

DETROIT RIVER INTERNATIONAL CROSSING STUDY

Practical Alternatives

Context Sensitive Solutions St. Clair College

June 23 and 24, 2006

- Introduction/Workshop Overview
- Issues/Potential Treatments
- Bridges
- Plazas
- Access Roads
- Breakout Discussions
- Regroup/Reconvene
- Next Steps



Getting and Giving the Most

- It's OUR meeting...participate enthusiastically
- Terminology expertise is secondary
- There is such a thing as a bad idea!
- Build, don't duplicate
- Respect (for each other and the process)
- Voices without titles
- Consensus on no consensus
- Informal style, structured approach

Context sensitive solutions (CSS) is a collaborative, interdisciplinary approach that involves all stakeholders to develop a transportation facility that fits its physical setting and preserves scenic, aesthetic, historic and environmental resources, while maintaining safety and mobility. CSS is an approach that considers the total context within which a transportation improvement project will exist." -- *Federal Highway Administration (FHWA)*

Issues and Potential Treatments

Issues

Air Quality

Community Disconnection

Visual / Aesthetic concerns

Noise

Light

Water Quality

Salt Spray

Wind

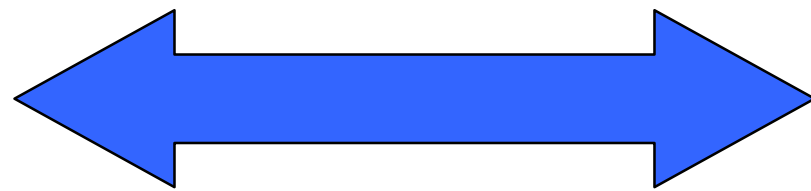
Habitat Loss

Privacy

Welcome to Canada

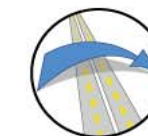
Historic District Integrity

Heat (Urban Heat Island Effect)



Potential Treatments

- Sustainable Technologies
- Earthforming & Berms
- Sound Attenuation
- Connections
- Vegetation
- Water Management
- Lighting
- Unifying Motif/Theme



Examples of Treatments

- Green Roofs
- Permeable paving
- Light coloured surfaces
- Alternative Energy Generation
- Planted walls
- Alternative Designs
- Tunnels
- Land bridges
- Pedestrian bridges
- Multi-Use Trail
- Formal Planting & Parks
- Naturalization
- Tree planting program
- Stormwater management
- Irrigation
- Formal Water Features
- Dark Skies Lighting
- Aesthetic Light Standards
- Signage & Wall treatments

Bridges

Bridge Design Considerations

Types of Long Span Bridges

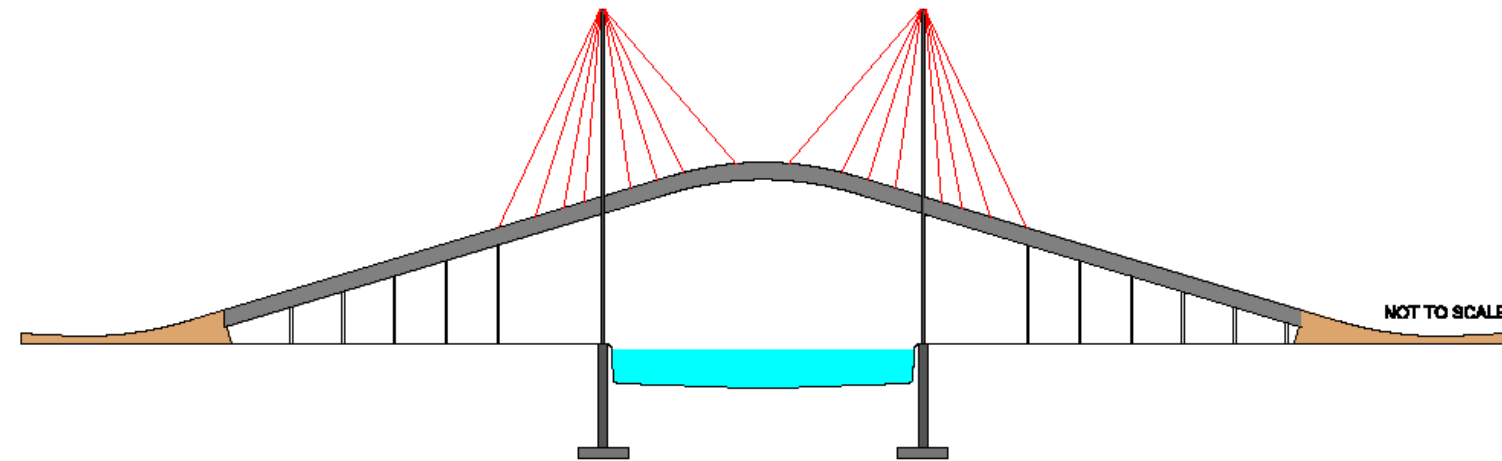
Practical Alternatives – Bridges

Bridge Examples

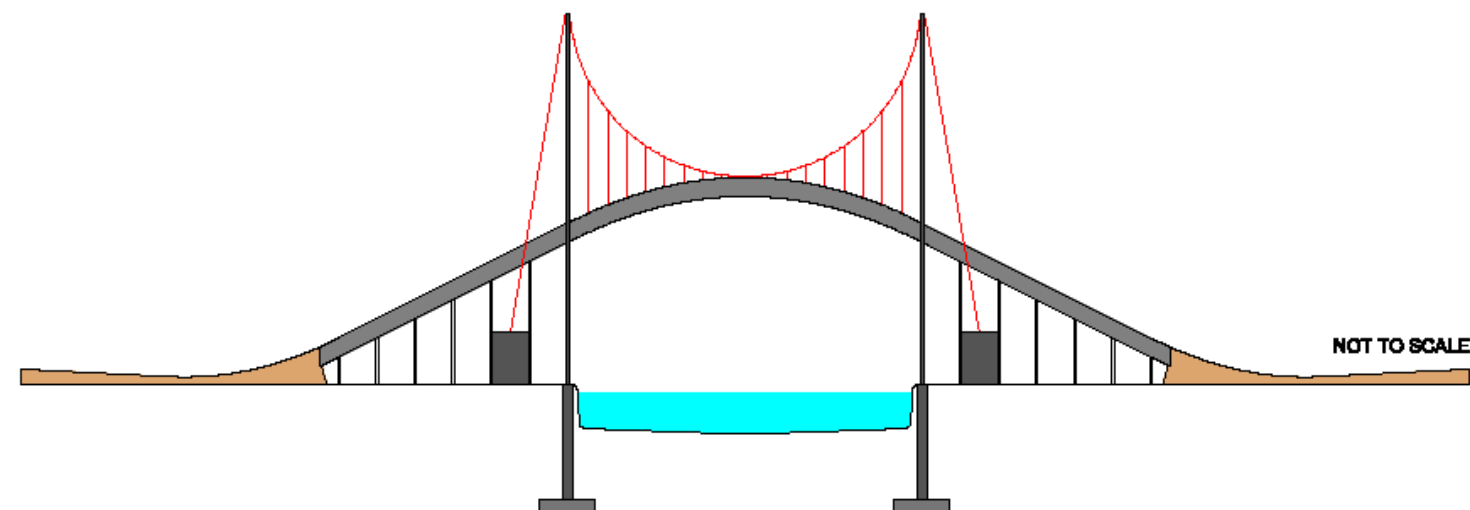
How should the Bridge look?

- Main Span
- Navigational Clearance
- Possible Piers in River
- Geotechnical
- Security
- Distance to Touchdown
- Highway Design Standards

