and 352.2 mASL in the southern portion.
- The wetland boundary was determined (flagged) by Dance Environmental Inc. and confirmed by GRCA staff on (August 17, 2022) and surveyed by IBI Group on (August 30, 2022).





Appendix B – Passive Grade Crossing: Standard Plan



- NOTES:**
- SIGNAGE AND WOODEN PLANK CROSSING SURFACE TO BE INSTALLED BY RAILWAY.
 - WOODEN PLANK CROSSING SURFACE TO BE SMOOTH CONTINUOUS.
 - SIGHTLINES MEASURED FROM STOPPED POSITION TO BE CLEAR OF VEGETATION AND OBSTRUCTION.
 - WOODEN PLANK CROSSING SURFACE TO BE A MINIMUM 24FT WIDTH FOR TRAVELLED WAY.
 - AS A BEST PRACTICE FILTER CLOTH CAN BE INSTALLED TO PROTECT THE TRACK INFRASTRUCTURE BENEATH THE CROSSING SURFACE FROM DUST, DIRT AND DEBRIS.
 - LOCATION OF SIGN POSTS TO BE SELECTED ACCORDING TO DESIGN VEHICLE.
 - VIEW OF SIGNAGE UPON APPROACHING THE CROSSING MUST BE UNOBSTRUCTED.
 - REFLECTORIZATION STRIP TO BE APPLIED ACCORDING TO GCS FIGURE 8-2.
 - SIGNAGE TO COMPLY WITH GCS FIGURE 8-4.
 - FLANGWAY SPACING TO COMPLY WITH TABLE 5-1.
 - INSTALLATION OF ALL CROSSINGS REQUIRE REVIEW AND APPROVAL BY THE RAILWAY.
 - CROSSING MAINTENANCE RESPONSIBILITIES TO BE ESTABLISHED BETWEEN THE RAILWAY AND PROPERTY OWNER.
 - EMERGENCY SIGN INSTALLATION BY THE RAILWAY IS MANDATORY FOR PUBLIC CROSSINGS, AND A BEST PRACTICE FOR NON-PUBLIC GRADE CROSSINGS. EMERGENCY SIGNAGE MUST COMPLY WITH GCS 8.5.
 - INSTALLATION OF 'NO TRESPASSING' AND/OR 'PRIVATE PROPERTY' SIGNAGE IS A BEST PRACTICE FOR PROPERTY OWNERS TO CONSIDER.
 - INSTALLATION OF ACCESS GATES OR OTHER MEANS TO RESTRICT USE OF THE CROSSINGS IS A BEST PRACTICE FOR PROPERTY OWNERS TO CONSIDER.

NOTES:
DRAWN BY: O. FESENKO

FOR REFERENCE ONLY

A	CLIENT REVIEW	5/12/2022
REV.	DESCRIPTION	DATE

CAUTION:
THE LOCATION OF UTILITIES IS APPROXIMATE ONLY, AND THE EXACT LOCATION SHOULD BE DETERMINED BY CONSULTING THE MUNICIPAL AUTHORITIES AND UTILITY COMPANIES CONCERNED. THE CONTRACTOR IS RESPONSIBLE TO PROVE THE LOCATION AND STATUS OF UTILITIES AND SHALL BE RESPONSIBLE FOR ADEQUATE PROTECTION OF PLANT AND EQUIPMENT FROM DAMAGE.

UNITS	mm & ft	DRAWING	1 OF 1
SCALE	As Indicated	APPROVED	L.Lui

PROJECT NAME
PROPOSED AT-GRADE CROSSING
RELOCATION
CN MILE 68.46 GUELPH SUBDIVISION

PROJECT LOCATION
CIVIC ADDRESS: 1856 SNYDER'S ROAD
EAST, PETERSBURG IN THE TOWNSHIP
OF WILMOT, ONTARIO

CLIENT
PETERSBURG SAND
COMPANY INC.

