



TORONTO WATERFRONT VIADUCT



Reconnecting our city.

The end of the crumbling Gardiner Expressway and the rail corridor barrier.



TORONTO WATERFRONT VIADUCT

**Our last opportunity to connect
downtown to the waterfront.**

**The Toronto Waterfront Viaduct (TWV) is a cable-stayed viaduct that will
combine a new route for vehicles with a new east-west transit line,
in a unique waterfront transportation corridor.**



An extraordinary legacy for the citizens of Toronto.

**skyPATH is a panoramic, weatherproof, “hanging gardens” destination
for pedestrians and cyclists... *under* the viaduct.**

THE OPPORTUNITY

**Remove the crumbling Gardiner Expressway
and relieve traffic gridlock... with little or no disruption.**



Cable-stayed Bridges & Viaducts



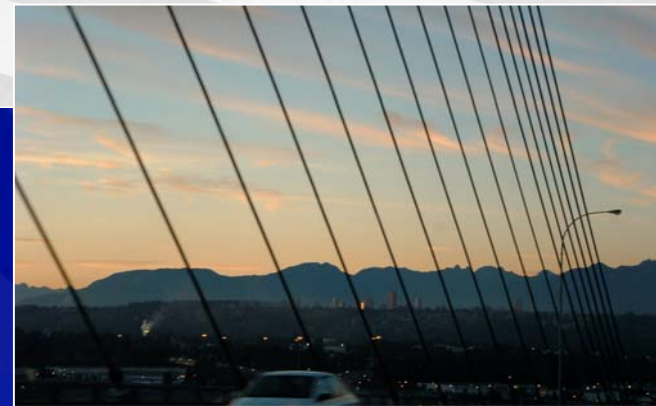
Millau Viaduct, France



Leonard P. Zakim Bridge, Boston



Cooper River Bridge, South Carolina



Crossing Alex Fraser Bridge, Vancouver, B.C.

No Disruptions

- ▲ **WHERE:** the viaduct straddles the rail corridor directly south of Front Street.
- ▲ **HOW:** cantilevered construction methods will minimize disruptions to rail service.
- ▲ **WHY:** commuter traffic would be paralyzed if the Gardiner was demolished before a replacement vehicular link was provided.

Cantilever Construction Method

Cantilever construction methods using “A” frame pylon design (straddles existing train tracks) = little or **no disruption** of activities below the viaduct.

When construction is complete, demolition of the Gardiner begins.



Toronto Waterfront Viaduct

A spectacular cable-stayed structure.

An essential commuter link.



TORONTO WATERFRONT VIADUCT



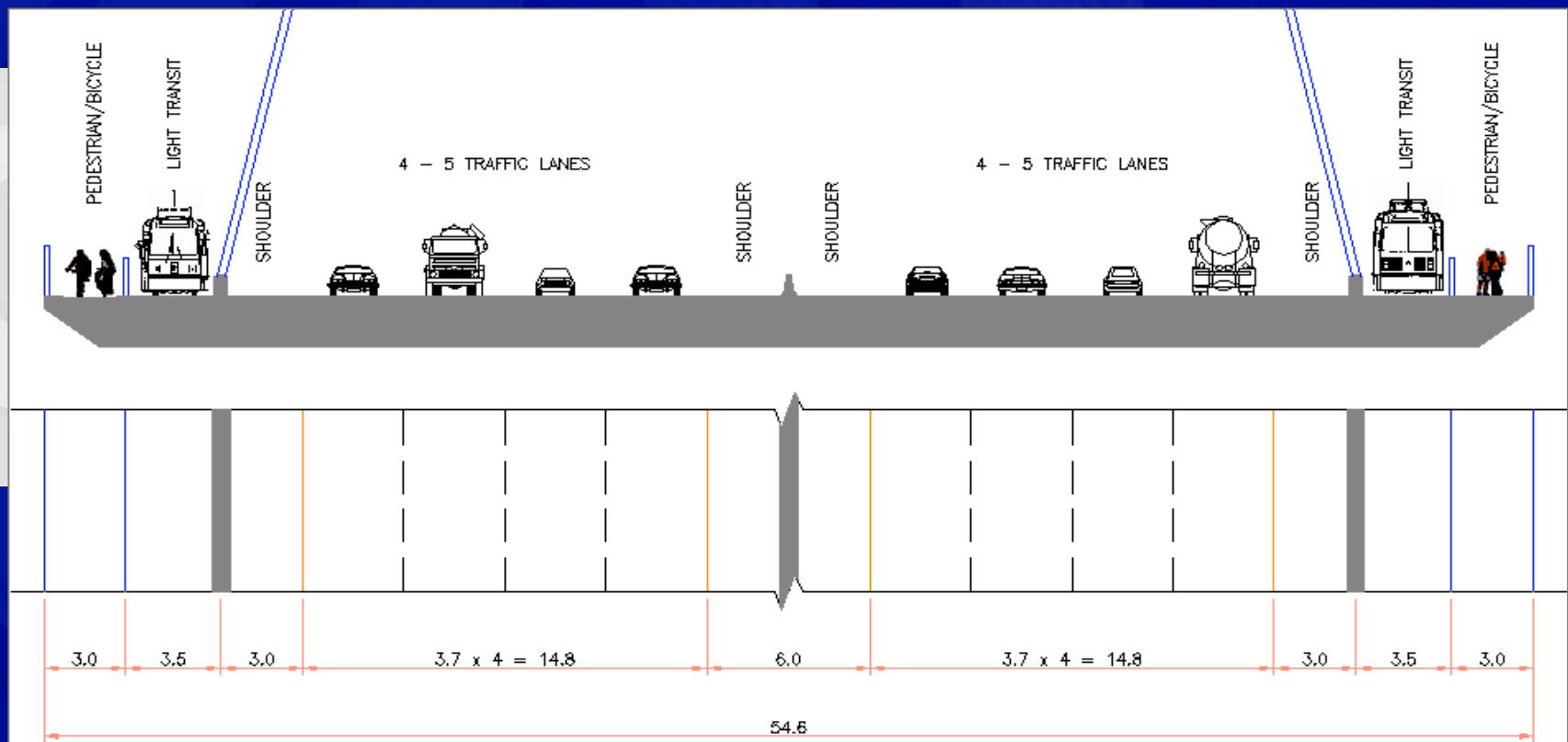
Toronto Waterfront Viaduct

The viable alternative.

