

SCHEDULE 2 – Traffic Management Plan

**Amherst Island Wind Energy Project
TRAFFIC MANAGEMENT PLAN¹**




Prepared for:
Algonquin Power Services Canada

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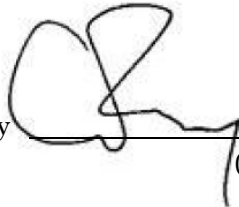
¹ The information and plans set out in this document should be read together with the additional traffic-related planning details in the Operations Plan, which together constitute the project's traffic management plan.

Sign-off Sheet

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**AMHERST ISLAND WIND ENERGY PROJECT
TRAFFIC MANAGEMENT PLAN**

Table of Contents

1.0 INTRODUCTION & BACKGROUND1.1

1.1 OBJECTIVES & SCOPE..... 1.1

 1.1.1 Items Unrelated to the Scope of a Traffic Management Plan..... 1.2

1.2 LOCAL CONTEXT AND KEY TRANSPORTATION ISSUES..... 1.2

1.3 OBSERVED ROAD CHARACTERISTICS & TRAFFIC..... 1.3

 1.3.1 Description of Roads 1.3

 1.3.2 Speed Limits..... 1.3

 1.3.3 Intersection Control..... 1.3

 1.3.4 Traffic & Pedestrian Volumes 1.4

 1.3.5 Main Traffic Routes 1.4

2.0 OVERVIEW OF CONSTRUCTION ACTIVITIES2.5

2.1 CONSTRUCTION ACTIVITIES IMPACTING THE PUBLIC RIGHT-OF-WAY 2.5

 2.1.1 Access Road Construction on Private Lands 2.5

 2.1.2 Modifications to the Public Roads 2.5

 2.1.3 Construction of Underground Collector System 2.6

 2.1.4 Major Turbine Component Deliveries 2.6

2.2 CONSTRUCTION ACTIVITIES OUTSIDE THE PUBLIC RIGHT-OF-WAY 2.7

 2.2.1 Turbine Foundations 2.7

 2.2.2 Construction of Temporary Laydown Areas and Office Trailers 2.7

 2.2.3 Construction of Transformer Station..... 2.8

2.3 CONSTRUCTION SCHEDULE 2.9

2.4 TYPES OF CONSTRUCTION VEHICLES 2.9

3.0 TRAFFIC MANAGEMENT PLAN3.10

3.1 MAINLAND ACCESS..... 3.10

3.2 CONSTRUCTION-RELATED TRAFFIC IMPACTS 3.10

 3.2.1 Impacts to Ferry Traffic..... 3.10

 3.2.2 General Impacts..... 3.10

 3.2.3 Specific Types of Traffic Impacts 3.11

3.3 TRAFFIC MANAGEMENT STRATEGIES..... 3.12

 3.3.1 Construction-Related Traffic Routes 3.12

 3.3.2 Traffic-Related Schedule Management 3.12

 3.3.3 Illumination 3.13

 3.3.4 Signage 3.13

 3.3.5 Escort/Warning Vehicles for Oversize Loads..... 3.14

 3.3.6 Flag Persons..... 3.15

 3.3.7 Parking and Moving Equipment/Vehicles on-site..... 3.15

 3.3.8 Specialty Vehicles 3.15

 3.3.9 Pedestrian and Cyclist Accommodation 3.15

 3.3.10 Public Information Strategy..... 3.16

 3.3.11 Wildlife Mitigation 3.16

 3.3.12 Construction Vehicle Driver Instructions & Supervision 3.17



**AMHERST ISLAND WIND ENERGY PROJECT
TRAFFIC MANAGEMENT PLAN**

3.3.13 Oversight of Traffic Management Strategies 3.17
3.3.14 Dust Control and Snow Removal 3.18

LIST OF FIGURES

- Figure 1: Site Location, Amherst Island, ON
- Figure 2: Example Full Road Closure on South Shore Road
- Figure 3: Example Lane Closure on 2nd Concession Road
- Figure 4: Example Traffic Interruption for Turbine Delivery

APPENDICES

- APPENDIX A – TYPICAL SIGNAGE
- APPENDIX B – SIGNAGE PLACEMENT MAPS
- APPENDIX C – WILDLIFE MITIGATION
- APPENDIX D – SUMMARY OF DETOUR ROUTES
- APPENDIX E – INCIDENT REPORTING FORM

AMHERST ISLAND WIND ENERGY PROJECT TRAFFIC MANAGEMENT PLAN

1.0 Introduction & Background

A Wind Energy Project (the “Project”) located on Amherst Island located in Lake Ontario south of the Village of Bath has been proposed by Windlectric Inc. The Project was approved by the Ministry of the Environment and Climate Change through Renewable Energy Approval issued on August 24, 2015. The Project involves the construction and operation of 26 wind turbines (27 sites are permitted), which will be situated on Amherst Island as illustrated in **Figure 1** and **Pre-Construction Study Schedule (d) “Pre-Construction Preparatory Work Plans & Drawings**, which also show the location of the proposed wind turbine sites, public road widenings, intersection improvements, and the permanent access roads that lead from the public road to the individual sites.

1.1 OBJECTIVES & SCOPE

In order to create an environment that mitigates the level of disruption and inconvenience to the Municipality’s residents, it is important to limit the number of interactions of construction vehicles/equipment with local resident/tourist traffic and local wildlife, and also to establish reasonable controls to be used to safely manage such interactions when they cannot be avoided.

A Traffic Management Plan (TMP) will be implemented on Amherst Island during construction to address safety requirements of the Project. This report reflects the assessment conducted to define the TMP, as well as the details of the TMP itself including:

- A consideration of the existing traffic, pedestrian, and cycling activity on the island as well as the related road/intersection operations;
- Potential safety concerns related to the design of the existing roadways and/or intersections, given the addition of construction vehicles to the mix of traffic on Amherst Island;
- Determination of the routes from a safety perspective between the Island laydown areas, the Island dock, and proposed wind turbine sites;
- An articulation of the TMP to manage construction traffic in a manner that minimizes the potential impact on local wildlife; and
- The specific measures to be implemented during the construction phase of the Project, which incorporate the principles and guidelines of the *Ontario Traffic Manual (OTM) Book 7 Temporary Conditions*.

The TMP outlines specific measures that will be used during construction of the Project to manage the interaction between construction-related traffic and regular traffic, and between regular traffic and temporary construction-related road conditions. Some traffic and road conditions can change significantly over time; therefore the TMP must be revised, adapted, and field-fitted to the local conditions during the course of construction.

AMHERST ISLAND WIND ENERGY PROJECT

TRAFFIC MANAGEMENT PLAN

1.1.1 Items Unrelated to the Scope of a Traffic Management Plan

Items that do not substantially affect traffic safety and/or mobility do not fall within the scope of a TMP. Examples of out-of-scope items include construction methods, depths of granular material for widenings, buried or elevated utilities, ditch drainage, an existing conditions assessment of the road structure, etc.

1.2 LOCAL CONTEXT AND KEY TRANSPORTATION ISSUES

Amherst Island is part of Loyalist Township within the County of Lennox and Addington. It has a population of approximately 400 people, which roughly doubles during the summer months. There are two hamlets on the island, Stella and Emerald, and rural residential development is generally located along the shoreline along Concession Road 3. There are many small businesses located on the island as well as farm lands that occupy most of its interior.

The Amherst Island Public School is located at 5955 Front Road. This school provides programs from junior kindergarten to grade 8 (approximately 30 pupils), and is served by a school bus operating on the island. Class times are from 8:35 a.m. to 2:50 p.m. The school also functions as a community centre, and so occasional small traffic spikes may occur related to community events. There are also several churches located on the island.

Transportation between the mainland (Millhaven) and the island (Stella) is provided by a ferry service for vehicles (maximum capacity of 30 cars) and passengers. The ferry runs on an hourly schedule between 6:00 a.m. and 1:30 a.m. and a one-way trip takes approximately 20 minutes. Ferry log information for 2014 indicates that, during an average month, approximately 11,000 cars and trucks are transported to and from the island. This translates into 370 average daily vehicle trips by ferry, and an average hourly volume of approximately 30 vehicles (15 vehicles to or from the island in an average hour). The seasonal variation of the ferry traffic was examined to determine how much the summer peak traffic would vary from the annual average traffic. It was found that the peak traffic for 2014 occurred in August with 13,576 car and truck trips. The seasonal peak trips were found to be approximately 23% greater than the annual average trips.

The key transportation considerations related to the context of the Amherst Island community and the planned construction of the Project are:

- The importance of the ferry to island residents as the single means for access (egress) to and from the mainland for traffic and in particular for emergency services support;
- Potential conflicts between construction-related traffic and the day-to-day activities associated with the local community, including local travel by car, school bus, bicycle, and on foot as well as the movement of farm machinery;
- The need to ensure that local residents are aware of the temporary conditions during construction that could affect traffic safety, or cause delay, on various parts of the island, depending on the location of the work sites; and

AMHERST ISLAND WIND ENERGY PROJECT

TRAFFIC MANAGEMENT PLAN

- The need to ensure that local wildlife and its habitat are not adversely impacted by the construction traffic associated with the Project.

1.3 OBSERVED ROAD CHARACTERISTICS & TRAFFIC

1.3.1 Description of Roads

The majority of the island roads can be characterized as having rural cross sections (i.e. gravel or grass shoulders and open drainage), relatively narrow travel widths (approximately 4 to 5m), and gravel surfaces. The exceptions include sections of Front Road along the north shore and Stella Forty Foot Road that have paved surfaces and travel widths of approximately 6 to 7m. The island roads are relatively flat (so sight lines are not limited) with the exception of the central section of Stella Forty Foot Road where there is a minor crest in the vicinity of the Glenwood Cemetery that limits north-south sight lines to some extent, along with a section of South Shore Road where it winds along the lakeshore. South Shore Road is a winding, narrow, gravel road that hugs the lake shore closely in some locations, allowing limited space for passing oncoming vehicles.

1.3.2 Speed Limits

There are some sections of Front Road with a posted speed limit of 50 km/h, while most of the other roads have no posted speed limits (statutory maximum speeds would apply, i.e. 50 km/h in urban settings and 80 km/h in rural settings). The physical characteristics and limitations of the island roads create a natural limit to vehicle speed.

1.3.3 Intersection Control

Most intersections lack stop or yield signs and are therefore “uncontrolled”, and approaching drivers are required to yield to a vehicle approaching from the right under the normal rules of the road. Several intersections have stop-controlled approaches such as Front Road/Stella Forty Foot Road (all-way stop) and Emerald Road/Second Concession (stop control on westbound approach), while several other intersections have yield signs on the minor street approach (e.g. Emerald Road/Front Road and Stella Forty Foot Road/South Shore Road).

AMHERST ISLAND WIND ENERGY PROJECT

TRAFFIC MANAGEMENT PLAN

1.3.4 Traffic & Pedestrian Volumes

Based on field observations and the limited capacity of the ferry, it is estimated that the hourly volumes on sections of the main roads such as Front Road and Stella Forty Foot Road would likely be in the order of 20 to 30 vehicles. The traffic on the remaining island roads is estimated to be 10 or less vehicle trips during a typical hour including movement of large farm machinery. Given these traffic volumes there are no road traffic capacity issues or significant operational issues, with the possible exception of short duration traffic activity during festivals or other special events.

Although cycling and pedestrian activity on the public roads is likely to be low in relative terms, out of an abundance of caution, construction will be managed on the assumption it will be present on a regular basis. Pedestrians and cyclists generally share the travelled section of the island roads since there are no separate facilities such as sidewalks or bike lanes provided for these modes of transportation.

1.3.5 Main Traffic Routes

The most active routes with respect to local resident/ tourist traffic are:

1. Front Road, from Kerr Point Road to the east end of the island;
2. Stella 40 Foot Road, from the public ferry dock to South Shore Road with the busiest section being from the dock to Concession Road 3;
3. South Shore Road, from Stella 40 Foot Road to Lower 40 Foot Road; and
4. Concession Road 3.

2.0 Overview of Construction Activities

The following text outlines planned construction activities that affect the public roads and lists the principal steps that will be involved in the completion of each activity.

2.1 CONSTRUCTION ACTIVITIES IMPACTING THE PUBLIC RIGHT-OF-WAY

2.1.1 Access Road Construction on Private Lands

Access road construction on private lands will include the following steps:

- Staking out the right-of-way construction limits and road centre line;
- Stripping and stockpiling of topsoil;
- Culvert and drainage work installation;
- Ditch and road construction with earthworks grading and geotextile as needed;
- Placement and compaction of sub-base road material and compaction testing;
- Placement of base-course road material and compaction testing; and
- Installation of gates to restrict access.

Reclamation related to the access roads will occur once the Project is operational, and will reduce the size of the access road entrances required for maintenance vehicles to access the turbines. Reclamation will involve de-compaction, restoration of topsoil, site leveling, beauty ring installation around each turbine tower and any required seeding in accordance with the Renewable Energy Approval (REA) application supporting documents.

2.1.2 Modifications to the Public Roads

Public road modification construction for this purpose will include the following steps:

- Staking out the right-of-way;
- stockpiling of topsoil;
- Ditch construction with grading as necessary;
- Placement and compaction of sub-base road material and testing; and
- Placement of base-course road material.

AMHERST ISLAND WIND ENERGY PROJECT TRAFFIC MANAGEMENT PLAN

Any temporary road modifications will be reversed after construction is completed unless alternative direction is received from the Township.

2.1.3 Construction of Underground Collector System

The underground collector system construction will include:

- Stake property lines and centre line;
- Install cable (plow, trench and bore as required);
- Backfill and compact trench;
- Install and connect splices and junction boxes;
- Install pad-mounted transformers at turbines;
- Terminate cable at substation and pad mounts; and
- Test collector system.

Reclamation work required as part of the collector line installation will occur once the line is fully installed and weather permits.

2.1.4 Major Turbine Component Deliveries

Major Turbine Component delivery work includes the following steps:

- Typically two cranes (80 to 130 ton capacity) will be brought to a turbine site to offload turbine components;
- Escort vehicles will be used to guide turbine component delivery vehicles to each turbine site;
- Turbine components will be inspected and offloaded; and
- Cranes will be moved to the next delivery location.

AMHERST ISLAND WIND ENERGY PROJECT

TRAFFIC MANAGEMENT PLAN

2.2 CONSTRUCTION ACTIVITIES OUTSIDE THE PUBLIC RIGHT-OF-WAY

2.2.1 Turbine Foundations

Foundation construction will include the following steps:

- Stripping and stockpiling of topsoil and vegetation/tree removal (if required, and in accordance with the Renewable Energy Approval documents) for each turbine foundation and erection laydown area;
- Staking of laydown area perimeter;
- Excavation of foundation;
- Pouring of concrete leveling mat;
- Installation of reinforcing bars and bolt cage;
- Pouring of concrete;
- Backfill foundation;
- Construction of crane pad; and
- Restoration of laydown area following turbine commissioning.

