Ontario

407 TRANSITWAY

From East of Highway 400 to Kennedy Road

Environmental Project Report

Section 8: Implementation

Delcan IBI GROUP

in association with

LGL

8. IMPLEMENTATION

8.1 Project Activities

Implementation of each stage of the 407 Transitway project will encompass three distinct steps: Pre-construction (including design); Construction; and Operation. A description of each step and the activities associated with them are discussed and listed below:

Pre-construction: This step includes the completion of preliminary and detailed designs and preparation of contract drawings and specifications. Also, this step involves obtaining all necessary property and permits, as well as approvals from regulatory agencies.

Construction: In this step all activities related to construction are carried out such as: removals, grading, excavation, filling, paving, bridge, culvert and station construction, landscaping and reinstatement within the entire construction zone.

Operation and Maintenance: This step begins with the commencement of testing and commissioning of transit operation, and continues through on-going revenue service encompassing all general operational activities including maintenance and monitoring.

Implementation for each stage outlined in the following subsections will be revised and confirmed during the Detailed Design Stage in consultation with the other transit agencies.

8.1.1 Pre-Construction

This stage includes the advancement of the functional planning through preliminary and subsequently detailed design followed by preparation of contract drawings and specifications. Aspects to be addressed and resolved during the design stage include but are not limited to:

- Potential funding sources for construction of the project;
- Property acquisition;
- Phasing requirements for infrastructure implementation;
- Staging of the infrastructure construction;
- Vehicle types and operational plans;
- Runningway, structures and station design;
- Obtaining MTO and ETR approvals for runningway design and any interchange modifications;
- Operations & Maintenance Facility design;
- Utility relocation strategy and design;
- Drainage and Illumination design;
- Landscaping materials;
- Public art and Heritage element design;
- Passenger amenities for stations and their design;
- ITS design;
- Coordination with local transit agencies and passenger transfer strategies;
- Fare collection strategies;
- Station and Operations and Maintenance building services design; and,
- Pavement design for running ways and roadways.

Other related pre-construction activities include:

- Site surveying as required;
- Obtaining approvals for construction access and working areas;
- Geotechnical investigations including drilling of boreholes to determine existing soil and groundwater conditions;
- Archaeological and waste contamination investigations;
- Advance utility relocation or burying contracts; and,
- Coordination with other projects in the vicinity of the corridor.

8.1.2 Construction

Physical construction activities will include:

- Installation of traffic accommodation measures as required by staging plan;
- Clearing and grubbing of trees and vegetation within the grading limits for construction of the project;
- Stripping of topsoil within the grading limits;
- Excavation of runningway, station and access road surface;
- Trenching and installing new or relocated above and below grade utility infrastructure
- Removing existing asphalt and disposing at approved facility;
- Removing redundant structures and disposing of debris;
- Installing SWM system components;
- Preparing transitway and station access road bed including cutting and filling and lying granular;
- Potentially salvaging existing granular/asphalt for reuse;
- Placing concrete or erecting fabricated steel or precast elements for bridges or culverts;
- Placing concrete for curb, barriers, retaining walls, planters and sidewalks;
- Constructing Station buildings and ancillary facilities;
- Constructing Storage and Maintenance Facility buildings and support facilities;
- Fabricating and erecting station elements including amenities;
- Laying granular and application of hot mix asphalt;
- Installing lighting, ITS equipment and traffic signals;
- Final site grading and topsoil application;
- Runningway and parking lot line painting; and,
- Installing landscaping features such as sod, shrubs, trees, paving stones irrigation systems, station amenities and platform furniture.

Throughout the construction stage, various associated activities, such as noise and air quality control and waste disposal, which can have potentially adverse environmental effects will need to be mitigated, as outlined in Section 7.

There will be opportunities to stage project activities during the construction phase. Staging the project will be beneficial in maintaining the best possible level of service during construction, including maintaining accesses to all properties as well as maintaining city/town and utility services such as water, sewer and hydro. This will include staging of activities in terms of activities across the corridor (cross-section staging), or sections/portions along the corridor (component staging).

Although specific plans to stage the project will not be determined until the Detailed Design Stage, an outline of staging methods in general terms is provided below so that potential effects can be assessed.