- **all modes of transportation hosted in a unique corridor.**
- **drive, walk, cycle or take public transit in and out of the downtown core.**
- **a barrier to the waterfront (the rail corridor) is transformed into a priceless source of connections.**

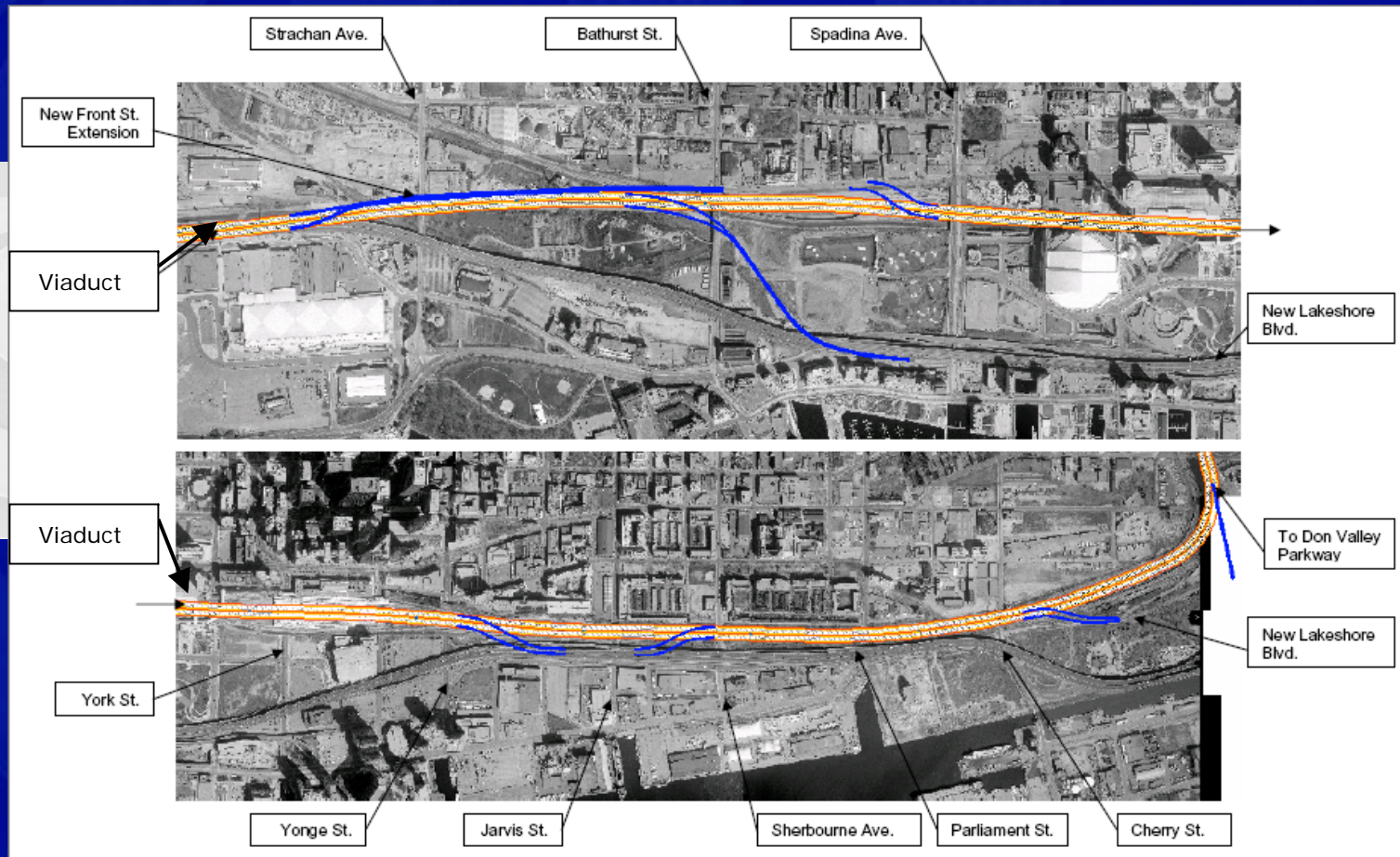
Toronto Waterfront Viaduct

Typical cross-section.



TWV Ramps and Connections

DRIVE ▲ TRANSIT ▲ WALK ▲ CYCLE



Speed Limit Issues

Spadina to Parliament



**“boulevard”
pace for
2.5 kilometers**



- ▲ **narrowing lanes of the viaduct east of Spadina (due to proximity to Rogers Centre, CityPlace etc.).**
- ▲ **virtually no “noise pollution” (canopy deflectors etc.).**
- ▲ **more *neighbourly* traffic flow through the core.**
- ▲ **a few extra seconds on the higher capacity viaduct still
= a huge net time saving for commuters (gridlock eliminated).**

Toronto Waterfront Viaduct

Complementing the city skyline.



skyPATH

A modern wonder of the world.



TORONTO WATERFRONT VIADUCT



skyPATH

**Walk, jog, cycle - or just sit and relax
in an extraordinary all-weather park.**

- ▶ perhaps the greatest new pedestrian amenity in the city's history and destined to become a major tourist attraction.
- ▶ complements the huge PATH underground network.
- ▶ an ideal companion project in support of 2015 World Expo bid.
- ▶ helps eliminate the “real” barrier - the railway corridor.
- ▶ funded by residential and commercial developers for highly valued direct connections (*eg. Calgary's PLUS 15 system*).
- ▶ appreciates the value of residences nearby, mitigating the potential “NIMBY” opposition to the Viaduct.