2.2.2 Construction of Temporary Laydown Areas and Office Trailers

Construction of the temporary laydown areas and the office trailer location will include the following steps:

- Stakeout of laydown area limits;
- Strip and stockpile topsoil;
- Site grading;
- Run services, electricity, communications cable;
- Place material and compact;
- Deliver construction trailers; and Install signage.

Upon completion of construction, temporary structures will be removed and the areas will be restored to pre-disturbance conditions.

AMHERST ISLAND WIND ENERGY PROJECT TRAFFIC MANAGEMENT PLAN

2.2.3 Construction of Transformer Station

The Transformer Station construction will include the following steps:

- Stake constructible limits;
- Strip and stockpile topsoil;
- Begin earthwork grading and excavations for foundations;
- Install reinforcing bars for strip foundations and piers;
- Pour concrete for foundations;
- Install grounding grid;
- Backfill ground grid and install material;
- Begin steel erection including equipment, switch gear and bus work;
- Main transformer delivery;
- Pull cables, connect and commission transformer;
- Deliver and commission control building; and
- Testing.

AMHERST ISLAND WIND ENERGY PROJECT

TRAFFIC MANAGEMENT PLAN

2.3 CONSTRUCTION SCHEDULE

Construction activities will take place within the periods outlined in Township noise bylaws of 6am to 9pm for delivery operations and 7am to 8pm for construction work Monday to Saturday. There are exceptional circumstances however when work could occur outside of these hours:

Emergency circumstances: As is recognized by the bylaw, certain health and welfare related incidences which require emergency equipment e.g. ambulance, fire trucks, helicopter ambulance.

Bulk concrete pours: The wind turbine foundations are poured in a continuous pour which cannot be interrupted. These pours will begin in the morning and are planned to be completed within the normal working day. However, in an exceptional circumstance of an interruption due to mechanical or weather related issues the pour may need to be continued after the normal working day.

Turbine Erection: During the erection of the turbine there are certain specific erection milestones which have to be completed once the lift is begun. Daily lift work will be planned to allow completion by end of the normal daily working hours, but in the event of weather or mechanical delay, there is a possibility the work will need to proceed beyond normal working hours.

2.4 TYPES OF CONSTRUCTION VEHICLES

For the purposes of the TMP, there are three primary classes of construction-related vehicles:

1. Heavy Loads such as the delivery of bulk materials e.g. aggregate and concrete;
2. Oversize loads such as Major Turbine Components as well as large construction vehicles e.g. backhoes; and
3. General-purpose construction vehicles, typically pickup trucks and crew vans.

AMHERST ISLAND WIND ENERGY PROJECT

TRAFFIC MANAGEMENT PLAN

3.0 Traffic Management Plan

3.1 MAINLAND ACCESS

Access to the Project's temporary mainland dock will generally follow one of the two following routes:

1. From Highway 401; south along Lennox and Addington County Road 4, and east along Bath Road to the mainland construction dock and staging area.
2. From Highway 401; south along County Road 6; west along Taylor Kidd Boulevard; south along County Road 4, to the mainland construction dock and staging area.

A review of each route reveals no areas where there is a significantly elevated potential for collisions with local traffic. There are no sight distance restrictions or obstructions, terrain is relatively flat, and the few entrances along these routes are clearly visible on approach. The roundabout intersection at Regional Road 2 and County Road 4 provides an effective means of traffic/speed control, and will accommodate turbine delivery vehicles for all Major Turbine Components with some over-tracking on the central island; with the exception for turbine blade and the top tower section, which will be transported along County Road 6. Temporary construction signage should not be required, with the possible exception of "truck turning" signs on Bath Road, on the east and west approaches to the entrance to the staging area and dock. Escort vehicles will be employed to protect traffic during the transport of Major Turbine Components and the main power transformer. Vehicles arriving at the mainland construction site will either turn directly south into the dock access or may turn north to the Invista property to queue for the barge or for overnight staging as required. Traffic management requirements on the mainland are minimal due to the relatively low number of construction vehicles and adequate road widths. Oversize loads will follow normal piloting procedures per Applicable Law.

3.2 CONSTRUCTION-RELATED TRAFFIC IMPACTS

3.2.1 Impacts to Ferry Traffic

Construction-related movement of materials and people will be barges or bulk material transport vessels utilizing newly constructed, special-purpose docks on the mainland and on the island. Therefore, the construction-related transportation will not impact the existing ferry operation or public docks on the mainland and the island.

3.2.2 General Impacts

The delivery of wind turbine components, construction equipment and materials will be staged such that the volume of additional traffic created on the island will be relatively low during any given hour. For example, the expectation is that the Major Turbine Components for only one turbine would be delivered during any given day, which means 10 turbine component loads being transported in a single day. Transportation of these construction-related materials will be via routes that accommodate oversize and slow moving trucks (typically flatbed tractor-trailers).

AMHERST ISLAND WIND ENERGY PROJECT TRAFFIC MANAGEMENT PLAN

There will be a need during Major Turbine Component deliveries for oncoming vehicles to share the available roadway surface. This will require drivers to pull over or stop at the direction of an escort vehicle until the delivery vehicle has passed. This procedure is standard practice and common throughout Ontario. Delays will be minimal due to the relatively small number of turbine component deliveries, and the relatively low traffic volumes on the island.

The Operations Plan provides a Communications Plan for delay scenarios and stipulates that transportation of oversized loads in front of the school, and through Stella, will not take place in a 30-minute period prior to, and following, the school day. In the event that a child is walking/riding to school at a non-standard time (i.e. running late or leaving early), the parents or the school may contact the Windlectric Site Manager directly, who will then take appropriate action by notifying delivery drivers to be aware of the child's presence.

The construction-related traffic associated with the more regular delivery of aggregate and other day-to-day construction equipment and materials, as well as daily worker traffic, will generate additional traffic. All construction-related traffic will arrive and leave by barge, which limits the ability for significant volumes of construction-related traffic to arrive at the same time. Based on the amount of materials to be delivered, and the capacity limitations of the two special-purpose barges, the peak traffic generated by the larger of the two barges (arriving at the island on a two hour cycle) will be limited to approximately 25 loaded aggregate trucks arriving and 25 trucks departing.

Given the low existing traffic volumes on any of the island roads, the increase in traffic due to construction activities can easily be accommodated from a capacity perspective, especially during off-peak hours (peak-hour traffic would only be expected for two to three hours a day, mostly during weekdays and summer weekends). Notwithstanding the adequate existing road capacity, there will be some relatively minor road and intersection improvements (i.e. road widening) required due to the physical limitations of the existing island road network as detailed in **Pre-Construction Study Schedule (d) "Pre-Construction Preparatory Work Plans & Drawings"**.

3.2.3 Specific Types of Traffic Impacts

There are three types of traffic impacts expected for this Project:

1. **Traffic interruptions:** very short duration closures² that are limited to a single road segment at a time, usually for moving oversized loads such as turbine components, for a typical closure time of between approximately 5 to 30 minutes;
2. **Lane closures:** short duration and limited length (less than 500m) of closure of a single lane, leaving room for a single lane of traffic (only during normal construction hours and not remaining overnight), typically for construction of temporary road widenings, trenching of electrical collectors, etc. where there is adequate and reasonable amount of space for traffic to pass beside

² Per Ontario Traffic Manual, Book 7 (Temporary Conditions) (Jan. 2014 edition): Very short duration work is 30 minutes or less, short duration work is 30 minutes to 24 hours, long duration work is over 24 hours.

AMHERST ISLAND WIND ENERGY PROJECT TRAFFIC MANAGEMENT PLAN

the work area. Lane closures may occur on one or the other and may alternate between sides as necessary for construction activities and traffic management; and

3. **Road closures:** short duration and limited length (less than 50m) closure of a road so that traffic is not possible in either direction. Road closures will only occur during normal construction hours and will not be left in place overnight. Road closures will be required for construction of temporary road widenings, trenching of electrical collectors, etc. where there is insufficient space for traffic to safely pass beside the work area.

These three types of traffic impacts are illustrated in **Figure 2**, **Figure 3**, and **Figure 4**.

3.3 TRAFFIC MANAGEMENT STRATEGIES

3.3.1 Construction-Related Traffic Routes

All Major Turbine Components and required construction equipment and materials are to be transported between mainland and island laydown areas by barge or bulk material transport vessel. The construction workforce will also be transported to and from the island by barge. Consequently, there will no need to use the public ferry for construction of the Project, except for the limited purpose of island dock construction. The existing road system on the island will be used for the transportation of construction materials and personnel between the Project's island dock and the wind turbine sites.

Construction vehicles (including gravel trucks and deliveries of turbine components) and equipment will reach the 26 turbine sites based on the *Delivery Routes for Heavy Loads* Drawing AMHST-207, Rev. 1 dated Sept. 15, 2015, and *Delivery Routes for Turbines* Drawings AMHST-206, Rev. 2 dated Sept. 15, 2015 (see **Operations Plan Schedule 20 "Delivery Routes for Turbines"** and **Operations Plan Schedule 3 "Heavy Load Traffic By Road"**, respectively). These drawings have been made available to the public for review and comment through a posting on the Loyalist Township website. Furthermore, larger construction vehicles will not use the intersection of Stella Forty Foot Road and South Shore Road due to geometric constraints. This report assumes that the truck routes outlined in these two schedules will not be changed. This report provides traffic management processes and procedures which will result in a level of public safety for the transport of materials and equipment that meets or exceeds prudent wind energy construction practices.

3.3.2 Traffic-Related Schedule Management

Highly detailed construction traffic sequencing cannot be prescribed as an element of this report due to the scale of the construction and the unpredictability of external factors (e.g. weather, material suppliers, etc.). Detailed sequencing of construction activity for roadworks will be determined by the Constructor on a 'week-ahead' basis and will be subject to adjustment in real-time accounting for traffic, weather, and logistical considerations in order to minimize the level of disruption and inconvenience to the Municipality's residents related to use of the public roads. Closures will be implemented in consideration of construction requirements while ensuring traffic access, and in particular emergency services access, to all points of the island at all times. Detours for Road Closures have been summarized in **Appendix D**. Simultaneous road closures will not be permitted to ensure that planned detour routes remain effective.

AMHERST ISLAND WIND ENERGY PROJECT TRAFFIC MANAGEMENT PLAN

Deliveries of Major Turbine Components and road closures will be planned to avoid active road closure detour routes.

3.3.3 Illumination

The need for illumination outside the dock area and turbine sites is not currently anticipated since deliveries and construction will generally be during daylight working hours. Where that is not possible, temporary illumination shall be provided at key points where it is deemed necessary to provide increased level of safety as per guidelines in *OTM Book 7*.

3.3.4 Signage

All signage in this report is intended for temporary conditions. Pre-existing conditions such as tight horizontal curvature will be signed if the Constructor's traffic control personnel decide to implement such signage to ensure construction-related traffic operates safely.

"Keep Right" signs will be posted advising the public of approaching construction vehicles on both approaches to the sharp crest curve on Stella 40 Foot Road at the cemetery, in addition to the reduced posted speed (60km/h) in this section.

Project roads used to access turbines shall be marked clearly to allow orderly entrance and egress from the Project site, and also direct travel away from environmentally or socially sensitive areas, as determined in consultation with Windlectric. Signs will be legible, and of sufficient durability, to last for the duration of construction activities. Windlectric shall obtain permits or permission from the County and Township authorities for the temporary placement of signs within public rights-of-way.

Road signs shall clearly identify access points where construction vehicles will be entering and existing public roads. Signage will be placed to identify private access roads where public traffic is prohibited.

Each turbine site shall be identified by a sign located at the entrance points to access roads to be installed during road construction.

Stop signs will be provided at the end of all access roads where they intersect with public roads.

"Truck exiting" signs will be provided on the public roads in both directions each side of the construction site access points; see **Appendix A** for typical sign details and **Appendix B** for sign placement.

OTM Book 7 traffic control measures (barriers, barrels, signage, etc.) will be used for working on the "shoulder" and for temporary lane closures. Where restriction to a single lane of traffic is required, single lane restrictions will be permitted during daylight hours only. Traffic will be controlled by flag-persons in continual radio communication with each other.

Temporary signage will be required for construction of the minor road improvements. All temporary signage must conform to the specifications of shape, colour, reflectivity, message, and size, as specified by the Ontario Ministry of Transportation (MTO) in the *OTM*. Sign placement shall adhere to *OTM Book 7*,

AMHERST ISLAND WIND ENERGY PROJECT TRAFFIC MANAGEMENT PLAN

Figure 14 – Typical Sign Placement, provided in **Appendix A**. All signage shall be covered when not in use. All temporary lanes shall be clearly delineated and comply with the minimum lane width specified, per the typical layout (TL) drawings in *OTM Book 7*.

Typical signage and sign placement can be found **Appendix A**. These sign placements are based upon *OTM Book 7 – Temporary Conditions*. Typical sign placements for the following scenarios have been included:

- Providing warning of an approaching work zone and reducing the posted speed (*OTM Book 7 – TL3*);
- Typical signage for shoulder work (*OTM Book 7 – TL6*);
- Typical signage for on-road work requiring a lane closure (*OTM Book 7 – TL19 and TL20A*); and
- Typical signage for turbine construction site access, trucks approaching (*OTM Book 7 - TC31L and TC31R*).

When placing temporary signs, considerations must be made to accommodate and effectively manage traffic through the work zone. These considerations include:

- Ensuring the signs are clearly visible and not obstructed by equipment or vegetation;
- Signs are required in both direction of travel;
- Signage shall reflect the current condition of the work zone;
- Signs reducing speed shall be placed to give the users enough time to react and safely slow down; and
- Monitoring and maintaining effectiveness of signage.

Maintenance and monitoring will follow recommendations detailed in *OTM Book 7*.

3.3.5 Escort/Warning Vehicles for Oversize Loads

As per the Highway Traffic Act, certain loads require an escort vehicle to accompany them during their transport. All necessary permits from MTO, the County, and the Township will be obtained in advance of these oversize load deliveries.

Escort vehicles and/or OPP escort, if required by Applicable Law, will accompany all Major Turbine Component deliveries.

AMHERST ISLAND WIND ENERGY PROJECT TRAFFIC MANAGEMENT PLAN

3.3.6 Flag Persons

Where flagging is needed (for example, during a lane closure), appropriate Personal Protection Equipment (PPE) meeting the requirements of *CSA Z96-02 (High Visibility Safety Apparel)* is to be worn at all times. All flag persons shall be certified by an approved course. Certificates will be available on-site. Flag persons will be equipped with a Stop/Slow paddle as per *OTM Book 7 – Traffic Control Sign (Stop/Slow Paddle - TC22)* and two-way radios for continuous and uninterrupted communication between pairs of flag persons.

