TRAFFIC

as a

COMMUNITY BUILDER

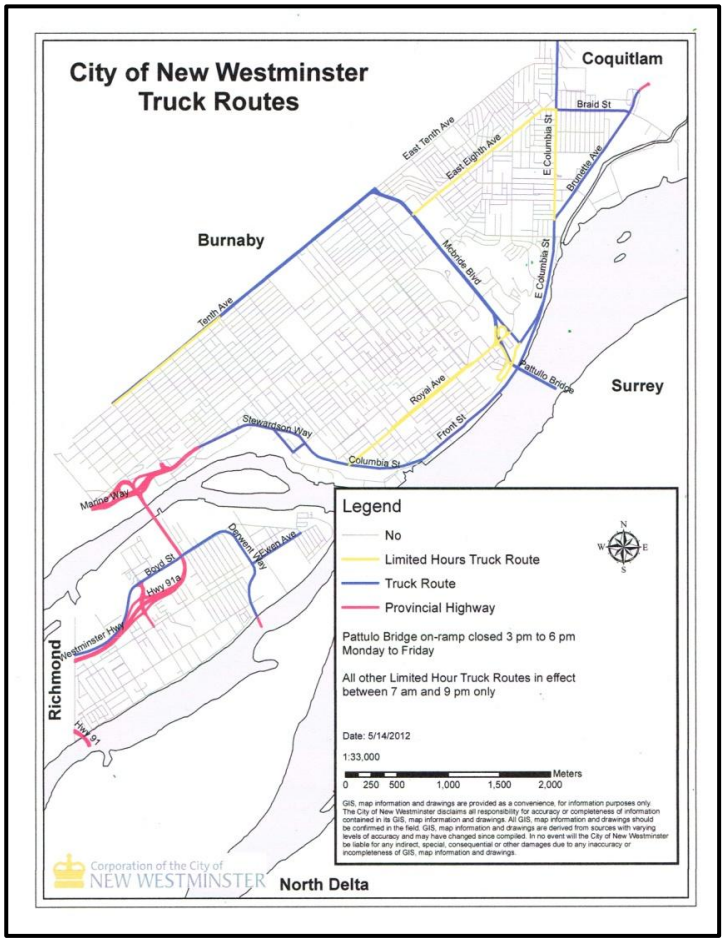
a proposal from

Billard Architecture

New Westminster, BC

THE PROBLEM

Photo by Larry Wright



Traffic congestion in New Westminster is negatively impacting local business, eroding our roads and bridges, and negatively impacting day to day life for residents.

THE IDEA

A 2.2km downtown bypass tunnel under the Fraser River from the north end of the King George Blvd in Surrey at the approach to the Pattullo Bridge with a terminus at the intersection of Stewardson Way and 12th Street in New Westminster.

The tunnel would offer one lane in each direction and be open to heavy truck traffic only from 6 am to 6 pm, Monday through Friday.

Concept and rendering by Robert Billard for Billard Architecture

THE OPPORTUNITY

Concept and rendering by Robert Billard for Billard Architecture

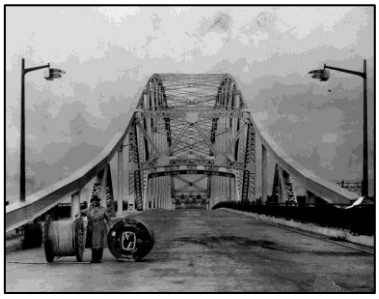
Development - an innovative development along Columbia Square that aligns with the development of the Anvil Centre

Arts & Culture - growth of New Westminster's arts and culture community with the building of a new Massey Theatre and artist live-work space.

Education - more space for New Westminster Secondary School to be developed with the relocation of the Massey Theatre

Tourism and local business - situated in high density residential area with easy access to Skytrain for visitors

THE PAST



The Pattullo Bridge, which is 1,227 meters (4,026 ft) in total length, consists of four lanes (two in each direction) with no barrier of any sort in the centre, making it highly prone to head-on collisions, especially at excessive speed or in bad weather. A key link between Surrey and the rest of Greater Vancouver, according to TransLink, the Pattullo bridge handles an average of 73,000 cars and 4000 trucks daily, or roughly 20 percent of vehicle traffic across the Fraser River.