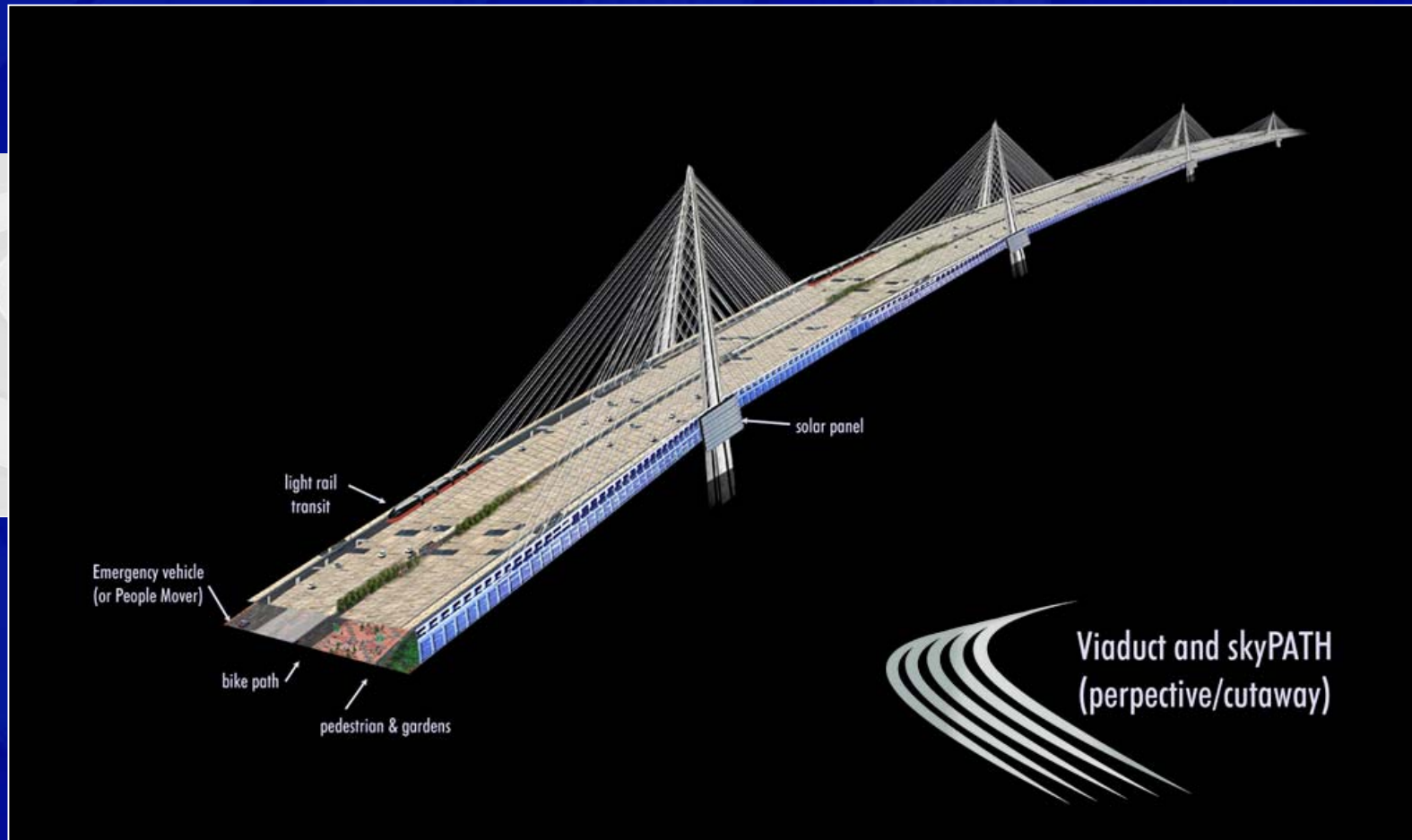
skyPATH

Partnerships and Beneficiaries.

- ▲ **Toronto Parks and Recreation.**
- ▲ **botanical and horticultural organizations.**
- ▲ **boards of education and other learning organizations.**
- ▲ **local artists, performers and other arts associations.**
- ▲ **pedestrian, cycling and neighbourhood associations.**
- ▲ **Toronto tourism in general, and Fort York in particular.**

Cutaway View

TWV and skyPATH.



THE SITUATION

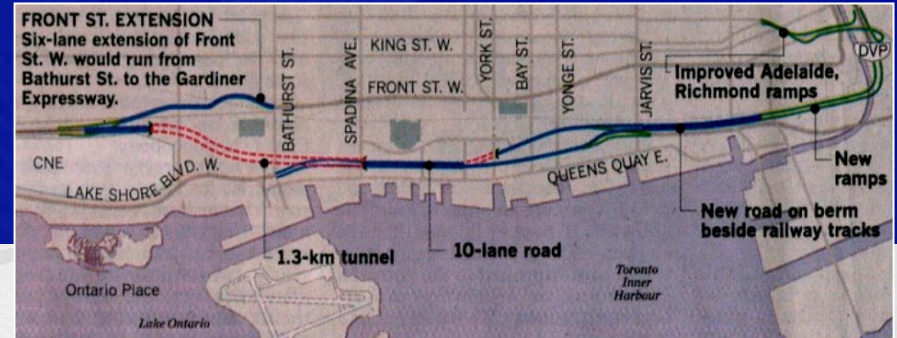
A Closer Look

- ▲ traffic gridlock and commuter volume = virtually an “all day rush hour” on the Gardiner Expressway.
- ▲ the crumbling expressway: maintenance costs continue to soar annually.
- ▲ the “real barrier” to the waterfront: the wide, below-grade rail corridor to the west of and the raised rail berm to the east.
- ▲ the explosion of development west of Yonge, south of Front Street.
- ▲ entire new neighbourhoods will be emerging east of Yonge.