Arterial and ETR Highway Ramp Traffic Management during Construction

The construction of underpasses along the entire route of the 407 Transitway will have an effect on general purpose traffic on several Regional arterial roads and directional ramps between these roads and the 407 ETR Highway. The construction staging sequence for the arterial road underpasses will ensure three lanes of the arterial road in the peak direction and two in the off-peak direction remain open throughout the construction period for each underpass. Temporary detours of the existing Highway 407 ramps will be constructed to allow construction of the crossings under the ramps. Discussions carried out with the MTO, the Region of York and 407 ETR resulted in agreement in principle to the above approach. Typically the construction sequence of the interchange crossings is proposed in three stages as illustrated in **Figures 8-1 to 8-3.** Detailed staging plan and temporary traffic management for each interchange crossing will be developed during the design stage.

Major Highway Crossings

Within the project limits there will be a total of four high volume crossings, three over Highway 407 and one over Highway 404. The structures will be 2-span slab-on-steel girder bridges. Aiming to minimize general traffic disruption on Highway 407, three alternative methods to erect the girders are being proposed.

- Alternative 1 – Use cranes to hold sections of girders.
- Alternative 2 – Use temporary towers and cranes to hold section of girder.
- Alternative 3 – Use temporary bents over Highway 407.

These construction methods will be analyzed in detail during the design stage.

8.1.3 Operations and Maintenance

Once construction is complete, operation and monitoring of 407 Transitway revenue service will be initiated. Activities during this stage will include:

- Testing and commissioning of vehicles, fixed facilities and IT systems;
- Training of operators and transit support personnel;
- Public relations and communications prior to and during revenue service;
- Monitoring traffic and transit ridership volumes to determine the potential for future enhancements;
- Accident/incident investigations to analyze and improve safety conditions;
- Monitoring of ITS equipment performance;
- Monitoring access road traffic signals timing; and,
- Landscape health.

Routine maintenance activities include:

- Spring sweeping of runningway, access roads, parking lots, sidewalk and boulevards;
- Snow and ice removal in the winter;
- Landscape maintenance including grass cutting, shrub and tree pruning in the summer;
- Replacement of any landscaped material; and,
- On-going scheduled vehicle, runningway, station and ITS maintenance.

8.2 Design Attributes and Built-In Mitigation

For this project, “built-in mitigation” is defined as actions and design features incorporated in the pre-construction, construction and operational stages, that have the specific objectives of lessening the significance or severity of environmental effects which may be caused by the project.

The 407 Transitway will be designed and implemented with the benefit of planning, transit and road design engineering, building and structural architecture, landscaping design and environmental best management practices. Regard shall be given to the legislation, policies, regulations, guidelines, and best management practices of the day. Where possible, mitigation measures will be prescribed in the construction contracts and specifications. Examples of practices that should be employed, based on current standards, are described below. These will be applied and refined during pre-construction, construction and operation of the project.

Construction and Traffic Management Plan

A Construction and Traffic Management Plan will be developed to manage the surrounding road system’s transportation function for all travel modes including equipment and material deliverables at various times during the construction period. The objective will be to maintain clear, pedestrian safe routes and to maintain existing traffic as close as possible to its current conditions. The plan will also outline the road signage program to ensure safe operation of vehicular and pedestrian traffic.

Emergency Response Plan

The preparation of an Emergency Response Plan to be used by the Contractor, will be included to allow full emergency services access during the construction period, such that, at all times, there is a method to access all residential, commercial and other land uses in the event of an emergency. Additionally, the Emergency Response Plan would include provisions for providing temporary services to end users in the event of a construction related service outage or other service disruption. A spills response and reporting plan will be prepared and adhered to by the contractor. Spills or discharges of pollutants or contaminants will be reported immediately. Clean up will be initiated quickly to ensure protection of the environment.

