

The Tunnel Hybrid Solution for Alaskan Way Viaduct Project



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- Quick History
- The Stakeholder Process is Created
- Guiding Principles and Evaluation Measures

- Scenarios Become a Hybrid Solution
- December — the Tunnel Hybrid Emerges
- Interesting Data Points & Gehl Pedestrian Study

- Details of the Tunnel Hybrid
 - ✓ Elements of the Hybrid
 - ✓ Costs, Financing & Timing
 - ✓ A Virtual Ride Through the Tunnel
 - ✓ Route, Depth, Soil

- How is this different from the Tunnel Voters Rejected?
- Why is Seattle Not the Big Dig?
- Likelihood of Cost Overruns?

- How Did this Coalition Emerge?
- Critical Issues to Proceed



Alaskan Way Viaduct History

- 1985 University of Washington study identifies problems
- 2001 Nisqually Quake
70+ Alternatives Evaluated
- 2006 EIS and SEIS
2 Preferred alternatives:
Cut and Cover Tunnel
Elevated
- 2007 Seattle Voters reject both alternatives
Project Team is created and selects 30 stakeholders



Alaskan Way Viaduct Stakeholder Process

Executives

Governor — County Executive — Mayor
Advised by House, Senate, City, and
County Transport Chairs

Project Team

WSDOT — KDOT — SDOT

Interagency Work Group

14 agencies



Alaskan Way Viaduct Interest Groups

Interest Groups	Labor	Business	Neighborhoods
Transportation Choices	KCLC	DSA	North Seattle
FutureWise	ILWU	Chamber	Southeast County
People 4 Puget Sound			Pike Place Waterfront
Sierra Club		Maritime	Belltown
People's Waterfront		BINMIC	Uptown
Working Families Elevated		Stadiums	International District
Allied Arts		Manuf Ind Council	Ballard/Fremont (2)
Cascade Bike Club			West Seattle (2) Southwest County



Alaskan Way Viaduct Guiding Principles

6 Principles and 27 Measures to Evaluated Alternatives

1. Improve Public Safety
2. Provide Efficient Movement of People and Goods, Now & Future
3. Maintain or Improve economies: Seattle, region, port, state
4. Enhance Waterfront, Downtown, Neighborhoods for People
5. Solutions that are Fiscally Responsible
6. Improve Health of Environment



Alaskan Way Viaduct Winnowing Scenarios

January

August

**December 11
Hybrids Emerge**

January 13

A Demand Mgmt/ Low Capital

Demand

B Surface Boulevard AK Way

Surface

C Alaskan Way Couplet
Waterfront Expressway
Retrofit

Couplet

Couplet

D 4-Lane Elevated

Elevated

Elevated

E Integrated Elevated
Elliot Bay Bridge

Integrated

F Bored Tunnel

Bored Tunnel

Bored Tunnel

G 4-Lane Cut & Cover Tunnel

Cut & Cover

H 4-Lane Lidded Trench

Trench



Alaskan Way Viaduct

Interesting Data Points

- 110,000 vehicles
 - 55-80% are bypass traffic
 - 50% registered outside Seattle
- 4,000 busses, trucks (30 ft+)
- \$2.2 - \$3.4B cost of disruption per year
- I-5 at capacity, demand management, new lanes can add 25,000 vehicles



Gehl Pedestrian Study

Description	Daily Average	Pedestrians	Ambiance	Bikes
Great Street	<1,000	Yes!	No noise Open windows	Safe & pleasant
Good Street	<5,000	Needs separation	Slight noise Trees thrive	OK in traffic flow
Okay Street	<10,000	Cross at corners	Noise & Pollute Sit inside Windows closed	Lanes & Tracks
Poor Street	<25,000	OK to walk	Unpleasant outside Little sidewalk life Trees struggle	Raise & Separate Very low quality Unsafe pollution
Bad Street	50,000	Cross at lights People avoid	Severe Some trees OK	Raise & Separate Worst quality Worst pollution