"In recent years, TransLink has closed the middle lanes to traffic from 10:00 p.m. to 5:00 a.m. in an effort to lower the high number of head-on collisions, and installed a series of plastic pillars to raise the visibility of the centre-lane divider. On January 2, 2006, four people were killed in a T-bone collision between two cars on the southern approach lane.

"In response to the high number of crashes on the bridge, TransLink studied the idea of reducing the number of lanes on the bridge from four to three using a counterflow operation, similar to that used on the Lions' Gate Bridge, with the number of lanes varied depending on traffic flow and volume. However, traffic analysis showed that significant congestion would result in Surrey and New Westminster, and the idea was abandoned. TransLink also examined a number of options to install a centre-line barrier and, in concert, to ban truck traffic from the bridge because the barrier would further narrow the traffic lanes, but that too was proven impractical. A more controversial proposal is to install photo radar on the bridge to enforce the existing speed limit. Thus far, the provincial Liberal government has ruled out the idea of bringing back photo radar, which it cancelled after first being elected in 2001.

"On July 31, 2008, TransLink decided to replace the Pattullo Bridge rather than try to repair the aging, narrow-laned structure, and told staff to start planning for it as a toll bridge. (From Wikipedia)

In a statement (July 2014) TransLink said without any alternative routes or additional capacity on adjacent routes, removing the truck routes would hurt regional movement of goods. It added any decision on removing routes would be premature before a decision on the Pattullo Bridge is made.

"We understand the City of New Westminster's concerns about the impact of truck routes in the community, and we have directed TransLink to work with the city towards a long-term solution that balances goods movement along the north shore of the Fraser River with livability for residents," said TransLink board chair Marcella Szei in the statement.

63 per cent. TransLink has come up with six options for what to do with the bridge, including a $300 million upgrade and an option to build a $1 billion new bridge.