Cable Stayed – 200 to 900 metres

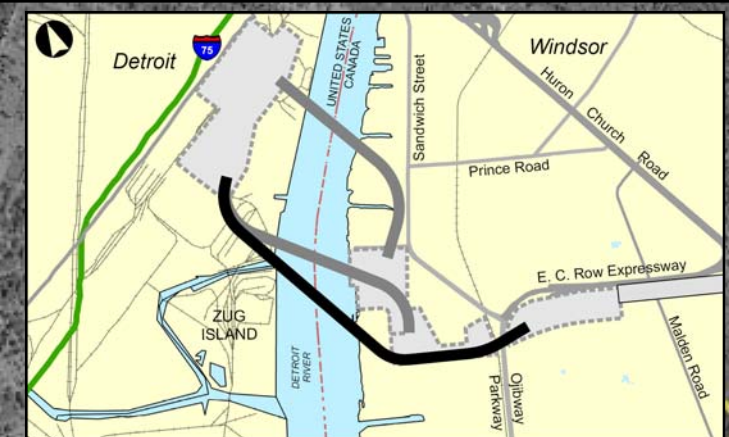


Suspension - 700 to 2000 metres



Crossing A – 1220 m Approximate Span

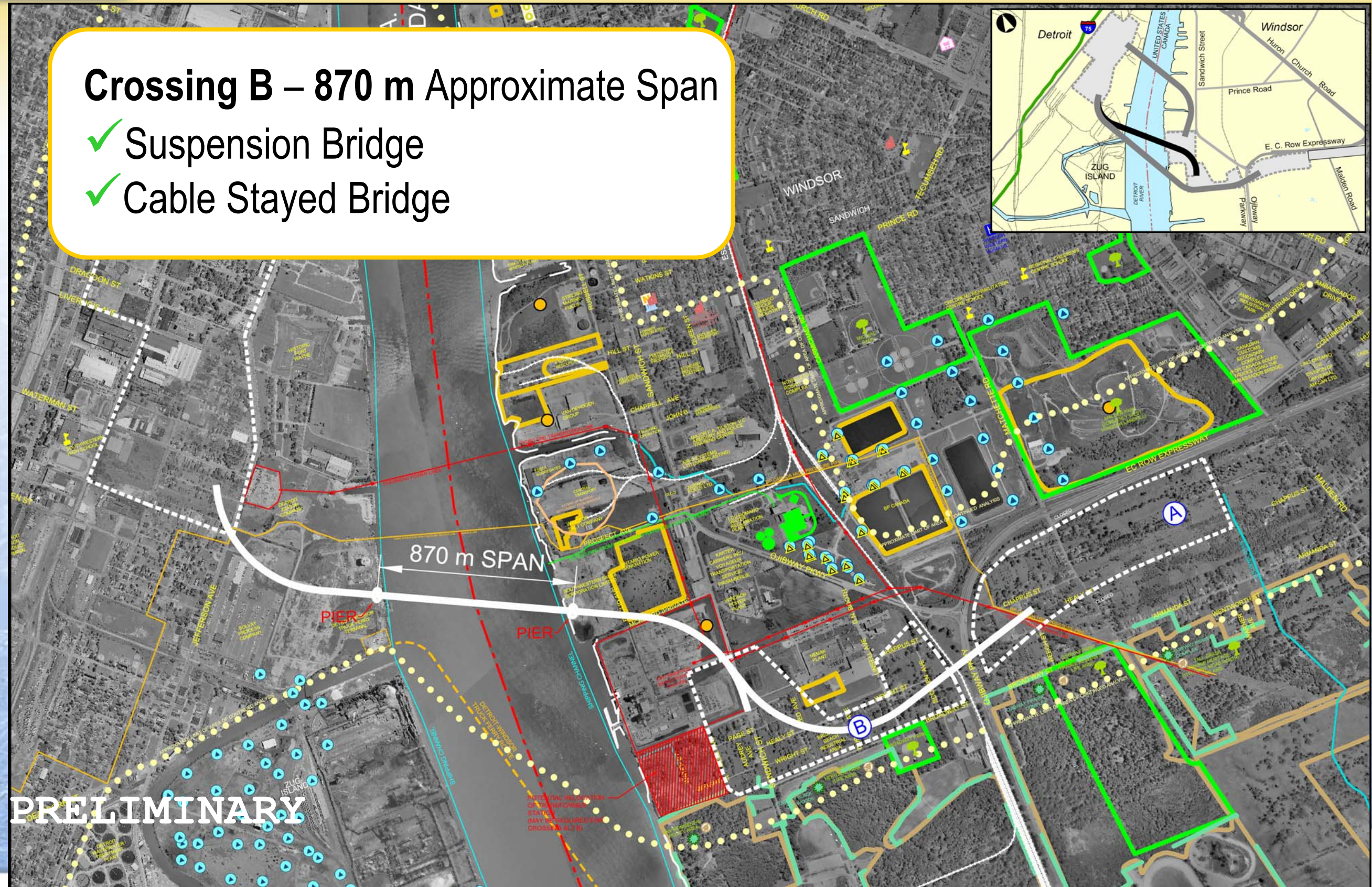
- ✓ Suspension Bridge
- ✗ Cable Stayed Bridge

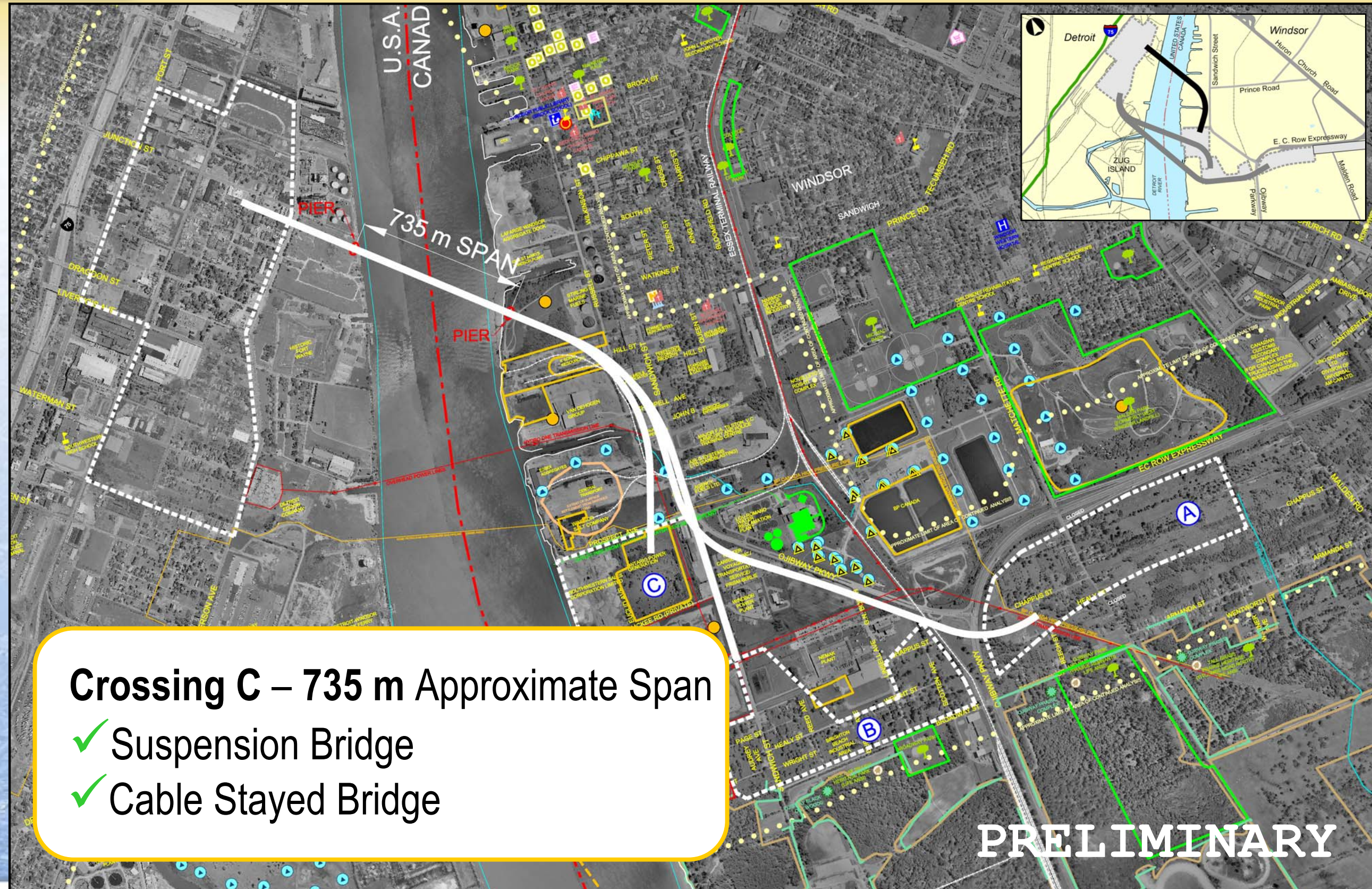


PRELIMINARY

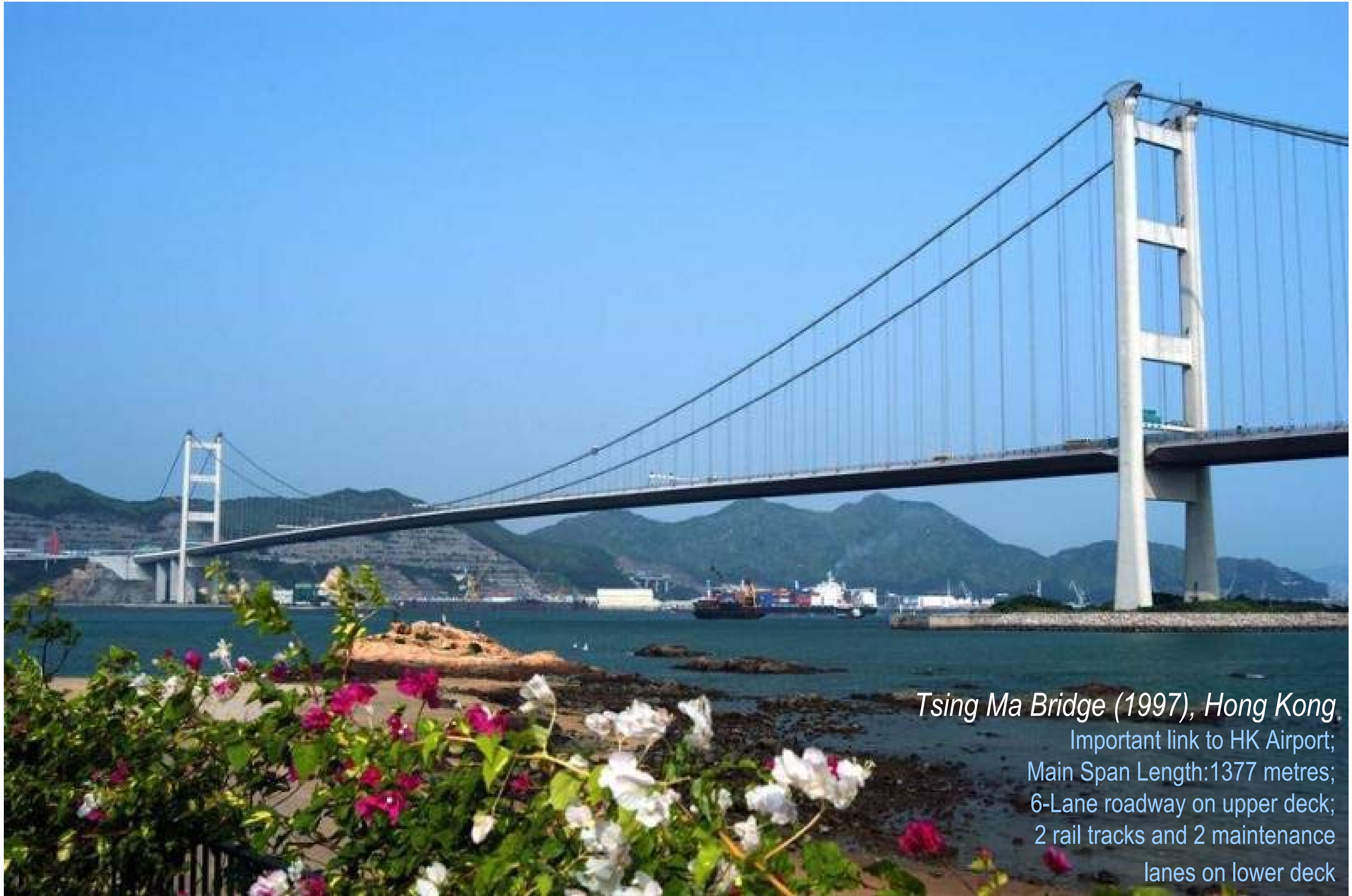
Crossing B – 870 m Approximate Span

- ✓ Suspension Bridge
- ✓ Cable Stayed Bridge





- Suspension
- Cable-Stayed



Tsing Ma Bridge (1997), Hong Kong

Important link to HK Airport;
Main Span Length:1377 metres;
6-Lane roadway on upper deck;
2 rail tracks and 2 maintenance
lanes on lower deck