Past Proposals



Dismantling



Tunnelling

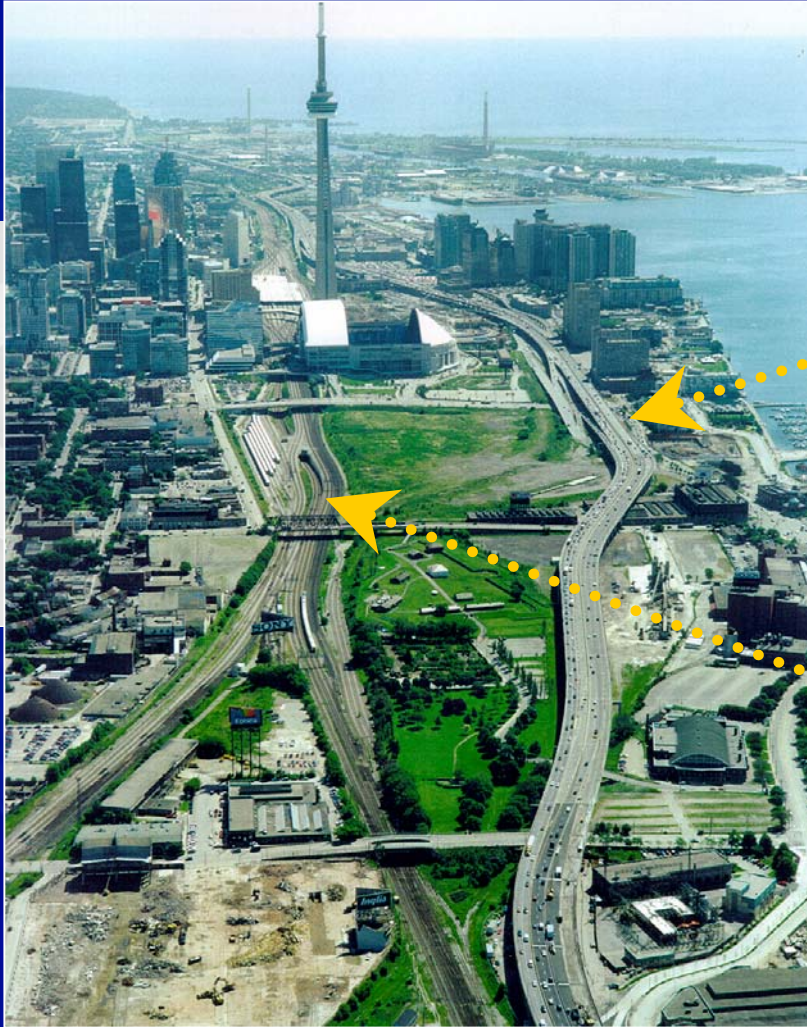


Front Street Extension



Beautifying under Gardiner

Eastern View



**Two separate corridors,
and two separate barriers.**

• The “psychological” barrier - the elevated Gardiner Expressway.

• The physical barrier - the rail corridor, a wide canyon between downtown and the waterfront.