Source: http://en.wikipedia.org/wiki/Pattullo_Bridge

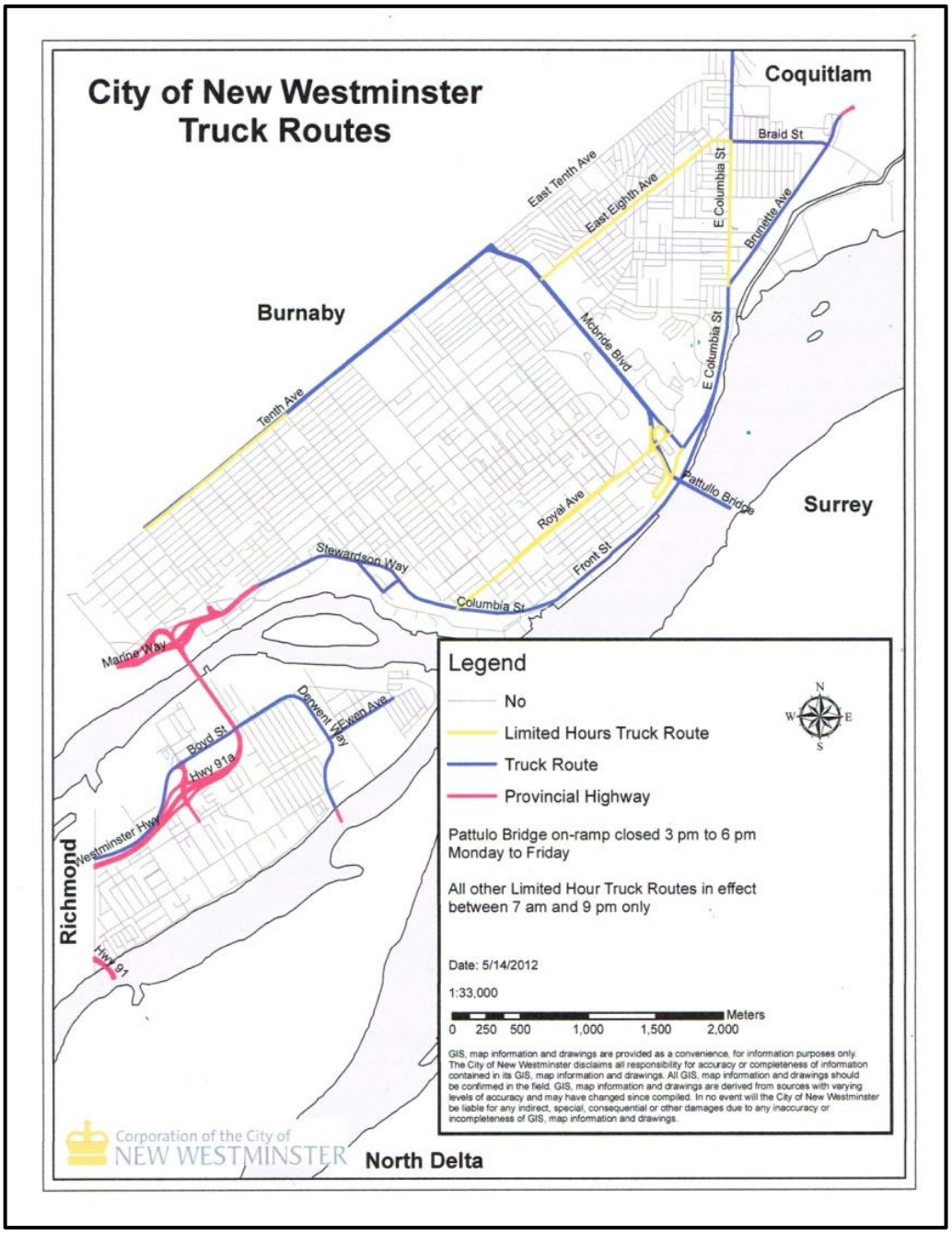
THE PRESENT

Photo: Jason Lang, Royal City Record

Since the new Port Mann Bridge opened with a $9 toll for truck traffic, it is estimated that **4000 more trucks use the Pattullo Bridge every day and truck traffic has increased by an estimated 63 per cent.**

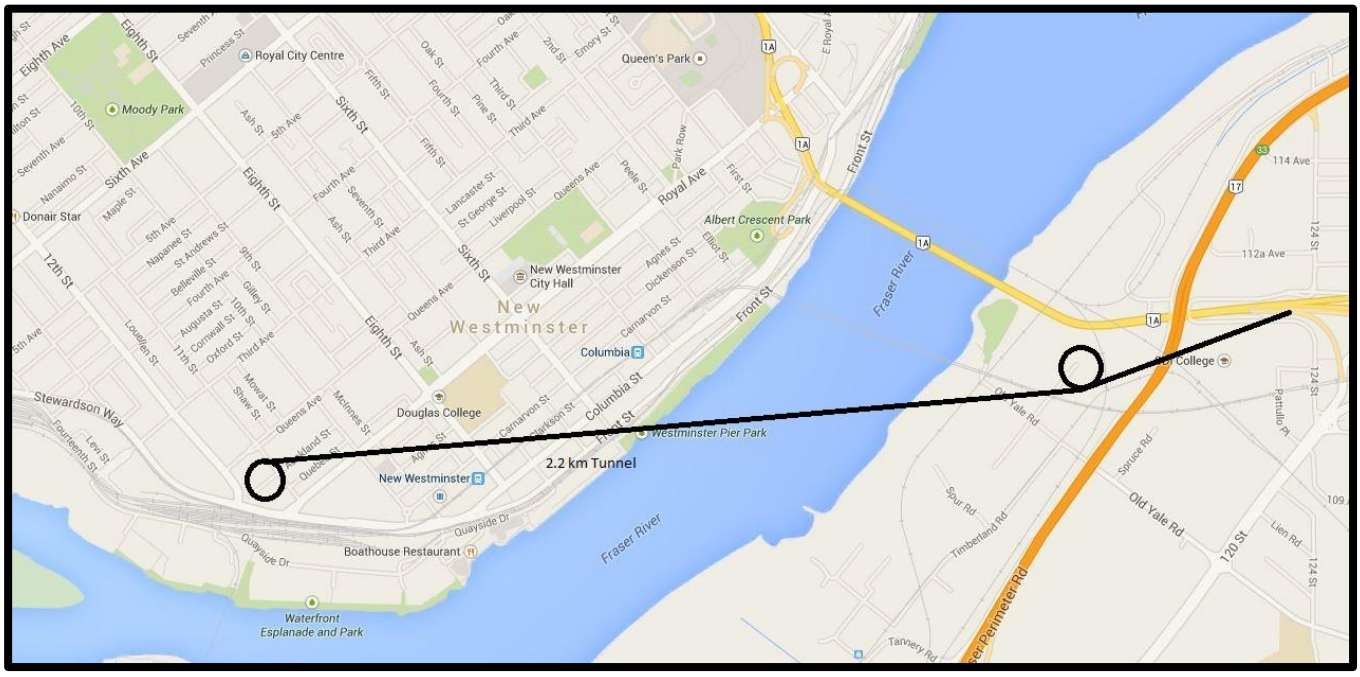
TransLink has come up with six options for what to do with the bridge, including a $300 million upgrade and an option to build a new bridge worth up to $1.5 billion.