3.3.7 Parking and Moving Equipment/Vehicles on-site

Vehicles working on the wind turbine construction shall park on the access roads to the turbines or at the wind turbine sites whenever possible. Vehicles shall be parked in a manner that does not impede traffic or interfere with visibility of signage.

3.3.8 Specialty Vehicles

Specialty vehicles needing assistance through the work site may include emergency service vehicles, school buses, wide or long load vehicles, and farm vehicles. All emergency and school services will be advised of construction work one week prior to commencing. Maximum vehicle width of emergency equipment on the island has been measured to be 2.54m. Consequently, the minimum road width at single lane closures has been set at 3m in order to ensure that emergency services equipment can always pass through these work areas without delay.

3.3.9 Pedestrian and Cyclist Accommodation

Pedestrian and cyclist traffic will be managed through work zones (road closures and single-lane restrictions) using the same traffic management procedures as those used to address vehicular traffic in such work zones. In order to further protect the safety of pedestrians and cyclists, the added accommodation of the provision of an escort will be offered to pedestrians and cyclists travelling through single lane closure work zones and through road closures if safe to do so.

Interaction between Project-related traffic and pedestrian and cyclist activity on the public roads will be governed by specific Contractor safety policies that will include the following measures whenever construction vehicles encounter pedestrians or cyclists on the public roads: (i) a maximum vehicle speed of 20 km/hour within 50m of a cyclist or pedestrian; (ii) a minimum separation of 2m when passing a cyclist or pedestrian, and (iii) construction vehicles will remain behind cyclists or pedestrians until it is safe to pass. It will be a policy of the Contractor that failure to comply with these Constructor safety rules will be grounds for driver dismissal from the Project.

Interaction between Project-related traffic and school-related pedestrian and cyclist activity near the school, and in the village of Stella, has been largely eliminated as there will be no deliveries of Heavy Loads in these areas at all. The 44 Major Turbine Component deliveries in front of the school and through Stella will not take place in the 30-minute period prior to the start of school, nor in the 30-minute period after the completion of the regular school day.

AMHERST ISLAND WIND ENERGY PROJECT TRAFFIC MANAGEMENT PLAN

In order to eliminate any delay to the island school bus on its way to the ferry, road closures will not start until the school bus has passed through the closure zone.

3.3.10 Public Information Strategy

In order to minimize impacts on island traffic, and to ensure the success of the Project, a traffic communication plan will be implemented. The traffic-specific components of the Communications Plan will include providing island residents with a week-ahead traffic impact forecast, and a day-ahead confirmation of traffic impacts. Road restriction notice signs will be placed near all work sites a minimum of one week prior to any lane or road closures (if installed much more than one week in advance, drivers may begin to be conditioned to ignore the signs). The traffic aspects of the Communication Plan will allow residents to effectively plan their routes, and mitigate the overall impact caused by the work and deliveries to the site. An activity forecast report shall be provided to Loyalist Township, outlining construction activity affecting the roads a minimum of one week prior to any work commencing. The road construction activity forecast will be updated weekly. A map of the island outlining the delivery routes to the sites for construction vehicles and deliveries will be kept up-to-date on the Project web site so that residents can plan to avoid those routes if desired. At this time, sources of aggregates, concrete, turbine components, and other materials have not been finalized, but it is assumed that County Road 4 and County Road 6 will be the primary delivery routes on the mainland.

The TriBoard Student Transportation Services that is responsible for the public school bus on the island will be notified of any road closures at least one week in advance of planned public road construction activity (as TriBoard has requested). There will be no impact to school buses on their way to the ferry in the morning as any road closure on a school bus route will be delayed until the school bus has passed.

A multi-media approach will be used to keep local residents and seasonal visitors advised of the designated construction routes so that they can avoid these routes if they wish to do so. Flyer delivery (weekly to residents' mailboxes), website postings, a Twitter feed, Facebook postings, and daily updates to the local radio station³ will all be used to publicly communicate traffic impacts.

3.3.11 Wildlife Mitigation

Risk of wildlife collisions and disturbance from construction traffic will be addressed through a variety of mitigation measures detailed in **Appendix C** (Wildlife Mitigation). These measures incorporate design elements into this report (e.g. considering the potential for wildlife impacts during route selection), as well as a specific traffic control measures, including measures designed to influence driver behavior. Specific mitigation and avoidance measures include:

- Avoidance of roads in proximity to the wetland complex or through large woodland features to the degree practicable;

³ Staff at CJAI 92.1 have been contacted regarding this aspect of the communication plan. CJAI staff will determine in their sole discretion the frequency and content of traffic impact reports.

AMHERST ISLAND WIND ENERGY PROJECT TRAFFIC MANAGEMENT PLAN

- To the extent possible, timing restrictions for construction traffic, specifically that large trucks and bulk material deliveries would be restricted to working hours;
- Reduced construction vehicle speed limits and signage near wildlife areas;
- Barrier fencing where appropriate; and
- Wildlife sensitivity and awareness training, with reinforcement designed to encourage a culture of respect for wildlife.

3.3.12 Construction Vehicle Driver Instructions & Supervision

All construction vehicle drivers shall be made aware of the potential for conflicts with island traffic on a route-specific basis and be advised of potential hazards such as locations with limited sight distance, areas with high entrance density, tight turns, and narrow roadway widths. Signage will be installed as per *OTM Book 7* as appropriate and where it can mitigate hazards related to construction activities, with care to avoid negative effects from over-signage.

A mobile radar-based speed tracking system (Traffic Logix SafePace Cruiser or equivalent) shall be deployed in varying locations during Project construction as a traffic calming measure.

After deliveries to the Island commence, traffic patterns shall be monitored at key conflict points for any major changes to, or peaks in, construction traffic patterns in order to mitigate unanticipated traffic impacts.

Drivers will be reminded through regular daily meetings that a failure to comply with the requirements of the TMP will result in disciplinary action, which could include a range of consequences up to and including termination.

3.3.13 Oversight of Traffic Management Strategies

The first Major Turbine Component deliveries to the island shall be checked and monitored to ensure that the road improvements are working as intended. Regular oversight shall continue as outlined in *OTM Book 7* and performed by qualified traffic management personnel, which includes checking for hazards and maintaining signs and traffic control devices in a good condition.

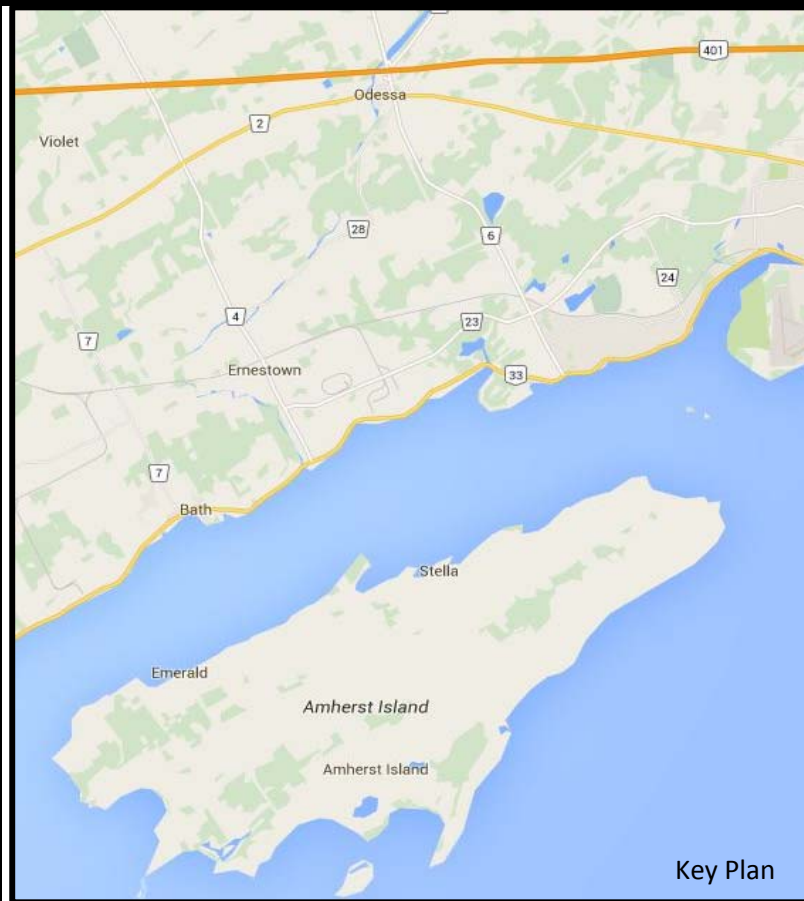
Traffic patterns will be monitored during construction at key conflict points to observe for collision potential. The major intersections, and particularly the intersection of the dock access road and Front Road, will be monitored. Adherence to all road regulatory and warning signage by construction vehicles will come under the responsibility of the contractor's site safety personnel who will regularly monitor and investigate traffic-related complaints. An Incident Reporting Form included as **Appendix E** will be used to record all pertinent details of any traffic incident observed/reported to the Contractor. Completed Incident Reports will be submitted, within 24 hours, to the Township with details of the incident and corrective actions taken.

AMHERST ISLAND WIND ENERGY PROJECT TRAFFIC MANAGEMENT PLAN

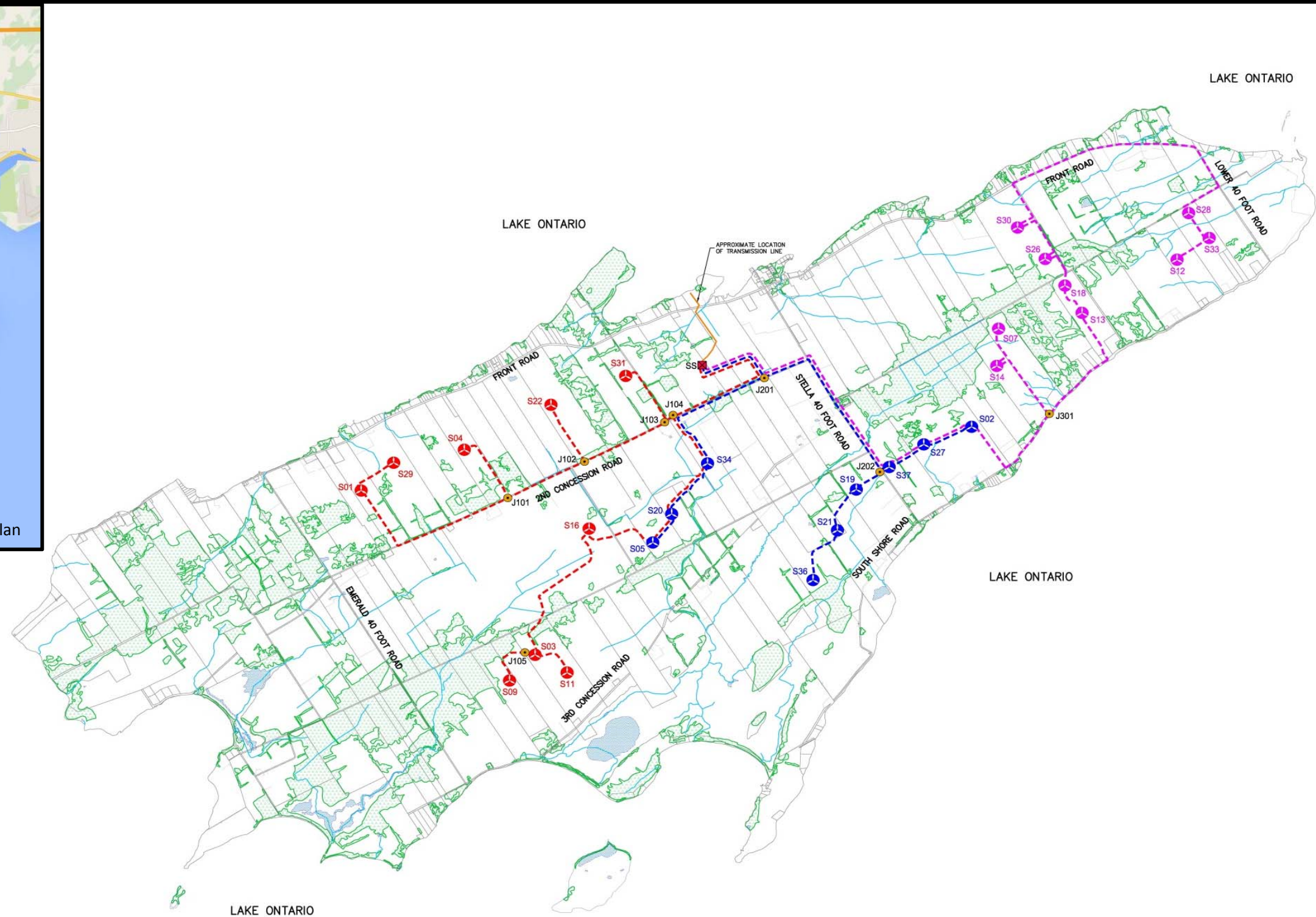
3.3.14 Dust Control and Snow Removal

Water tankers and spreader trucks shall be used to suppress the emission of dust from the construction sites and haul routes.

Snow removal may be needed both for access to the sites, and maintaining public access through active work zones. In order to maintain these two requirements, snowplows will be available on site. These snowplows will be used to clear access to the site for work crews and to ensure that the affected roads will be accessible by the public in the event that municipal/provincial snow removal services cannot maintain safe driving conditions due to interference by construction activities.



