DRAFT
(May 29, 2005)
Detroit River International Crossing Study
Proposed Evaluation Factors and Performance Measures
Illustrative Alternatives Phase

1. Introduction

The Detroit River International Crossing Study requires a structured and well-proven process to evaluate alternatives. It must be consistent with laws/regulations governing such analyses. It must also allow decisions to be made such that: 1) a Draft Environmental Impact Statement can be published by the end of 2006; 2) a Preferred Alternative approved by the Partnership Steering Committee by mid-2007, if not sooner; and, 3) an FEIS completed by the end of 2007 (Figure 1).

This evaluation process begins with a determination by the Partnership Steering Committee, with input from the Working Group and Consultants,[1] of only those options that will meet the project's purpose and need. The project's purpose is stated as follows:

- Provide safe, efficient and secure movement of people and goods across the Canadian-U.S. border in the Detroit River area to support the economies of Michigan, Ontario, Canada and the U.S.

- Support the mobility needs of national and civil defense.

The project's need is based on these four factors:

- Provide new border crossing capacity to meet increased long-term demand;

- Improve system connectivity to enhance the seamless flow of people and goods;

- Improve operations and processing capability; and,

- Provide reasonable and secure crossing options in the event of incidents, maintenance, congestion or other disruptions.

To address these issues, an alternative's performance in a number of transportation information categories, such as "capacity," must be assessed. For example, travel demand modeling results produced in the earlier Planning/Needs and Feasibility Study (P/N&F), and updated for the ongoing environmental analysis work, indicate road-based solutions outside the Detroit River area (Figure 2) do not meet the project's purpose and need, i.e., they do not divert enough traffic from the Detroit River area to render the existing crossings' border capacity adequate. And, while continued use is expected of public transit by cross-border travelers/workers, as well as shipping of freight by barge and intermodal rail/truck facilities, these modes, in and of themselves, also do not meet the project's purpose and need. On the other hand, road/plaza/crossing facilities (bridge or tunnel) meet the purpose and need if they are located in the Detroit River Area.

[1] The Partnership Steering Committee is comprised of representatives of the Federal Highway Administration, Transport Canada, the Ministry of Transportation Ontario and the Michigan Department of Transportation. The Consultant teams are led by URS Canada (Canadian Team) and The Corradino Group of Michigan (U.S. Team).