source: Backgrounder - A Reasonable Approach: New Westminster's Perspective on the Pattullo Bridge, March 2014



Current truck routes
Source: City of New Westminster

THE FUTURE



Entry points for tunnel:
Surrey: *North of South Perimeter Road, East of Old Yale Road, West of the Pattullo Bridge approach*
New Westminster: *at 12th Avenue and Stewardson Way*

A BETTER, MORE STREAMLINED ROUTE

- The proposed route uses terminus points that are stationed at under-utilized properties zoned for light industry. Both terminus points have ample opportunity to be developed an add value to their respective cities.
- This proposed route takes advantage of the similar grade elevations of both terminus points adjacent to the Fraser River and the minimal impact to surrounding neighbourhoods.
- This route maximizes safety by providing a straight route from point a to point b providing easy access to heavy truck traffic while reducing traffic in surrounding residential neighbourhoods.
- This proposed tunnel has a length of approximately 2.2km. It is significantly shorter and potentially less expensive than the proposed land based tunnel from Surrey to Burnaby.
- This proposed tunnel has minimal negative impact on adjacent cities.
- The terminus point in New Westminster offers an immediate access to local service truck traffic only while directing traffic destined for other municipalities out of New Westminster without entering the residential areas.

USE OF EXISTING INFRASTRUCTURE

- Truck traffic designated for the Tri-Cities has ample opportunity to enter the city via the Port Mann bridge and the Lougheed Hwy and Brunette Ave exits. With the extended travel time required to use the tunnel to re-route back to the Tri-Cities, the incentive for heavy truck traffic to use the Port Mann Bridge and Highway 1 increases, thus reducing the burden on the residential areas of New Westminster.

BENEFITS AND INTEGRATED SYNERGIES

- The terminus point in New Westminster at the intersection of Stewardson Way and 12th Street offers a unique opportunity to combine a traffic infrastructure project with a significant community building that would provide an opportunity to grow the downtown entertainment and business district beyond Columbia Square with continuity of art and culture built at the Anvil Centre.