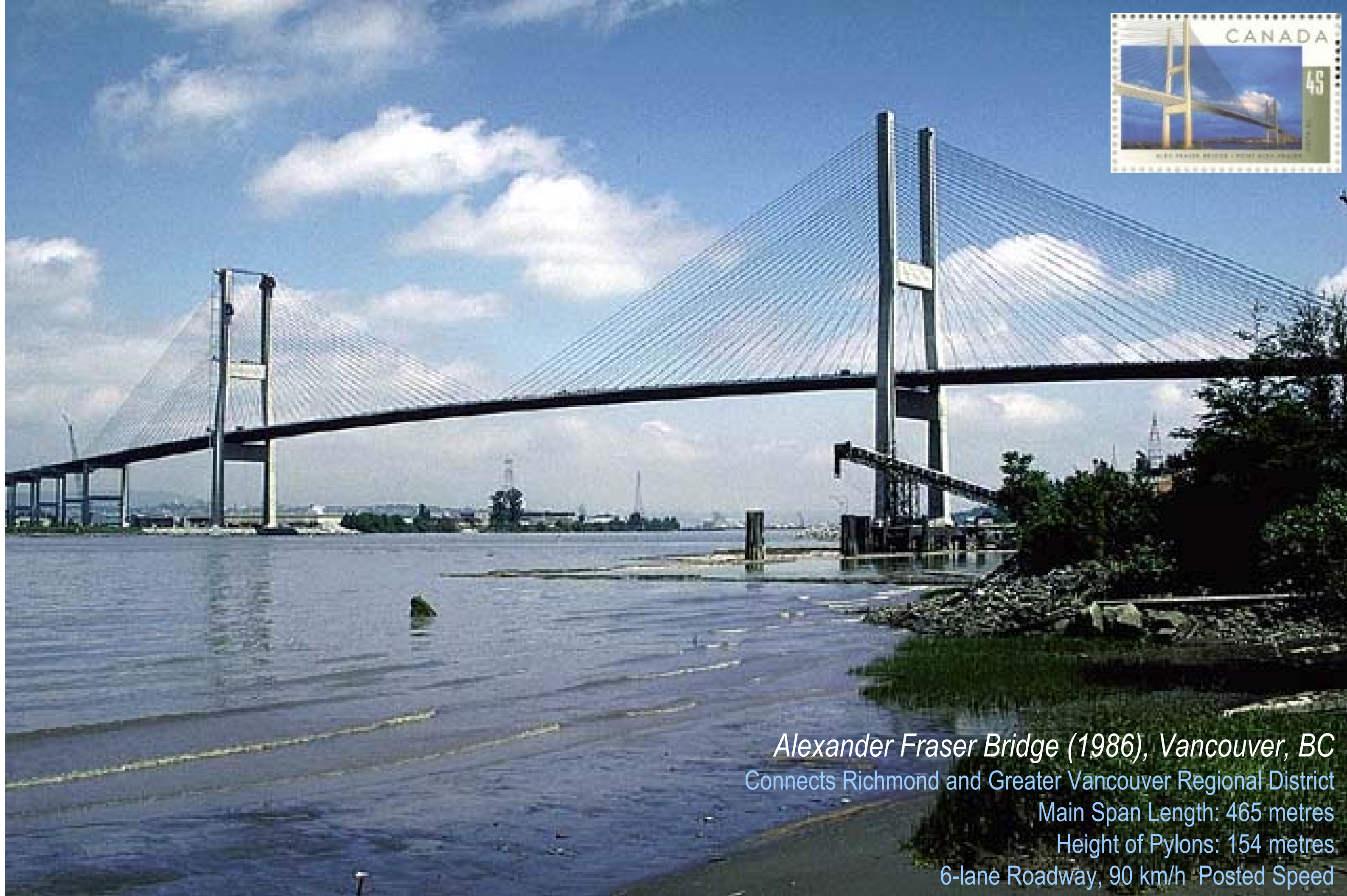
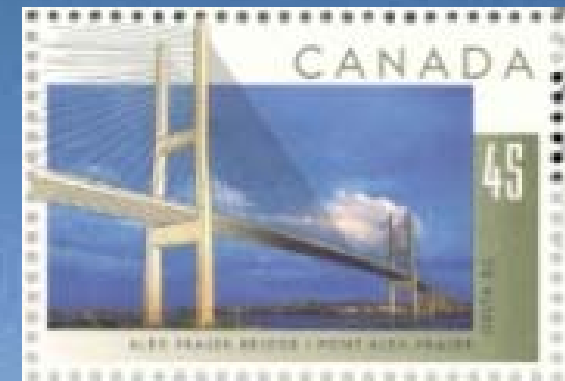
Golden Gate Bridge (1937), San Francisco, CA

Links San Francisco to Sausalito

Main Span Length: 1280 metres

Height of Towers: 230 m

6-lane roadway with pedestrian/bicycle access



Alexander Fraser Bridge (1986), Vancouver, BC
Connects Richmond and Greater Vancouver Regional District
Main Span Length: 465 metres
Height of Pylons: 154 metres
6-lane Roadway, 90 km/h Posted Speed



Tatara Bridge (1999), Japan
Connects Honshu and Shikoku Islands
Main Span Length: 890 metres (longest in the World)
Height of Pylons: 226 metres
4-lane Roadway, with bicycle/pedestrian access



Leonard P. Zakim Bunker Hill Bridge
2003

Boston, MA
Main Span Length: 436 metres
Height of Pylons: 82 metres
Widest Cable Stayed Bridge in World; 55 metres

Discussion of Potential Aesthetic Issues:

Themes;

Colour;

Lighting



Veterans' Glass City Skyway Bridge, Toledo, OH



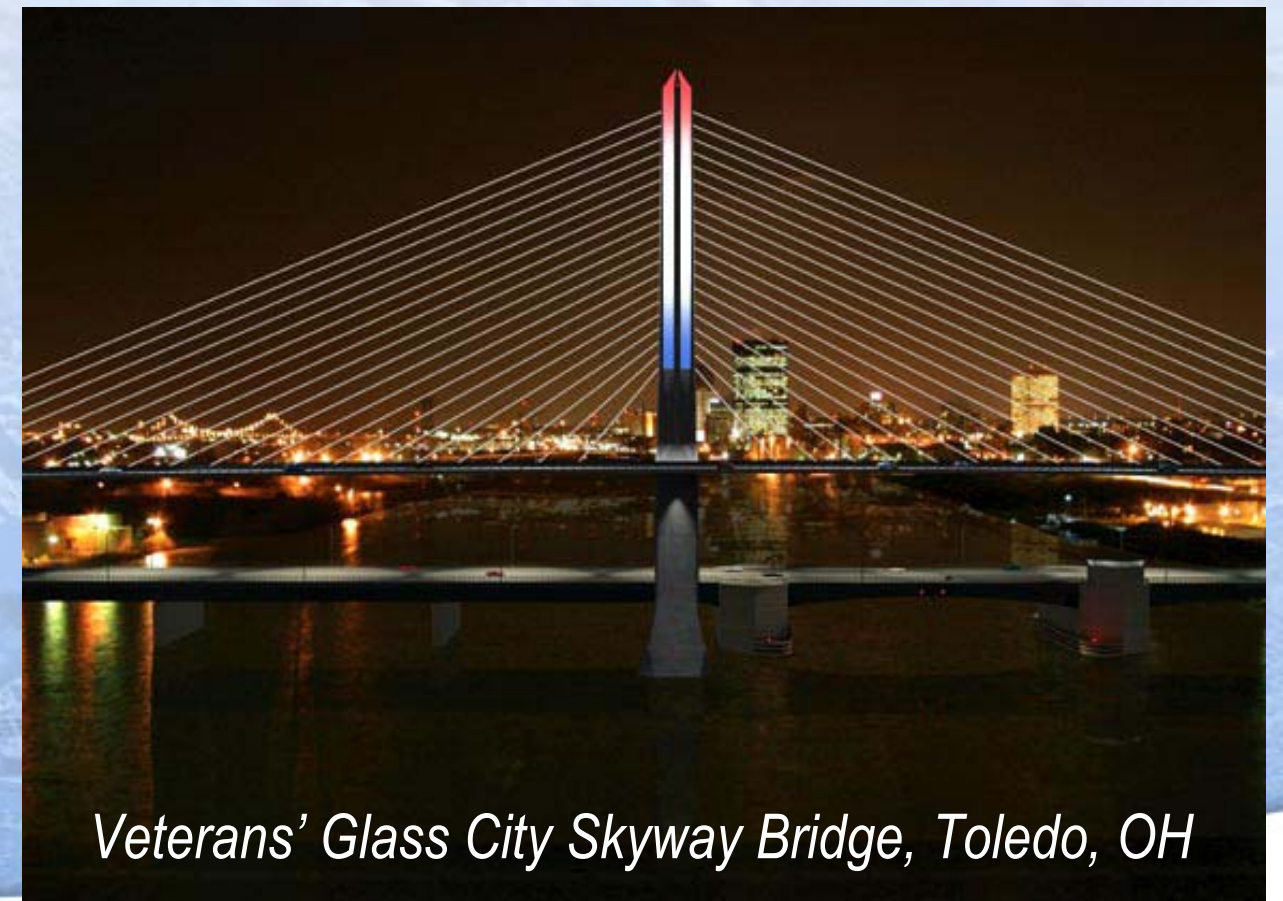
Potential Themes for DRIC Crossing?
Bi-National?
Local Heritage?
Local Symbols ("Motor City"?)
Suggestions?



