





July 14, 2011

Paula Hammond  
Secretary of Transportation  
Washington Department of Transportation

(Hand Delivered)

**RE: SR 520 Bridge Replacement – Final Environmental Impact Statement – Response**

I believe Olympia is making a grave error on insisting to go with the current preferred conceptual design for the SR 520 bridge replacement.

I am well versed in most of the conversations, debates and studies dating back to the original Parametrix Study on Alternative Designs and 520. I was on Mayor Nickels 520 Advisory Board and worked with Senator Ed Murray to secure the funds for the 520 Mediation Group.

Olympia and Seattle are under the impression that an Immersed Tunnel Tube (ITT) on Lake Washington would cost \$8 billion dollars and that particular design (done by COWI) didn't even go all the way across Lake Washington. Olympia, Seattle and the general public couldn't be more misinformed on this subject.

Based on current and finished ITT projects in Northern Europe where the cost of skilled labor is greater than ours here in the Northwest, Immersed Tunnel Tubes cost in Denmark, Sweden and Northern Germany approximately (\$US) \$500 million per mile. This is the cost for a four-chambered submerged tube underwater. Cost based on the completed Oresund Tunnel, Sweden to Denmark four-chambered tube completed in 2000 (project sheet attached) and the just announced Fehmarn Belt Tunnel connecting Denmark to Germany again four chambers for vehicle and trains, 11 miles long in 131 feet of water making it the longest ITT in the world. There are dozen more completed ITT projects that support this cost figure per mile enclosed in this packet.

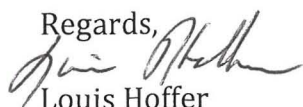
SR520 is only 3.7 miles from I-5 to the Medina shore that would be only \$1.8 billion dollars for a four-chambered tube from Medina to I-5.

Governor Gregoire is telling us that the 520 design above ground and floating high above the water on stilts like a viaduct will cost \$3.8 billion. That is \$2 billion dollars more than a tube.

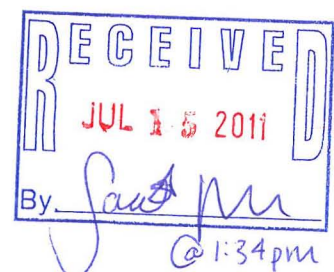
Even with additional ramps south of the ship canal dispersing traffic to the north and south before I-5 the total cost for an ITT still would be less than Governor Gregoire's \$3.8 billion monstrosity.

Governor Gregoire has already spent \$500 million on pontoon construction...perhaps they can be recycled into rain barrels?

Regards,



Louis Hoffer  
1523 Parkside Drive East  
Seattle, WA 98112  
(206) 919-1664 - p



July 14, 2011

Seattle Mayor Mike McGinn  
Seattle City Hall  
600 Fourth Avenue, Seattle, WA.

**RE: SR520 – Response to Final Environmental Impact Statement FEIS**

Dear Mayor McGinn,

Today is the final day for responses to the FEIS for SR520 and the Bridge Replacement. I want to thank you in particular and all of our leaders listed below on this letter for the work that you have done along with community groups, community councils and individuals to bring a better solution to the Seattle 520 Corridor.

In the coming months as you all can imagine a chain of events (both legal proceedings and at the voting polls) will occur that will bring Olympia's decisions regarding the 520 Bridge to a forefront in King County and Seattle.

I wanted the four of you to have the information in this packet for you and your staff to be aware of actual costs per mile for an Immersed Tunnel Tube (ITT) projects planned and completed in other parts of the world to have as a comparison and hopefully as a tool for you to work from.

Over the past several decades China specifically but also most of Asia have been constructing ITT projects at a rapid pace. These projects are difficult to attach a quantitative figure as their labor costs are greatly reduced and their site priorities and challenges (if any) are different. However, these projects have proven to be an effective testing ground and have propelled projects with many environmental, topography, air quality, seismic and construction challenges forward in Northern Europe where cost for skilled labor is higher than in the Northwest here in the United States.

This attached packet shows from a large number of planned and completed ITT projects with high vehicle and in most examples light rail capacity a cost per mile (in US\$) to be far less than what Olympia and Governor Gregoire have led the general public to believe.

The general cost per mile currently in Northern Europe is \$500 million (US\$) per mile. SR520 is 3.7 miles from I-5 to the Medina Shore. The base cost for a four-chamber tube underground and underwater from I-5 to Medina would cost \$1.8 billion. Governor Gregoire currently is planning to construct a monstrosity for \$3.8 billion.

Of course, on/off ramps south of the Montlake Ship Canal would increase the cost and improvement options such as a connection to Sound Transit and an additional 520-Downtown Seattle connection to the Mercer Street exit bypassing I-5 for Seattle/Eastside traffic could all be added at additional costs.