Key Plan



Not to Scale

Notes

Legend

SIGN

WORKING AREA

Revision _____ By _____ Appd. _____ YY.MM.DD

File Name: _____ Dwn. _____ Chkd. _____ Dsgn. _____ YY.MM.DD

Permit-Seal _____

Client/Project



AMHERST ISLAND WIND PROJECT
75MW WIND FARM
Amherst Island, Loyalist Township, Ontario

Title

EXAMPLE FULL ROAD CLOSURE
ON SOUTH SHORE ROAD

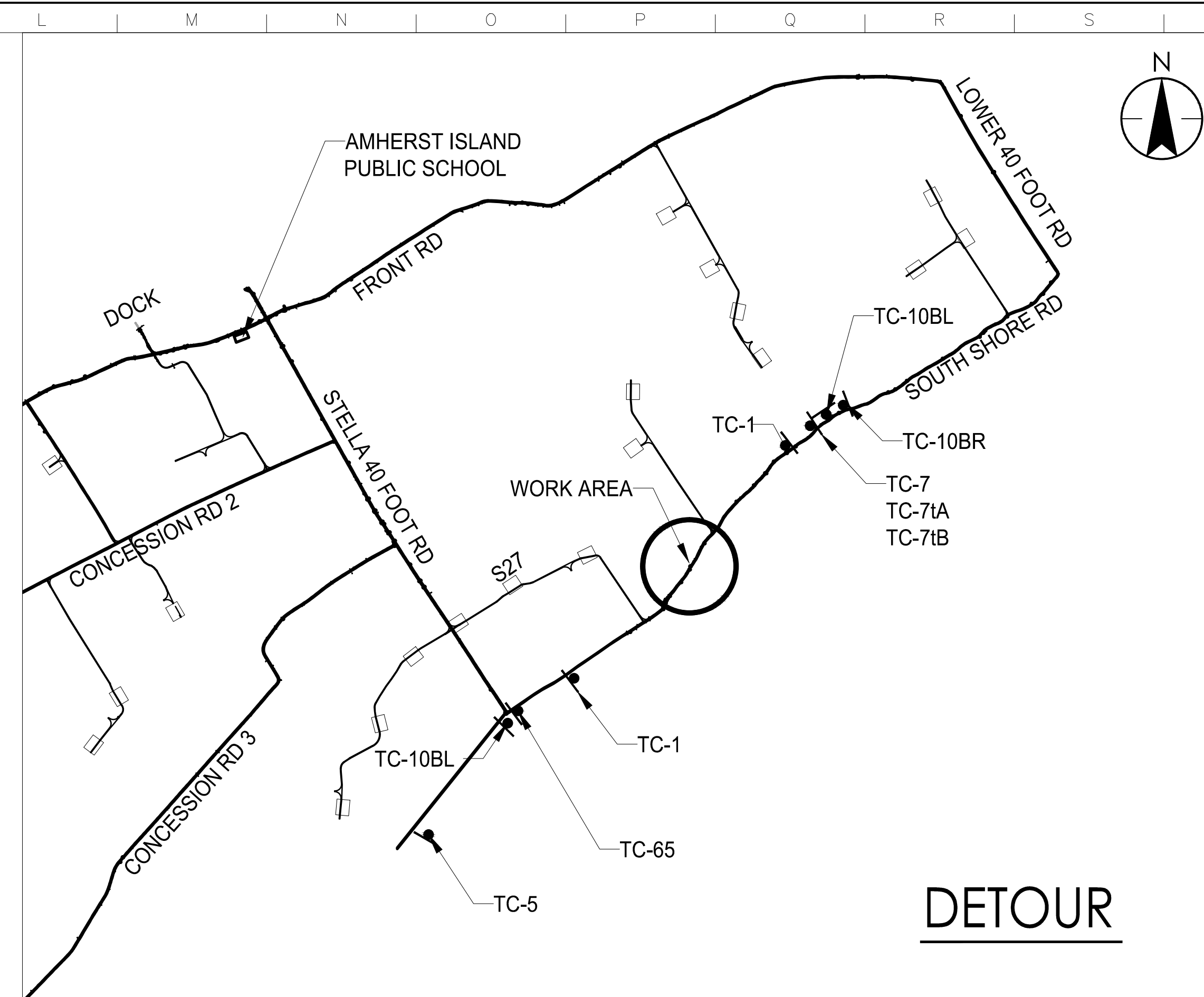
Project No. _____ Scale _____

133560101

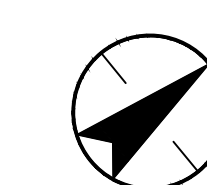
Drawing No. _____ Sheet _____ Revision _____

GENERAL NOTES

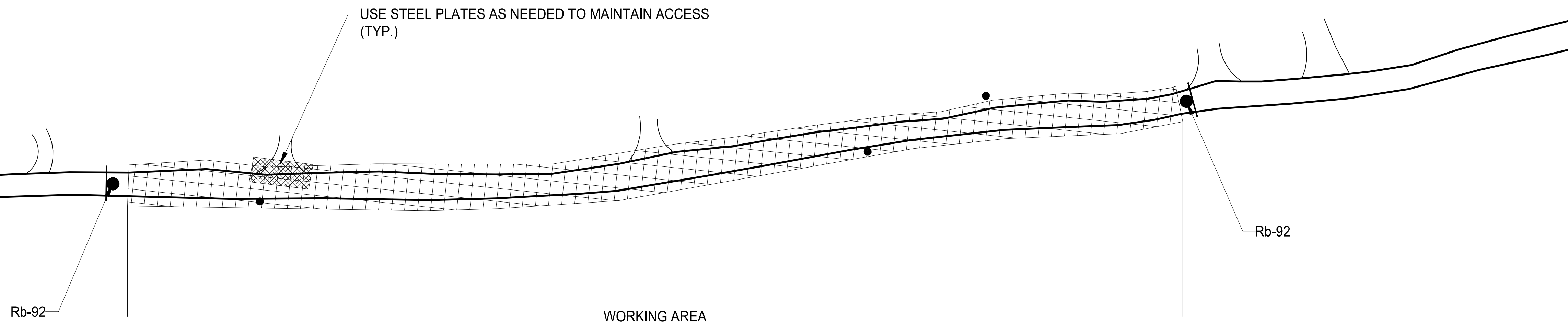
1. TEMPORARY CONDITIONS, ALL SIGNAGE REQUIREMENTS AND ALL OTHER TRAFFIC MANAGEMENT REFERENCE SHALL BE IN ACCORDANCE WITH OTM BOOK 7.
2. CONSTRUCTION ZONE ADVISORY SIGNING TO BE PLACED IN ADVANCE OF THE BEGINNING OF CONSTRUCTION IN ACCORDANCE WITH OTM BOOK 7. PORTABLE VARIABLE MESSAGE SIGNS (PVMS) AS APPROPRIATE.
3. FLEXIBLE DRUM TC-51C SHALL BE USED TO DELINEATE A CLOSED LANE, SEPARATE OPPOSING LANES OF TRAFFIC, SEPARATE CONSTRUCTION WORK SITE AND FLOW OF TRAFFIC. SPECIFICATIONS AND PLACEMENT SHALL BE IN ACCORDANCE WITH OTM BOOK 7.
4. USE STEEL PLATES OR OTHER METHODS AS NECESSARY TO MAINTAIN ACCESS TO ALL ADJACENT PROPERTIES WITH THE MINIMUM REASONABLE DELAY.
5. THE ROAD CLOSURE WILL VARY IN LENGTH (TYPICALLY BETWEEN 150 AND 300 METRES) AND WILL PROGRESSIVELY MOVE DOWN THE ROAD.
6. UPSTREAM SIGNAGE WILL INDICATE THAT ROAD IS CLOSED AHEAD - LOCAL TRAFFIC ONLY.
7. TC-65 ROAD CLOSING NOTICE SIGN WILL BE INSTALLED WITH THE FOLLOWING TYPICAL MESSAGE: "ROAD CLOSURE ON SOUTH SHORE ROAD BETWEEN LOWER 40 FOOT ROAD AND STELLA 40 FOOT ROAD FROM [START DATE] TO [END DATE] BETWEEN 7AM AND 7PM - LOCAL TRAFFIC ONLY"
8. SIGNAGE PLACEMENT WILL BE COORDINATED WITH DRIVEWAY/ACCESSES AND OTHER EXISTING SIGNAGE.



DETOUR



USE STEEL PLATES AS NEEDED TO MAINTAIN ACCESS (TYP.)



SOUTH SHORE ROAD

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GENERAL NOTES

1. TEMPORARY CONDITIONS, ALL SIGNAGE REQUIREMENTS AND ALL OTHER TRAFFIC MANAGEMENT REFERENCE SHALL BE IN ACCORDANCE WITH OTM BOOK 7.
2. CONSTRUCTION ZONE ADVISORY SIGNING TO BE PLACED IN ADVANCE OF THE BEGINNING OF CONSTRUCTION IN ACCORDANCE WITH OTM BOOK 7. PORTABLE VARIABLE MESSAGE SIGNS (PVMS) AS APPROPRIATE.
3. FLEXIBLE DRUM TC-51C SHALL BE USED TO DELINEATE A CLOSED LANE, SEPARATE OPPOSING LANES OF TRAFFIC, SEPARATE CONSTRUCTION WORK SITE AND FLOW OF TRAFFIC. SPECIFICATIONS AND PLACEMENT SHALL BE IN ACCORDANCE WITH OTM BOOK 7.
4. USE STEEL PLATES OR OTHER METHODS AS NECESSARY TO MAINTAIN ACCESS TO ALL ADJACENT PROPERTIES WITH THE MINIMUM REASONABLE DELAY.
5. WORK AREA VARIES IN LENGTH, TYPICALLY 150 AND 300 METRES.
6. SIGNAGE PLACEMENT WILL BE COORDINATED WITH DRIVEWAY/ACCESSES AND OTHER EXISTING SIGNAGE.

Notes

Legend

- SIGN
- WORKING AREA
- FLAG PERSON

Revision	By	Appd.	YY.MM.DD

File Name:	Dwn.	Chkd.	Dsgn.	YY.MM.DD

Permit-Seal

Client/Project



AMHERST ISLAND WIND PROJECT
75MW WIND FARM
Amherst Island, Loyalist Township, Ontario

Title

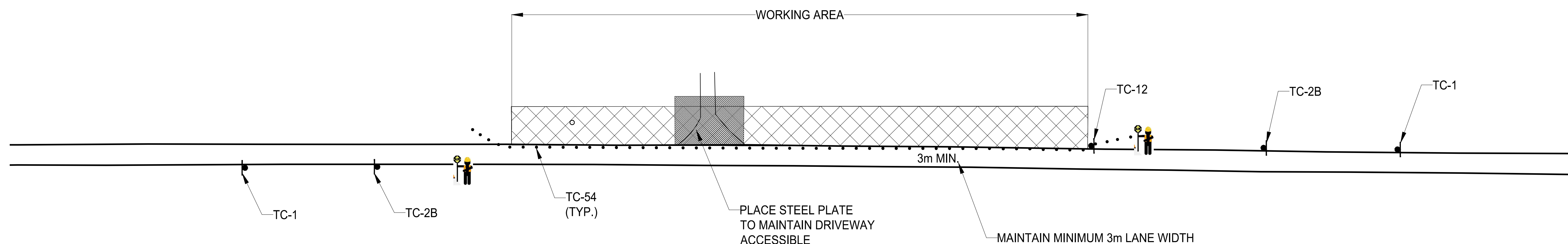
EXAMPLE LANE CLOSURE
ON 2ND CONCESSION ROAD

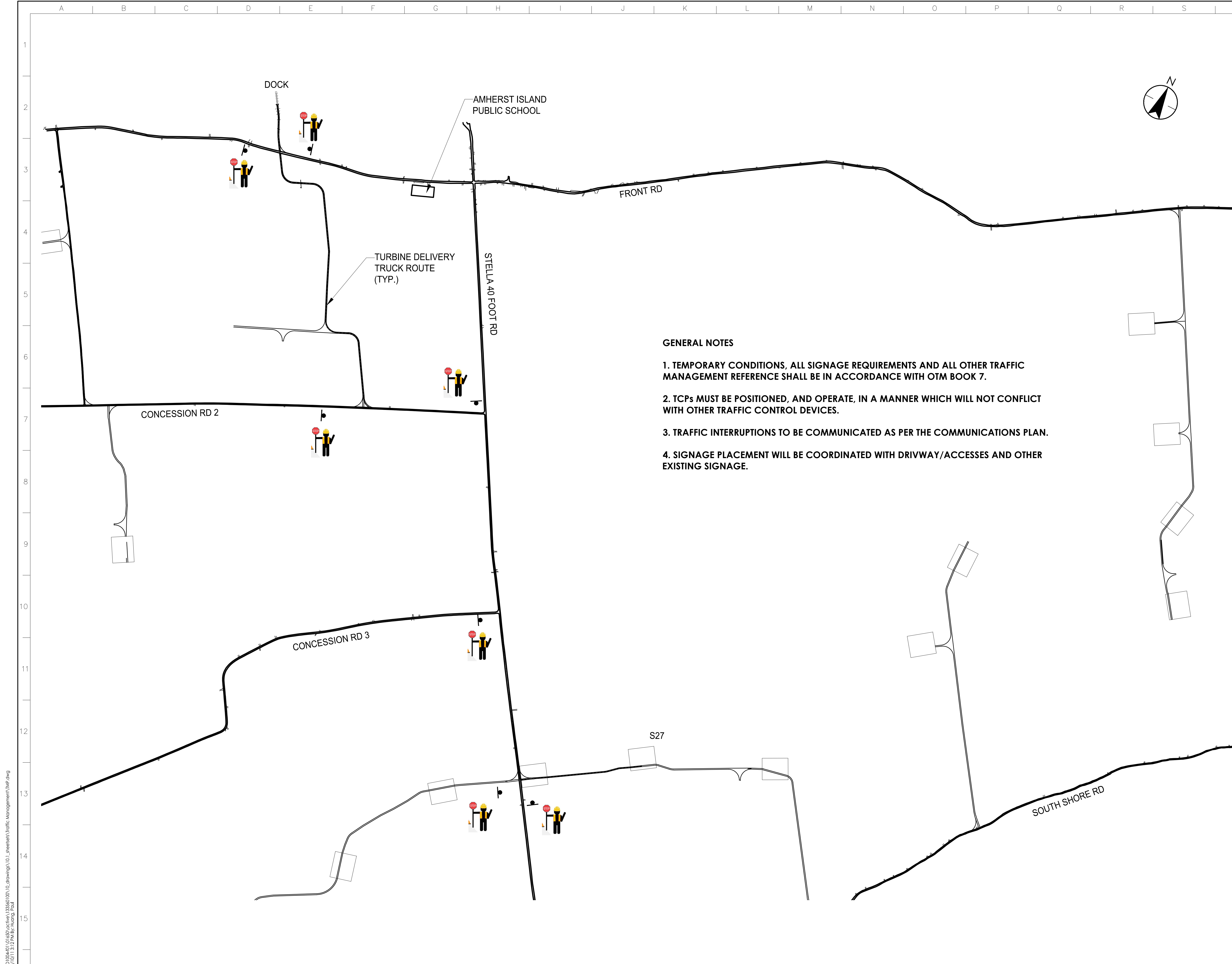
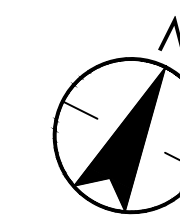
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13356101	

Drawing No.	Sheet	Revision

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2ND CONCESSION ROAD





GENERAL NOTES

1. TEMPORARY CONDITIONS, ALL SIGNAGE REQUIREMENTS AND ALL OTHER TRAFFIC MANAGEMENT REFERENCE SHALL BE IN ACCORDANCE WITH OTM BOOK 7.
2. TCPs MUST BE POSITIONED, AND OPERATE, IN A MANNER WHICH WILL NOT CONFLICT WITH OTHER TRAFFIC CONTROL DEVICES.
3. TRAFFIC INTERRUPTIONS TO BE COMMUNICATED AS PER THE COMMUNICATIONS PLAN.
4. SIGNAGE PLACEMENT WILL BE COORDINATED WITH DRIVEWAY/ACCESSES AND OTHER EXISTING SIGNAGE.

