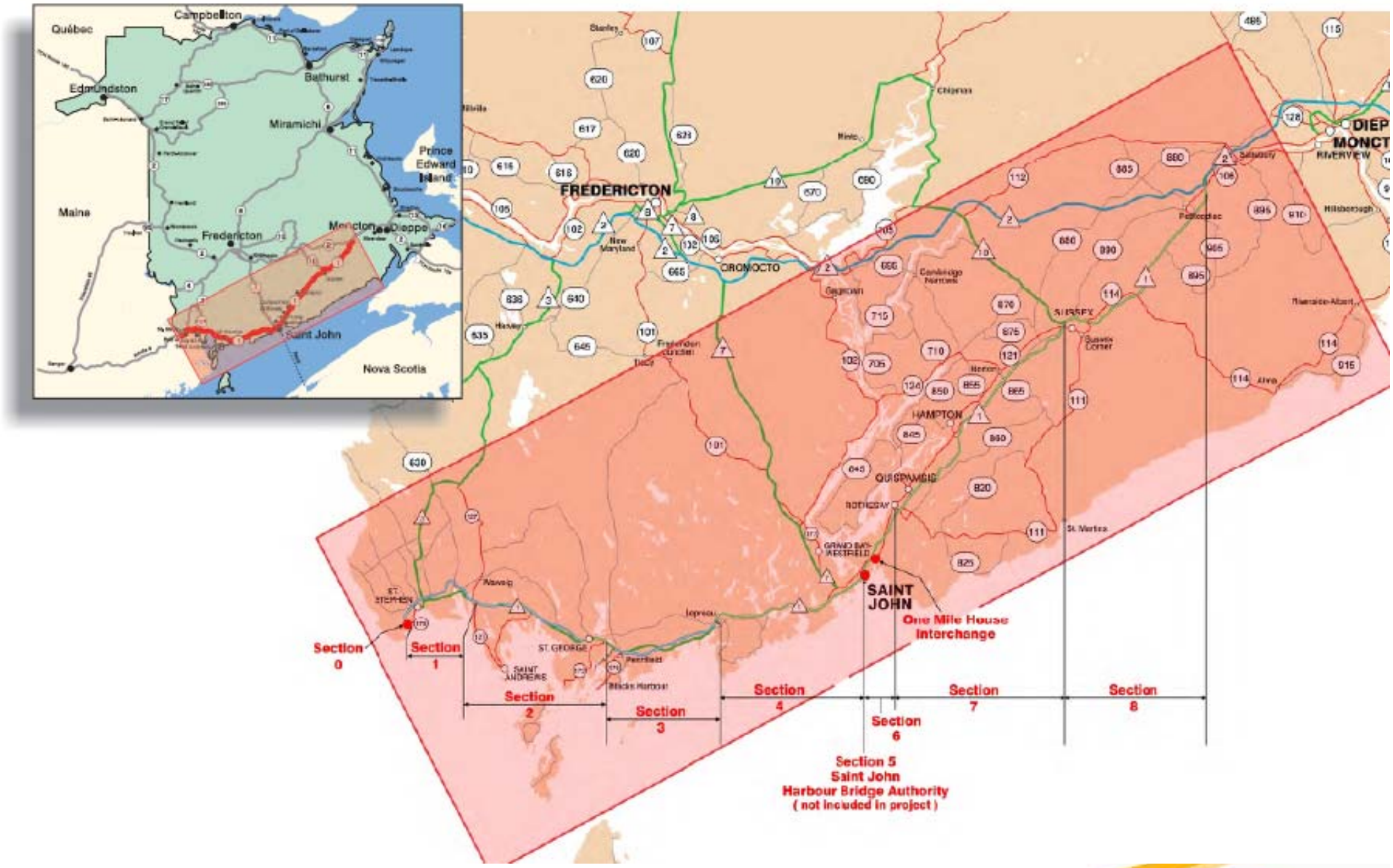
Transportation Association of Canada

2012 Annual Conference

Road Safety Audits
Route 1 Gateway Project - New Brunswick

October 14-17, Fredericton, New Brunswick

New Nouveau Brunswick



New Nouveau Brunswick

Route 1 Gateway Project

- Project Details:
  - construction of 55 km of new 4-lane highway
    - also upgrades to 180 km of Route 1
  - operation, maintenance and rehabilitation for the same 235 km corridor until 2040
  - contract awarded March 31, 2010 with design-build work completed no later than July 2013
    - Awarded to Dexter Development General Partnership
    - site work started May 2010
    - expected completion date - Nov 2012

New Nouveau Brunswick

RSA - Route 1 Gateway Project

- Project Requirements per Design-Build (DB) Agreement
  - The Developer shall engage an independent road safety audit firm
  - The safety audit firm must be experienced in work of this type on large scale projects
  - The Road Safety Audit shall follow the procedures outlined in the Road Safety Audit Guide published by TAC.