Japan has also benefited greatly from (ITT) developments in China and for the past decade leading up to the devastation that country has recently endured constructed all of it's main transit lines in Immersed Tunnel Tubes. As a result Japan had zero destruction in it's immersed tunnel tubes allowing all main transit lines to remain at full operation during and after the earthquake much the same way as BART did in San Francisco in 1989.

I propose and I have a team prepared to do a three-month study that would produce recommended designs and options and more importantly actual costs associated with each design option.

Capita Symonds is among the top three largest tunnel engineering firms in the world. I have attached some information on their company and I am in constant contact with them as well as the other top producers in the engineering world for this kind of work.

I have been a resident of Seattle for a long time, my wife's family was one of the pioneers of our city's commerce, transportation, banking and insurance industry. I and as I know the rest of you want a transportation solution for this corridor that not only is cost effective, safe for our environment but also something we can be proud of. A legacy to our families and to all Western Washington residents and visitors, something as monumental as our iconic Space Needle could be created in this corridor if we all just pause, think and look around and try to do the right thing.

I can be connected at anytime and would take great pleasure in assisting in any way I can with this endeavor. It is not too late.

Best Regards,



Louis Hoffer  
1523 Parkside Drive East  
Seattle, WA 98112  
(206) 919-1664 p

cc. Senator Edward Murray  
Representative Frank Chopp  
Representative Jamie Pedersen

# CAPITA SYMONDS

14th July 2011

Our ref . RCL/CS/900017-02

Mr M McGinn  
Seattle City Mayor  
Seattle City Hall  
600 4th Avenue 7th Floor  
Seattle, WA 98104  
United States

Dear Mr McGinn

## **Lake Washington Immersed Tunnel proposal**

I have been in discussion with Louis Hoffer about the possibility of constructing an immersed tube tunnel across Lake Washington as replacement for the current SR 520 bridge. From our discussions I believe that such a tunnel is possible and within the current state of knowledge for the design and construction of immersed tunnels.

The maximum depth of the lake appears to be around 190ft. This is comparable with the depth of the immersed tunnel that has recently been completed across the Bosphoros in Istanbul, so although the tunnel is deep it is not beyond the current state of knowledge. Costs depend on the specifics of the country and the site but to take the Øresund Tunnel between Denmark and Sweden as an example this was 2.55 miles long and accommodated a dual carriageway road and twin track high speed railway. The tunnel was completed in 2000 at a cost of US\$960m or US\$376m per mile. Allowing for around 60% inflation to 2011 prices the cost today would be around US\$600m per mile. This is only an approximate calculation but indicates that a cost of US\$550 – US\$650m per mile should be achievable depending on differences between the US and European construction industries. This is inclusive of all the electrical and mechanical installations in the tunnel.

Immersed tunnels have been constructed across waterways where a bridge would be environmentally unacceptable. For example the first such tunnel in the UK at Conwy was built across the Conwy Estuary, an important salmon river, to protect the World Heritage site of Conwy as a bridge would have dominated the landscape. There would inevitably be some temporary environmental impacts during construction but these can be mitigated and generally a solution that is acceptable to all interested parties can be found. Once the tunnel has been completed the environment is returned to its existing condition.

Seattle is in a seismically active area and immersed tunnels are able to accommodate the movements associated with this. Many immersed tunnels have been built and performed successfully in such countries as Japan and Greece and the recently completed Bosphoros tunnel in Turkey is only 15 miles from the very active North Anatolian Fault.

An immersed tunnel is a particularly adaptable form of construction in that it can accommodate combinations of road and rail. It is relatively easy and cost effective to provide for future expansion in such a tunnel, for example by constructing bores to accommodate future light rail plans. Ground level intersections at each end of the tunnel allow for effective flow and dispersion of traffic into the adjacent road network.

Capita Symonds House, Wood Street, East Grinstead, West Sussex RH19 1UU  
Tel 01342 327161 Fax 01342 315927 [www.capitasymonds.co.uk](http://www.capitasymonds.co.uk)

Capita Symonds Ltd

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# CAPITA SYMONDS

In summary, an immersed tunnel could provide an acceptable solution to the replacement for the floating bridge and approaches on the Seattle side that would provide a safe efficient transport corridor without long term detriment to the environment.

Yours sincerely



**R C Lunniss**  
**Consultant**  
**For Capita Symonds Ltd**

Tel +44(0)1342 327161  
Fax +44(0)1342 315927  
Email [richard.lunniss@capita.co.uk](mailto:richard.lunniss@capita.co.uk)