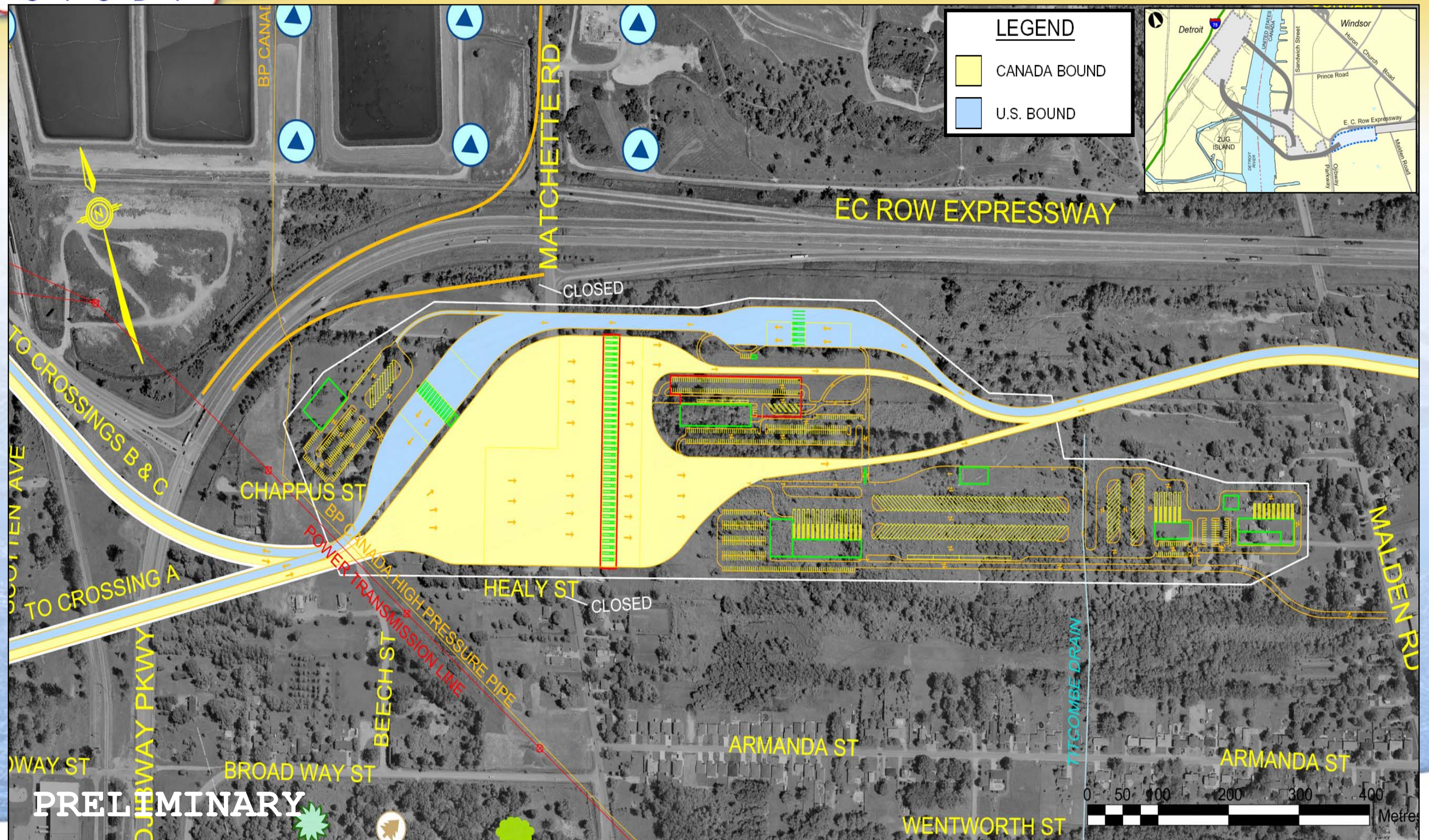


Types:

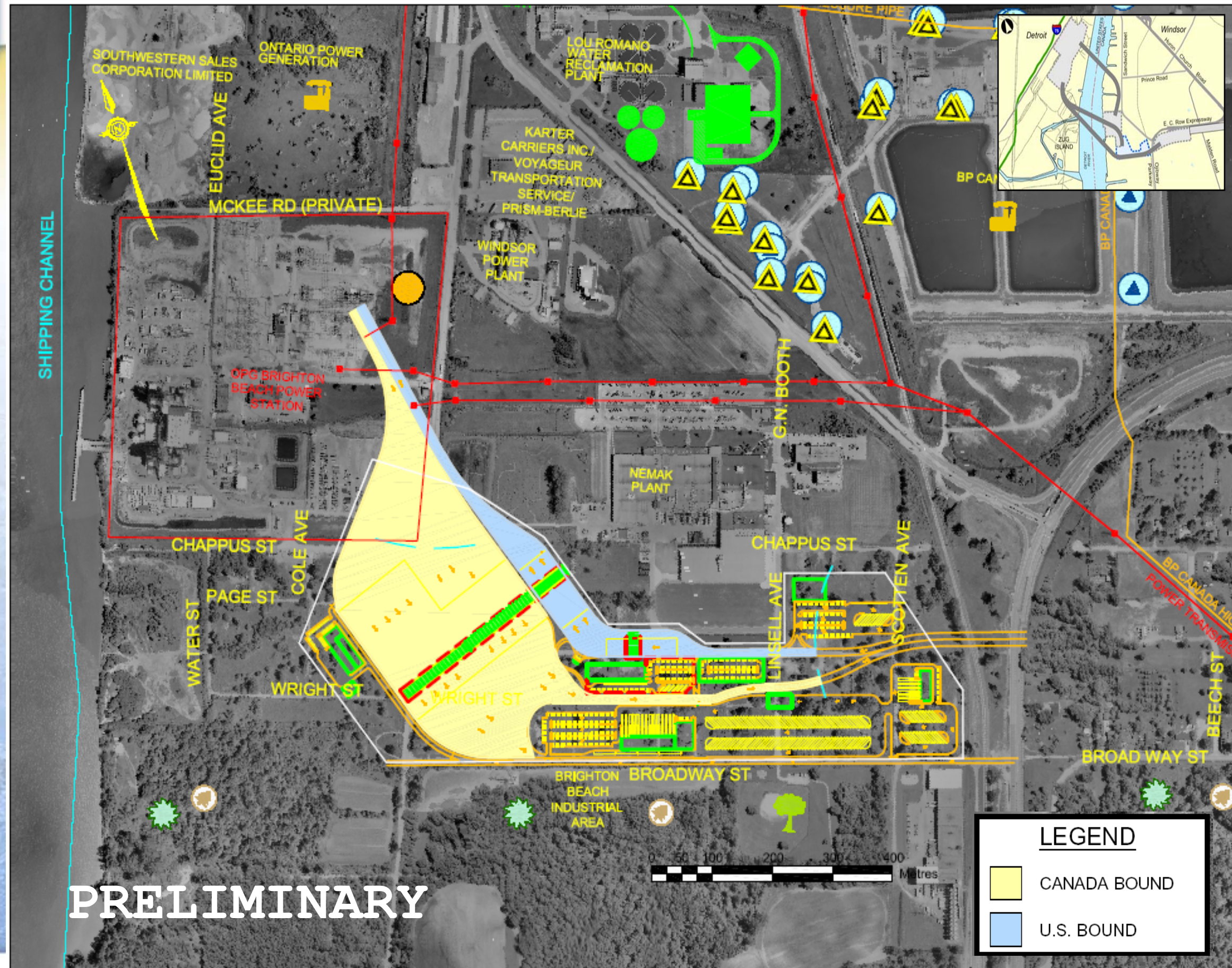
- Soft
- Accent
- Dynamic



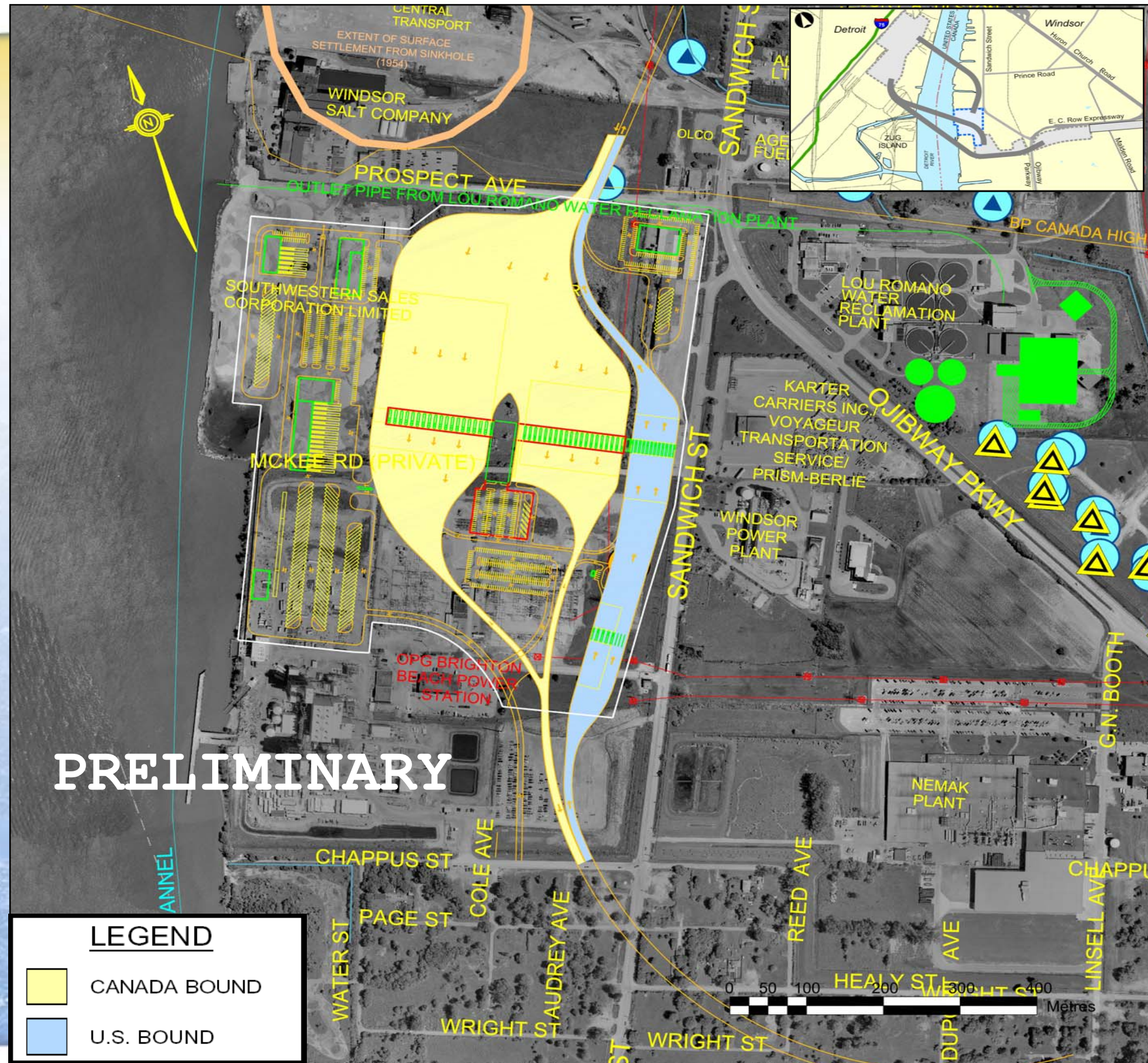
Plazas







PRELIMINARY



3 Locations - 4 Configurations



Conceptual Visualizations

- Each location presents a different configuration of opportunities for:
 - Separation from Neighbourhood ('Buffer')
 - Interior/Welcoming landscape
 - Use of Sustainable Technologies

Separation between functional plaza and adjacent land use ('Buffer')



Conceptual Visualizations

- Width varies depending on the plaza layout. Different widths allow different types of landscape.
- Residential Neighbourhood
- Industrial Area
- Natural Area
- Can be designed for air quality improvement, privacy screen, noise attenuation, public amenity, etc.