Notes

Legend



Revision	By	Appd.	YY.MM.DD

File Name:	Dwn.	Chkd.	Dsgn.	YY.MM.DD

Permit-Seal

Client/Project



AMHERST ISLAND WIND PROJECT
75MW WIND FARM
Amherst Island, Loyalist Township, Ontario

Title

EXAMPLE TRAFFIC INTERRUPTION FOR TURBINE DELIVERY

Project No.	Scale	
133560101		
Drawing No.	Sheet	Revision
4	1 of 1	

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2016/07/11 10:12 PM by: hchang_pos

APPENDIX A – TYPICAL SIGNAGE

Figure TL-3

Reduced Speed Zone Signing

Two-Lane

Multi-Lane

Undivided Non-freeway

Divided Non-freeway

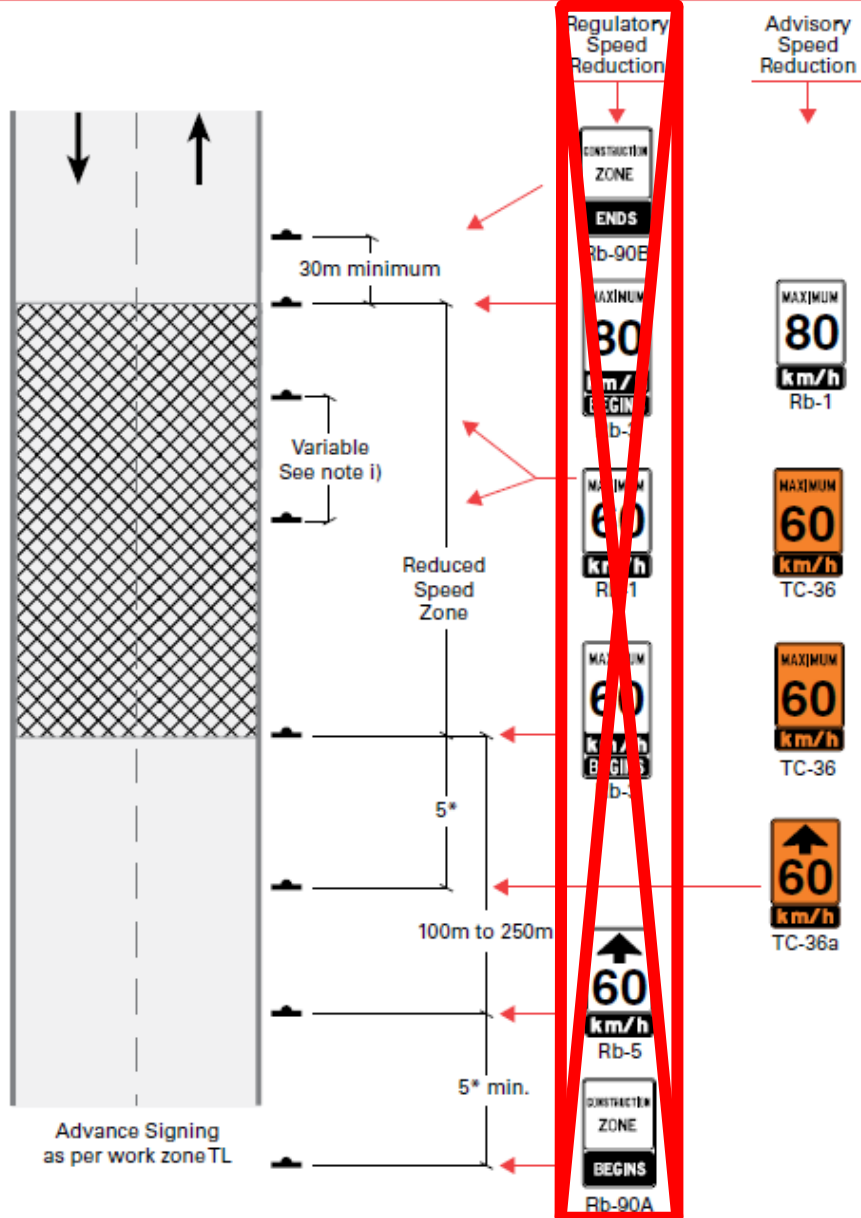
Freeway

Mobile Operations

Very Short Duration

Short Duration

Long Duration



* For Short Duration, see [Table A](#). For Long Duration, see [Table B](#).

NOTES

- i) Refer to Regulation 615 of the Highway Traffic Act and OTM Book 5 for distance between regulatory speed limit signs.
- ii) For regulatory speed reduction, a Designated Construction Zone must be established and signed as per TL-1.
- iii) The same signing is required in the opposite direction.

Figure TL-6 Shoulder Work

Two-Lane

Multi-Lane

Undivided Non-freeway

Divided Non-freeway

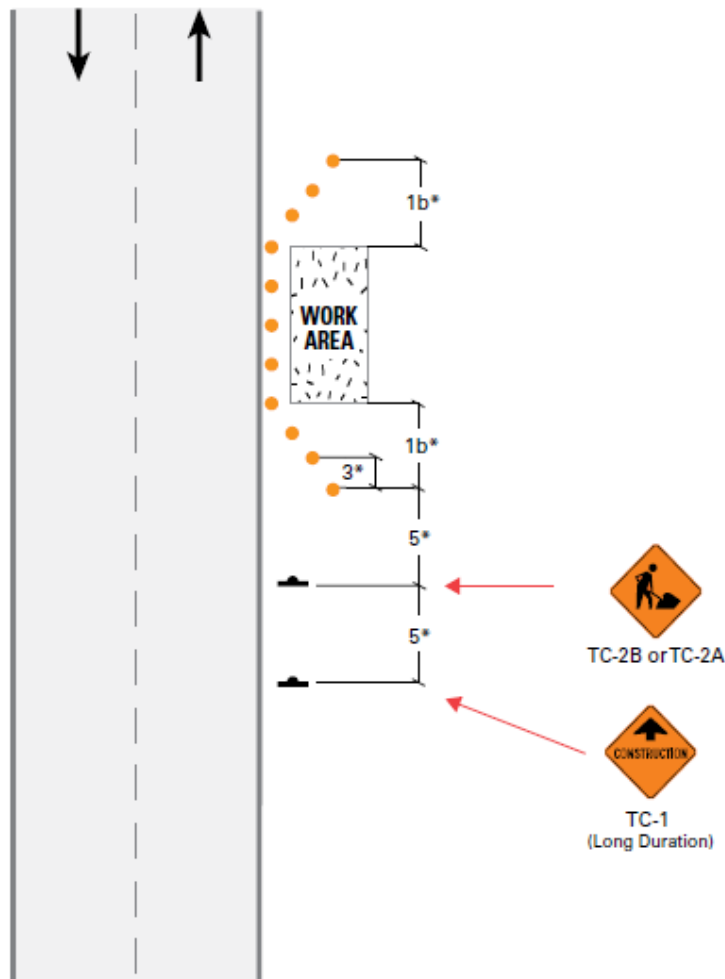
Freeway

Mobile Operations

Very Short Duration

Short Duration

Long Duration



* For Short Duration, see [Table A](#). For Long Duration, see [Table B](#).

NOTES

- i) Work on the left shoulder mirror image for multi-lane divided road.
- ii) Termination taper optional.
- iii) Work area may or may not contain a work vehicle. See General Notes to Typical Layouts #4.
- iv) A work vehicle with a TC-12 may replace cones for Short Duration work.

Figure TL-20A Lane Closed (Traffic Control Persons)

Two-Lane

Multi-Lane

Undivided Non-freeway

Divided Non-freeway

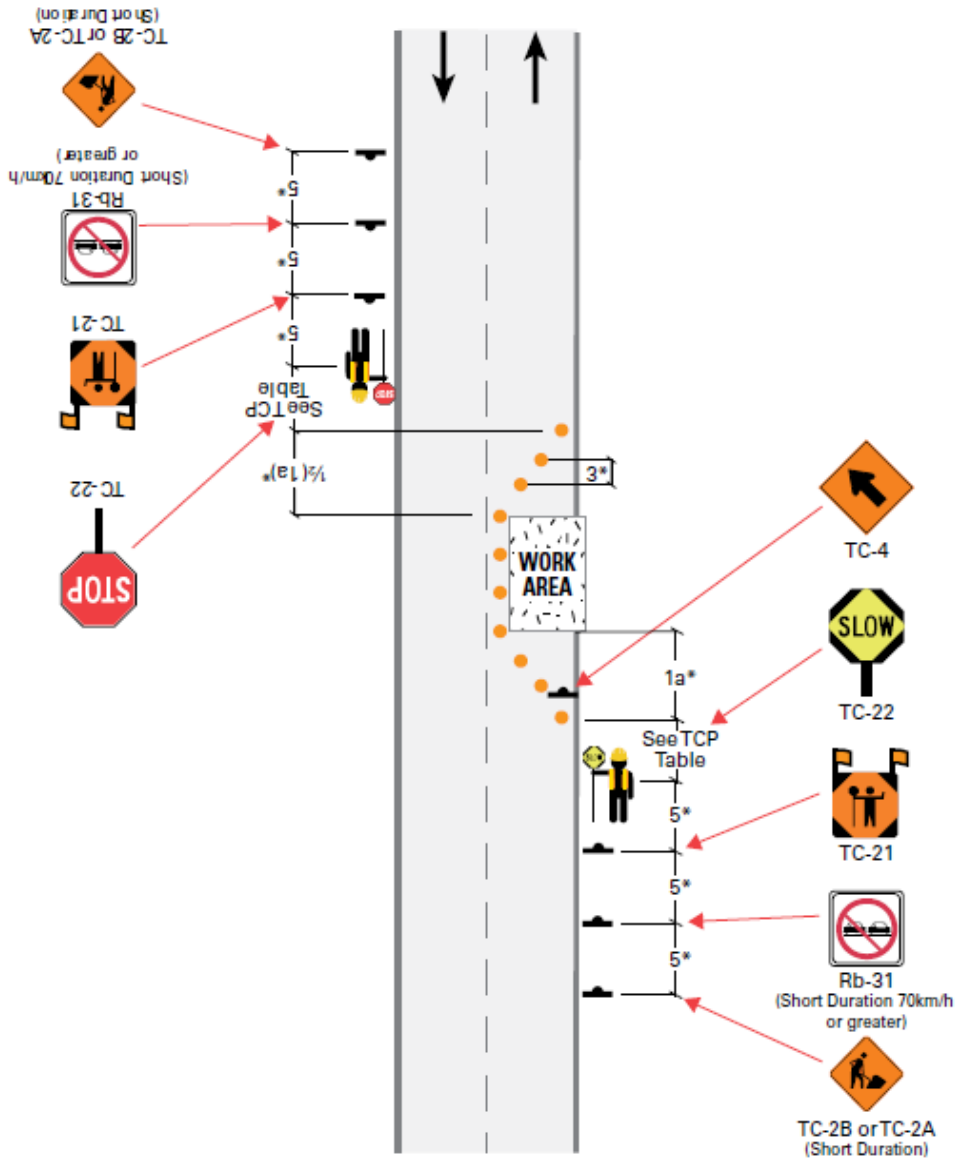
Freeway

Mobile Operations

Very Short Duration

Short Duration

Long Duration






* See Table A.

NOTES

- i) For low-volume roads (< 3000 vehicles per day) and visibility more than 150m beyond the end taper, the TCP and TC-21 may be eliminated for the direction that is not closed.
- ii) For Very Short duration, work on low-volume roads with a normal posted speed less than 70km/h, the cones are not required.
- iii) On high speed (70 km/h or greater) or where lane keeping/compliance is an issue, consider using TL-20B.

Truck Entrance Signs

TC-31L	TC-31A	TC-20At
TRUCK ENTRANCE	TRUCK ENTRANCE (with amber flashers)	WHEN FLASHING TAB
		
Minimum Background Reflectivity: Engineering Grade (Type I)		

Purpose:

The TRUCK ENTRANCE signs must be used when trucks are using an entrance from a work zone into a live lane (turn or crossing movement). The signs may also be used when the temporary condition limits the vision of an existing crossing that is heavily used by trucks (see OTM Book 6 – Warning Signs for sight distance criteria).

The TC-31 sign must be installed in advance of the crossing at the distance specified in the appropriate table (Table A, B, or C: 5*).

The truck entrance sign illustrates the truck entering the roadway, not the work area. If the truck entrance is on the left, the TC-31L sign that is shown above must be used. The TC-31R sign which has the reverse symbol must be used when the truck entrance is on the right.

Table A Work Zone Component Dimensions: Very Short and Short Duration Work (Non-freeways)

	Dimension	Normal Posted Regulatory Speed Limit **				
		50 km/h or lower	60 km/h	70 km/h	80 km/h	90 km/h
1a*	Taper length for full lane closure (m)	10 – 15	20 – 30	30 – 40	50 – 60	70 – 80
1b*	Taper length for roadside work (m) ***	3 – 5	5 – 7	7 – 10	10 – 12	15 – 20
2*	Longitudinal buffer area (LBA) (m)****	(30)	(40)	50	60	75
3*	Maximum distance between markers (m)*****	4 – 6	4 – 6	8 – 10	8 – 10	10 – 12
	Minimum number of markers for taper	at least 4 markers	at least 5 markers	at least 5 markers	at least 7 markers	at least 8 markers
4*	Minimum tangent between tapers (m)	30	30	60	60	80
5*	Distance between construction signs (m) *****	20 – 30	20 – 30	50 – 60	50 – 60	70 – 80

* Table A distances are based on good visibility, and should be increased if visibility is poor.

** The regulatory maximum speed posted on a highway applies under normal conditions; that is, when no construction zone or work activity is present. Guideline provisions required in OTM Book 7 are based on normal posted regulatory speed, and not on temporarily reduced construction zone regulatory or advisory speeds.

*** Roadside work includes shoulder work and roadway edge work.

**** LBAs are optional at speeds of 60 km/h or lower, but should be used for closed lanes on multi-lane roads if space permits.

***** Markers are channelizing devices. Application guidelines are shown in Table F. Cones with reflective collars may be used for daytime or night-time operations on non-freeways.

***** 5* also refers to the required distance for the placement of a TC Warning Sign ahead of the hazard where referenced in section 6.3.5 for the individual signs.

Table B Work Zone Component Dimensions: Long Duration Work (Non-freeways)

	Dimension	Normal Posted Regulatory Speed Limit**				
		50 km/h or lower	60 km/h	70 km/h	80 km/h	90 km/h
1a*	Taper length for full lane closure (m)	LV: 15 – 25 HV: 30 – 50	40 – 60	60 – 80	100 – 120	140 – 160
1b*	Taper length for roadside work (m)***	LV: 5 – 8 HV: 9 – 15	10 – 15	15 – 20	20 – 25	30 – 40
2*	Longitudinal buffer area (LBA) (m)****	(30)	(40)	50	60	75
3*	Maximum distance between markers (m)*****	6 – 8	8 – 10	8 – 10	10 – 12	12 – 14
	Minimum number of markers for taper	at least 5 markers	at least 7 markers	at least 9 markers	at least 11 markers	at least 13 markers
4*	Minimum tangent between tapers (m)	55	100	120	140	160
5*	Distance between construction signs (m)*****	40 – 50	90 – 100	110 – 120	130 – 140	150

* Table B distances are based on good visibility, and should be increased if visibility is poor.