The Deep Bore Hybrid Solution

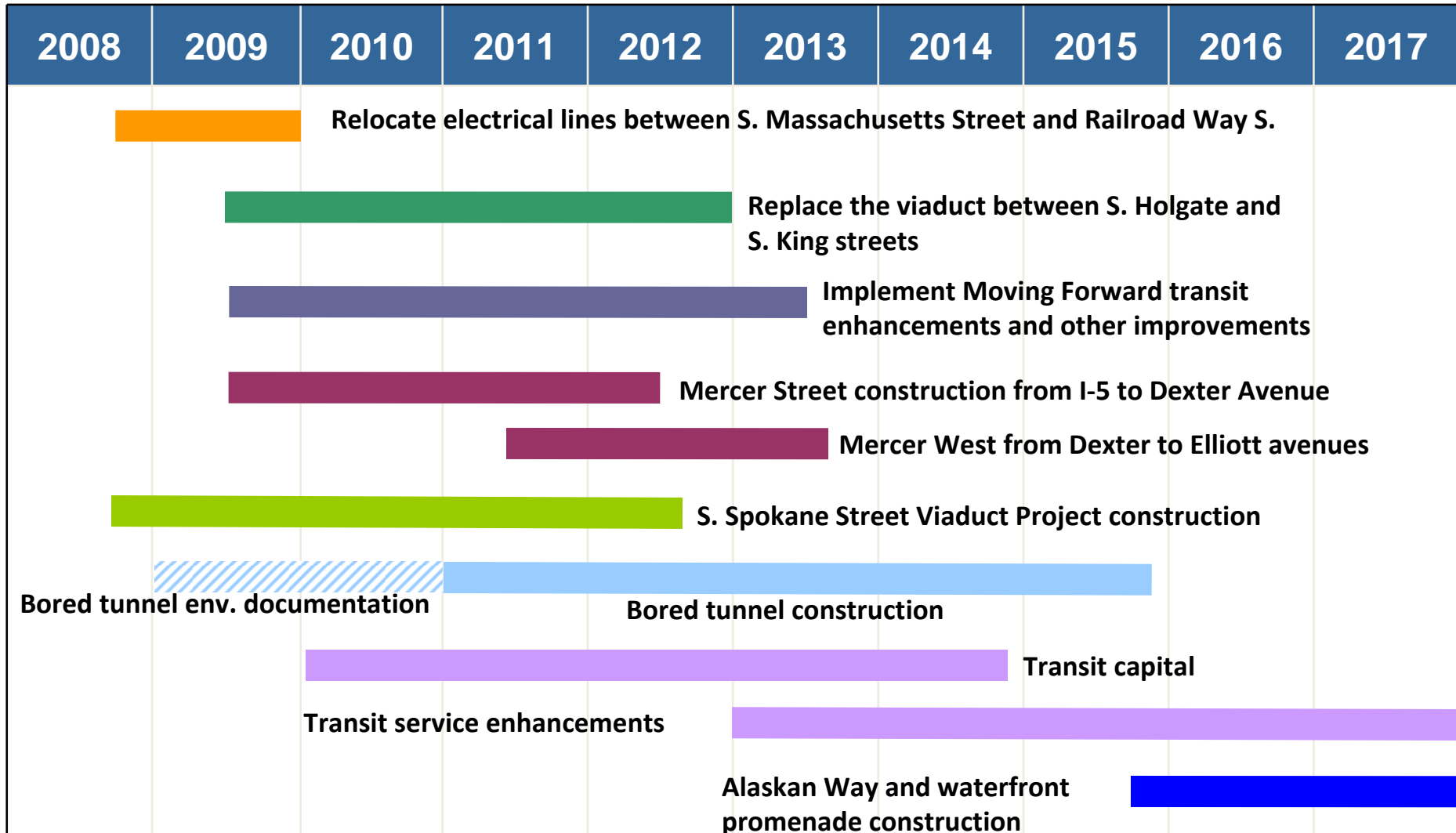
	Proposed Project Implementation Responsibility				Costs
	State	King County MVET	City of Seattle	Port of Seattle ***	
Moving Forward and Prior Expenditures	\$600 million			\$300 million	\$900 million*
SR 99 Bored Tunnel	\$1.9 billion**				\$1.9 billion
Alaskan Way Surface Street and Promenade	\$290 million		\$100 million		\$390 million
Central Seawall			\$255 million		\$255 million
Utility Relocation			\$250 million		\$250 million
City Streets and Transit Pathways		\$25 million	\$190 million		\$215 million
Transit Infrastructure and Services		\$115 million	\$135 million		\$250 million
Construction Transit Service	\$30 million	\$50 million			\$80 million
Total	\$2.82 billion	\$190 million	\$930 million	\$300 million	\$4.24 billion
Transit Operations Annual Cost		\$15 million			\$15 million