Figure 1
Evaluation Process

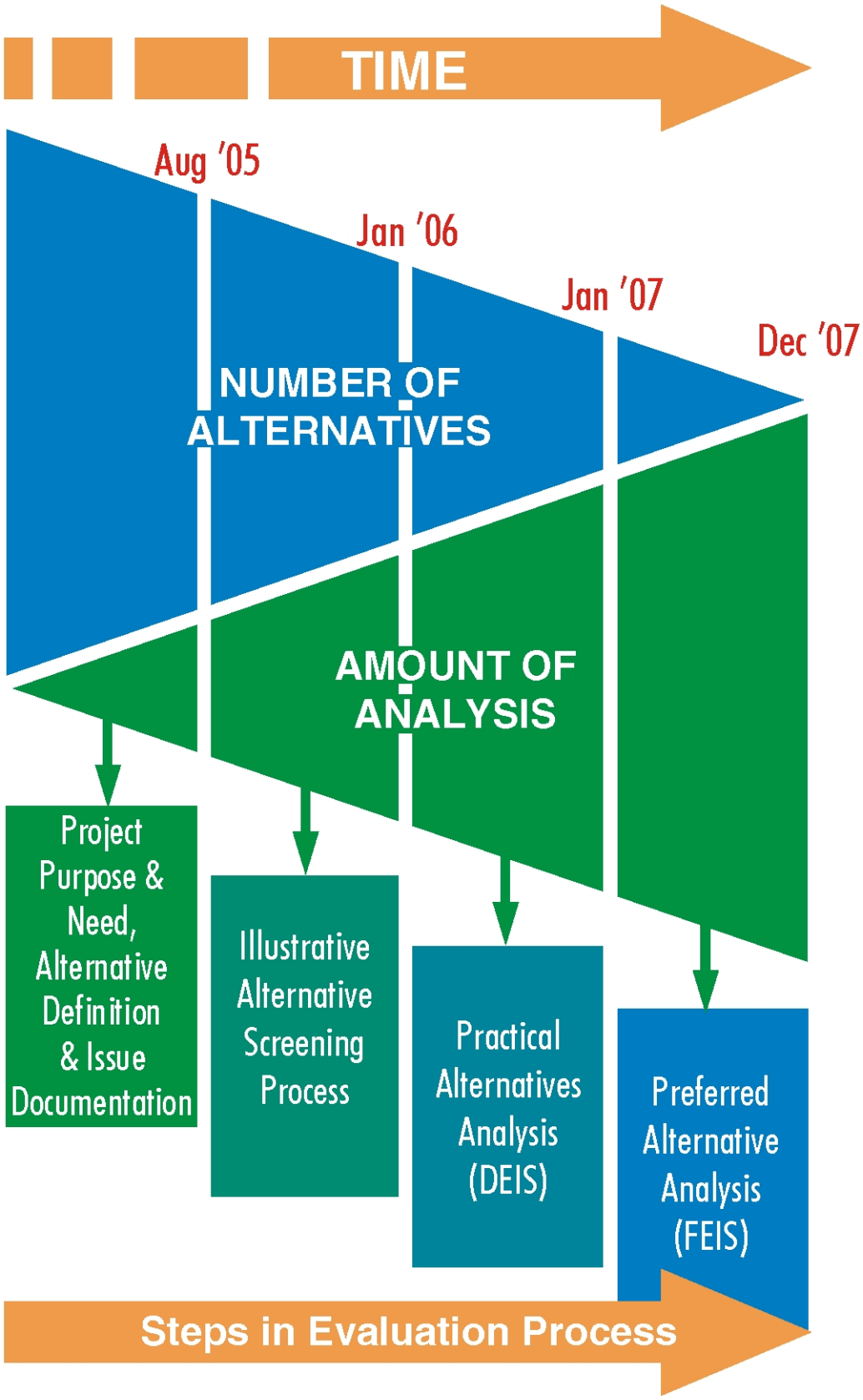
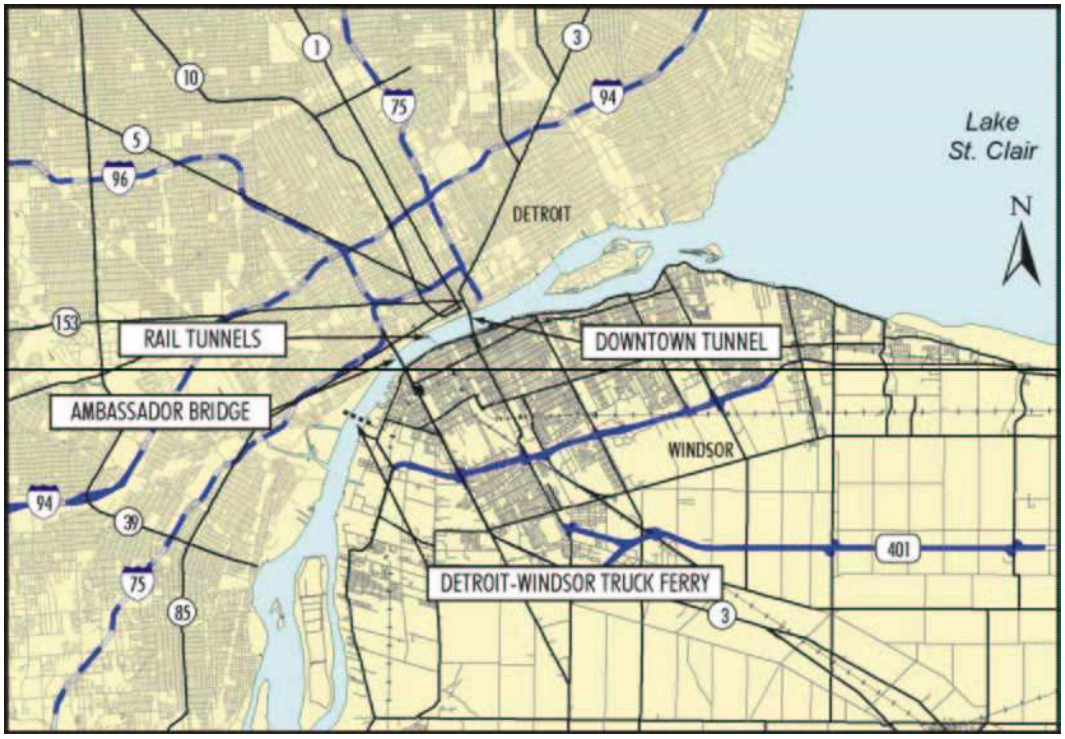


Figure 2
Detroit River International Crossings



The purpose of the environmental study process that is a key part of the current phase of work is to evaluate impacts of alternatives and to feed this information back to the alternatives selection process. This information will assist the Partnership to refine alternatives and to reduce impacts. The goal is to avoid, minimize or mitigate impacts to the extent practicable. Additionally, the analysis process may uncover impacts that are so significant to be deemed "fatal". In such case the alternative associated with a fatal flaw would be eliminated from further consideration. However, at this time, reconnaissance in the P/N&F, and new work on the environmental phase, do not indicate any "fatal flaws" associated with road-based crossings in this area.