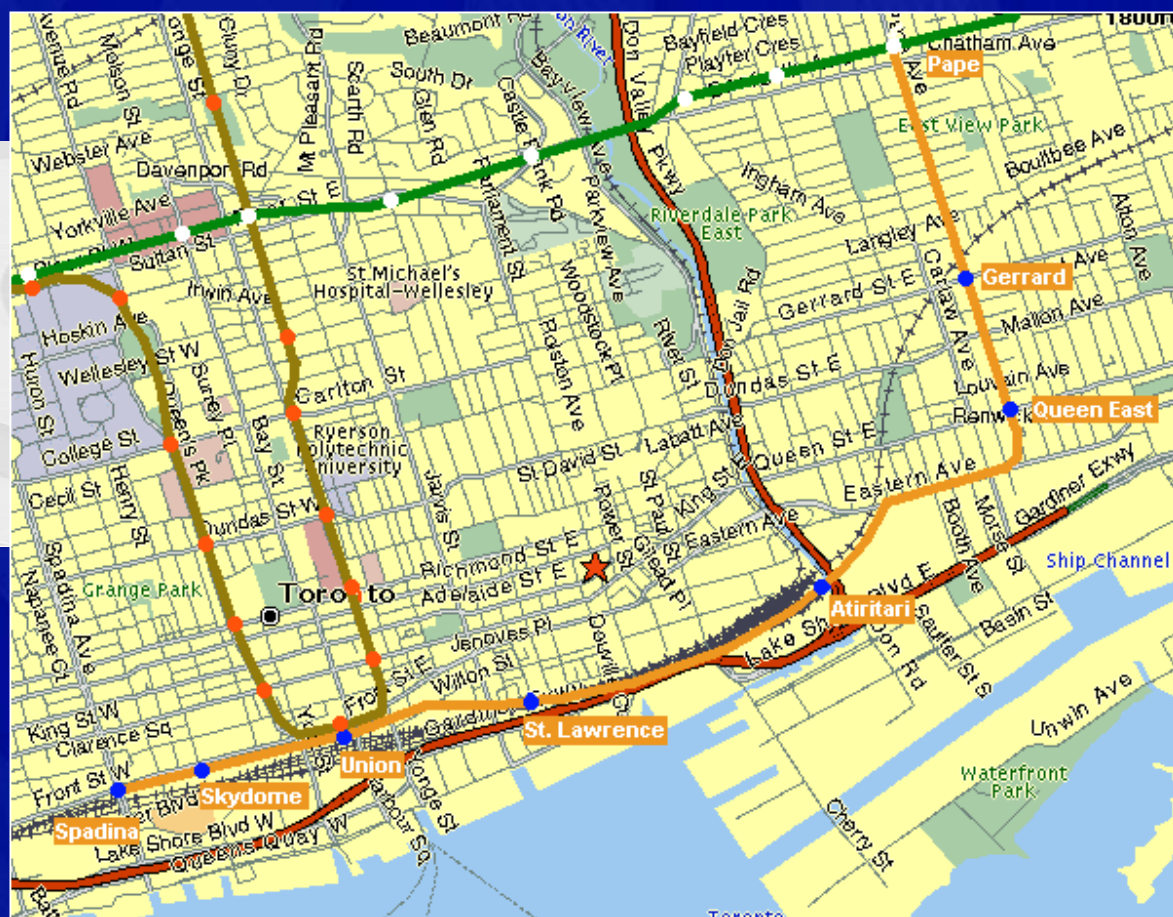
THE SOLUTION

A Closer Look

- keep the Gardiner Expressway vehicular link until the viaduct construction is complete.
- a new Lakeshore *rapid* transit line to relieve congestion and serve thousands of new residents south of Front Street.
- a grand new Lakeshore Boulevard is designed.
- innovative retail and north/south links below the eastern rail berm.
- skyPATH: an extraordinary pedestrian and cycling route, underwritten by the private sector.

Lakeshore Rapid Transit Line

TTC's Network 2011 Downtown Relief Line (proposed 1985)

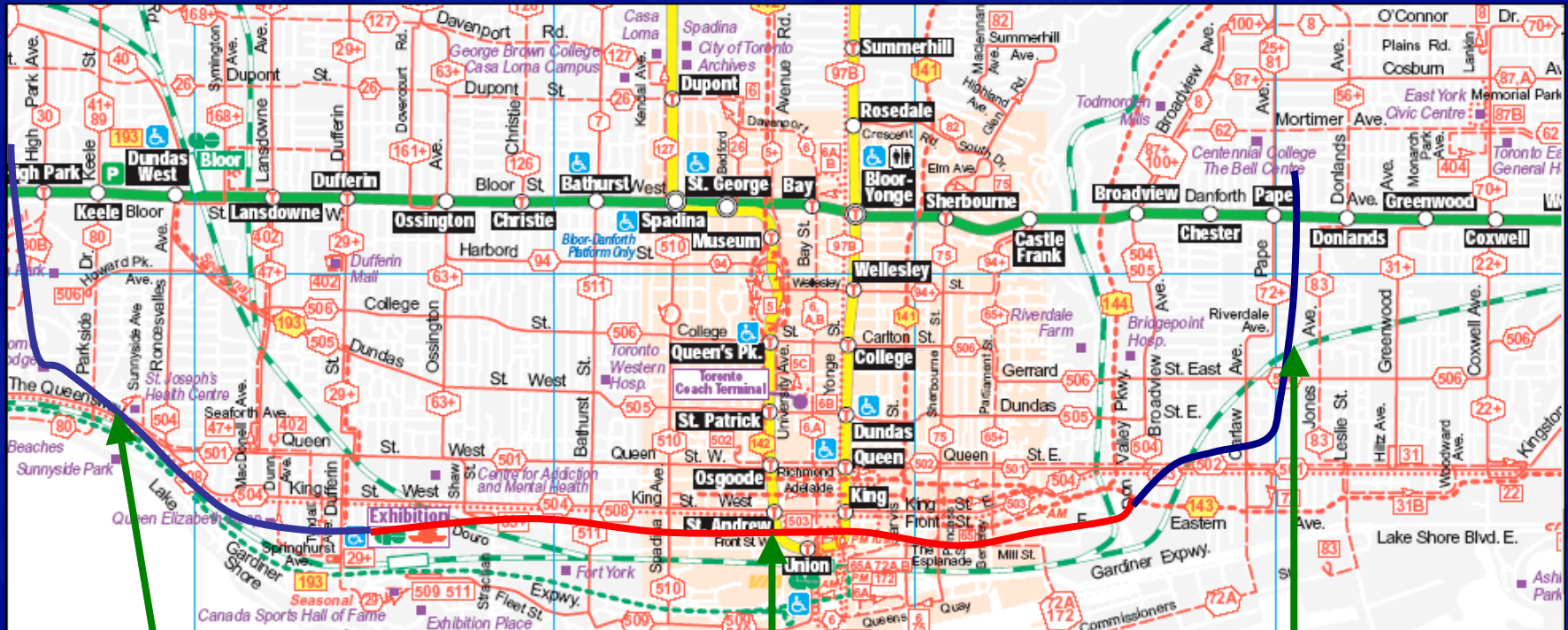


TORONTO WATERFRONT VIADUCT



Lakeshore Rapid Transit Line

Downtown Toronto subway system and proposed relief line



Western extension

Proposed viaduct

Eastern extension

TORONTO WATERFRONT VIADUCT



Western View

Present day - elevated Gardiner Expressway & rail corridor.



Future view

Gardiner is dismantled and a “new” Lakeshore Boulevard graces the waterfront.



TORONTO WATERFRONT VIADUCT



*illustration shows Island airport replaced by western portion of the proposed 2015 World Expo site.



TWV deck and skyPATH straddle the rail corridor just above trains.



