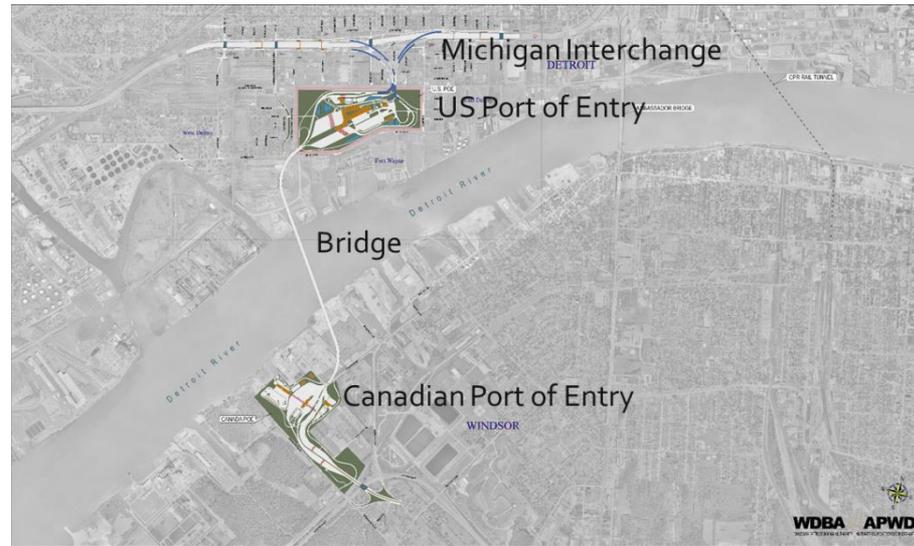


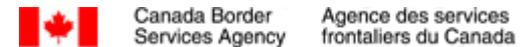
Gordie Howe International Bridge



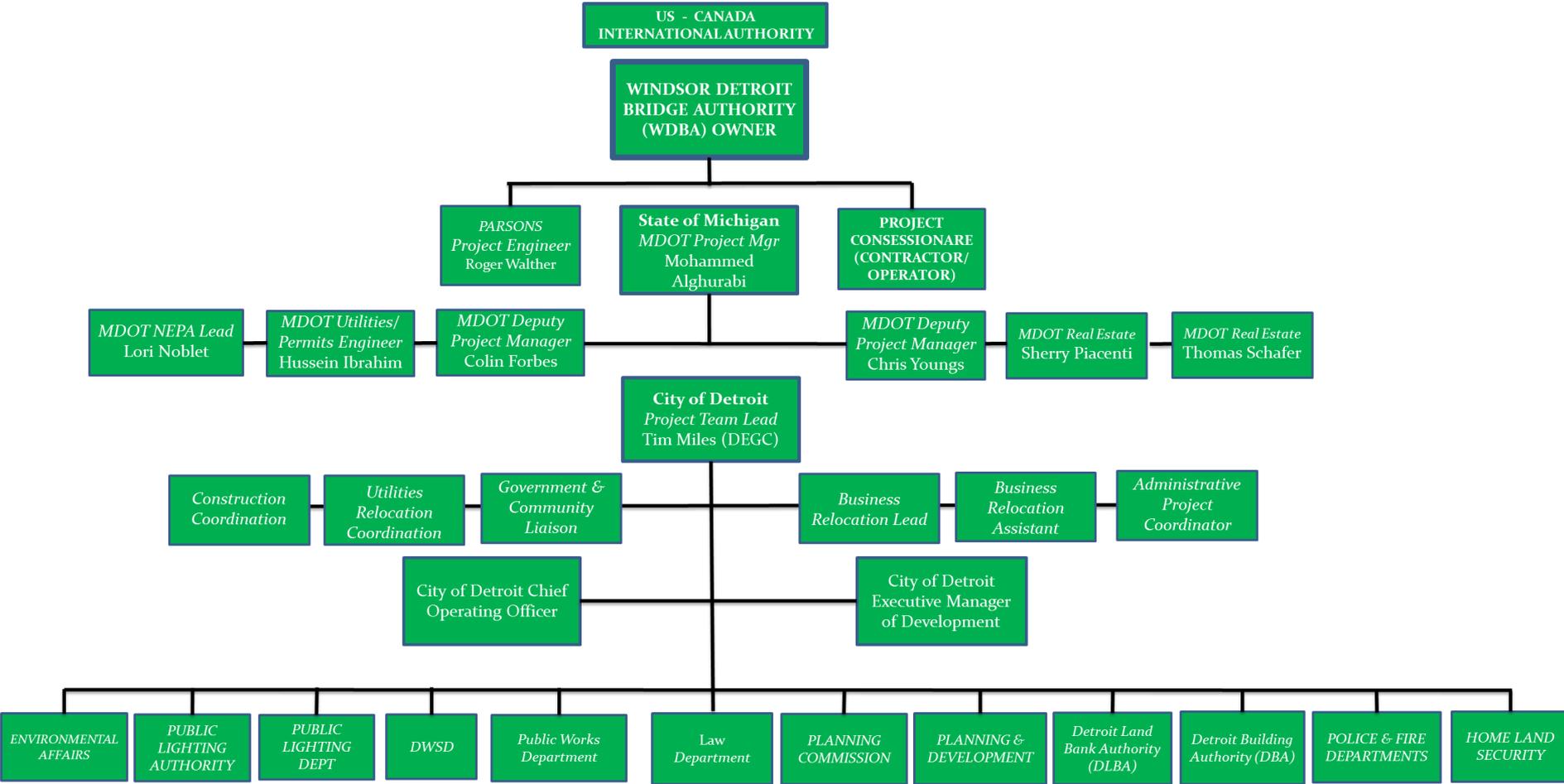
**Midwest Geotechnical Conference Presentation
October 19, 2016**