These preliminary conclusions will be reviewed by the Partnership Working Group and Steering Committee. At that time they will also consider each proposed alternative's international and national importance from economic and travel/transportation (including freight) perspectives. The national/international issues may be overriding considerations throughout the evaluation.

2. Defining Illustrative Alternatives

The alternatives remaining from the first screening, i.e., those which meet purpose and need and have no fatal flaw, will be defined at an "Illustrative" level of detail of specific crossing/plaza/access roadway combinations. Existing data on such items as housing density, cultural resources, wetlands, and other environmentally significant features, plus geotechnical information (including data on salt mines) will be studied to define the Illustrative Alternatives.

A key step in this process is locating the crossing plaza on each side of the Detroit River. Defining plaza functions and footprint/size will be done in concert with Customs and Border Processing Agencies. Locating the plaza alternatives will be accomplished through engineering/planning analysis and field work, again using data such as those listed above (i.e., housing, environmental factors, etc.). The definition of Illustrative Alternatives will be completed by the end of May 2005 to be presented to the public in June 2005.

The evaluation of the Illustrative Alternatives will be conducted in the summer of 2005 for: 1) the plaza; and, 2) the crossing links (bridge/tunnel and connecting roadways). The results of this two-part screening will then be combined to form end-to-end solutions connecting both sides of the border with Detroit River crossings. Table 1 displays the list of factors to be used in these evaluation processes. Performance Measures Categories are included to further define each factor. They are to be used, along with a spectrum of qualitative and quantitative measures, to aid in alternatives definition/refinement and, therefore, to inform the decision-making process. The summary definition of each evaluation factor listed on Table 1 is presented next.

2.1 Evaluation Factors

Maintain Air Quality – Under the U.S. Clean Air Act, the SEMCOG region is now classified as non-attainment for the $PM_{2.5}$ standard and is in marginal non-attainment for the eight-hour ozone standard. To assess the relative effect of Illustrative Alternative transportation proposals on key roadway links (to be specified in cooperation with MDOT and MTO), the border crossing plaza, and for the regional system overall, pollutant burdens will be calculated for carbon monoxide (CO), hydrocarbons (HC), oxides of nitrogen (NOx), and particulates of 10 microns (PM_{10}), $PM_{2.5}$, Diesel Particulate Matter (DPM), carbon dioxide (CO_2), and air toxics (benzene, 1,3-butadiene, formaldehyde, acetaldehyde, and acrolein). Hotspot analyses at the plaza and key locations along the roadway system connecting to the border crossing will be conducted through dispersion modeling for carbon monoxide $_{for}$ the U.S. Other pollutants to address precursors of Green House Gases (GHG) will be added to the dispersion modeling products in Canada.

Protect Community/Neighborhood Characteristics – The transportation network of the future will have traffic volumes on the crossing, plaza and connecting highway links that are expected to be different from those of today, if a new/expanded border crossing is developed. To measure the effects of the Illustrative Alternatives on plaza and key roadway links in or near neighborhood areas, the forecast volumes by vehicle type on selected roadway segments will be determined. Additionally, the change in local access will be defined, including that for emergency services. Sensitive receptors (residences, churches, schools, libraries and similar institutions/land uses) that might be negatively affected by noise will be sited and the noise impacts on them determined. Potential acquisition of residential, business, and institutional structures (churches, libraries and the like), and farm property/structures will be determined. Areas of significant numbers of minority and low-income people will be identified and the intrusion of new roadway development into these areas will be evaluated. Finally, the public safety concerns related to the plaza will be addressed.

Table 1
Detroit River International Crossing Study
Proposed Evaluation Factors and Performance Measures
Illustrative Alternatives Phase