**skyPATH connections
to neighbourhoods
(cutaway view)**



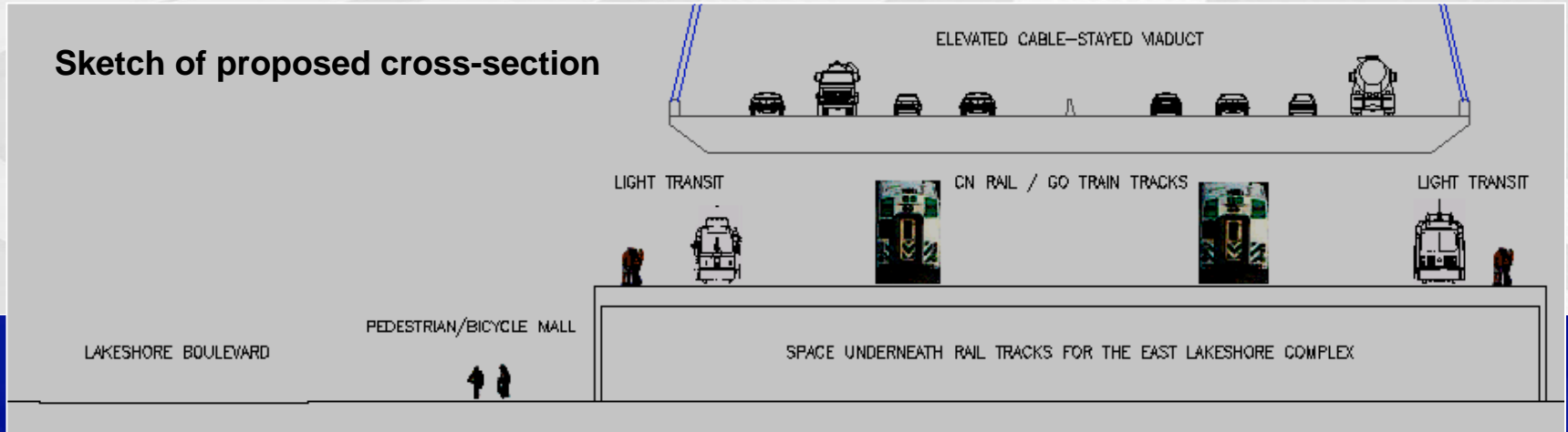
**North-south pedestrian connections to
skyPATH, underwritten by developers.**

Residential, Retail and Tourism Opportunities

- ▲ **EAST LAKESHORE MALL** - retail and pedestrian connections to the planned East Bayfront community, under the railway berm.
- ▲ **habitable viaduct pylons** - residential and/or commercial construction “piggy-backs” on pylon strength.
- ▲ **TOURISM** - new destinations such as skyPATH and 2015 World Expo.

EAST LAKESHORE MALL

East/west retail mall under the railway berm (phased construction).



Pedestrian connections north to The Distillery District and West Donlands, and south to the East Bayfront.

EAST LAKESHORE MALL

Present day rail embankment (berm) east of Yonge.



Only a few crumbling access points (north/south)
at major streets such as Sherbourne.

EAST LAKESHORE MALL

Future view of the rail berm east of Yonge.



TORONTO WATERFRONT VIADUCT



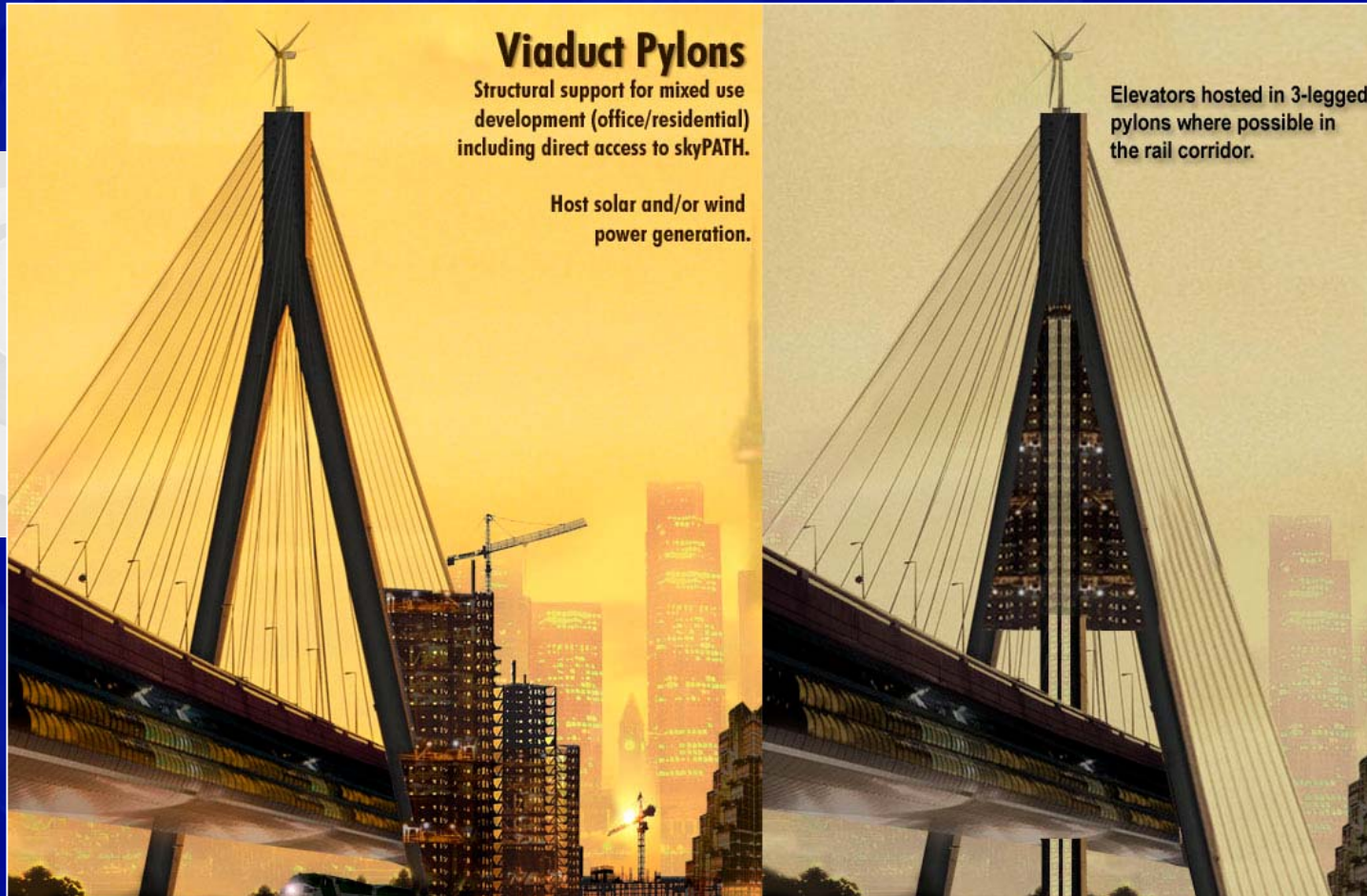
EAST LAKESHORE MALL

Future interior view: retail opportunities, parking etc.