Figure 8-1: Stage 1 Interchange Crossing

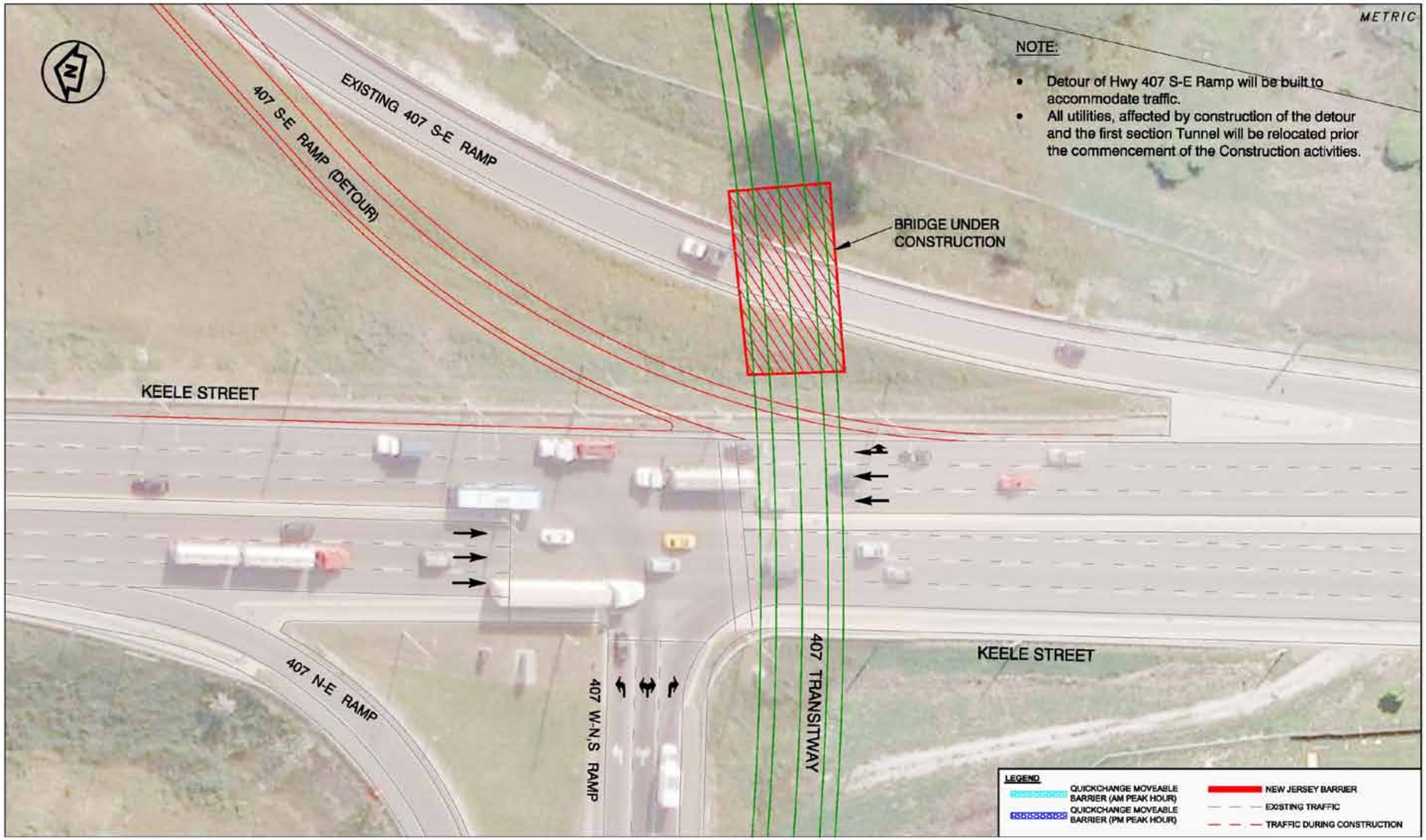


Figure 8-2: Stage 2 