*Reflects cost savings from Moving Forward program realized by not repairing the viaduct from Lenora to Battery Street Tunnel and not completing the second phase of fire and life safety upgrades to the Battery Street Tunnel.

**Reflects the most likely cost based on a conceptual design. The potential cost range is between \$1.2 billion and \$2.2 billion.

***Agreement in concept for up to \$300 million subject to Port of Seattle Commission review and approval.

Program Timeline



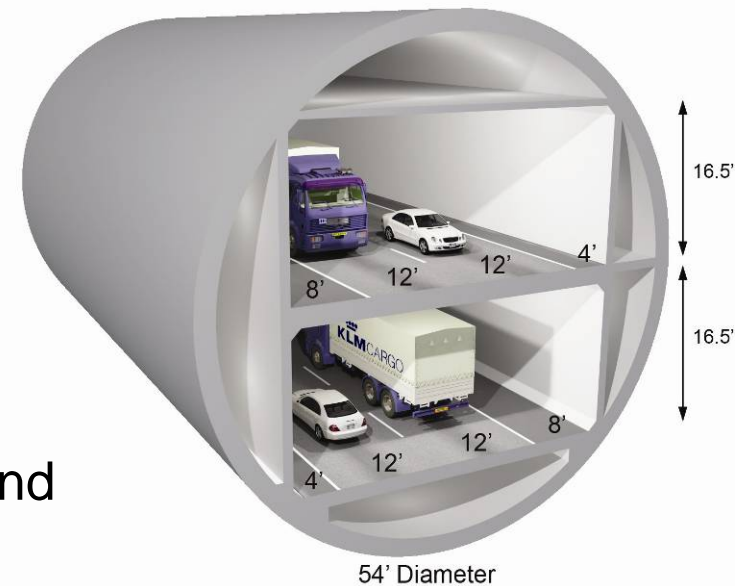
*Seawall construction will take place before Alaskan Way and promenade construction

Tunnel Particulars

Bored Tunnel Hybrid Alternative

SR 99 Tunnel:

- 54' diameter, single bore tunnel.
- Two lanes of traffic in each direction.
- Approximately 1.7 miles long King Harrison
- Between 30 and 200 feet underground.
- Construction is expected to begin in 2011 and be open to drivers in 2015.



