REPORT

ON

PLANNING STAGE

ROAD SAFETY AUDIT

NORTH EAST EDMONTON RING ROAD

STAGE 1 – 2041

1.6 MILLION REGIONAL POPULATION

Calgary, Alberta

June 2009

June 26, 2009

Rodney Peacock, P. Eng.
Manager, Urban Roadway Design
and Construction
ISL Engineering and Land Services
#100, 7909 – 51 Avenue NW
Edmonton, AB T6E 5L9

Dear Rod:

RE: Planning Stage – Road Safety Audit of the North East Edmonton Ring Road – Stage 1 – 2041 (1.6 Million Regional Population)

We are pleased to submit our planning stage safety audit report for Stage 1 of the North East Edmonton Ring Road.

If there are any questions on our report or if further information is required please contact me at (403-239-3988) or Gerry Smith at (204-832-9300). Thank you for the opportunity to undertake the study.

Yours truly,

John Morrall, P. Eng
President

ROAD SAFETY AUDIT – PLANNING STAGE

North East Edmonton Ring Road

1.0 INTRODUCTION

Alberta Transportation has retained ISL Engineering and Land Services to develop the first stage of the North East Edmonton Ring Road (NEERR). Canadian Highways Institute and GCS Technology were retained by the ISL Planning Team to conduct a planning stage road safety audit of Stage 1 – 2041 (1.6 million regional population).

The audit focused exclusively on safety issues related to the functional plan. It is recognized that the Design Team has other issues to consider when developing a project and the issue of road safety must be carefully weighed against the other issues that impact a project.

2.0 BACKGROUND

The North East Edmonton Ring Road plans and profiles reviewed include Anthony Henday Drive (AHD) from Whitemud Drive to Manning Road and Highway 16 from AHD to Highway 21.

3.0 BASIS OF THE AUDIT

The audit was carried out by:

John Morrall, Ph.D., E. Eng., Canadian Highways Institute Ltd.
Gerald Smith, M.Sc., P. Eng., GCS Technology

The following documents were provided by the ISL Design Team:

- Design Criteria, Anthony Henday Drive, ISL Engineering and Land Services
- North East Edmonton Ring Road, 2041 – Stage 1 Plan and Profile, 4 sheets, Scale 1:10,000 June 2009.

The road safety audit referenced the following road design guidelines:

- *Highway Geometric Design Guide*, Alberta Transportation and Utilities, 1995 updates to 1999.

- *Geometric Design Guide for Canadian Roads*, Transportation Association of Canada, 1999.

- *Best Practices for Planning and Design of Freeway Facilities*, prepared by Jarret Berezanski, P. Eng. and Bob Savage, P. Eng., Alberta Transportation, January 2004.

The road safety audit followed the safety audit guidelines set forth in:

- *The Canadian Road Safety Audit Guide*, Transportation Association of Canada, 2001.

- *Alberta Transportation Road Safety Audit Guidelines*, prepared by G. Ho and J. Rozental for Alberta Transportation, March 2004.

4.0 ROAD SAFETY AND OPERATIONAL ISSUES

Tables 1 and 2 were prepared as part of the road safety audit to assist in identifying road safety and operational issues. Table 1 shows the interchanges on AHD while Table 2 shows the interchanges on Highway 16.

TABLE 1
STAGE 1

INTERCHANGE CLASSIFICATION

NORTH EAST EDMONTON RING ROAD – AHD

INTERCHANGE	TYPE	CLASSIFICATION	SPACING TO NEXT INTERCHANGE (m)	MAINLINE OVER OR UNDER CROSSROAD
Whitemud Drive	Service	Cloverleaf	3340	Under
Sherwood Park Freeway/ Wye Road	System	Directional with loops	3100	Under
Baseline Road	Service	Parclo 4A	3250	Under
Highway 16	System	Directional	1970	Over
130 Avenue	Service	Parclo & Half-Diamond	3470	Under
153 Avenue	Service	Parclo 4A	3070	Under
Manning Dr.	System	Directional		Under

TABLE 2
STAGE 1

INTERCHANGE CLASSIFICATION

NORTH EAST EDMONTON RING ROAD – HIGHWAY 16

INTERCHANGE	TYPE	CLASSIFICATION	SPACING TO NEXT INTERCHANGE (m)	MAINLINE OVER OR UNDER CROSSROAD
Anthony Henday Drive	System	Directional	1670	Under
Broadmoor Blvd.	Service	Parclo B one loop	1610	Under
Sherwood Drive	Service	Diamond	1620	Under
Cloverbar Road	Service	Parclo (existing)	1620	Over
Highway 21	Service	Cloverleaf		Under

4.1 GENERAL COMMENTS

- There are a number of interchange types. Although all of the exits are single ramp exits and provide consistency for main line traffic the interface of each interchange type on the cross roads is different. Drivers on the cross roads are faced with a different decision in terms of accessing the ramp system of each interchange, depending on which cross road they are traveling on. The potential indecision and uncertainty may lead to collisions.