Example of Treatment Adjacent to Residential Land Use

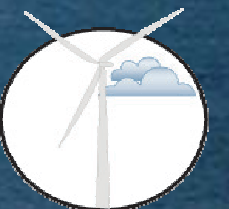
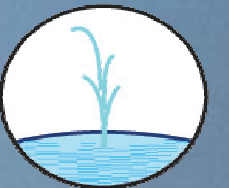
Ashbridges Bay Area, Toronto



Example of Treatment Adjacent to Residential Land Use

Ashbridges Bay Area, Toronto





Example of Treatment Adjacent to Detroit River

Humber Bay Shores, Toronto

Discussion of Potential Issues:

Layout is process oriented / prescriptive / functional;

Landscape treatments at edges;

Building facades;

Welcome Centre / Gateway.

Interior landscaping



Conceptual Visualizations

- Opportunity for aesthetic & formalized welcoming landscapes that tie into bridge & access road motifs
- Integrate Sustainable technologies such as permeable paving, green roofs, passive irrigation, aesthetic use of stormwater treatment
- Strive to meet security parameters (visibility, etc.)



Example of Aesthetic Streetscape & Parking

Niagara Botanical Gardens, Niagara Falls, ON



Example of Aesthetic Streetscape & Parking

Niagara Botanical Gardens, Niagara Falls, ON



Gateway Centre, Ames, Iowa



Conceptual Visualization



Sudbury, Ontario



Kenora, Ontario

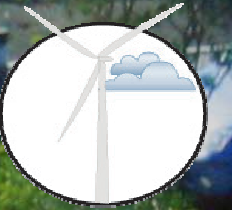


Wawa, Ontario



Example of Extensive Green Roofs

Ford Plant, Dearborn, MI



Example of Shaded Parking

Netherlands



Phasing

- Designing temporary landscapes that will accommodate the build-out of the plazas to 2035
- Adhere to security parameters



Conceptual Phasing Visualizations



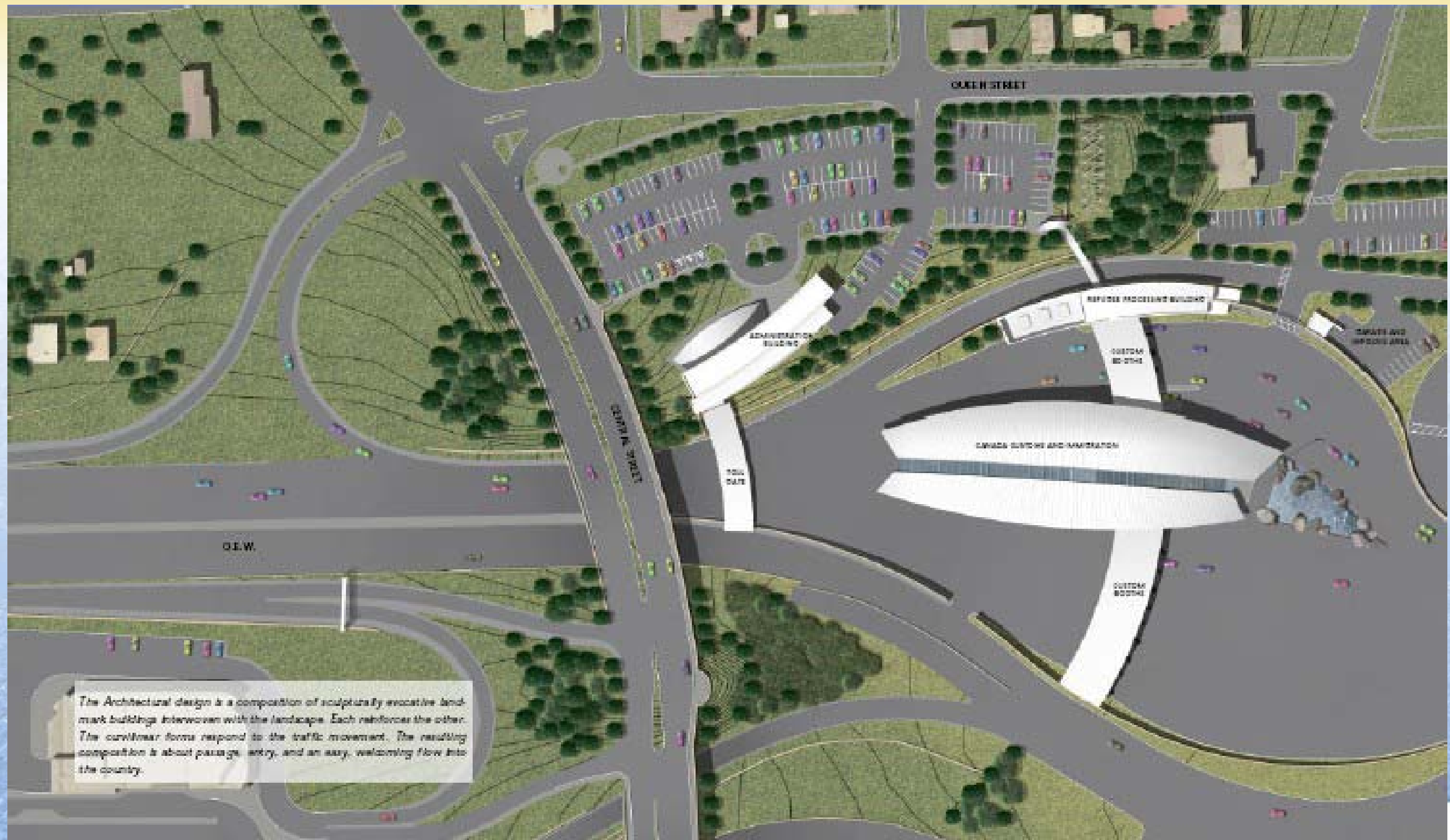
- Poplars achieve a height of up to 20 feet in as little as 10 years



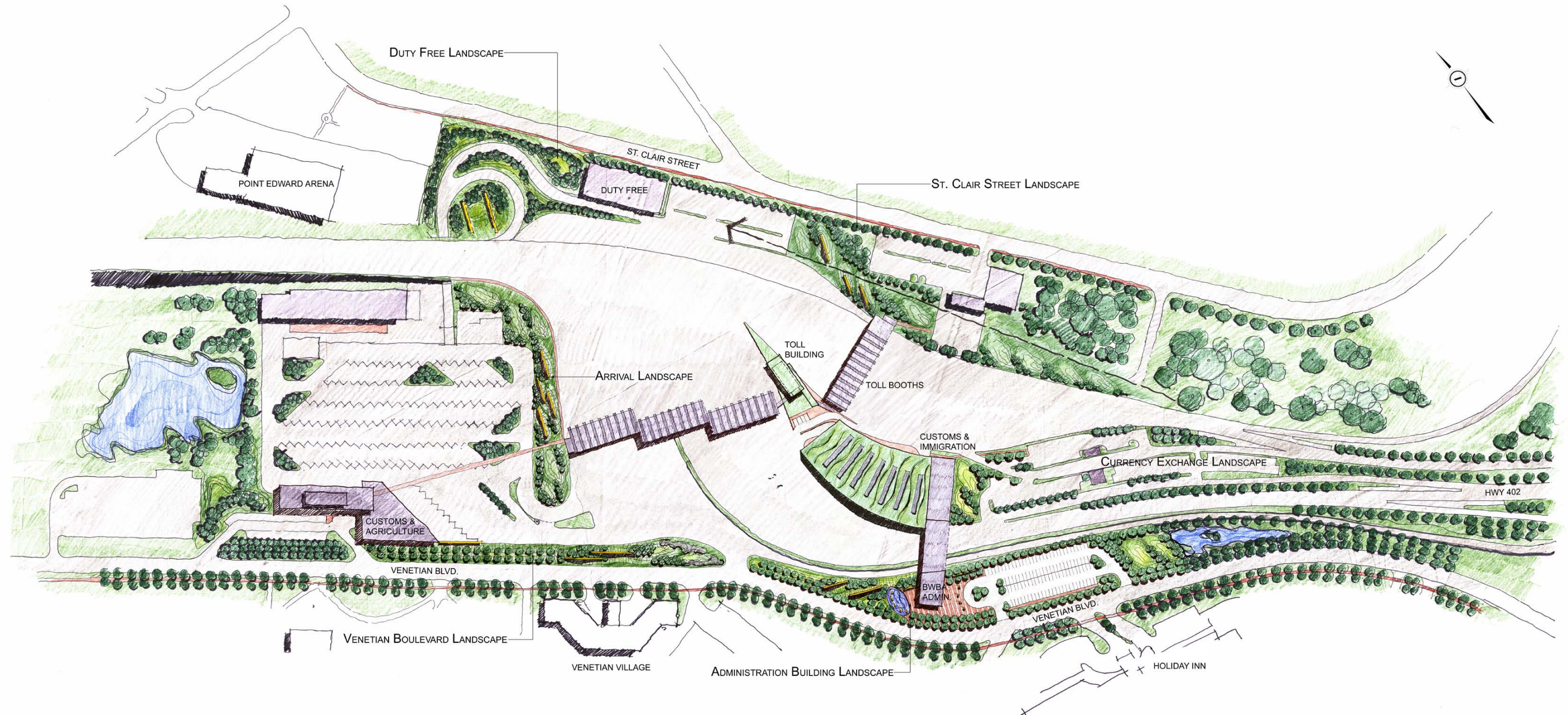
- Aesthetic effects can be achieved through designed mow / no mow regimes

Peace Bridge Plaza, Fort Erie, Ontario

Detroit River
INTERNATIONAL CROSSING
S T U D Y







Access Roads

How Should the Access Road look?