***Matthew J. Chynoweth, Deputy Metro Region Engineer
Michigan Department of Transportation***

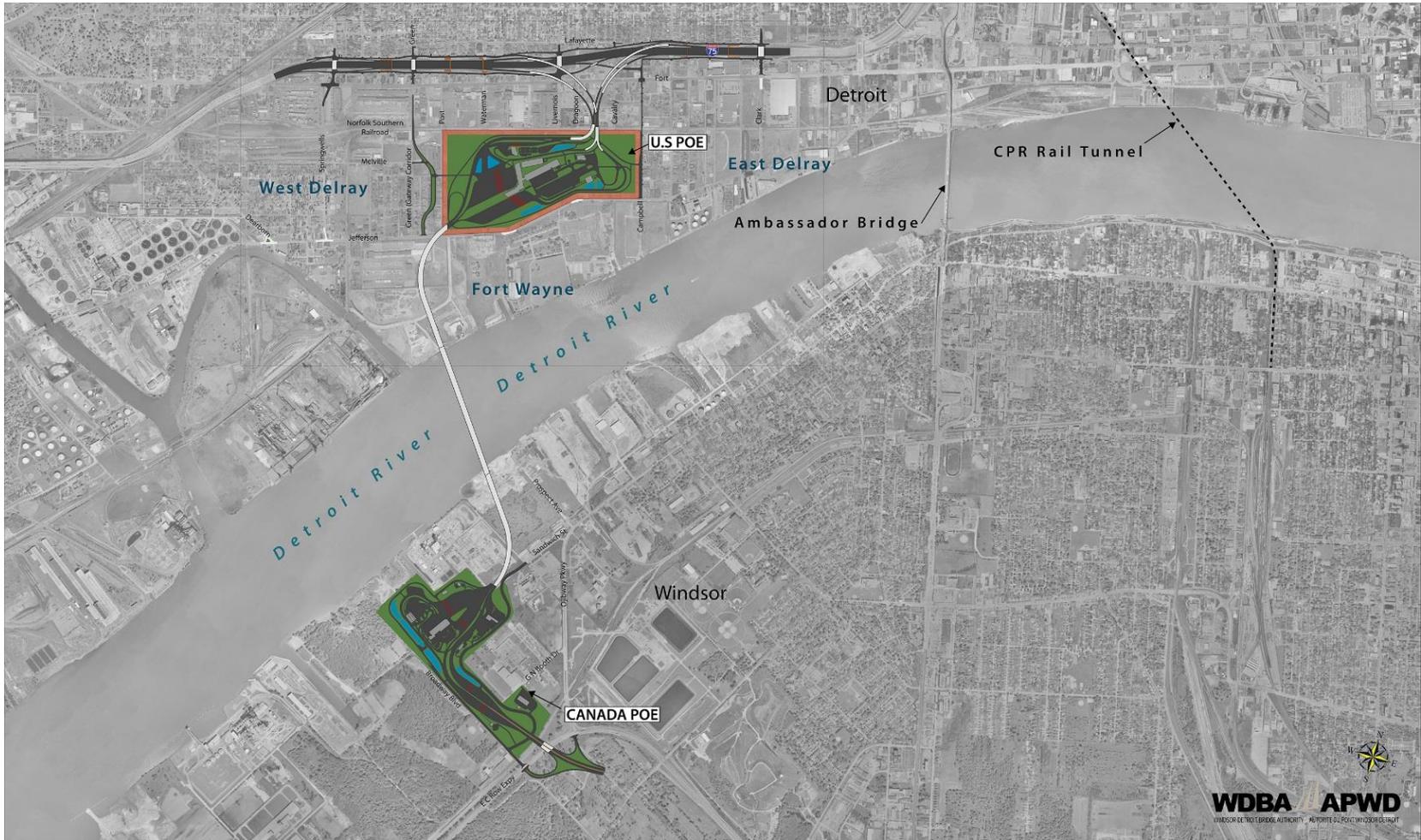
Project Collaboration



GHIB Project Team



Project Components



Why a New Crossing is Needed

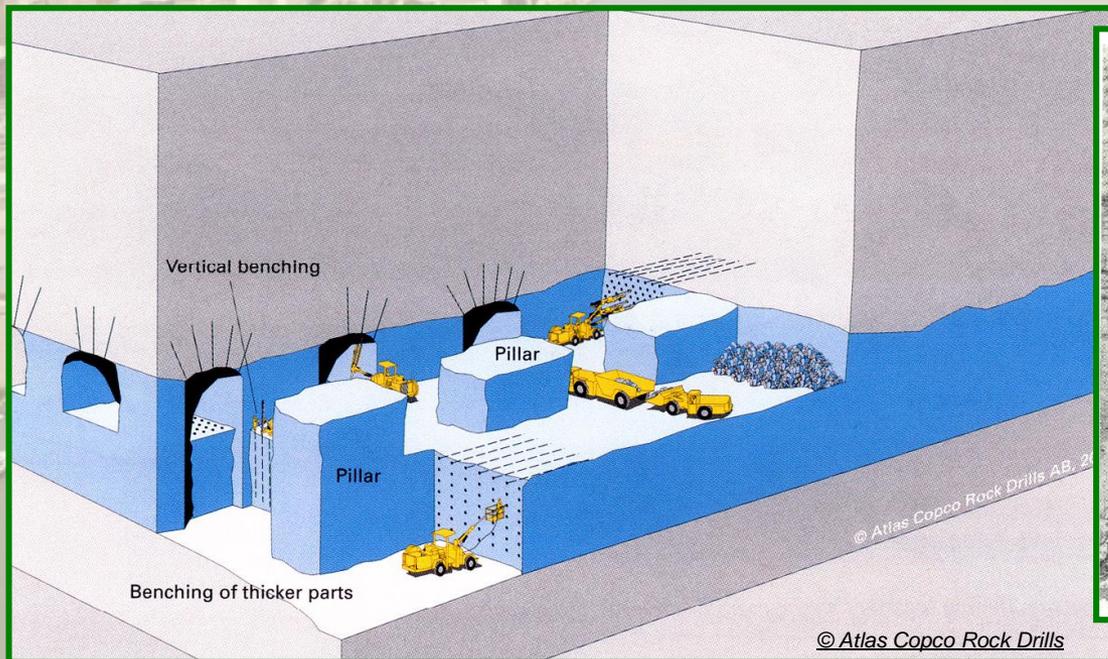
- Development of additional border capacity for Detroit-Windsor is a key priority for U.S. and Canadian governments, as well as private industries, shippers and manufacturers on both sides of the border.
- New bridge will also provide additional crossing capacity for passenger vehicles.
- Goal is to provide a safe, efficient and secure end-to-end border crossing system directly connecting I-75 in Detroit and Highway 401 in Windsor.
- The new publicly-owned bridge will ensure border crossing capacity and redundancy at this vital trade crossing.
- Additional capacity will stimulate long-term economic growth.

