

MEMORANDUM

From: Geotechnical Advisory Group

To: Mohammed Algurabi, MDOT
Roger Ward, MTO

Date: February 13, 2008

Re: Summary of Geotechnical Advisory Group Activities

This memorandum has been prepared by the Geotechnical Advisory Group for the Detroit River International Crossing study being undertaken by the bi-national partnership between the United States Federal Highway Administration, Transport Canada, the Michigan Department of Transportation, and the Ministry of Transportation Ontario.

The Geotechnical Advisory Group was convened in the spring of 2006 to assist with technical guidance and review of the geotechnical explorations, testing, analyses and conclusions associated with the effects that solution mining activities formerly undertaken on nearby sites may have on the potential sites of new bridge foundations. The group met in June, 2006, to review the planned exploration and testing program and protocols for changing these programs. Following this meeting, the Geotechnical Advisory Group was satisfied with the direction and scope of the planned explorations. A subsequent meeting was held in March, 2007, to update the Geotechnical Advisory Group on progress with field programs on the US and Canadian sides of the river. At times during the course of the field exploration work the programs were modified by the consultant teams as a result of field conditions including property entry restrictions and drilling conditions. These changes were made with the knowledge of the Geotechnical Advisory Group and with consultation when necessary.

In November, 2007, the Geotechnical Advisory Group was provided with copies of draft reports prepared by the consultant teams. These reports were reviewed and at the December 4 and 5, 2007, meetings and through following correspondence, the Geotechnical Advisory Group requested clarification and additional information related to the following topics:

- Methodology for defining zones of primary influence (Canadian study);
- Methodology for defining zones of secondary influence (Canadian study);
- Re-examination of some data from alternative perspectives and hypotheses/assumptions (US and Canadian studies) related to "ground truthing" of the cross-well data and comparisons to other data sources (correlation);
- Re-examination of the fundamental assumptions/hypotheses involved in the Canadian study to judge the degree of conservatism in the results;

- Clarification of the postulated mechanisms/reasons related to the geophysical phenomena associated with “weak” amplitude reflectors within the cross-well data (Canadian study); and
- Clarification of the differing approaches and results associated with the numerical modelling conducted for both US and Canadian studies.

The goal of these clarification requests was to develop an added level of confidence in the technical exploration and analysis methods and the resulting conclusions to the satisfaction of the Geotechnical Advisory Group. Following a review of responses to these requests, the Geotechnical Advisory Group has established a consensus opinion that the consultant’s findings and conclusions for purposes of setting the bridge alignment and foundation locations provide a reasonable level of confidence and are an appropriate basis for decision-making for this project. Specifically main conclusions provided to the Geo Advisory Group by consultants are;

- On the U.S. side, there are no subsurface features or conditions associated with solution mining that might affect the bridge foundations for the locations shown at Crossings B and C (X-10 and X-11).
- On the Canadian side, for Crossing B (X-10N), there are no subsurface features or conditions associated with solution mining that might adversely affect the bridge foundations for the locations shown at Crossing B (X-10N) provided that the foundations remain outside of the Limit of Secondary Influence as presented by Golder Associates.
- On the Canadian side, for Crossing C (X-11), there are no subsurface features or conditions associated with solution mining that might adversely affect the main span bridge foundations for the locations shown at X-11 as presented by Golder Associates. However, the proposed approach alignment to Crossing C passes over the eastern end of the former solution mining well field and a subsurface anomaly that appears to be a brine-filled cavity, rubble zone, and disturbed rock mass. Should this crossing alignment be considered further, additional study will be required to refine the range of risks and orders of magnitude of future settlement that should be accommodated by design. The level of effort (investigation, testing, and analysis) that may be required to further refine these issues relative to the Crossing C alignment may be prohibitive.

The Geotechnical Advisory Group is satisfied that the scope of the program, methods of data collection, interpretations and analyses are sound and reflect the state of the art or practice in engineering and scientific fields used to reach conclusions. Notwithstanding this assessment, responsibility for the accuracy and completeness of their investigations, analyses, conclusions and recommendations resides with the Consultants (URS, GAL, Corradino, NTH). Ultimate decision-making responsibility rests with the Partnership and its individual members (TC, FHWA, MTO and MDOT) based on recommendations received from its consulting teams. The Geo Advisory

Group's responsibility has been solely to advise the consultants, and in turn the Partnership, as it has proceeded through this complex and important work.

Signed on behalf of the Geotechnical Advisory Group:

A handwritten signature in black ink, appearing to be 'L. Rothenburg', written in a cursive style.

Leo Rothenburg,

A handwritten signature in black ink, appearing to be 'Richard S. Woods', written in a cursive style.

Richard Woods,

Co-Chairs, DRIC Geotechnical Advisory Group