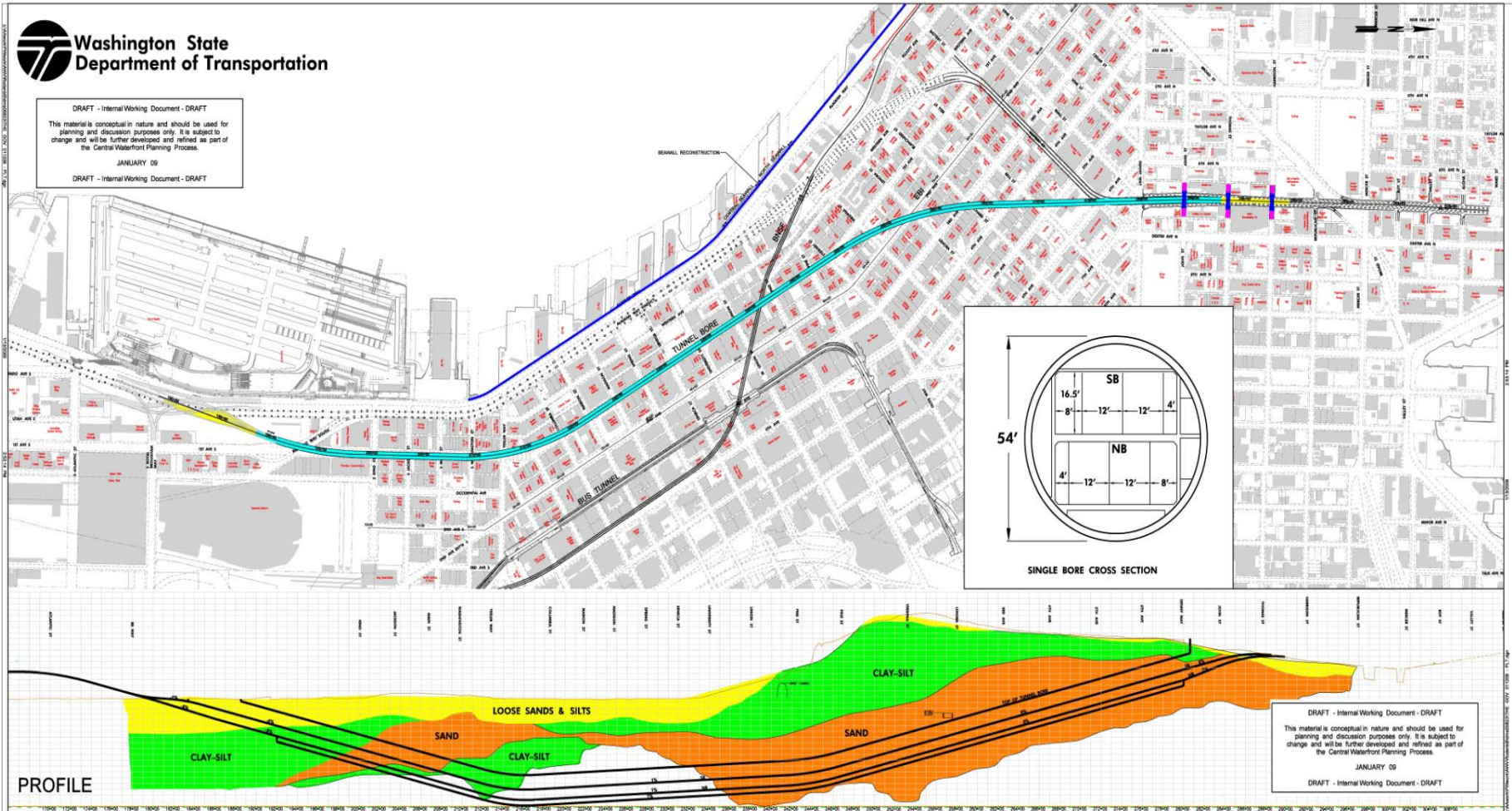
Alaskan Way surface street:

- Four-lane roadway with two lanes in each direction.
- Carries approximately 25,000 vehicles per day.

SR 99 Single Bored Tunnel Under Seattle

January 2009

Tunnel Routes and Soil Types



Why Is Seattle's Tunnel Not The One Voters Rejected?

Now

Bored
Below First Avenue
Up to 200 feet below ground
Existing Viaduct stays open
Construction time 4.5 years
Limits impact to downtown, water

Then

Cut and Cover
At seawall
10 feet below ground
Viaduct closed 3.5 - 7 years
Construction time 117 months
Would have killed downtown, waterfront



Why is Seattle's Tunnel Not a Big Dig?

Boston

80% paid with federal dollars
2 Interstate Highways+intersection
2 multi-lane Cut and Cover under existing in-service interstate
Major elevated sections/ramps
Poor geotechnical conditions
8 miles physical length
161+ lane miles
Signature cable stayed bridge
2 sunken tubes in Boston harbor
\$4B mitigation
Project grew over time
– many delays (escalation) + scope growth