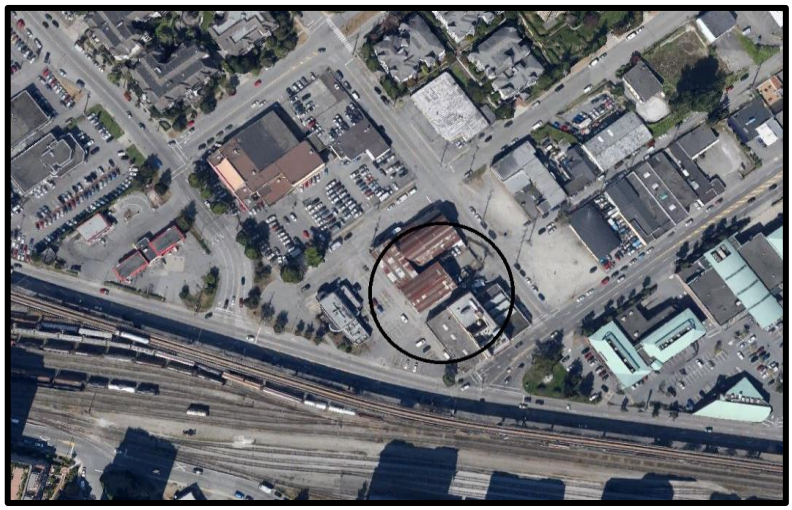
Photo: Larry Wright

- The unique design proposed here utilizes space limiting ideas and innovative traffic logistics to work hand in hand with a dynamic and beneficial mixed-use development that takes advantage of already existing local infrastructure. With the proximity of a significant retail and consumer based centre with restaurants, grocery stores, hardware store, veterinary services and drug store this area is prime for providing all of the community needs for a vibrant mixed-use anchor to the downtown core. Extending the vibrancy from the newly opened Anvil Centre.

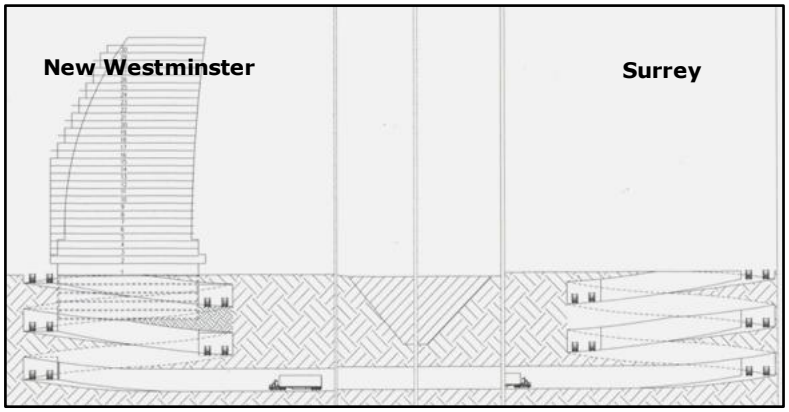
The unique design proposed here utilizes space limiting ideas and innovative traffic logistics to work hand in hand with a dynamic and beneficial mixed-use development that takes advantage of already existing local infrastructure.

With the proximity of a significant retail and consumer based centre with restaurants, grocery stores, hardware store, veterinary services and drug store this area is prime for providing all of the community needs for a vibrant mixed-use anchor to the downtown entertainment and business district extending the vibrancy from the newly opened Anvil Centre.