Evaluation Factor	Performance Measure Categories	Performance Measure
Maintain Air Quality	Regional Burden	Mobile 6.2 analysis based on traffic model results.
	Dispersion (CO in U.S./Canada and other Green House Gases/pollutants in Canada)	CALQ3HC hotspot analysis for key roadway links.
Protect Community/Neighborhood Characteristics	Traffic Impacts ▪ Volumes by Vehicle Type	Peak period volumes on specific links by mode (cars, trucks, and int'l. trucks).
	▪ Local Access	Number of streets crossed, closed, or with an interchange.
	Noise	TNM2.5 model analysis based on traffic model results for key roadway links.
	Community Cohesion/Community Character	Encroachment/severance on neighborhood based on professional judgment. Impact on delivery of community services (function of road closures) based on professional judgment.
	Acquisitions ▪ Residential	Number of dwelling units (du) by type; population estimate based on average persons per du.
	▪ Business	Number of business establishments; employment estimate based on average employees per business for area.
	▪ Institutions	Number of institutions by type (church schools, etc.).
	▪ Farm Property/Structures	Operations/structures affected.
	Environmental Justice	EJ areas (census tracts) affected.
	Public Safety/Security (Plaza Only)	Assessment based on professional judgment.
Maintain Consistency with Local Planning	Land Use (existing and planned)	Designation of "consistent," "not consistent," or "not applicable" with goals, objectives and/or policies based on review of official planning documents.
	Development Plans	Designation of "compatible," "not compatible," or "not applicable" with plans for upcoming development that may not be covered by official plans.
	Contaminated Sites/Disposal Sites	Number of documented sites affected.

Table 1 (continued)
Detroit River International Crossing Study
Proposed Evaluation Factors and Performance Measures
Illustrative Alternatives Phase

Evaluation Factor	Performance Measure Categories	Performance Measure
Protect Cultural Resources	Historical	Number of listed sites affected.
	Parklands	Number of parks by type; number of acres affected. Includes subset for Coastal Zone Management sites.
	Archaeological	Number of sites affected.
Protect the Natural Environment	Environmental Significant Features	Number of acres affected by type.
	Surface Water Quality/Groundwater	Number of acres of floodplains affected; number of water crossings (including secondary rivers and streams); Detroit River channel alteration; number and general location of in-water piers; number of water intakes affected.
	Environmentally Significant Species/Habitat	Number of acres affected by type; list of species; other significant features.
	Farmland/Prime Agricultural Soils	Number of acres by soil type.
	Other Natural Resources	Underground area affected measured by area of roadway above.
Improve Regional Mobility	Highway Network Effectiveness ▪ Service Levels	Miles by LOS classification by major facility type.
	▪ Vehicle Miles of Travel	By major facility type.
	▪ Vehicle Hours of Travel	By major facility type.
	▪ Distance Traveled	Average miles for car, local truck, and international truck.
	Continuous/ongoing river crossing capacity	Miles of detour to alternate crossing. Redundancy assessment.
	Operational Considerations of Crossing System (River Links and Plaza)	To be determined.
Assess How Project Can Be Built	Constructability	Site constraints; geotechnical constraints; construction staging/duration; traffic maintenance; risk assessment.

Maintain Consistency with Local Planning – The existing and future land use patterns of affected communities will be examined to assess the degree of consistency of the proposed transportation improvements. This will include development known through other documents publicly available but not included in "official plans." Finally, the intrusion of a plaza or new roadway that is part of the border crossing system on contaminated sites/disposal sites will be evaluated.

Protect Cultural Resources – The use for transportation facilities of properties of historic and/or archaeologic significance and publicly-owned parklands is protected by various U.S. and Canadian laws/regulations. The transportation systems' use of such sites/properties, including those areas covered by Coastal Zone Management programs, will be defined for each Illustrative Alternative.

Protect the Natural Environment – There is potential to affect wetlands, surface and groundwater resources and other ecologically sensitive areas, including those which may be populated by threatened and/or endangered species. This is particularly true along the Detroit River and the International Wildlife Refuge. The acreage of these areas possibly intruded upon by an Illustrative Alternative will be quantified and the species potentially impacted will be identified. Likewise, the potential use of productive resources, such as farmland (Ontario Class 1-3 soils) or mineral mines, will be determined. Water quality issues will also be addressed in this category by defining the water crossings affected, floodplain acres intruded upon, and possible impacts to the Detroit River, including the release of contaminated sediments. If any water intakes would be potentially affected, they will be enumerated.

Improve Regional Mobility – The purpose of the Detroit River International Crossing Project is, in part, "to provide safe, efficient and secure movement of people and goods across the Canadian-U.S. border in the Detroit River area to support the economies of Michigan, Ontario, Canada and the U.S." Therefore, the ability of the overall highway network to move vehicles efficiently will be evaluated on a number of key roadway links using Highway Capacity Manual terminology (e.g., service volumes at LOS E). Regional vehicle miles, vehicle hours of travel, and travel distances will also be calculated. In the U.S., the "region" will likely be a subarea of the SEMCOG seven-county area to better define variations among alternatives. Also included here will be an assessment of: 1) ability of an alternative to provide continuous/ongoing river crossing capacity; and, 2) the operational considerations of the system (plaza and crossing).