A Multi-purpose Structure

Residential/commercial construction- HABITABLE PYLONS



TORONTO WATERFRONT VIADUCT



2015 World Expo Bid

A viable transit link between 2 fair sites .

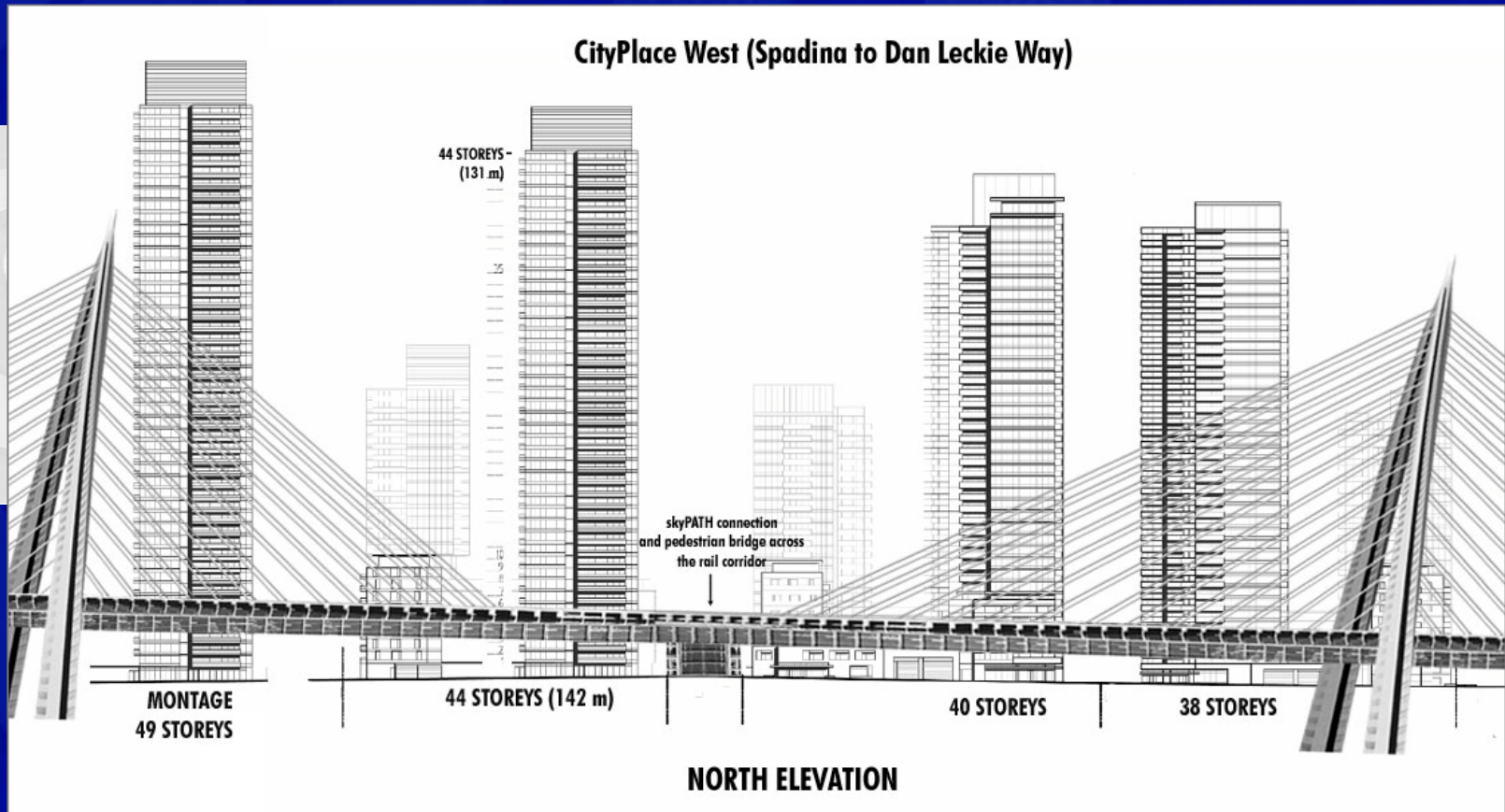
- ▶ **TWV hosts a fast transit link between the proposed east (Portlands) and west (Island airport) sites of the fair.**
- ▶ **spur lines to Exhibition Place, Ontario Place and the Island will provide a much-needed tourism boost.**
- ▶ **development of the Portlands, the East Bayfront and the West Don Lands will be accelerated.**

2015 World Expo Bid



Neighbours

Future Towers of CityPlace



Future View - Fort York

One of the nation's most important historical sites in a worthy setting.