Seattle

Less than 10% paid with federal dollars

1 Deep Bore

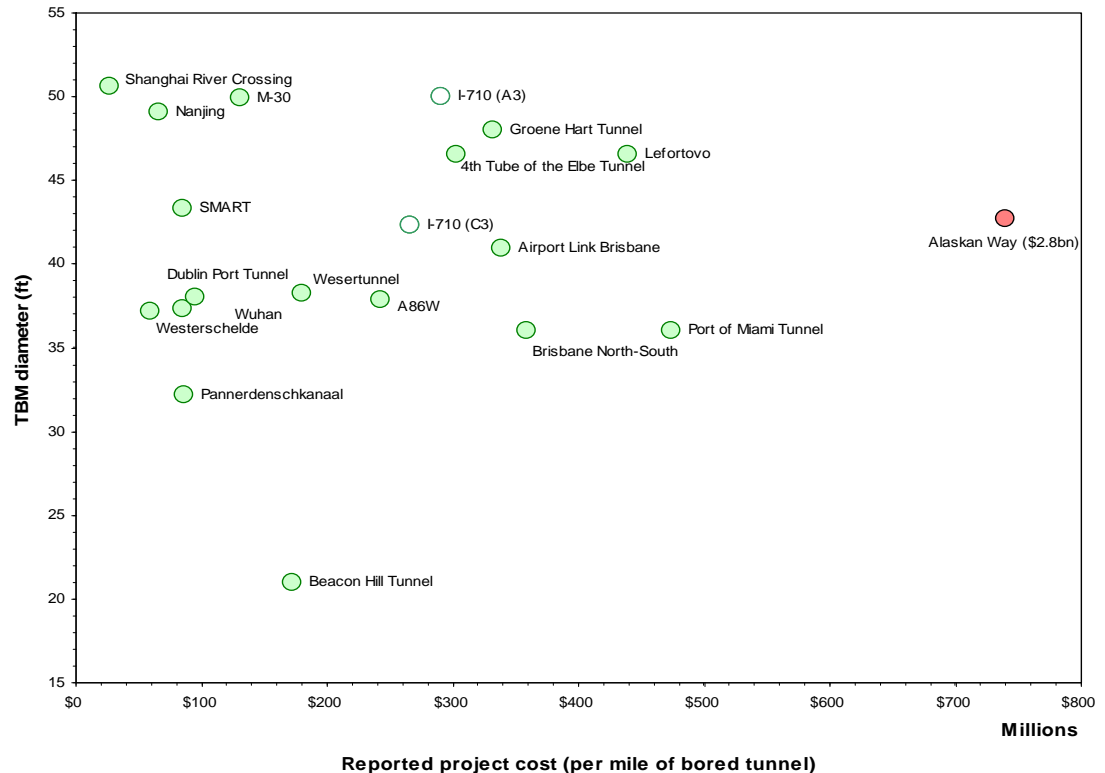
Largely glacial till and clay
2.8 miles
12.8 lane miles
No bridge
No water
Minimal disruption if viaduct operates



World's Deep Bore Tunnels

Majority of projects indicate a cost per mile of single tunnel of less than \$350 million. This equates, for two tunnels 10,000 ft long, to \$1.3 billion.

Survey of bored tunnel reported costs (per mile of bored tunnel)



Notes:

- Costs are reported project costs, and have been normalized to indicate the cost of a mile of single tunnel
- No price escalation has been incorporated
- Costs for I-710 project in Los Angeles are from feasibility study – project is not built
- Alaskan Way figures based on \$2.8bn for twin 10,000ft long tunnels



How Did the Tunnel Hybrid Emerge?

- Project Team delivered data and information by December
- The cost of disruption became paramount (\$2.2-\$3.4B a year)
- Groups formed to stop surface and elevated options
- Gehl study showed surface alone would be unpleasant
- Freight community, port got involved and demanded CAPACITY
- Speaker's Parkway raised public profile and galvanized response
- Governor won election and directed focus on viaduct
- Deep Bore Tunnel experience grew worldwide
- Outside tunnel experts helped Project Team reduce cost estimate
- Stakeholders took control of process and created coalition
- Capped state contribution at \$2.8B



Critical Issues Still Open

- 35,000 vehicles a day to NW Seattle
- How does the North Portal work?
- How does the South Portal work?
- What is timing of demolition of viaduct, completion of tunnel?
- Financing — City
- Financing — County
- Financing — Port
- Financing — State
- Communications with communities: Safety, seismic, travel times, budgets

Project is at less than 1% design, so there is plenty of time to solve