Interchange Crossing

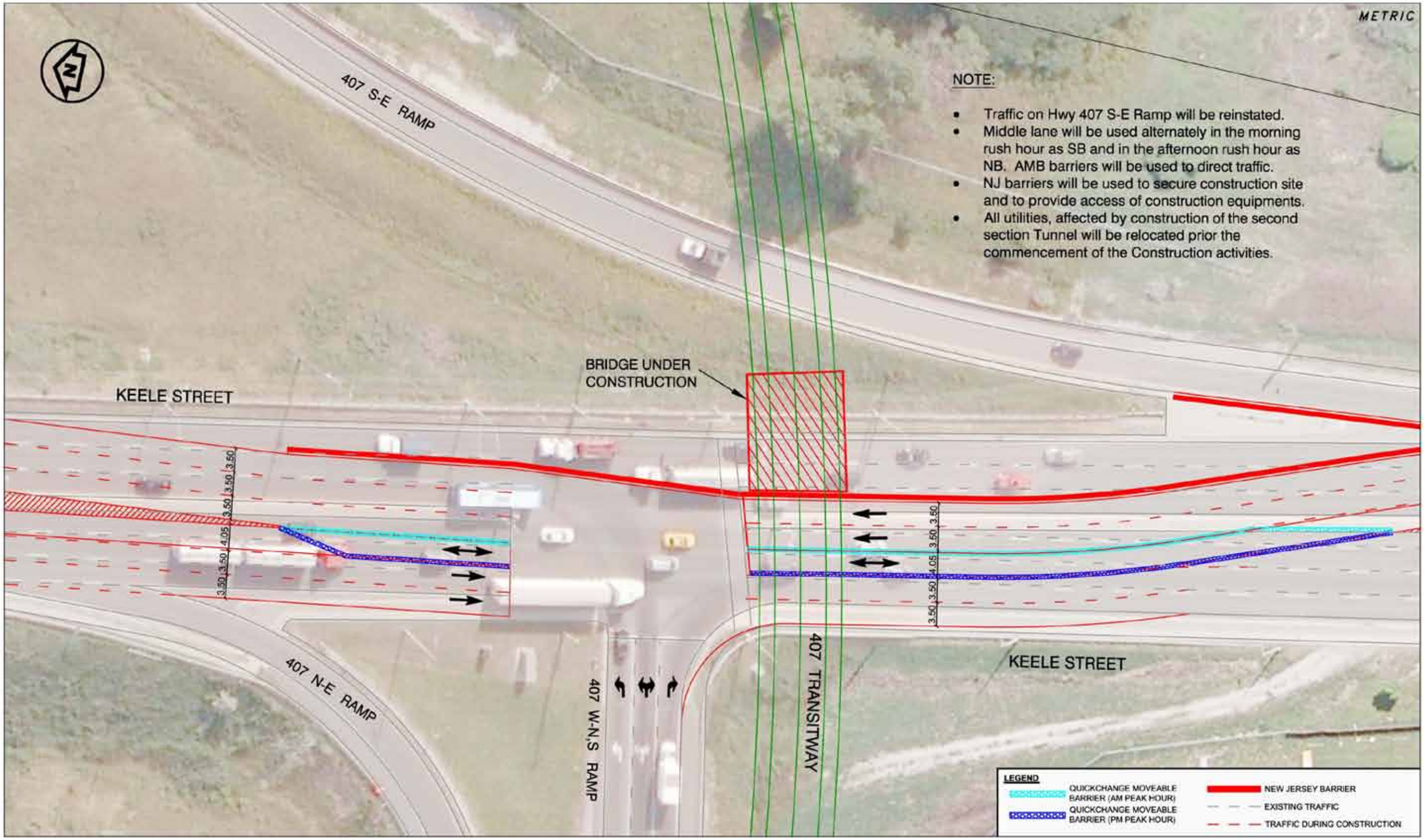
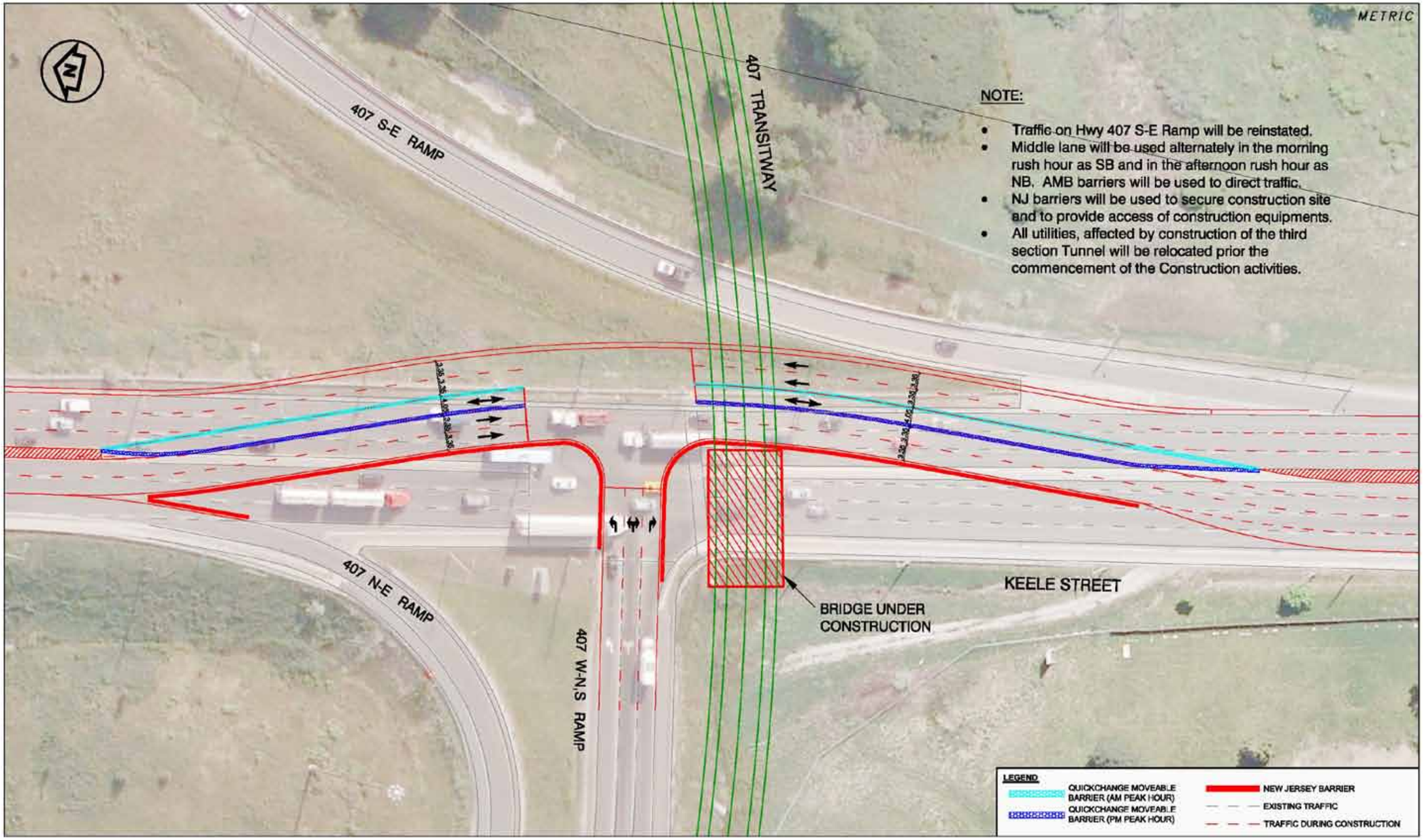