Assess How Project Can Be Built – In this category, an assessment will be made based on professional judgment of the constructability of the proposed alternative (bridge and roadway system) and its border plaza. The measures to be defined are site constraints, geotechnical constraints, construction staging/duration, traffic maintenance, and risk assessment.

3. Evaluation Process

An example "scoring form" is shown on Table 2. It, and the scoring process in which it is used, have been applied successfully on a number of projects in Southeast Michigan. This scoring process will only apply to evaluation factors. It will be done independently by the public and the Project Team (Steering Committee, Working Group and Consultants combined). The "performance" of each Illustrative Alternative will be measured by the Consultants. So, the "bottom line" score of each alternative will be a result of combining the Consultant's performance score by evaluation factor multiplied by the weight of that factor established by 1) the public, and 2) the Project Team. So, two scores will be available per alternative to compare and contrast the technical and non-technical assessment of evaluation factors.

It is noteworthy that cost will be applied after the evaluation scoring to determine "cost effectiveness," defined as "score (points) per dollar." Cost will be developed on an order-of-magnitude basis from unit construction costs (e.g., dollars per square meter or per linear meter). Factors will be applied to the basic construction cost to account for right-of-way costs, design, construction administration, contingencies and the like.

At the end of the determination of performance of the Illustrative Alternatives (evaluation scoring) and cost effectiveness, the Steering Committee will again examine the alternatives according to how well each addresses the objective of providing for the mobility requirements across the US-Canada border consistent with issues of international and national importance so that the end-to-end proposals can be determined and a "short list" of Practical Alternatives established. Following public input, these will be subject to detailed analysis and documentation in the Environmental Impact Statement (U.S.) for eventual selection of a Preferred Alternative. That is scheduled to occur in mid-2007, but every effort will be made to accelerate that timetable.

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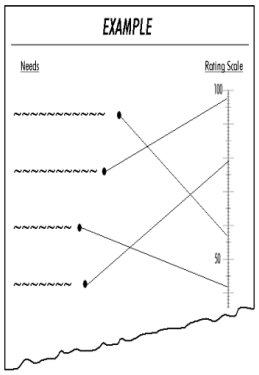
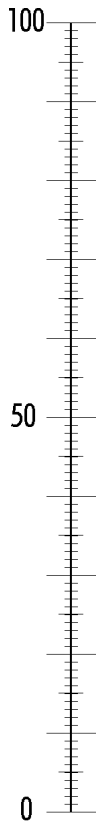
Detroit River International Crossing Project
Scoring Form – Evaluation Factors



How Important Are These Items?

We want to know how you value the seven evaluation factors listed below. To provide us your opinion, please rate them on the scale of "1" through "100", with the highest rating indicating the item you believe is most important. Draw a line from the dot (•) following each factor on the left, to the scale on the right, to indicate your opinion. It you choose, you can have all factors at the same point on the scale at the right. When finished, return your form to a project representative, or by email, or by fax at the addresses listed at the bottom of this form.

Your opinions will be used to evaluate the impacts of the Illustrative Alternatives of the Detroit River International Crossing Project. In that process the Detroit River International Crossing Partnership must also consider the project's Purpose and Need Statement (attached). Therefore, a proposed river crossing alternative's international and national importance from economic and travel/transportation (including freight) perspectives may be overriding considerations throughout the evaluation. Thank you.

Factor		Rating Scale
Maintain Air Quality	●	
Protect Community/Neighborhood Characteristics	●	
Maintain Consistency with Local Planning	●	
Protect Cultural Resources	●	
Protect the Natural Environment	●	
Improve Regional Mobility	●	
Assess How Project Can Be Built	●	

Name of Person Completing Form: _____

Please return the completed form by July 31, 2005.

www.partnershipborderstudy.com
Hotline: 800.900.2649
Fax: 248.799.0146

Project Purpose

The Purpose of the Detroit River International Crossing Project is to: (for the foreseeable future, i.e., at least 30 years):

- ***Provide safe, efficient and secure movement of people and goods across the Canadian-U.S. border in the Detroit River area to support the economies of Michigan, Ontario, Canada and the U.S.***
- ***Support the mobility needs of national and civil defense.***

Project Need

To address future mobility requirements across the Canada-U.S. border, there is a need to:

- ***Provide new border crossing capacity to meet increased long-term demand;***
- ***Improve system connectivity to enhance the seamless flow of people and goods;***
- ***Improve operations and processing capability; and,***
- ***Provide reasonable and secure crossing options in the event of incidents, maintenance, congestion or other disruptions.***