- Crossing / Access Points;
- Cross Section;
- Lighting;
- Signage;
- International Gateway
- Urban Surroundings
- Safe/Efficient/Convenient Design

1 Route - 3 Landscapes

- Straight Pieces

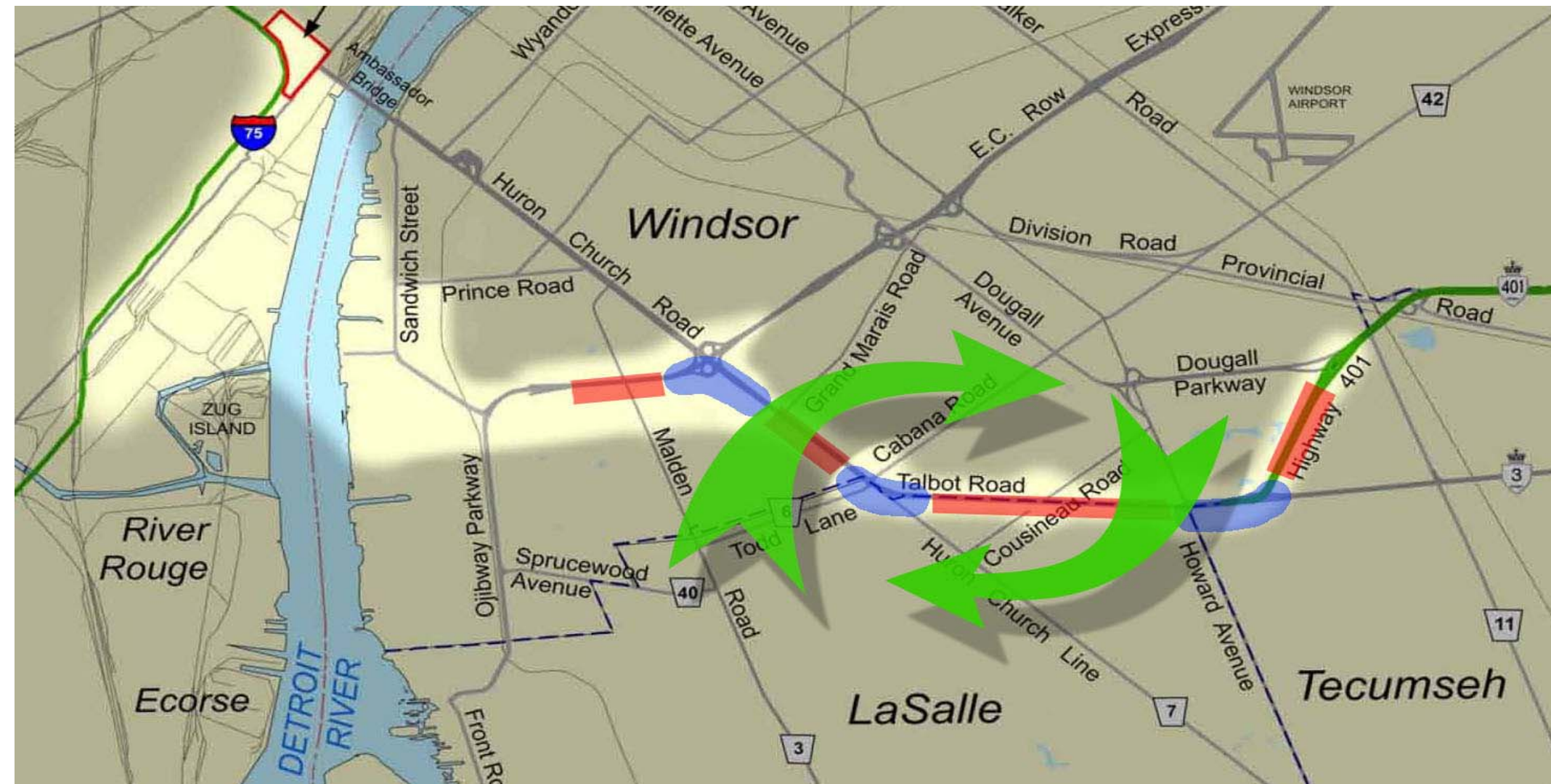
Areas where the Right-of-Way is at its narrowest.

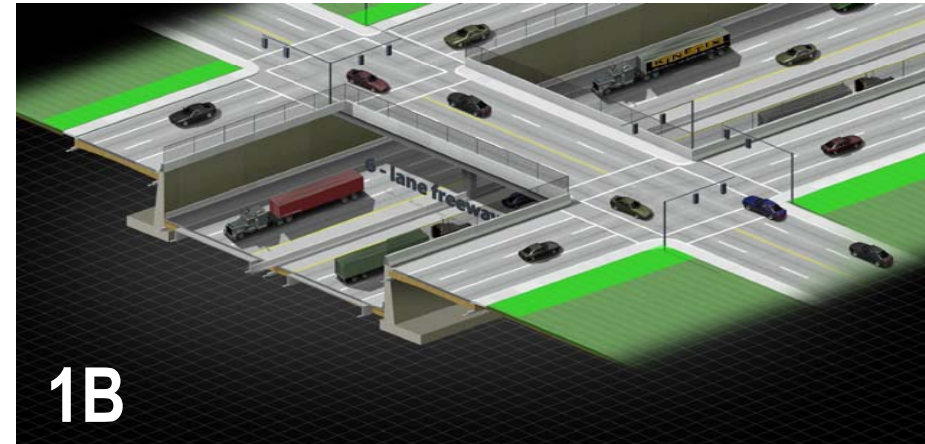
- Interchanges and Major Bends

Areas where the Right of way will widen.

- Reconnections

Potential bridges that will reconnect the communities on either side of the access road.





Freeway & Service Roads at Grade

Depressed Freeway

Tunnelled Freeway

- Limited space for landscaping
- Harsh conditions: salt spray, exposure, wind, air quality



Example of Boulevard Planting



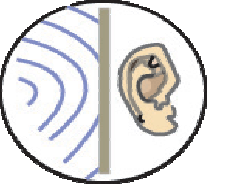
Example of Boulevard Planting



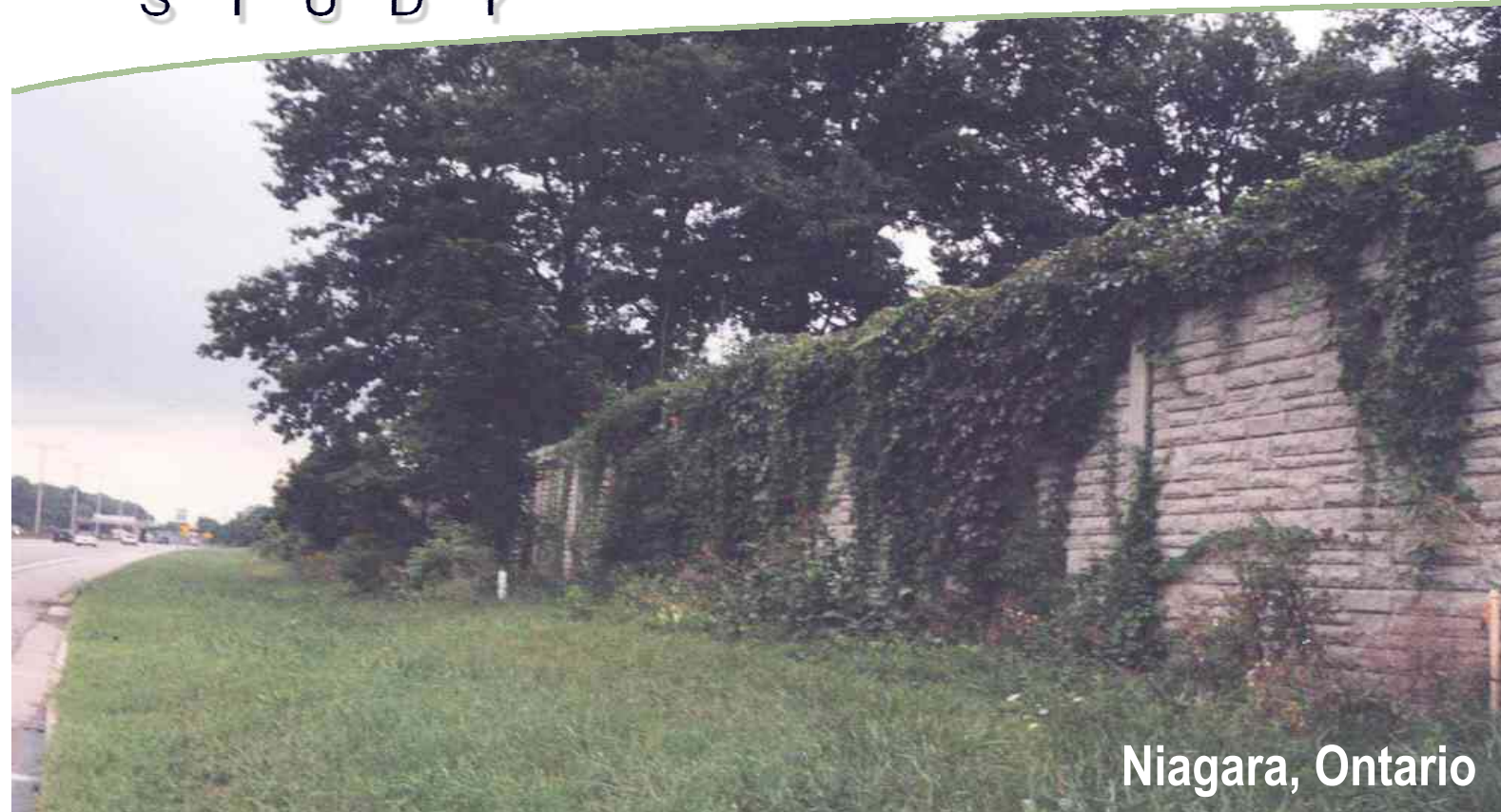
Examples of Custom Finishes on Sound & Retaining Walls



Examples of Solar Panels on Sound Wall



e.