Project History

Timeline	Activity
2001-04	Planning/Need and Feasibility Study
2005-09	Coordinated U.S. and Canadian environmental studies Comprehensive and peer reviewed geotechnical analysis U.S. ROD obtained
2008-12	Canada land acquisition begins Preliminary Canadian and U.S. POE design and other preparation work
2012	Michigan-Canada Crossing Agreement WDBA incorporated Canada passes <i>Bridge to Strengthen Trade Act</i>
2013	Presidential Permit
2014	U.S. Coast Guard Permit International Authority members appointed (3 U.S., 3 Canadian) WDBA becomes operational Canada and the U.S. sign an Arrangement regarding the U.S inspection plaza
2015	International Authority approves U.S. land acquisition, which soon commences RFQ released for the P3 Concessionaire (launch of procurement process) Bridge is officially named the <i>Gordie Howe International Bridge</i> Canada begins Early Works on the site of the Canadian port of entry

Room-and-Pillar Salt Mining

- Room-and-pillar mining for solid rock.
 - ✓ Overlying rock and overburden is supported by pillars.
 - ✓ Numerous buildings (like Ford's Rouge River Complex) and roads (like I-75) are built over these type mines.

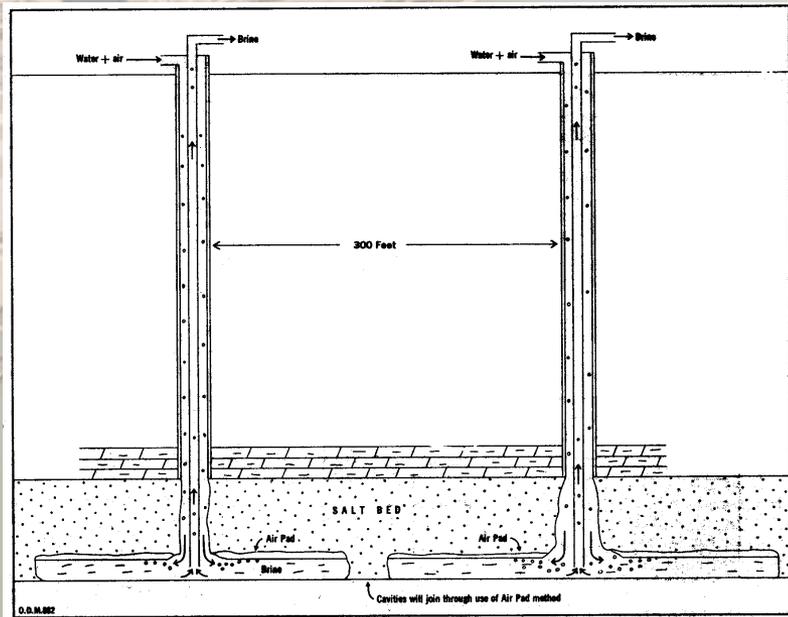
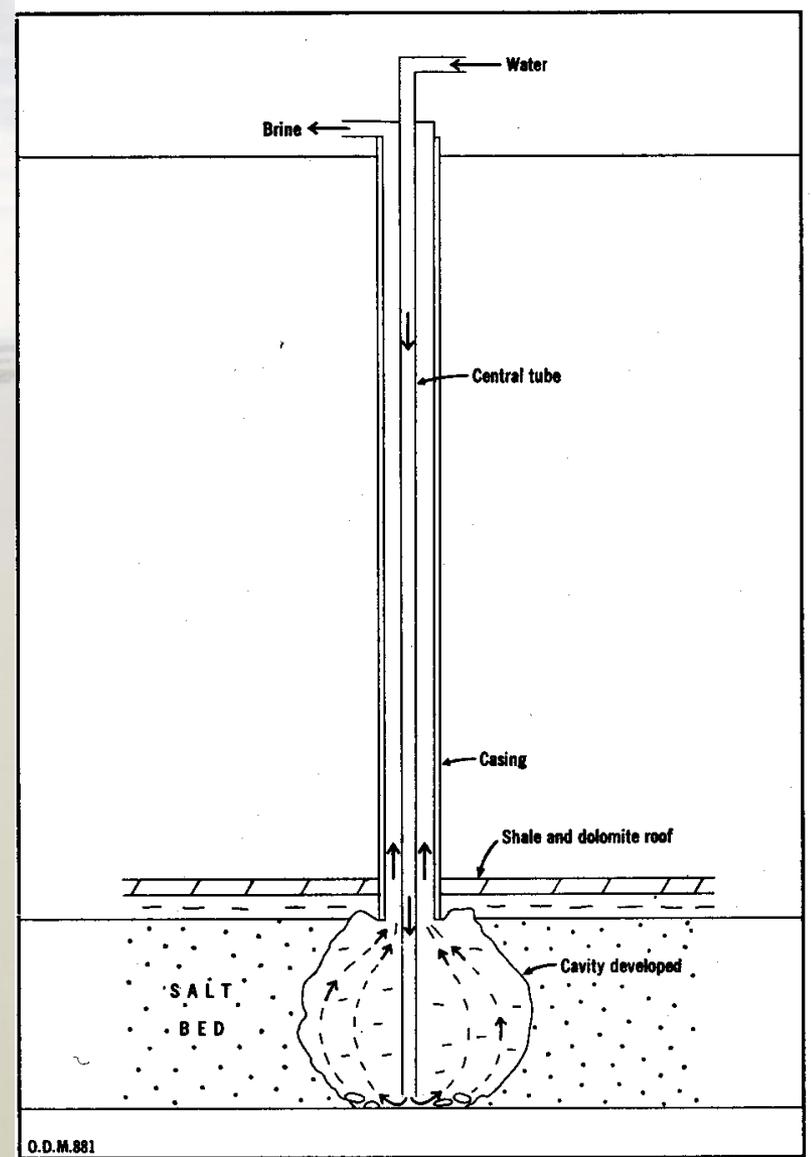