RSA - Route 1 Gateway Project

The Road Safety Audit shall be conducted at each of the 4 stages listed below:

- Early in the design phase
- At the preliminary design phase
- Following the detailed design phase and
- Pre-opening

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- The 4 stage process shall be undertaken for all aspects of the DB Work except as detailed below for work in the Existing Sections:
  - For rumble strips and chipseal shoulders – no safety audit procedure to be implemented
  - For median crossovers and longitudinal pipes, length of need for guide rail and energy absorbing guide rail end treatments, bridge railings, additional signing and frangible bases – a pre-opening audit only is to be completed

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- The Developer shall produce a response report for the audit conducted at each stage of the Road Safety Audit.
  - Response reports prepared within 5 business days of receipt of Audit
  - Response reports to be submitted to R1G Project Company (10 days max)
    - reduced to 5 Business days following completion the pre-opening stage audit
  - The Developer shall maintain a log of all time lines associated with the Road Safety Audit process

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- Not Acceptable for Developer to Reject a Recommendation by stating:
  - the recommendation does not fall within the scope of DB Agreement
  - the recommendation is not in accordance with DOT practice **unless** the Developer demonstrates to R1G Project Company that such a reason is justified and based on acceptable standards of design and construction.
    - A response rejecting any such recommendation must be signed by the Operator

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- Lessons Learned from Previous P3 Audits
  - Developer to maintain a log of all time lines associated with road safety audit process
  - Detours to be reduced in speed greater than the 20km/h max. are allowed provided RSA have completed a review
  - Use of energy absorbing guide rail end treatments and frangible bases - NCHRP (now std. practice)

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- The Developer retained Intus Road Safety Engineering Inc. as the independent road safety auditor.
  - Intus - Canadian owned and operated firm
  - has experience in providing expert road safety services
  - is totally independent from all firms participating in the design of the Project
  - proposed an audit plan consistent with the TAC Road Safety Audit Guide

RSA - Route 1 Gateway Project

- Experience of RSA Team:
  - Human factors
  - Geometric design
  - Traffic operations – including detour and traffic management plans
  - Road safety

- RSA Team indicated other expertise would be made available if required

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- Road Safety Audit Procedure - as per the 7-step procedure as prescribed by TAC
  - Step 1: Holding Start Up Meeting
  - Step 2: Conducting Site Visit
  - Step 3: Conducting Audit Analysis
  - Step 4: Preparing Audit Report
  - Step 5: Holding Findings Meeting
  - Step 6: Response Report
  - Step 7: Implementation of the Corrective Actions

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Examples RSA Recommendations

- Design
  - Median cross-overs in too narrow a median to allow for snow plow equipment (i.e. tow plows) to turn around. RSA suggested to relocate.
  - Local road alignment to an intersection on a downgrade and a crest curve will make driver tasks more demanding. RSA suggested to use upper values of the range for stopping sight distance

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Design cont.

- A portion of a removed section of a roadway may mislead motorists in continuing down the old (removed) alignment. RSA suggested to break this line of sight

- Horizontal alignment of an access road and adjacent mainlane are such that headlights from access road could distract motorists on new 4-lane. RSA recommended shielding of headlights through use of berms, trees etc. to block this sight line

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Design cont.

- Issue of sight distance along horiz. curve of main lanes adjacent to concrete barrier in a narrow median. RSA indicated better to have median barrier placed to max. sight lines than to have barrier placed in same line as luminaries located in same median and avoid frangible bases

- Issue raised whether to protect bridge columns outside the 10m clear zone with guide rail. RSA completed a risk analysis that determined guiderail placed at 1.5m offset from left lane is more of a hazard than pier at 10m.

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Design cont.

- Trail realignment is severe and could be challenging to trail users and cause run-off trail crashes. RSA suggested to realign or install proper signage

- A realignment of an RAU 80 has a horizontal curve coincident with a sag vertical curve which creates the illusion that the curve is more “gentle” than it is. RSA suggested to increase radius or separate curves.

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Pre-Opening Audits

- issue of slopes not being as Design indicated. RSA noticed a few slopes that were too steep and had either to be flattened or guiderail put in place

- several issues raised regarding concerns in traffic safety. Some applied to secondary roads and other comments to Detours. RSA suggested the relocation of some Stop Ahead signs and possible requirement of curve warning and checkerboard signs

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Pre-opening cont.

- Issue where diamond on-ramp meets main lanes and pipe end for ramp falls within the clear zone of the main lanes. RSA suggested to slope the end of the pipe so it does not constitute a hazard.

- Bases for luminaries were high causing frangible bases to not work effectively. RSA suggested to raise the grade around the base.

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Any Questions?