** The regulatory maximum speed posted on a highway applies under normal conditions, that is, when no construction zone or work activity is present. Guideline provisions required in OTM Book 7 are based on normal posted regulatory speed, and not on temporarily reduced construction zone regulatory or advisory speeds.

*** Roadside work includes shoulder work and roadway edge work.

**** LBAs are not a requirement at speeds of 60 km/h or lower, but should be used for closed lanes on multi-lane roads if space permits.

***** Markers are channelizing devices. Application guidelines are shown in Table F. Cones with reflective collars may be used for daytime or night-time operations on non-freeways.

***** 5* also refers to the required distance for the placement of a TC Warning Sign ahead of the hazard where referenced in section 6.3.5 for the individual signs.

LV = Low Volume

HV = High Volume

LV is defined as the average daily traffic volume with less than 3000 vehicles per day (combined traffic for both directions). This figure can be obtained from the local road authority or estimated by counting the number of vehicles that pass the work site in 3 minutes and multiplying this figure by 300. The count may be taken in off-peak or peak traffic periods, corresponding to the period during which the work operations will be carried out.

Example: 20 cars in 3 minutes x 300 = 6000 vehicles per day (this would be an HV road).

KEEP RIGHT Sign



Wb-6	60 cm x 60 cm
Font	Highway Gothic D
Colour	Legend & Border – Black Background – Yellow Reflective
Minimum Sheeting	Type I

Purpose and Background

The purpose of the KEEP RIGHT warning sign (Wb-6) is to warn motorists to keep to their own half of the roadway, on segments of two-lane road having the combined hazards of narrow pavement width and restricted sight distance.

Sign Types

There is one type of KEEP RIGHT sign: (Wb-6).

Guidelines for Use

The KEEP RIGHT warning sign must only be used on two-lane roads where the pavement width is narrow and the sight distance is restricted (e.g., due to horizontal or vertical curves, vegetation, etc.).

Location Criteria

The location criteria for this sign are as described for warning signs in Section 1.5 (Location), and as described for signs in general, in Book 1b, Section 12 (Sign Position). No exceptional location criteria are noted.

Special Considerations

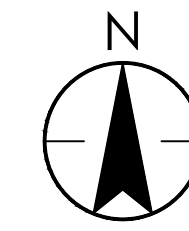
There is also a KEEP RIGHT regulatory sign (Rb-25), which is unrelated in application to the KEEP RIGHT warning sign. Information on the Rb-25 sign can be found in Book 5 (Regulatory Signs).

RAMP METERED WHEN FLASHING Sign (With Amber Flashers)



Wb-7	75 cm x 75 cm
Font	Highway Gothic C
Colour	Legend & Border – Black Background – Yellow Reflective
Minimum Sheeting	Type I

**APPENDIX B – SIGNAGE
PLACEMENT MAP**



LAKE ONTARIO

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Notes

Legend

- SITE ACCESS ROAD
- TC-31L TRUCK ENTRANCE LEFT
- TC-31R TRUCK ENTRANCE RIGHT

Revision	By	Appd.	YY.MM.DD

Issued	By	Appd.	YY.MM.DD

File Name:	Dwn.	Chkd.	Drwn.	YY.MM.DD

Permit-Seal

PRELIMINARY
NOT FOR CONSTRUCTION

Client/Project



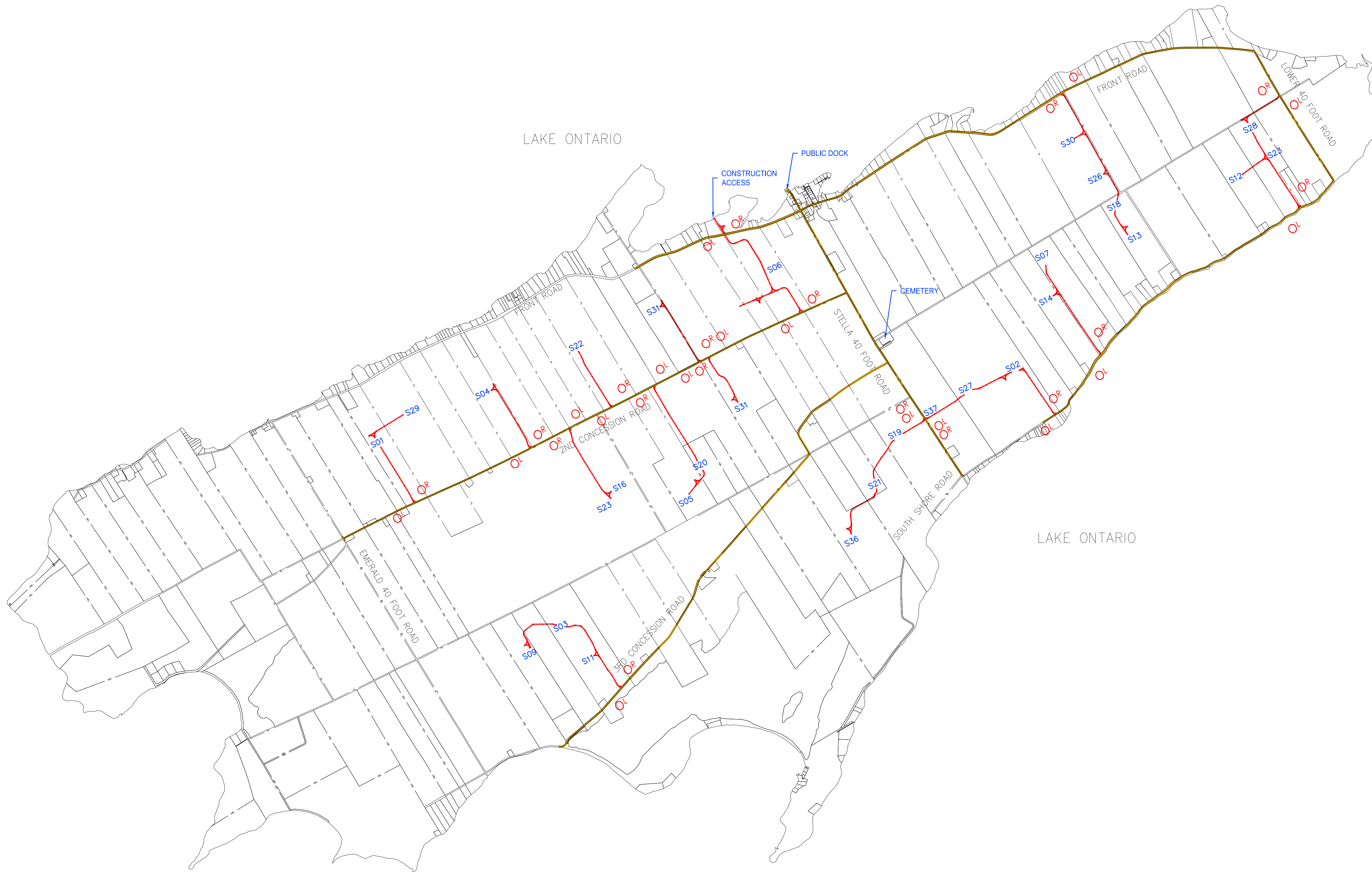
Windlectric Inc.
 AMHERST ISLAND WIND PROJECT
 75MW WIND FARM
 Amherst Island, Loyalist Township, Ontario

Title

OVERALL SITE LAYOUT
 MUNICIPAL ROAD USE
 TEMPORARY SIGNAGE PLAN-1

Project No. 133560078 Scale 1:25,000

Drawing No. C0033 Sheet 33 of 35 Revision A



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Notes

REFER TO TL-3/TABLE B FOR PLACEMENT OF ADVISORY SPEED REDUCTION SIGNS.

Legend

- TL-3 REDUCED SPEED ZONE SIGNING
- ↑ START/DIRECTION OF SPEED CHANGE ZONE (ADVISORY SPEED REDUCTION)
- CONSTRUCTION ZONE
- TC-36 ADVISORY SPEED REDUCTION SIGN (TO 60km/hr)

Revision	By	Appd.	YY.MM.DD

Issued	By	Appd.	YY.MM.DD

File Name:	Dwn.	Chkd.	Drwn.	YY.MM.DD

Permit-Seal

PRELIMINARY
NOT FOR CONSTRUCTION

Client/Project



AMHERST ISLAND WIND PROJECT
75MW WIND FARM
Amherst Island, Loyalist Township, Ontario

Title

OVERALL SITE LAYOUT
MUNICIPAL ROAD USE

Project No.
133560078

Scale
1:25,000

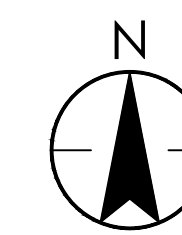
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Sheet Revision

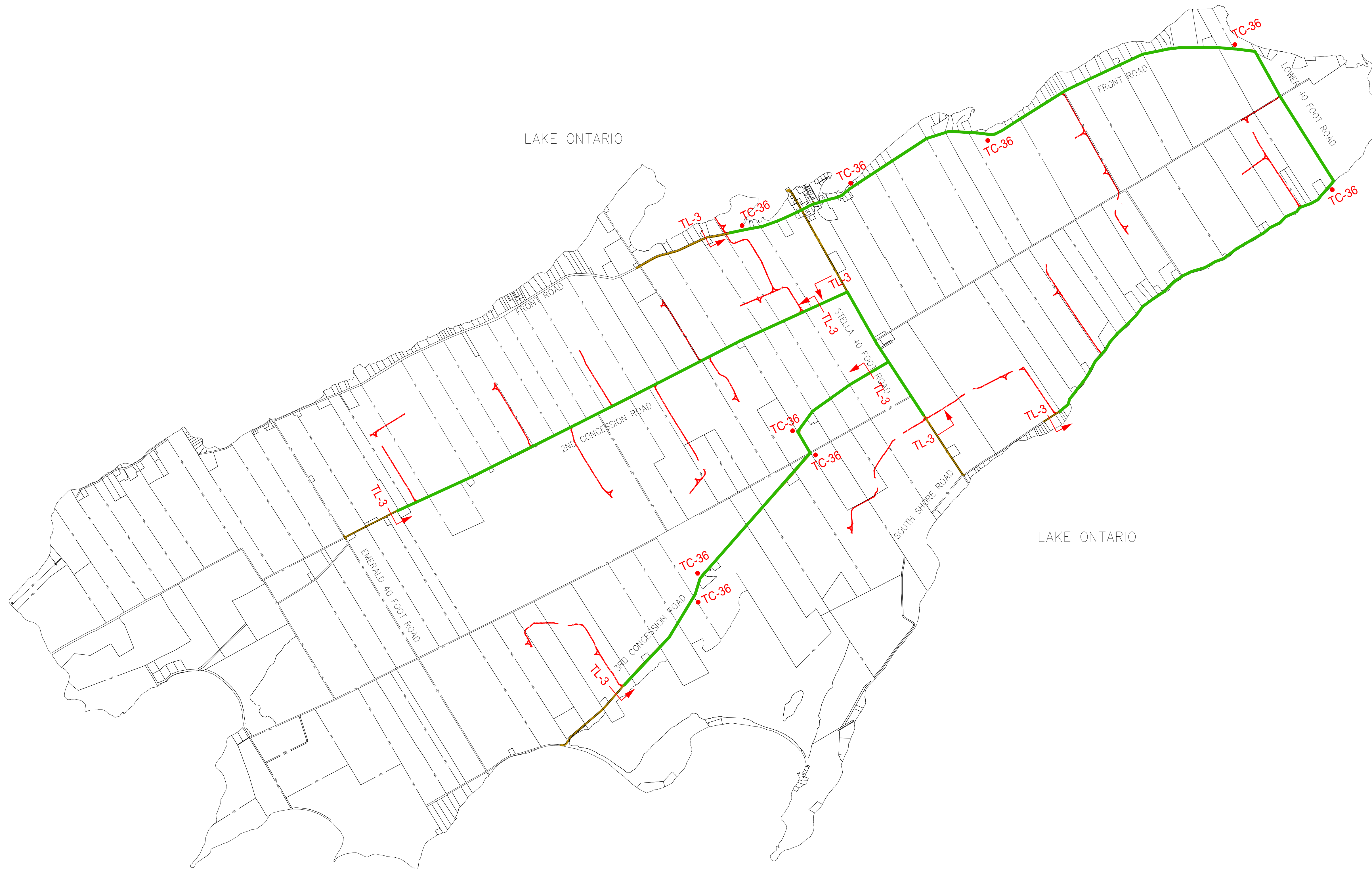
C0034

34 of 35

A



LAKE ONTARIO



LAKE ONTARIO

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Notes

- WHERE ALL WORK IS PERFORMED OFF THE EXISTING DRIVING SURFACE, USE TL-6
- WHERE WORK ENCROACHES ON DRIVING SURFACE, CLOSE ONE DIRECTION OF TRAFFIC, MAINTAIN MINIMUM 3.25 METRE LANE WIDTH AND IMPLEMENT TL-20A.

Legend

- * TL-6 SHOULDER WORKS OR TL-20A LANE CLOSURE

Revision

Issued

File Name:

Permit-Seal

PRELIMINARY
NOT FOR CONSTRUCTION

Client/Project



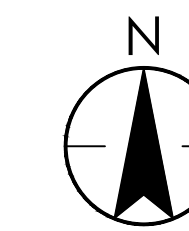
Windlectric Inc.
 AMHERST ISLAND WIND PROJECT
 75MW WIND FARM
 Amherst Island, Loyalist Township, Ontario

Title

OVERALL SITE LAYOUT
 MUNICIPAL ROAD USE

Project No. 133560078 Scale 1:25,000

Drawing No. C0035 Sheet 35 of 35 Revision A



APPENDIX C – WILDLIFE MANAGEMENT PLAN

**Amherst Island Wind Energy
Project, Traffic Management
Plan Appendix C
WILDLIFE MITIGATION**



Prepared for:
Windlectric Inc. (c/o Algonquin
Power Co)

Prepared by:
Stantec Consulting Ltd.