Detroit River International Crossing

- Solution Salt Mining/Brine Wells

- ✓ Brine wells date from late 1880s to 1950s.

- Wells go down to cavities as deep as 1,650 feet below the ground surface.



Detroit River International Crossing

- Sinkholes have developed
 - ✓ In Canada in 1954 (500 feet wide / 25 feet deep).
 - ✓ We could also mention the Pt. Hennepin sinks also



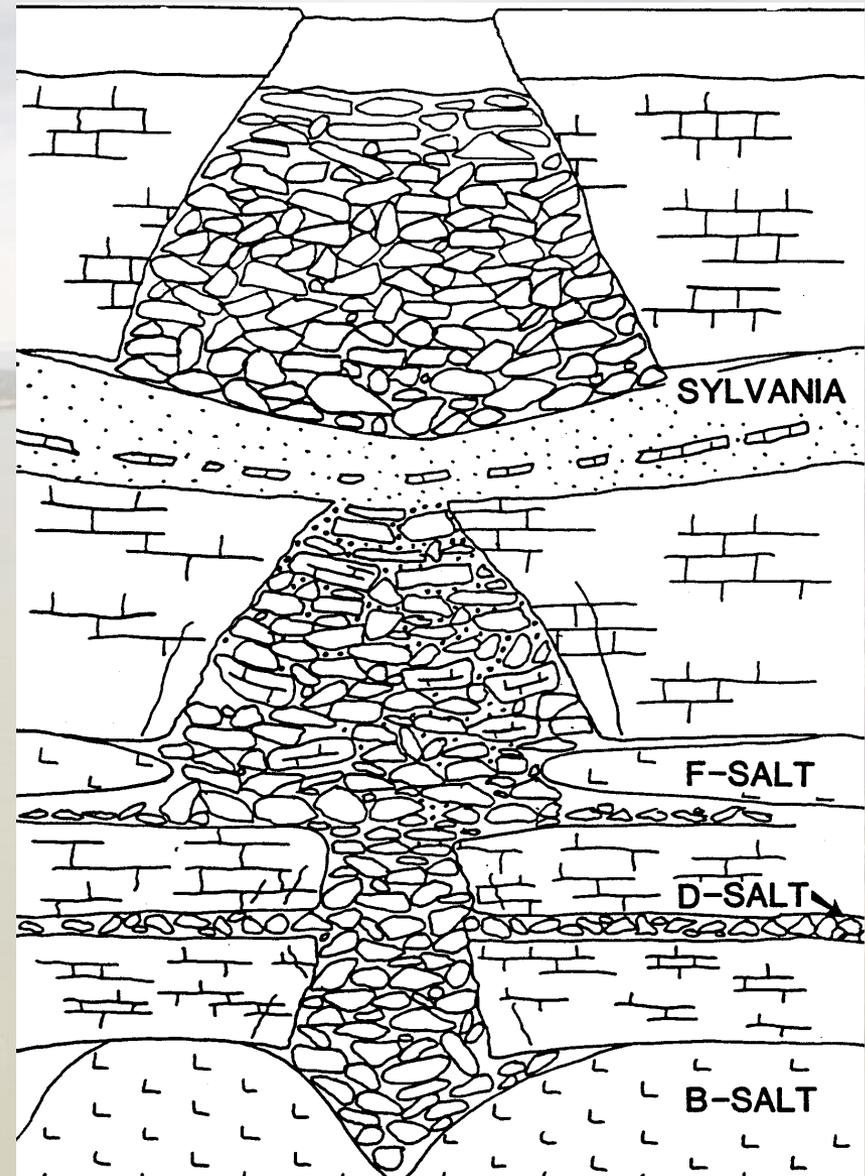
Current Situation

- Historical research indicates a number of potential brine wells are in the area of analysis for a new river crossing.
 - ✓ None are in the Detroit River.



Current Situation

- A bridge pier/foundation must avoid the cavity cone of influence zone rising to the ground surface.
 - ✓ Weight of the layers of soil/rock above cavity can cause a sinkhole.
 - ✓ Bridge pier can accelerate the creation of sinkhole.