Figure 8-3: Stage 3 Interchange Crossing



Management of Contaminated Materials

During the Detailed Design Stage, studies will be completed to determine any potential for the project to interact with contaminated soil or groundwater. Where the potential is confirmed, a plan to remediate the environment to the applicable standards will be prepared. The MOE and Construction Manager would be notified immediately upon discovery of any contaminated material encountered within the construction area. If contaminated materials or contaminated groundwater are encountered within the construction limits, these will be removed and disposed off in accordance with all applicable acts and regulations. Treatment and discharge of contaminated groundwater are also to be in accordance with applicable legislation and regulations.

Construction Waste Management Plan

During construction there will be some excess materials requiring disposal off the site of the project. These could include concrete rubble, asphalt, earth and road ROW appurtenances such as signs and lighting and utility poles. During the Detailed Design Stage a Waste Management Plan will be developed to ensure that surplus material is recycled wherever practical and to describe the methods to be used by the Contractor for disposal of all other surplus material in accordance with provincial or local municipal practices and guidelines.

Geotechnical Investigations

In advance of the detailed design, final, comprehensive geotechnical investigations will be required to confirm groundwater and subsurface conditions and potential impacts that will need to be considered in developing the detailed design of the project.

Archaeological Assessment and Monitoring

From an initial assessment of the existing conditions, areas having archaeological potential have been identified. Accordingly, it is recommended that a Stage 2 Archaeological Assessment be conducted by a licensed archaeologist, prior to construction. During actual construction, it may be necessary to monitor deep excavations, by a licensed archaeologist. The results of the Stage 2 assessment should be used to determine this level of monitoring. If during the course of construction, archaeological resources are discovered, the site should be protected from further disturbance until a licensed archaeologist has completed implementing any necessary mitigation measures.

Stormwater Management Plan

The post-development SWM strategy includes the design of several enhanced swales, as a part of a treatment train approach as discussed in Section 6.4 for quality treatment of runoff generated by the transitway for drainage areas less than 5 ha, and several SWM ponds for drainage areas greater than 5 ha (details included in Chapter 5 of **Appendix M**). All ponds were designed for quantity and quality control providing Level 1 protection at the outlet.