November 23, 2015

Table of Contents

1.0	INTRODUCTION	1.1
2.0	LOCAL CONTEXT AND WILDLIFE HABITATS.....	2.1
3.0	WILDLIFE MITIGATION	3.1
3.1	MITIGATION DURING MINOR ROADWAY MODIFICATIONS	3.1
3.2	TRAFFIC AND CONSTRUCTION TIMING MITIGATION.....	3.2
3.2.1	Traffic Management Design and Construction Timing Restrictions.....	3.2
3.2.2	Traffic Control.....	3.3
3.2.3	Driver Behavior.....	3.4
3.2.4	Wildlife Movements.....	3.5
4.0	CLOSING	4.1
5.0	REFERENCES.....	1

AMHERST ISLAND WIND ENERGY PROJECT, TRAFFIC MANAGEMENT PLAN APPENDIX C WILDLIFE MITIGATION

Introduction
November 23, 2015

1.0 INTRODUCTION

Windlectric Inc. (Windlectric) is proposing to develop, construct, and operate the 75 megawatt (MW) Amherst Island Wind Energy Project (the Project) within Loyalist Township (the Township) in the County of Lennox and Addington (the County) in eastern Ontario.

The basic Project components include the construction of 26 wind turbines with associated access roads, collector lines and temporary construction laydown areas. Natural heritage assessment and environmental impact studies were completed, which identified some natural heritage features in proximity to the Project, assessed the potential impacts to these features and provided required mitigation measures.

Project traffic will use existing public roads on Amherst Island. The use of public roads will include some relatively minor modifications to accommodate construction traffic, such as increasing turning radii at some intersections and tight corners. In accordance with the Renewable Energy Approval (REA – No. 7123-9W9NH2, Section P), a Traffic Management Plan was developed in connection with the use of the public roads. The purpose of this Appendix to the Traffic Management Plan is to provide the wildlife mitigation requirements that will form an integral part of the Traffic Management Plan.

AMHERST ISLAND WIND ENERGY PROJECT, TRAFFIC MANAGEMENT PLAN APPENDIX C WILDLIFE MITIGATION

Local Context and Wildlife Habitats
November 23, 2015

2.0 LOCAL CONTEXT AND WILDLIFE HABITATS

The Amherst Island landscape is comprised mostly of agricultural fields, primarily hay and pasture. Scattered woodlands, shrubland habitats and some minor water features occur intermittently within the agricultural setting.

Woodlands on the island are typically dominated by ash, red cedar or maple. While smaller woodlands occur throughout the island, some larger woodland patches can be found in the western and central-eastern parts of the island. Portions of the woodland in the western part of the island were identified as old growth.

A large coastal wetland complex, comprised of open marsh and swamps, occurs in the southwestern portion of the island, outside of the Project area. This includes the Nut Island Duck Club Marsh (114 ha), Wemps Bay Marsh (43 ha) and the Long Point Marsh (315 ha). The wetland complex provides habitat for a variety of wildlife, including but not limited to amphibians, reptiles and breeding birds. Some ash swamp and wet meadows occur elsewhere on the island. However, these are reflective of poor drainage soils and typically do not hold standing water, making them ill-suited for use by wildlife species associated with wetlands.

The NHA/EIS identified certain types of significant wildlife habitat on the island. Breeding bird habitats that were identified as significant included grassland (mostly hay and pasture field), the wetland complex, shrubland / early successional habitat (fallow agricultural lands) and area sensitive woodland habitat. Other significant bird habitats on the island included landbird migratory stopover habitats (larger woodlands) and raptor wintering areas (open fields and woodlands).

Wildlife Mitigation
November 23, 2015

3.0 WILDLIFE MITIGATION

3.1 MITIGATION DURING MINOR ROADWAY MODIFICATIONS

Construction of the Project will include minor modifications within the existing public road rights of way; specifically increasing turning radii at intersections, tight corners and other areas with space restrictions. These modifications will be strictly limited to the existing road right-of-way and will be temporary to the construction period.

During road work to construct these modifications, the mitigation measures described below will be taken, which go above and beyond normal construction mitigation best practices. These measures are consistent with mitigation in the NHA/EIS.

- In areas where the existing road footprint is expanded within the right of way, clearly delineate work area using silt fence to avoid accidental encroachment beyond work area and the right of way;
- The Project will implement a grading and stormwater management plan which will include a sedimentation and erosion control plan, and will be prepared by an erosion control design expert. The plan will include the following features:
 - minimizing the duration of soil exposure;
 - retaining or replace any existing vegetation in the right of way;
 - diverting runoff away from exposed soils, keeping runoff velocities low and trapping sediment as close to the source as possible;
 - exposed soil areas will be stabilized and re-vegetated, through the placement of seed and mulching or seed and an erosion control blanket, promptly upon completion of construction activities;
 - sediment and erosion controls should be monitored regularly and properly maintained, as required. Controls are to be removed only after the soils of the construction area have been stabilized and adequately protected until cover is re-established;
 - on site works inspected by a qualified inspector; and
 - post-construction inspection and monitoring (and if necessary further work) will occur to ensure that any necessary re-vegetation has been successful.

AMHERST ISLAND WIND ENERGY PROJECT, TRAFFIC MANAGEMENT PLAN APPENDIX C WILDLIFE MITIGATION

Wildlife Mitigation
November 23, 2015

- In areas adjacent to water features (including water crossings, ponds and seasonally flooded areas), road construction and site preparation will occur between October 31st and May 1st to avoid sensitive periods for amphibians, fish and reptiles; and
- Any vegetation clearing required will take place outside of the period from April 1st to July 31st to eliminate the potential for wildlife disturbance during the breeding window.

Following construction, the temporary road modifications, such as turning radii, will be removed. During this period, all construction mitigation discussed above will apply. All disturbed areas will be re-seeded to be returned to pre-construction conditions.

3.2 TRAFFIC AND CONSTRUCTION TIMING MITIGATION

During construction, Project related vehicles will use public roadways for delivery of construction equipment, materials, project components and aggregate, as well as daily worker traffic. The following sections outline mitigation steps that will be taken to minimize potential risk of wildlife collisions and disturbance from construction traffic. These measures have included incorporating design elements into the traffic management plan (e.g. considering the potential for wildlife impacts during route selection), traffic control mitigation and influencing driver behavior.

3.2.1 Traffic Management Design and Construction Timing Restrictions

The Ontario Ministry of Transportation provides a general approach to wildlife conflict assessment (MTO 2006). The process involves the identification and avoidance of priority wildlife areas. Where roads occur, MTO recommends that potential wildlife conflict zones be identified, the nature of the wildlife using these areas be assessed and appropriate wildlife mitigation measures be developed. During the development of the Traffic Management Plan and in selection of the trucking routes on public roads during construction of the Project this process was applied.

The wetland complex on the southern end of the island provides habitat for amphibian and breeding birds, as well as habitat for reptiles. Similarly, sections of existing public roads which pass through large wooded areas may have increased risk of wildlife collisions, in particular if the woodland provides a movement corridor function. Trucking routes were selected to avoid roads in proximity to the wetland complex or through large woodland features. Specifically, no construction related traffic will use Emerald 40 Foot Road, Art McGinns Road or South Shore Road to the west of Stella 40 Foot, which cross through woodlands, and are the only roads on Amherst Island that cross or run adjacent to the wetland complex. These roads will not be used at any time during the construction of the Project.

AMHERST ISLAND WIND ENERGY PROJECT, TRAFFIC MANAGEMENT PLAN APPENDIX C WILDLIFE MITIGATION

Wildlife Mitigation
November 23, 2015

Avoidance mitigation will also include the following construction timing restrictions.

Risk of wildlife / vehicle collisions is typically increased during the evening at dusk when some wildlife species become more active. To reduce the potential risk of wildlife collision, use of any public roads by Project related vehicles during dusk and night hours will be limited to the extent possible. To accomplish this, delivery of Project components, equipment and materials, as well as aggregate delivery, will be scheduled outside of the dusk and nighttime hours.

Construction schedules will also avoid carrying out any construction activities between May 1st and October 31st in the areas that are in any proximity to the wetland complex, specifically access roads, turbine foundations and infrastructure associated with turbines S03, S09, S11 and S36, as well as construction traffic on 3rd Concession Road. Thus, no construction activities will be carried out at any of these locations, and there will be no construction traffic on 3rd Concession Road, during the main active season for various species of wildlife that may be using the wetland complex.

3.2.2 Traffic Control

In general, increased awareness and vigilance with respect to wildlife, as well as reduced speeds, assist in the detection and avoidance of wildlife on roads. These measures can be particularly effective when implemented where roads intersect with any wildlife habitats.

During construction, the speed limits of Project traffic on existing public roads will be reduced to 30 km/hour in proximity to watercrossings, ponds or seasonally flooded areas. In these areas temporary signage will be installed during construction to remind vehicle drivers where speed restrictions apply and to increase driver vigilance with respect to wildlife. This mitigation will be in place from May 1st to October 31st.

The signage will be posted at the beginning of the designated wildlife zones, in both directions. The signs will in general be generic as to the type of wildlife presence and will not be species or group of species specific. If for some locations the on-site wildlife inspector feels it would be beneficial, species-specific signage will also be used. The signage will display wildlife crossing and speed limits to act as a reminder and to reinforce the awareness training.

During construction, trained field biologist wildlife inspectors will be on-duty full time to monitor the effectiveness of driver awareness and reduced speed limits, as well as the effectiveness of training and signage to influence driver behavior. As an example, the installed signs and fencing will be checked on a daily basis during construction and maintained or replaced as needed. If in the opinion of the wildlife inspector, additional measures or approaches should be implemented to increase or modify mitigation, or in order to ensure the effectiveness of the mitigation already in place, those measure or approaches will be put in place.

AMHERST ISLAND WIND ENERGY PROJECT, TRAFFIC MANAGEMENT PLAN APPENDIX C WILDLIFE MITIGATION

Wildlife Mitigation
November 23, 2015

3.2.3 Driver Behavior

Driver behavior can influence the risk of wildlife / vehicle collisions (OREG 2010). The potential risk of vehicle / wildlife collisions can be reduced through the adoption of certain driver behaviors. Education and engagement of the construction team is a critical component of the traffic management mitigation (van der Ree et al., 2015, MNR 2014). As such, a training program and associated training materials to educate construction vehicle drivers about the risk to wildlife, mitigation measures and driver behavior requirements is important and has been included as part of this Plan.

All vehicle drivers will be required to complete wildlife awareness training before performing any work on the Project. Formal retraining will be required for any vehicle drivers that are away from the Project site for more than 120 business days. To reinforce training and engage drivers, wildlife sensitivity reminders into the daily Project tailgate sessions or morning workflow planning. Furthermore, pocket handouts will be provided to drivers, and wildlife mitigation materials will be posted around the job site to reinforce training.

The specific training materials will be developed by a qualified biologist with experience in construction environmental inspection. The initial wildlife awareness training will be provided in person by the construction environmental biologist; likely provided at the same time as the site orientation and the awareness training requirements under the Endangered Species Act permit.

Following this initial training, measures will be taken to reinforce wildlife awareness on the construction site. Materials such as posters and handouts will be posted in communal areas such as construction trailers or washrooms.

A record will be kept of all training including who provided and attended the training, the date of certification and the training materials that were covered. Hard hat certification stickers will be a requirement before work of any nature on site may begin.

The training session and associated materials will include, at a minimum:

- background information (designed to be engaging) on wildlife and wildlife habitat on Amherst Island;
- Identification of what wildlife drivers may encounter;
- where and when encounters are most likely to occur;
- the mitigation measures for wildlife that are being put in place;
- safety and responsible driving guidance (i.e. as recommended in MTO 2013), such as:

AMHERST ISLAND WIND ENERGY PROJECT, TRAFFIC MANAGEMENT PLAN APPENDIX C WILDLIFE MITIGATION

Wildlife Mitigation
November 23, 2015

- Watch - Scan the road ahead from shoulder to shoulder. If wildlife is spotted, slow down and pass carefully. Have extra vigilance and obey speed restrictions in signed areas;
 - Steer - Stay in control and adjust speeds to accommodate weather conditions. If driving at dusk or night occurs, reduce speeds. Look where you want to travel instead of fixation unduly on what you are trying to avoid;
 - Brake - firmly if wildlife is observed on or adjacent to the road. Do not assume the wildlife will move out of your way; and
 - Stop - as safely as possible if wildlife is crossing the road. If one animal crosses the road, others may follow.
- whom to speak to regarding any questions about the wildlife mitigation;
 - where on the construction site refresher materials on wildlife can be found; and
 - actions to take in the case of a wildlife encounter.

The onsite wildlife inspectors will encourage ongoing engagement and discussion with vehicle drivers throughout the construction period.

In addition to positive encouragement, and creating a culture of respect for wildlife, drivers will be reminded that compliance with this plan is a mandatory job requirement, and any failure to do so could result in disciplinary action, up to and including termination.

3.2.4 Wildlife Movements

To reduce the risk of any wildlife collisions during construction silt fencing or other appropriate barrier fencing will be used to inhibit movement of wildlife onto the public roadways. Such exclusory fencing will be placed strategically, where there appears to be the greatest possibility for any wildlife crossings to occur (MNR 2014). Within the Project site, such areas have been identified where public roads intersect or run adjacent to water crossings, ponds or seasonally flooded areas. The wildlife inspector will require fencing in additional areas as deemed beneficial based on the circumstances encountered during construction. The barrier fencing will in all cases be temporary, during the construction period.

Specifications for barrier fencing will follow best practices, including for example, Best Practices Technical Note – Reptile and Amphibian Exclusion Fencing (MNR 2013). Installation of barrier fencing will occur prior to commencement of construction. The fencing will extend 50m on either side of the feature and both sides of the road, with the ends of the fencing curved to direct wildlife away from the road. The wildlife inspector will be onsite during the installation of barrier fencing to minimize the potential disturbance or destruction of wildlife and/or their

**AMHERST ISLAND WIND ENERGY PROJECT, TRAFFIC MANAGEMENT PLAN APPENDIX C
WILDLIFE MITIGATION**

Wildlife Mitigation
November 23, 2015

habitat during construction. As noted above, the fencing will also be monitored to ensure it remains in place and is working as planned.

AMHERST ISLAND WIND ENERGY PROJECT, TRAFFIC MANAGEMENT PLAN APPENDIX C WILDLIFE MITIGATION

Closing
November 23, 2015

4.0 CLOSING

The Traffic Management Plan and this Wildlife Mitigation Appendix have been completed in accordance with REA No. 7123-9W9NH2. The application of these mitigation measures, including traffic management, driver behavior and wildlife movement mitigation are expected to address potential negative effects of construction traffic.

Stantec Consulting Ltd. prepared this Wildlife Mitigation Appendix to the Traffic Management Plan for Windlectric Inc. for the Amherst Island Wind Energy Project. Windlectric Inc. is committed to implementing the appropriate protection and mitigation measures as they apply to the construction of the proposed Project.