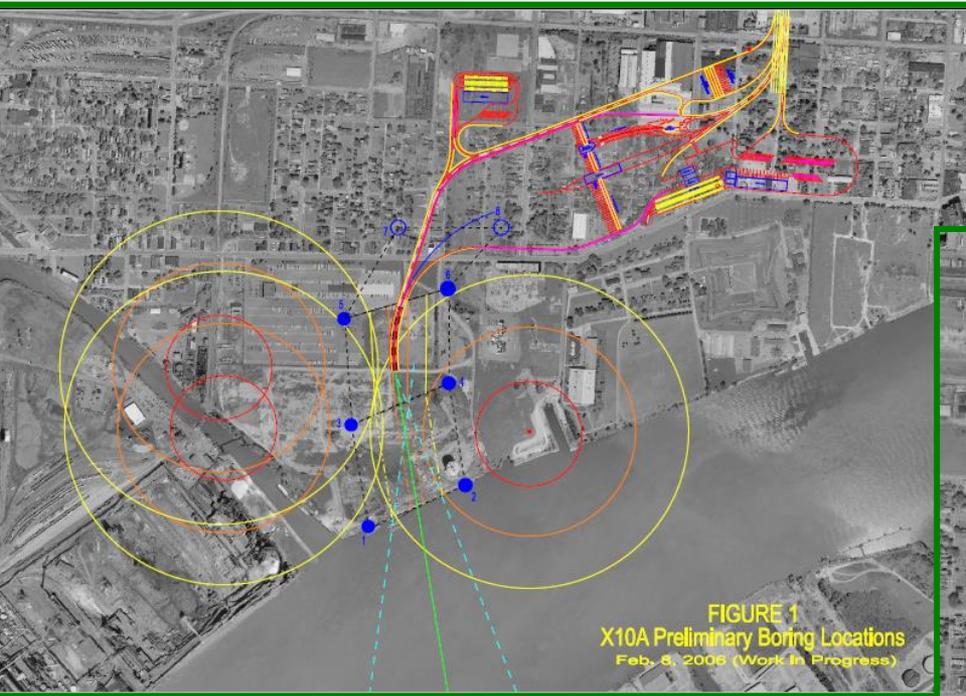
Drilling Program

- Two crossing corridors exist.



Drilling Program

- Each corridor will have 7 boreholes drilled for a total of 14.



Drilling Program (con't)

- Each borehole will have a series of seismic source and receiver combinations placed in the borehole
 - ✓ High frequency seismic energy will be sent between hole pairs to create 2-D images.
 - ✓ 2-D images will detect where current cavities are located and potential zones for sinkhole development.

Drilling Program (con't)



- 11 of 14 drill sites are industrial.
 - ✓ 10 of 11 are owned/controlled by City of Detroit.
- Drill rigs will be at industrial sites 30 days.

Drilling Program (con't)

- Drill rigs at sites with residential properties within 300 feet will be there only 15 days.
- Noise buffering will be provided to the drilling operations at the sites near residential properties.
- Compensation will be provided to allow 11 families within 300 feet of the drill rig to relocate to a hotel/motel for 30 days.

Drilling Program (con't)

- All drilling will be 24/7 until work is complete at each hole.
 - ✓ Boreholes will be protected with flush-mount steel casing for 90 days
 - ✓ Boreholes will be grouted to depth and capped after completion of testing program.
 - ✓ Borehole sites will be repaired to better than conditions previous to drilling activities.
- Nuisances include noise and possible smell of “rotten eggs” (H₂S).
- Personnel will be on site.
 - ✓ To manage all work including drilling operations, environmental, and safety conditions.

Why Try to Build a Crossing Here

- Best location from many perspectives.
 - ✓ Travel / Traffic.
 - ✓ Environmental issues.
 - ✓ Social / Economic issues.
 - ✓ Cost.
- Brine wells exist in greater concentration down river.

Crossing, Plaza, & Route Alternatives

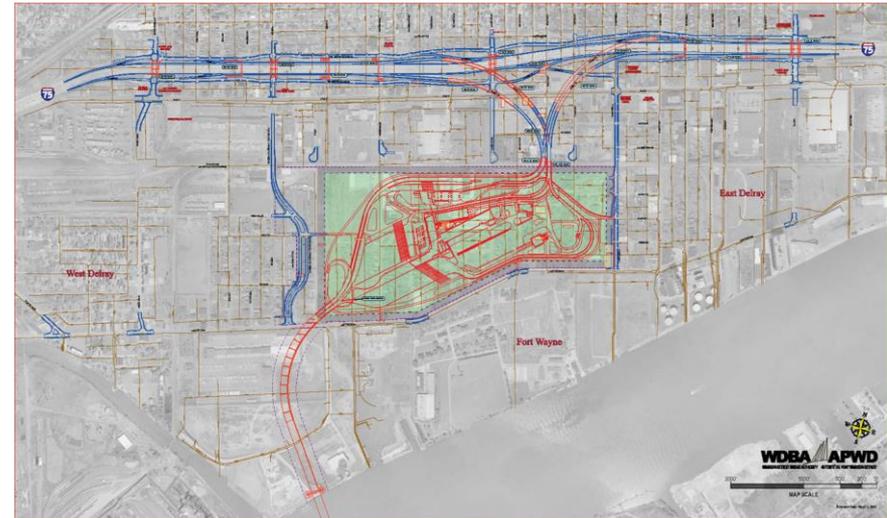


Windsor-Detroit Bridge Authority

- A not-for-profit Canadian Crown corporation.
- Reports to Parliament through the Government of Canada.
- Manages the procurement process for the design, construction, financing, operation and maintenance of the new bridge through a public-private partnership (P3).
- Will oversee the work of the P3 partner and will manage the concession agreement and payments.