Erosion and Sediment Control Plan

In advance of the Construction Stage, a detailed plan will be prepared by the Contractor to manage erosion and the flow of sediment into storm sewers. This plan will be based on best management practices including the Guideline of Erosion and Sediment Control at Urban Construction sites. Provision for inspection of erosion and sedimentation control measures during construction will be identified in permit approvals. Catchbasin filters and straw bales in roadside ditches will be used to control erosion and sedimentation during construction. Sediment fences will be used where construction is adjacent to watercourse crossings.

Landscape Plan

During the Detailed Design Stage, and building on the concepts outlined in this report, a detailed Landscape Plan will be prepared to guide the species selection, location and planting details for all proposed plantings along the runningway and at stations, where applicable. The plan will be prepared by a professional landscape architect with experience in plantings along arterial highways and public areas such as the station precincts.

Lighting Treatment Plan

A Lighting Treatment Plan in accordance with local and regional municipal standards will be prepared prior to the initiation of construction. The Lighting Treatment Plan will include lighting fixtures and illumination along the various sections of the corridor. A lighting audit of the preferred lighting design plan will be conducted to ensure clear sight lines and appropriate illumination.

Public Communications Plan

The requirement for a Public Communications Plan stems from the need to keep the public informed about the work in progress and the end result of the construction activity. Residents and other stakeholders must be aware of scheduled road closings and other disruptions to normal service ahead of time in order that their activities can be planned with minimum disruption. The Public Communications Plan should detail how to communicate the information to the public, what information should be disseminated, and at what project stages the communications should take place.

8.3 Project Implementation Phasing

Implementation of the Central Section of the 407 Transitway will likely entail several phases, the extent and timing of each being a function of funding availability, the need to maintain transit service reliability and priorities for transit investment in the GGH. Currently Metrolinx provides cross-regional transit service in the 407 Corridor by operating in mixed traffic on the 407 ETR through this Central Section of the transitway by linking several municipalities east and west of Highway 400 to York University with a short diversion south from the ETR. In addition, Metrolinx provides express service between RHC (Yonge Street) and Pearson Airport, again using the ETR for most of the route.

In establishing the objectives for phased implementation of the transitway, the current availability of the ETR to Metrolinx services has been assumed as a baseline phase extending over the full 23 km of the Central Section. All phasing strategies assessed are based on a combination of part or parts of the existing ETR service joined to a newly constructed portion of the ultimate 23 km fully grade-separated transitway. From this starting point, the following objectives were adopted in defining candidate phasing strategies:

- Each phase implemented should not result in a significant increase in travel time through the Central Section. Preferably, segment lengths should yield a travel time saving greater than the time penalty to divert from and to, the ETR and phase limits selected must minimize the time to transfer from ETR lanes to the new transitway;
- Ideally, the sequence of implementation should correspond to the likely distribution of traffic congestion in the ETR lanes;

- Early implementation of segments that provide improved access to the (planned and likely completed) Yonge and Spadina subway extensions;
- Phase sequencing should be responsive to the zones with highest ridership potential to maximize benefits and exposure of dedicated transitway service. Ideally, segment phasing should respond to the timing of adjacent developments (particularly UGCs) and provide access to the transitway by all modes (local transit, park and ride, walk-in);
- Phase costs should result in a contract cash flow that MTO (or the funding agency) can accommodate in annual budgeting; and,
- Construction staging associated traffic diversion and delays that arterial road users will tolerate.

With a view to meeting the above objectives, potential Phasing Strategies being investigated include:

- A Baseline Strategy – Cross-regional Rapid Transit Service on the 407 ETR in mixed traffic;
- An Enhanced Baseline Strategy – Cross-regional Rapid Transit Service on 407 ETR with enhanced access to and/or additional off-line stops;
- Rapid Transit Service on newly-constructed 407 Transitway between Bathurst Street and Woodbine Avenue and on 407 ETR from Spadina Subway to Bathurst Street and from Woodbine Avenue to Markham Centre (Kennedy);
- Rapid Transit Service on 407 ETR from Spadina Subway to RHC and on newly-constructed 407 Transitway from RHC to Markham Centre (Kennedy); and,
- Rapid Transit Service on newly-constructed 407 Transitway from the Jane Station (Spadina Subway 407 Station) to Markham Centre (Kennedy Station).

Approval of this TPAP of the entire Central Section will enable the MTO, or the proponent at the time, to pursue any one or more of the above strategies, or variations of them, within the limits of this TPAP.