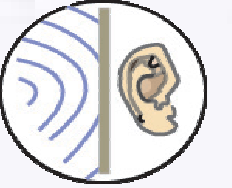
Niagara, Ontario



Niagara, Ontario



Amsterdam Ring Road, Netherlands

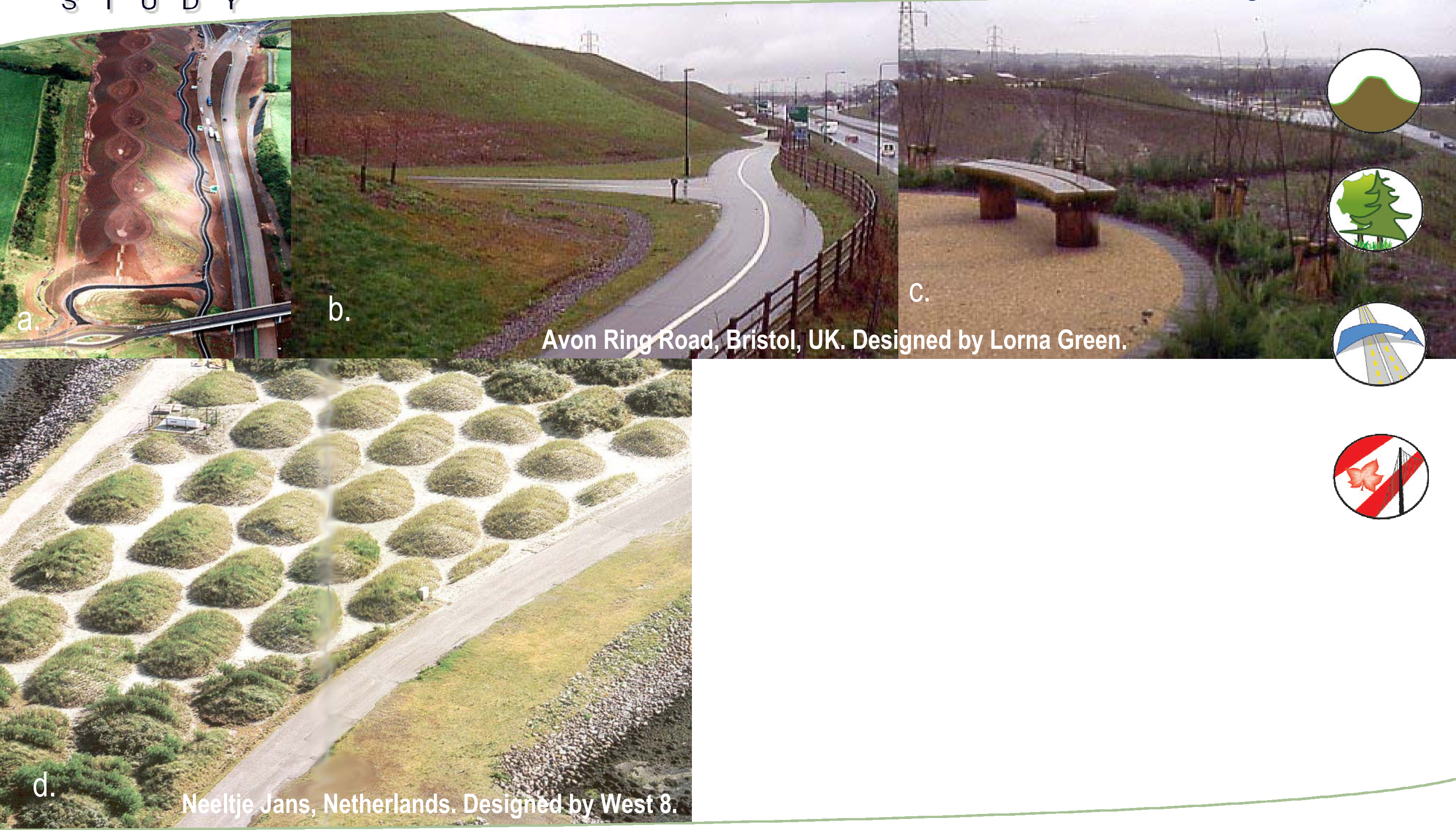


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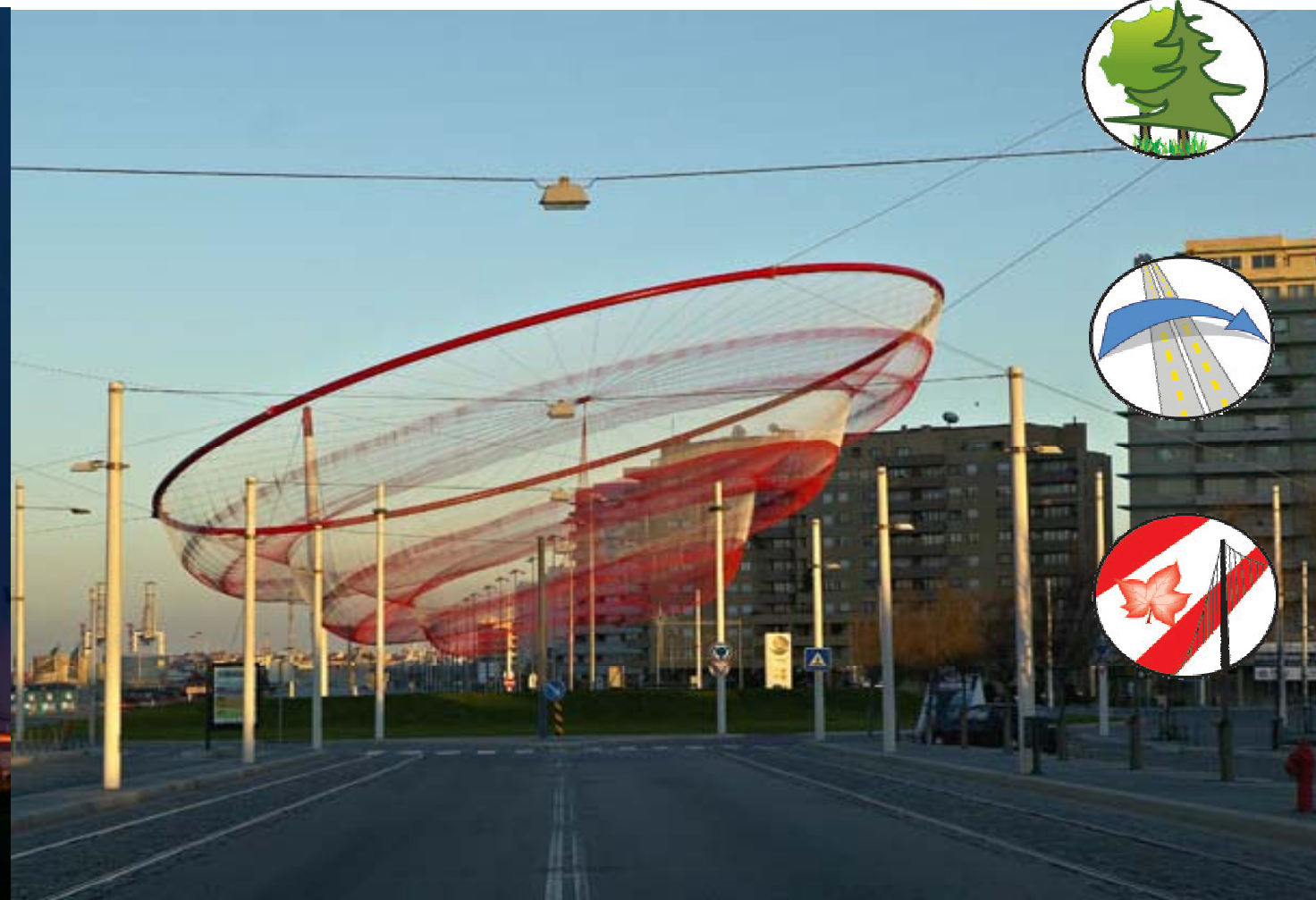
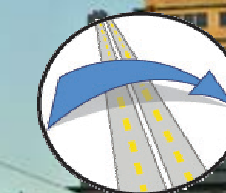
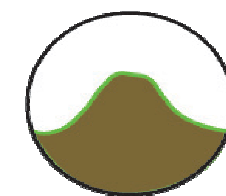
Examples of Sound Walls with Ivy



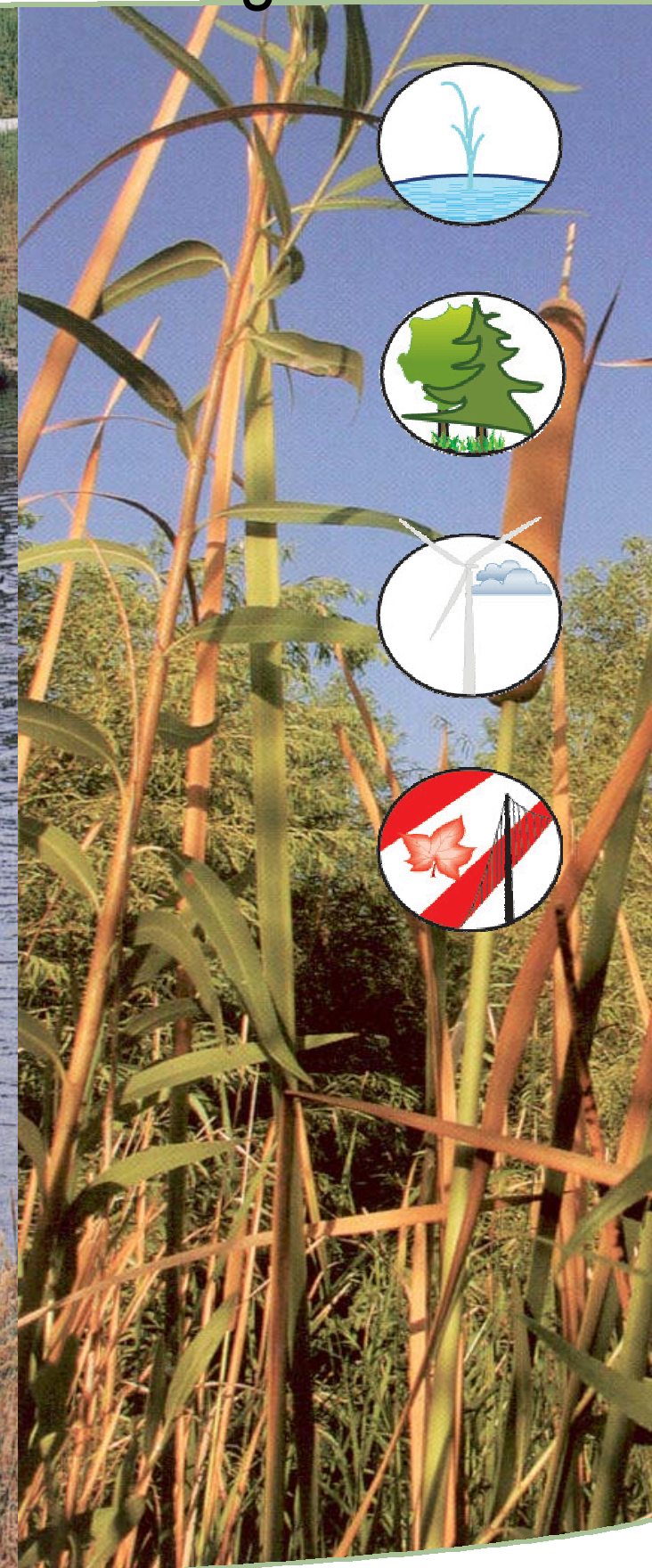
-More space between ramps, main highway to accommodate earthforming, water management, themes & motifs