U.S. Utility Relocation

- WDBA is working with utilities and other partner agencies to identify high priority areas where utilities require relocation.
- Relocation designs and schedules have commenced with DTE Energy, International Transmission Corporation (ITC) and Detroit Water and Sewage Department. Some relocations have already been completed.
- Other companies have begun or completed relocations of their utilities, including Sprint/Nextel and AT&T.



U.S. Project Footprint



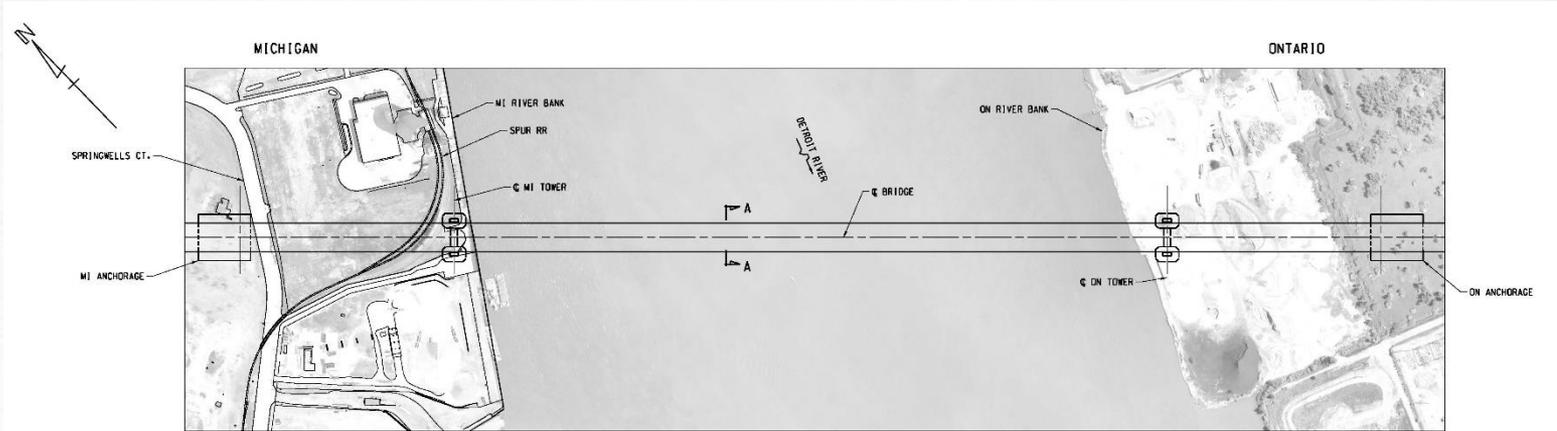
Component Key Features: Bridge

- 6 lanes – 3 in each direction
- Two design types could be used for this signature Bridge:
 - Suspension, which is recognized by its elongated “M” shape; or
 - Cable-stayed, which has more of an “A” shape.
- Clear span of 0.53 miles with no piers in the water
- One approach bridge on each side of the crossing to connect Ports of Entry in the U.S. and Canada
- Total length of approximately 1.5 miles
- Height of main towers up to 820 feet, which rivals the RenCen

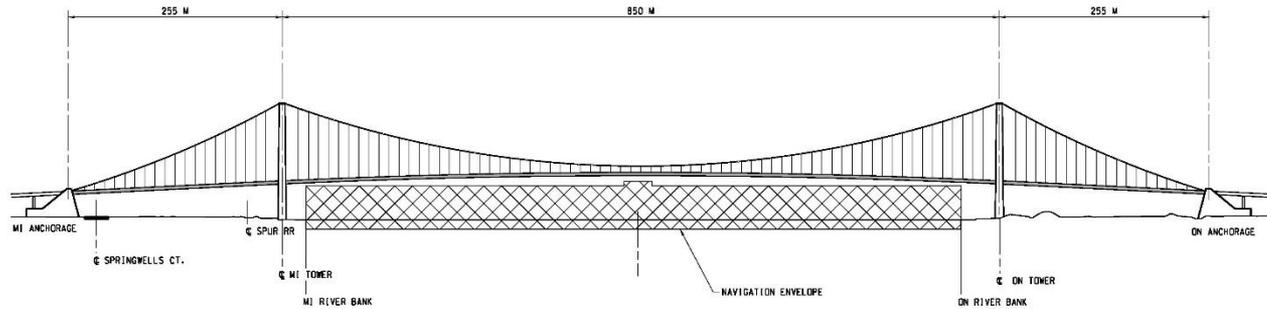


Once complete, the Gordie Howe International Bridge will be among the top five longest bridges in North America.