DRAWING TITLE
PASSIVE RAILWAY CROSSING DETAILS

DRAWING No.
A-100

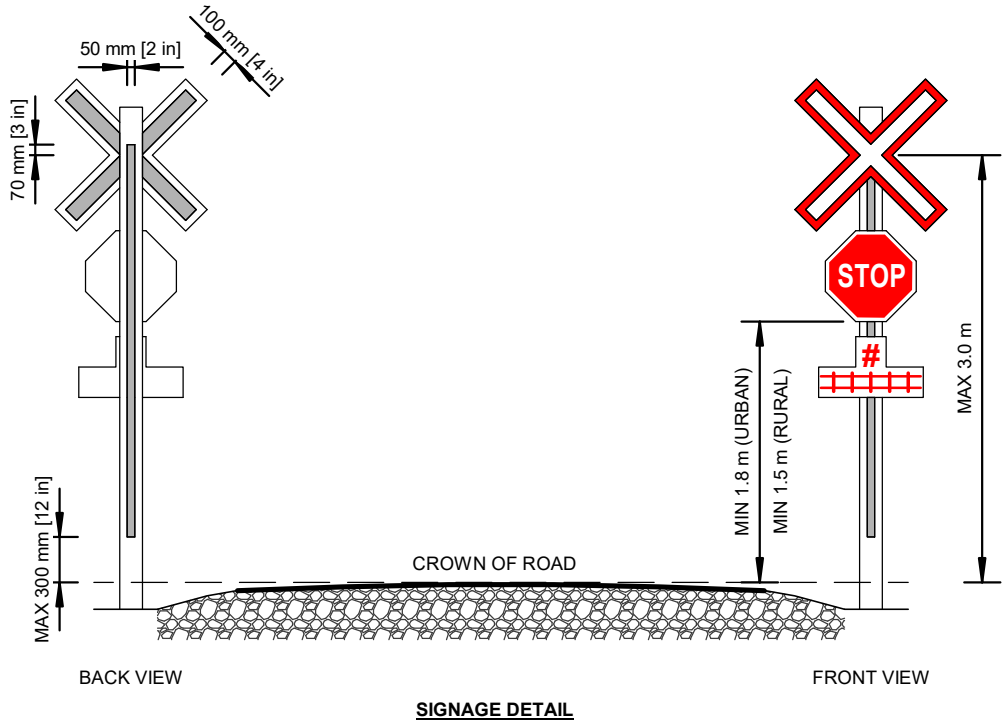
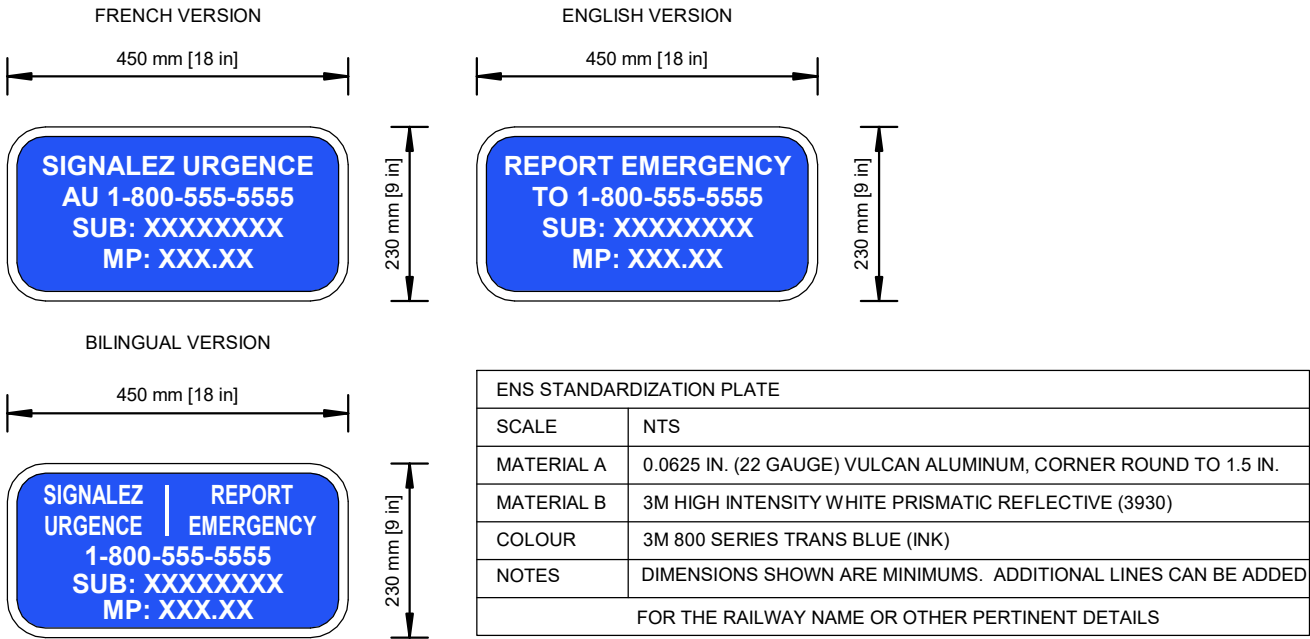


FIGURE 8-5 EXAMPLES OF EMERGENCY NOTIFICATION SIGNS





Appendix C – Operational Plan (taken from the Submission Materials of the Development Application to the Township of Wilmot)