Examples of Aesthetic Berm Design



Public Art in Traffic Circle “She Changes”by Janet Echelman



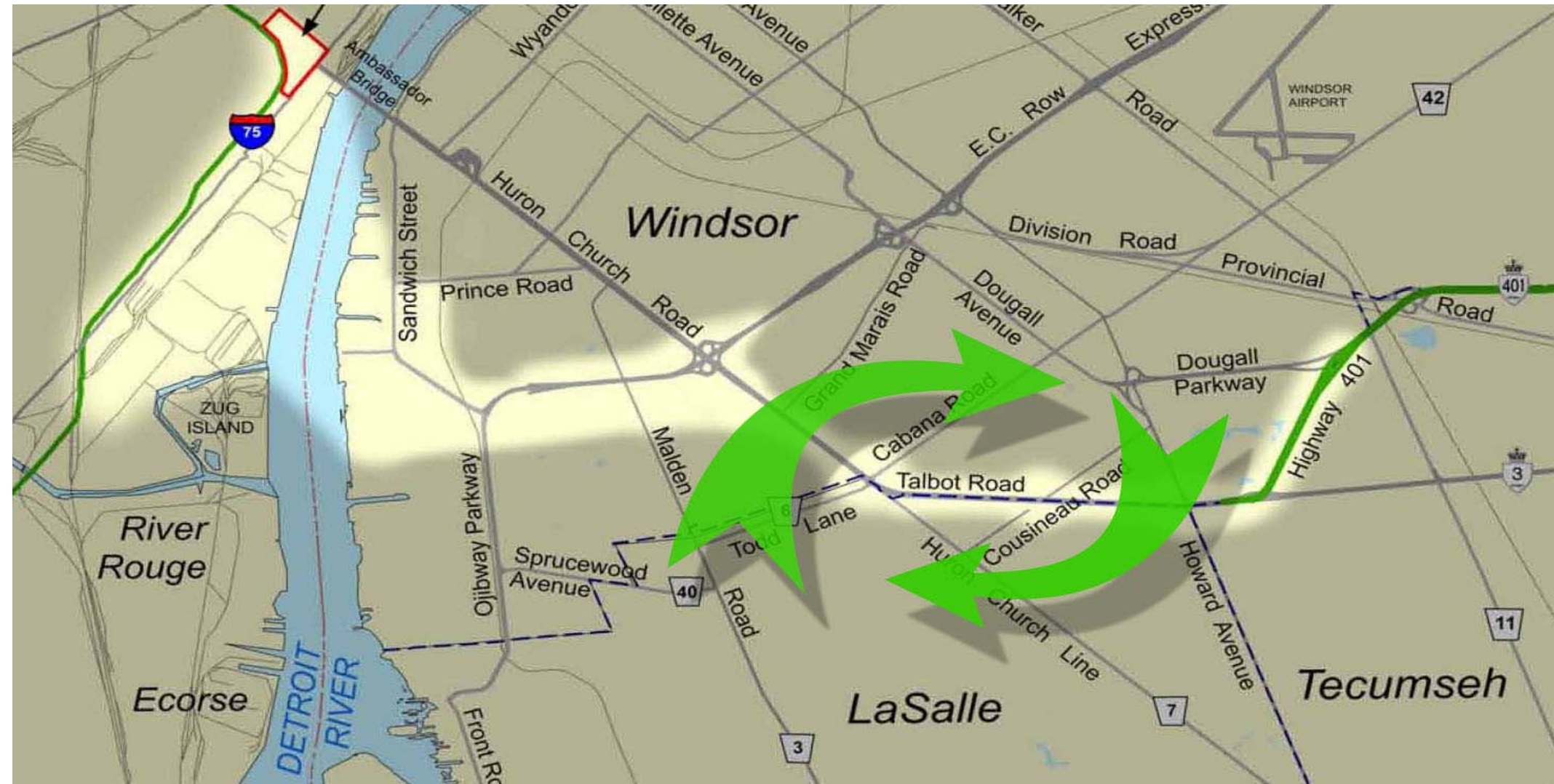


Examples of Revegetation

Gateway to Randstadt, Netherlands



Examples of low maintenance planting on highway slopes & berms

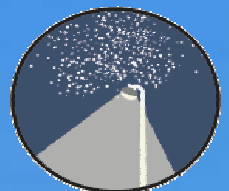
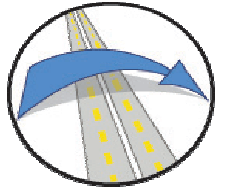


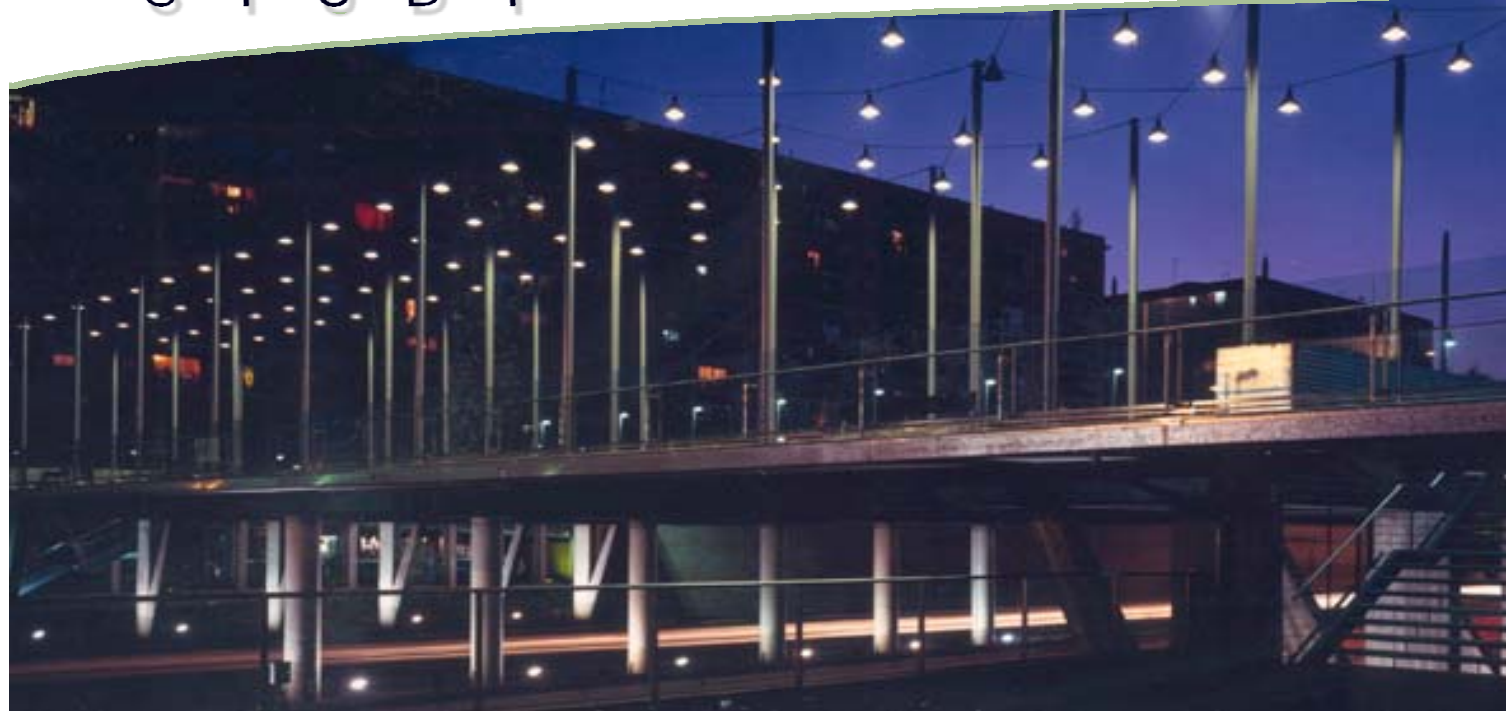
- Re-integrating Neighbourhoods, Creating new Places
- Parkettes, Land Bridges, Pedestrian Bridges, Multi-use trails



Example of Pedestrian Bridge & Associated Parkette

Gardiner Expressway, Toronto, Canada





Example of Pedestrian Bridge/Parkette



Examples of Landbridges for people & wildlife

Various locations, Netherlands



Various locations, Michigan

Aesthetic Treatments–Access Roads-Depressed



Various locations, Michigan

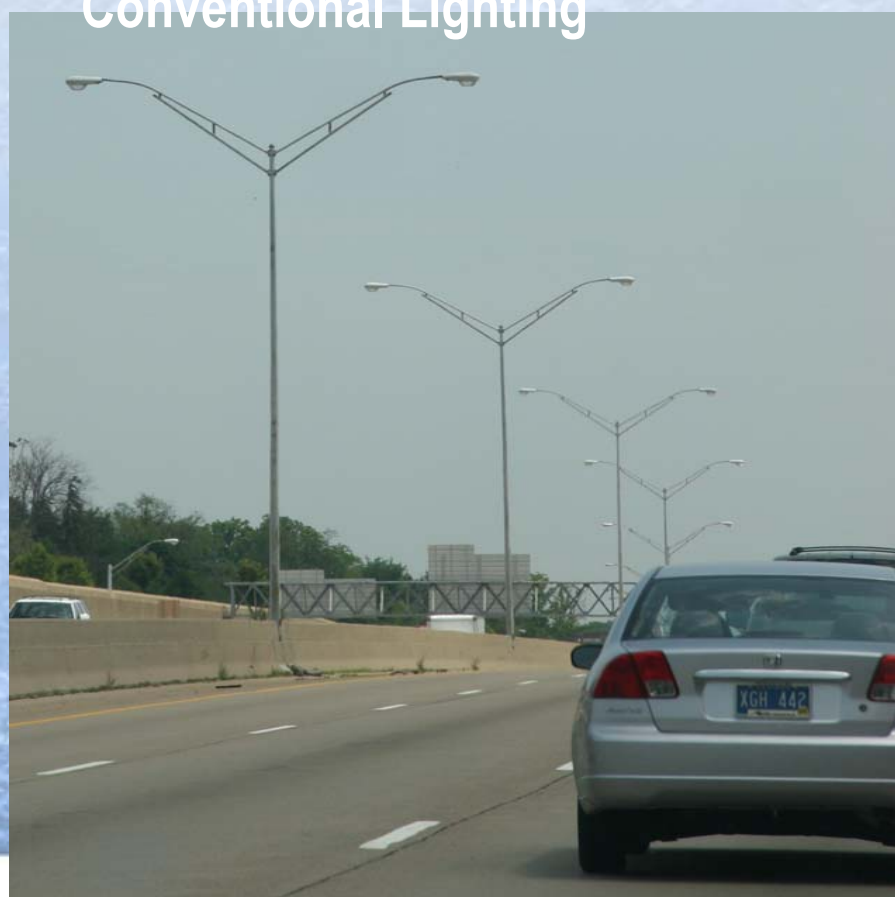
Aesthetic Treatments–Access Roads-Depressed



Various locations, Michigan



Conventional Lighting



Decorative/Accent Lighting



High Mast Shielded Lighting



Thank You

Next Steps