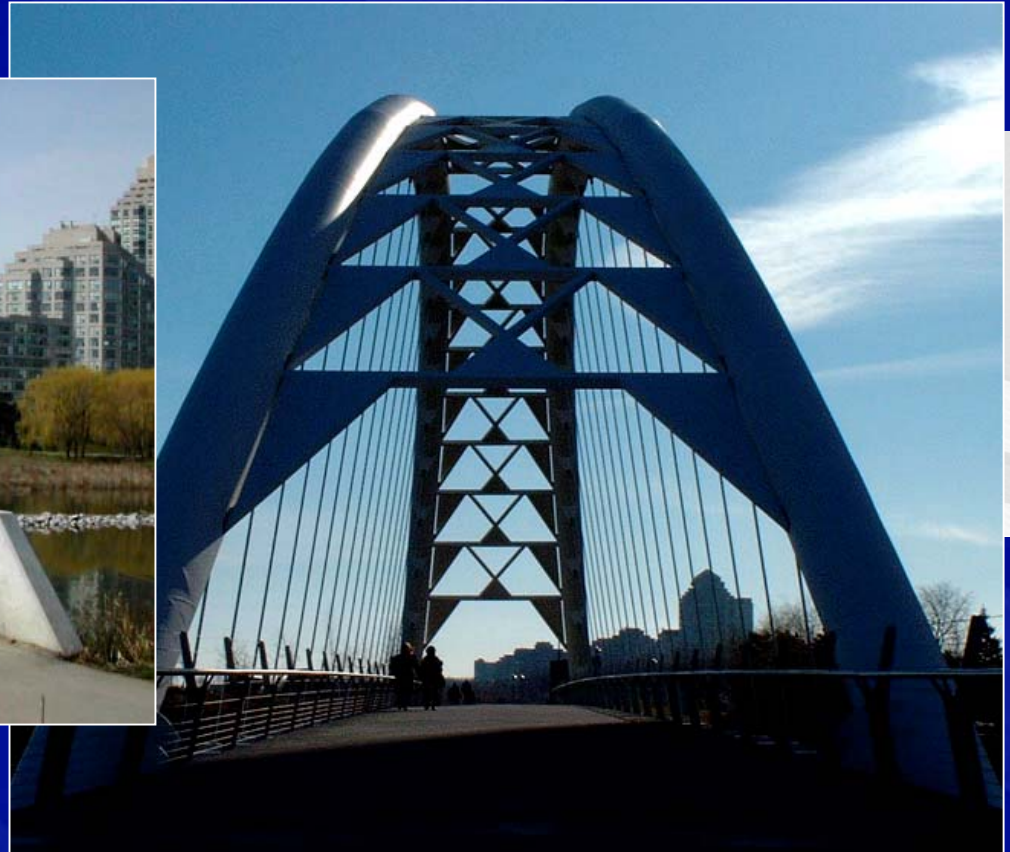
PRESENT DAY (ABOVE) - the crumbling expressway immediately south of FORT YORK.

FUTURE VIEW - a new perimeter worthy of one of the most important historical sites in Canada.



Design Matters.

Precedents in Toronto - pedestrian bridges.



Aerial View

Toronto now demands great design.



Asymmetric cable-stayed viaduct design.

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Budget Estimate (TWV)

Estimated cost for a 10-lane cable-stayed viaduct

= CAD \$115 million per 500 metres

Proposed length of viaduct

= 6 kilometres

Cost of the viaduct

= CAD\$1.38 billion

Cost of ramps and connections

= CAD\$190 million

ESTIMATED TOTAL COST

= CAD\$1.57 billion

Estimated cost for the 4-lane (1.3 km long) **tunnel proposed in 2000**

= CAD\$1.8 billion*

*year 2000 estimate/not adjusted for inflation

* The year 2000 costs (\$1.8 billion) for a 1.3 km tunnel are greater than the year 2006 budget estimate for the 10 lane, 6 km viaduct.

Financing Options

- ▶ **diversion of 2 cents a litre from gas tax in Toronto.**
- ▶ **\$0.50 to \$1.00 electronic toll per use, for a period of 30 years.**
- ▶ **private investment opportunities:**
 - \$ **East Lakeshore Mall retail**
 - \$ **habitable Viaduct Pylons**
 - \$ **development of priceless waterfront lands after dismantling the elevated Gardiner Expressway**

Key Partnerships

Support from Union Station stakeholders will be critically important.



Original Elevation from **UNION**
Roof sample - Santiago Calatrava

TORONTO WATERFRONT VIADUCT (TWV) & skyPATH converge with the new Union Station trainshed.

- ▲ a convergence of many stakeholders.
- ▲ City of Toronto, GO Transit, VIA, Union Pearson Group, precinct plans and area landowners.

LEGACY

ECONOMIC AND SOCIAL GAIN FOR DOWNTOWN AND THE ENTIRE G.T.A.

- ▲ **iconic structure enhances the skyline.**
- ▲ **more expressway lanes and a new rapid transit line.**
- ▲ **new pedestrian and bicycle routes in all directions.**
- ▲ **beautiful redesign of Lakeshore Boulevard.**
- ▲ **new shopping and tourism areas connecting the city to its waterfront.**
- ▲ **development opportunities for private investors and new tax revenues for the city.**

Next Steps.

- ▲ build political support at all three levels of **Government**.
- ▲ communicate with all **stakeholders**, neighbours and landowners.
- ▲ solidify **civil engineering/architectural development** issues.
- ▲ identify **financing options** and draft budget.
- ▲ identify private **investors**, partners and funders.
- ▲ conduct city-wide **consultation** and public awareness campaign.

An Unrivalled *Mobility* Corridor

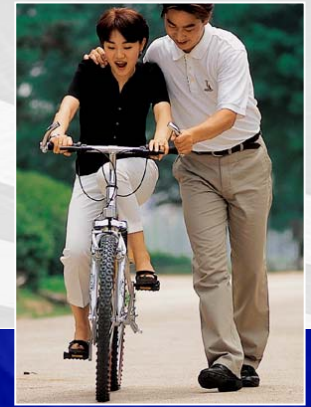
▲ DRIVE



▲ WALK



▲ TRANSIT



▲ CYCLE

A New, Connected City Emerges.



Under construction and proposed downtown projects.

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