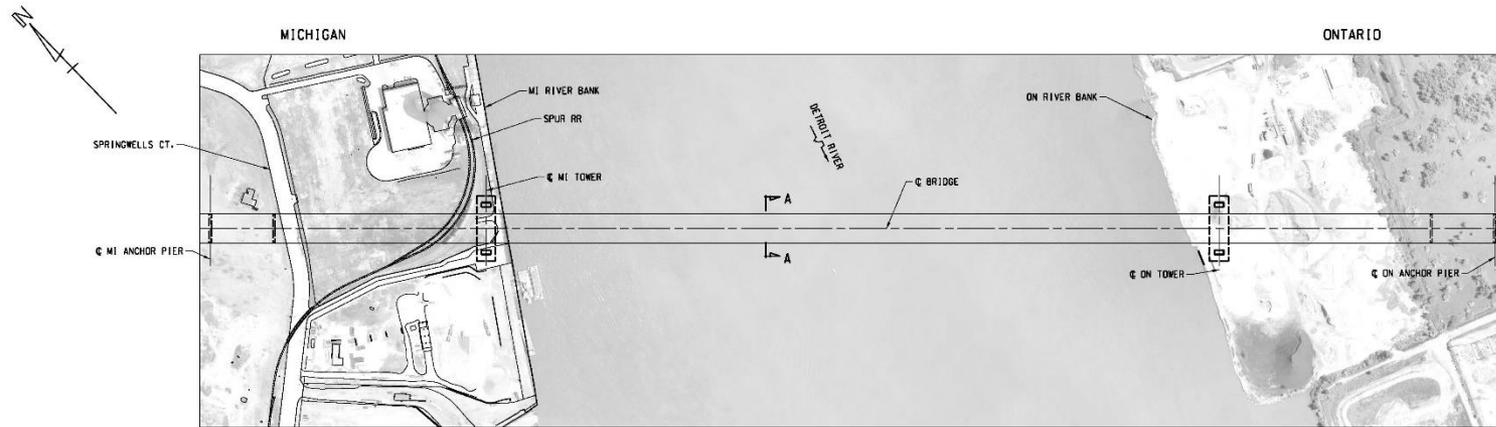
Component Key Features: Bridge



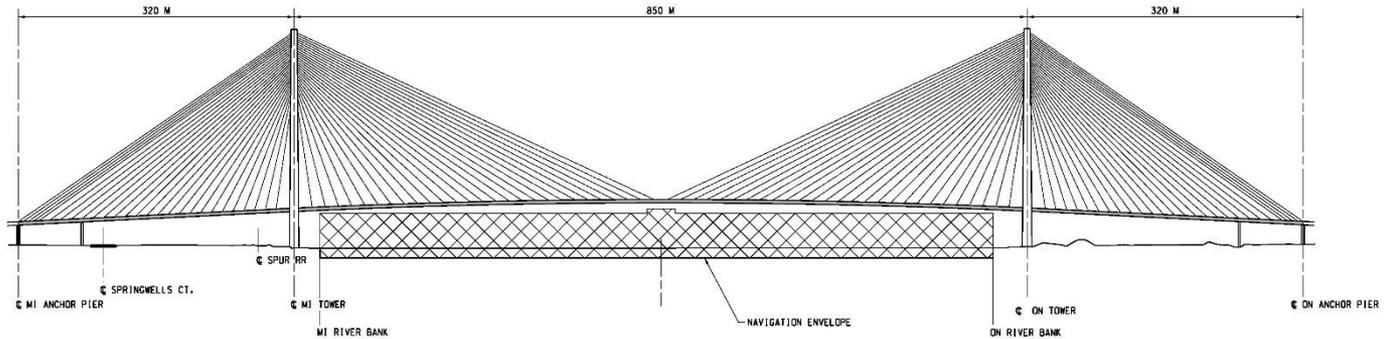
PLAN - MAIN BRIDGE



Component Key Features: Bridge

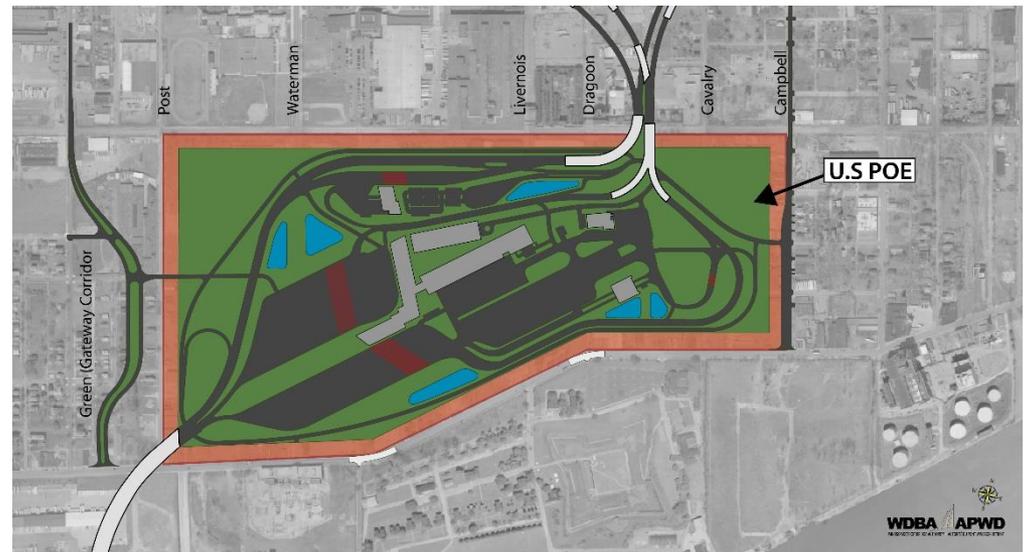


PLAN - MAIN BRIDGE



Component Key Features: U.S. Port of Entry

- Approximate 148 acre site
- U.S. inbound border inspection facilities for both passenger and commercial vehicles
- U.S. outbound inspection facilities
- Commercial exit control booths
- Parking
- Hundreds of long-term jobs
- Will be one of the largest Ports of Entry in the United States
- Aesthetic and landscape features to buffer plaza to community



Component Key Features: Canadian Port of Entry

- Approximate 130 acre site
- Inbound border inspection facilities for both passenger and commercial vehicles
- Outbound inspection facilities
- Toll collection facilities
- Maintenance facility
- Hundreds of long-term jobs