- The interchange spacing appears to be rather close for what is a suburban freeway and can lead to major issues related to weaving and sign comprehension. AT Planning and Design Standards for Freeway Facilities suggests a preferred spacing between local interchanges of 2000m or more. Systems interchanges are preferably spaced 3000m or more from adjacent local interchanges.

- There are a number of locations where the right turn from a ramp enters the cross street on a high speed entrance. Vehicles may be entering the cross street at too high a speed for conditions on the cross street. A yield condition may be more appropriate.

- There are potential weaving issues between and within a number of interchanges as follows:

  On Anthony Henday

  - Sherwood Park Freeway/Baseline Road – NB & SB
  - Baseline Road/Highway 16 – NB & SB
  - Highway 16/130th Avenue – NB & SB

  On Highway 16

  - Anthony Henday/Broadmoor Blvd. – WB
  - Broadmoor Blvd./Sherwood Drive – WB

  On Sherwood Park Freeway

  - Anthony Henday/17th Street EB & WB

  At the Anthony Henday/Sherwood Park Interchange

  - Between the loop ramps SB and WB

  At the Highway 16/Highway 21 Interchange

  - Between the loop ramps NB

- It is noted that the Stage 1 plans are in accordance with Alberta Transportation Practices" as follows:

  - The mainline is free flow, fully access controlled
  - All ramps and exits are on the right-hand side
  - Single ramp exits are provided
  - Exit terminals appear to have DSD

4.2 Specific Observations

- The SB to WB and the NB to EB ramps from Anthony Henday enter Baseline Road in a high speed configuration. Vehicles on the ramp may be entering at too high a speed for the conditions on Baseline Road, a lower speed urban roadway. A Yield configuration may be more appropriate.

- There is a local access connection west of Anthony Henday Drive directly to/from EB Highway 16. A local connection within a system interchange is inconsistent design and violates driver expectations. It presents a potential safety issue in terms of conflicts between slower moving local traffic and higher speed through traffic.

- There is a local access connection west of Anthony Henday Drive directly to/from WB Highway 16. A local connection within a system interchange is inconsistent design and violates driver expectations. It presents a potential safety issue in terms of conflicts between slower moving local traffic and higher speed through traffic.

- The length of the grades on Anthony Henday Drive out of the river valley may require climbing lanes to avoid conflicts between slower moving traffic, particularly trucks, and higher speed traffic.

- The service interchanges at 130th Avenue on Anthony Henday and Broadmoor Blvd. on Highway 16 are too close to the system interchange at Anthony Henday and Highway 16. The spacings are 1970m and 1670m respectively. The preferred systems – service interchange spacing is 3000m. The service interchanges are within the functional operating area of the system interchange which can lead to congestion and collisions.

5.0 CONCLUDING REMARKS

A road safety audit of the North East Edmonton Ring Road, Stage 1 Plans has been carried out.

The audit identified a number of geometric and operational issues that have the potential to contribute to collisions once the facility is opened to traffic. Consideration should be given to correcting these identified issues before the plan development moves forward in order to minimize the potential for collisions and to provide a safer facility.

It is recognized that the ISL Planning Team, in addition to considering safety issues when developing a functional plan, has to deal with a broad range of issues – existing and planned land-uses, environment, traffic, right-of-way, geotechnical, life cycle costs, etc. It is, therefore, important when addressing the comments in the safety audit to consider appropriate, explicitly based trade-offs with these issues to provide the most cost-effective design possible.

This review and commentary was prepared by Canadian Highways Institute Limited/GCS Technology for ISL Engineering and Land Services. The material in it reflects Canadian Highways Institute Limited/GCS Technology's best judgment in light of the information available to us at the time of the review. Any use which ISL Engineering and Land Services or any second party makes of this review, or any reliance on it, or any decision made based on it, are the responsibility of ISL Engineering and Land Services. Canadian Highways Institute Limited/GCS Technology accepts no responsibility for damages, if any, suffered by ISL Engineering and Land Services or any second party as a result of decision made or actions taken based on this review.

Respectfully submitted,

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