**AMHERST ISLAND WIND ENERGY PROJECT, TRAFFIC MANAGEMENT PLAN APPENDIX C
WILDLIFE MITIGATION**

Closing
November 23, 2015

This document entitled Amherst Island Wind Energy Project, Traffic Management Plan Appendix C WILDLIFE MITIGATION was prepared by Stantec Consulting Ltd. ("Stantec") for the account of Windlectric Inc. (the "Client"). Any reliance on this document by any third party is strictly prohibited. The material in it reflects Stantec's professional judgment in light of the scope, schedule and other limitations stated in the document and in the contract between Stantec and the Client. The opinions in the document are based on conditions and information existing at the time the document was published and do not take into account any subsequent changes. In preparing the document, Stantec did not verify information supplied to it by others. Any use which a third party makes of this document is the responsibility of such third party. Such third party agrees that Stantec shall not be responsible for costs or damages of any kind, if any, suffered by it or any other third party as a result of decisions made or actions taken based on this document.

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Nicole Kopysh
Project Manager

AMHERST ISLAND WIND ENERGY PROJECT, TRAFFIC MANAGEMENT PLAN APPENDIX C WILDLIFE MITIGATION

References
November 23, 2015

5.0 REFERENCES

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Van der Ree, R., D.J. Smith, and C. Grilo. 2015. Handbook of Road Ecology. John Wiley & Sons Ltd.

Appendix D – Summary of Detour Routes

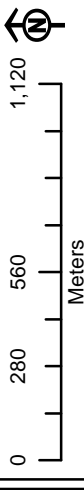
Legend

- Public Roads
- Waterbodies
- ↔ Detour Route



No.	Date	Description

REVISIONS

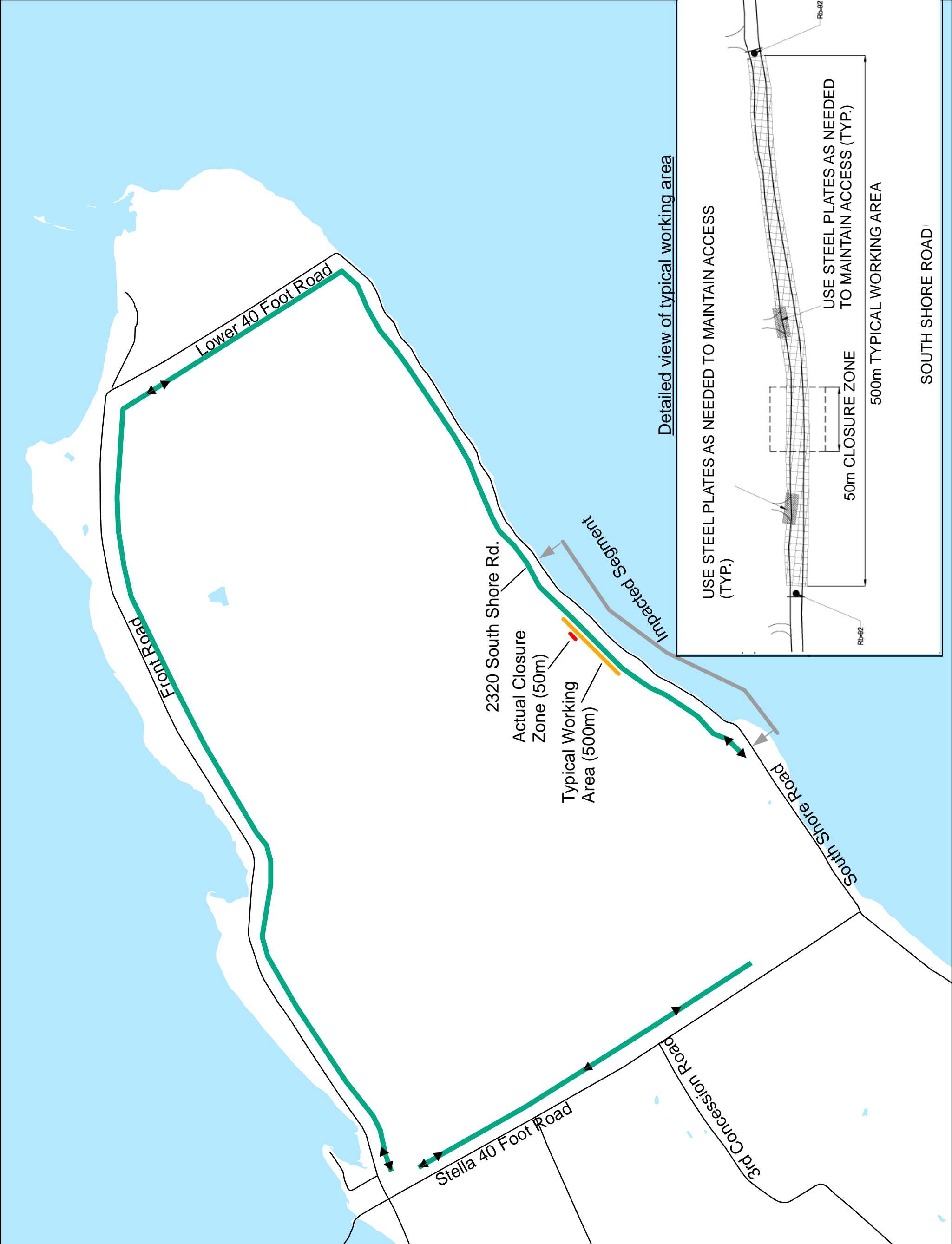


ALGONQUIN POWER Co.

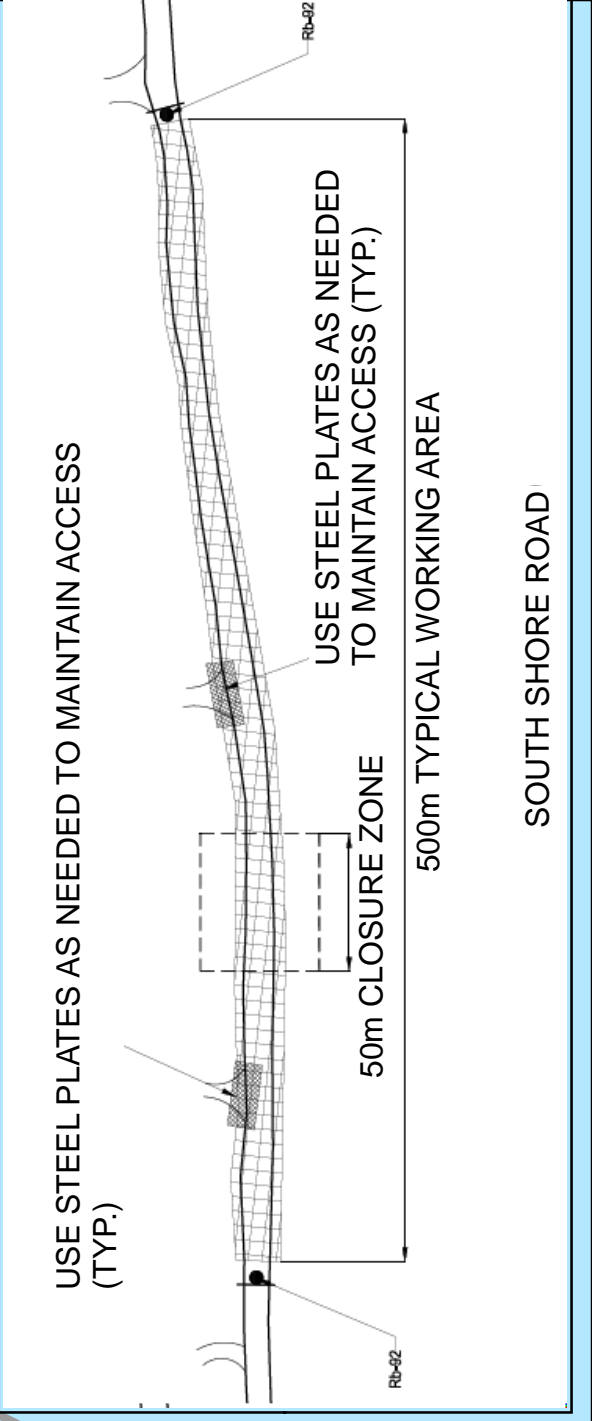
AMHERST ISLAND
WIND PROJECT

South Shore Rd Road Closures & Preferred Detour Routes

DATUM/PROJECTION: NAD83/UTM ZONE 18N	SCALE: 1:22,500
DRAWN BY: D THOMPSON	DATE: FEB 6, 2017
DRAWING No. AMHST - 240a	REVISION No. 0



Detailed view of typical working area

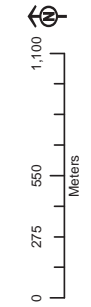


Legend

-  Public Road
-  Waterbodies
-  Detour Route



REVISIONS	
No.	Description
1	16/02/15 Stampfile Update



AMHERST ISLAND
WIND PROJECT

Stella 40 Foot Rd Road Closures & Preferred Detour Routes

DATUM/PROJECTION: NAD83/UTM ZONE 18N	SCALE: 1:22,000
DRAWN BY: D THOMPSON	DATE: DEC 23, 2016
DRAWING No. AMHST - 240b	REVISION No. 0

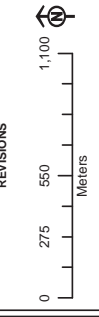


Legend

- Public Road
- Turbine Locations
- Waterbodies
- ↔ Detour Route



No.	Date	Description






AMHERST ISLAND
WIND PROJECT

Dump Rd Road Closures & Preferred Detour Routes

DATE/PROJECTION: NAD83/UTM ZONE 18N	SCALE: 1:22,000
DRAWN BY: D THOMPSON	DATE: DEC 23, 2016
DRAWING No. AMHST - 240c	REVISION No. 0

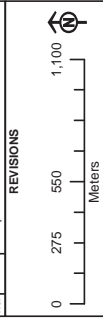


Legend

-  Public Road
-  Waterbodies
-  Detour Route



No.	Date	Description





AMHERST ISLAND
WIND PROJECT

TITLE: 3rd Concession Rd Road Closures & Preferred Detour Routes

DATUM/PROJECTION: NAD83/UTM ZONE 18N	SCALE: 1:22,000
DRAWN BY: D THOMPSON	DATE: DEC 23, 2016
DRAWING No. AMHST - 240d	REVISION No. 0

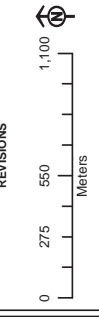


Legend

-  Public Road
-  Waterbodies
-  Detour Route



No.	Date	Description



AMHERST ISLAND
WIND PROJECT

TITLE: 3rd Concession Rd Road Closures & Preferred Detour Routes

DATE/PROJECTION: NAD83/UTM ZONE 18N	SCALE: 1:22,000
DRAWN BY: D THOMPSON	DATE: DEC 23, 2016
DRAWING No. AMHST - 240e	REVISION No. 0



Appendix E – Incident Reporting Form



INCIDENT INVESTIGATION REPORT

Report No. _____

SECTION A

DATE OF INVESTIGATION: _____ DATE & TIME OF INCIDENT: _____

Day Shift Night Shift

- INCIDENT TYPE:**
- | | | |
|--|---|--|
| <input type="checkbox"/> Personal Injury | <input type="checkbox"/> Near Miss | <input type="checkbox"/> Inhalation Exposure |
| <input type="checkbox"/> Equipment Damage | <input type="checkbox"/> Property Damage | <input type="checkbox"/> Fire/Explosion |
| <input type="checkbox"/> Security/Theft | <input type="checkbox"/> Material Loss | <input type="checkbox"/> Environmental |
| <input type="checkbox"/> Chemical Exposure | <input type="checkbox"/> Occupational Illness | <input type="checkbox"/> Fuel Spill |
| <input type="checkbox"/> Fatality | <input type="checkbox"/> Report Only | <input type="checkbox"/> Vehicle Incident |
| <input type="checkbox"/> Other (Explain) _____ | | |

INDIVIDUAL REPORTING INCIDENT: _____

REPORTED TO WHOM? _____ DIRECT FOREMAN: _____

CONTRACTOR: _____ CONTRACT #: _____

PERSON(S) INVOLVED: _____ OCCUPATION(S): _____

ANY WITNESSES? YES NO (If Yes, Please fill out Witness Statement Section B, Attachment B)

ARE PICTURES/DIAGRAMS ATTACHED? YES NO

WAS THERE ANY INJURIES: YES NO

Name of Injured Worker: _____ Was First Aid Rendered? By Whom? _____

Injured Body Part /Nature of Injury: _____

Medivac/Medical Referral/Return to Work? _____

DESCRIPTION OF INCIDENT/ DESCRIBE HOW INCIDENT OCCURRED:

(Additional space is available in Section B)



INCIDENT INVESTIGATION REPORT

SECTION A

DESCRIBE ANY PROPERTY DAMAGE AND/OR TYPE OF EQUIPMENT DAMAGED: ESTIMATED COST: \$ _____ .00

WAS EQUIPMENT TAKEN OUT OF SERVICE? YES NO DID EQUIPMENT RETURN TO WORK? YES NO

DESIGN (equipment failure, standards, utilized, guarding procedures, incompatibility with machinery, etc.)

ENVIRONMENT (dust, noise, hazard identification, etc.)

WEATHER CONDITIONS: _____ LIGHTING CONDITIONS: _____

WAS PROPER PPE BEING USED AT THE TIME? YES NO

HUMAN FACTORS (fatigue, competency, improvisation, drugs/alcohol, training, etc.)

INCIDENT ANALYSIS (direct causes/ indirect causes):

HAS OR WILL THIS INCIDENT BE REVIEWED WITH WORKERS? YES NO

HAS OR WILL THIS INCIDENT BE REVIEWED WITH SUPERVISION? YES NO

HAVE YOU ATTACHED MINUTES OF REVIEW MEETING(S)? YES NO **IF NOT, FORWARD ASAP** YES NO

HAS A HAZARD ANALYSIS BEEN CONDUCTED? YES NO

WHAT STEPS HAVE BEEN TAKEN TO ELIMINATE PROBABLE CAUSES? (BY WHOM? WHEN?)

WHAT ADDITIONAL STEPS WILL BE TAKEN AT LATER DATE AND WHEN? _____

REVIEWED BY PENNECON LIMITED

Name:	Position:	Date:
-------	-----------	-------

FOLLOW UP REQUIRED

FILE COMPLETE

OH&S Committee Notified? Yes No WHSCC Notified? Yes No

COMMENTS: COMPLETE SECTION-B REQUIRED Yes No

REVIEWED BY:

MANAGEMENT REPRESENTATIVE: _____ Date: _____



INCIDENT INVESTIGATION REPORT

SECTION B (attachment A)
EMPLOYEE'S STATEMENT OF FACTS:

EMPLOYEE'S SIGNATURE	DATE:
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INCIDENT INVESTIGATION REPORT

SECTION B (attachment B)

FOREMAN'S REPORT:

FOREMAN'S SIGNATURE	DATE:
----------------------------	--------------