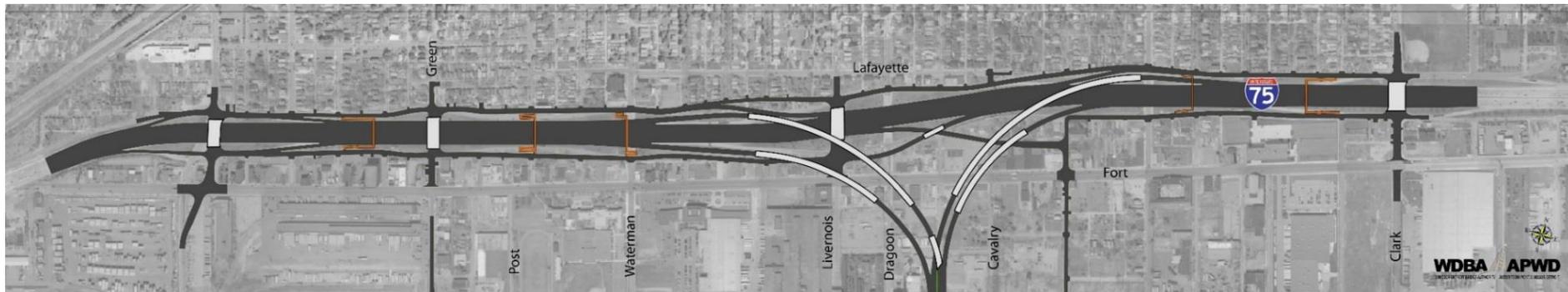


Once constructed, this port will be the largest Canadian port along the Canada-US border and one of the largest anywhere in North America.

The footprint allows for the installation of further technology and the addition of expanded border processing facilities.

Component Key Features: Michigan Interchange to I-75

- Primary connecting ramps to and from the US POE
- Reconfiguration of I-75 interchange ramps and service drives
- Investments in local neighborhoods
- Local road improvements, including:
 - 4 new crossing road bridges
 - 5 new pedestrian bridges
 - Widened roads at key intersections



Public-Private Partnership (P3)

- The new bridge, plazas and U.S. interchange will be built using a public-private partnership (P3) model.
- P3s provide greater value for money and more time certainty than the traditional procurement method.
- The P3 model is a contractually binding commitment by the private sector to deliver infrastructure at a pre-determined price and fixed date with meaningful penalties in case of contract defaults.

Public-Private Partnership (P3)

- This provides financial certainty to the WDBA, our governments, and to taxpayers. It also offers guarantees that the infrastructure will be well maintained for a long period of time.
- The private partner will design, build, finance, operate, and maintain the project for a specified period of time.
- The private sector is paid only on performance, aligning financial incentives for on-time, on-budget delivery and for the achievement of performance standards during the useful life of the asset.

Responsibilities

INTERNATIONAL AUTHORITY

- Six members with equal representation from Canada and Michigan
 - Oversee and approve key steps in the P3 procurement process
 - Monitor WDBA compliance with the Crossing Agreement signed by Michigan and Canada

WDBA

- WDBA is the Project Authority for the delivery of the entire Project, and is responsible for:
 - Directing all project activities
 - Hiring advisors
 - Flowing of funds
 - Working closely and collaboratively with other government departments and agencies in both the U.S. and Canada
- WDBA will also have the contractual relationship with the successful private sector partner

MICHIGAN

- Michigan is responsible for:
 - All U.S. land acquisition
 - Environmental testing and mitigation for contamination
 - Utility relocations
 - Demolition work
 - Working closely and collaboratively with other government departments and agencies, including the City of Detroit and WDBA

Private Sector Partner Responsibilities

Project Components	Design	Construction	Finance	Operations & Maintenance	Life Cycle, Maintenance Rehabilitation & Handover Requirements
Bridge	X	X	X	X	X
Canadian POE (including Tolling Infrastructure)	X	X	X	X*	X
United States POE	X	X	X	X*	X
Michigan Interchange	X	X	X	MDOT	MDOT

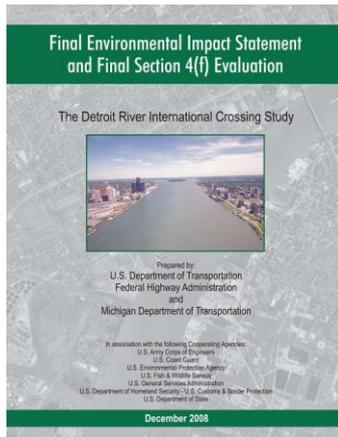
* CBSA and CBP will operate the Canadian POE and United States POE, respectively, and carry out customs inspections and other border-related functions. Project Co will be responsible for custodial functions and other building-related operations and maintenance.

P3 Procurement Process

- RFQ released in July 2015
- Introductory Project Meetings and Industry Days were held in Windsor and Detroit in August 2015.
 - 848 people representing 419 companies attended
- Six North American and international respondent teams submitted responses.
- Responses were evaluated by WDBA officials and partner organizations under the supervision of an independent fairness monitor.
- The WDBA announced three Shortlisted Respondents in January of 2016.



U.S. Property Acquisition



An extensive environmental study completed as part of the Detroit River International Crossing study in 2005-2009 identified the properties that would be required for the construction of the US Port of Entry, the bridge foundations and the Michigan Interchange.

- The Michigan Department of Transportation (MDOT) is responsible for all property acquisitions in the US (i.e., Michigan) with oversight from the WDBA and is committed to working with property owners in a fair and consistent manner, and in accordance with federal and state law.
- In June 2015 MDOT held a series of information meetings in the Delray community for residential property owners and tenants within the Project footprint.
- MDOT will continue to acquire property within the Project footprint based on fair market value.

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