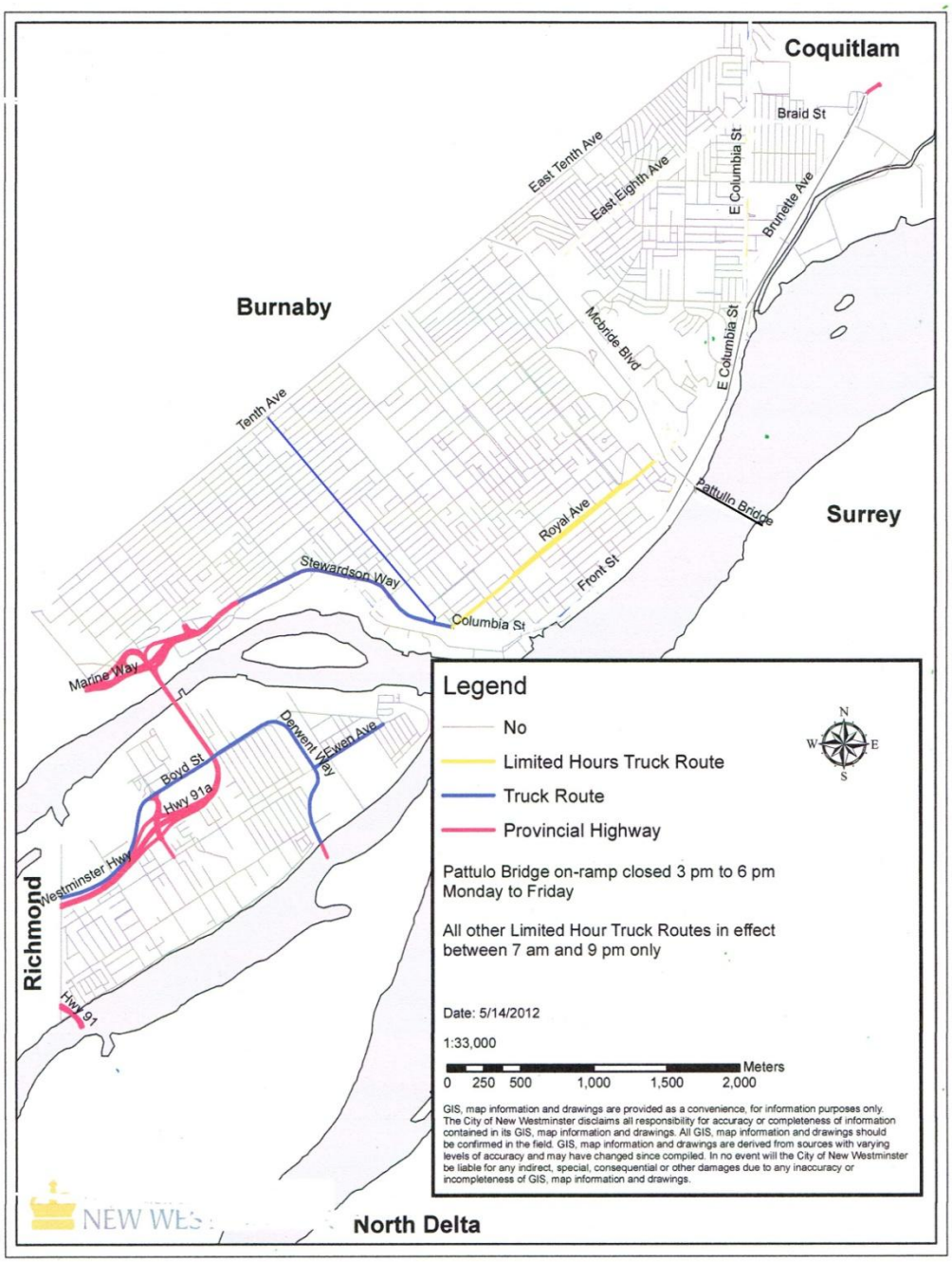
Surrey Terminus



New Westminster Terminus



Section through both terminus points



Potential future truck routes with tunnel in place
Source: City of New Westminster Edited by Robert Billard for Billard Architecture

THE BENEFITS

The proposed tunnel and development in New Westminster works with existing community desires and issues needing resolutions.

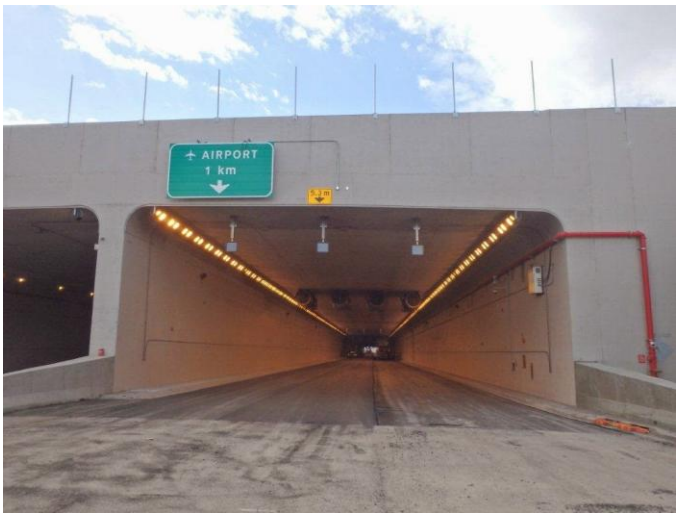
1. Reduce truck traffic in New Westminster without imposing Burnaby with the burden of added traffic in residential areas.

2. Revitalize the south end of 12th Street and continue to build on New Westminster as a destination for arts and culture.

3. Replace the Massey Theatre and separate this project from the redevelopment of New Westminster Secondary School allowing for more space and opportunity to grow the community space on the current theatre land.

Communities in the western world are leaders for redirecting traffic underground and improving safety in communities. The opportunity to generate economic return in the tourism industry by promoting the construction of the tunnel is viable and the models can be used from cities like Seattle and Calgary that have achieved these goals before us.

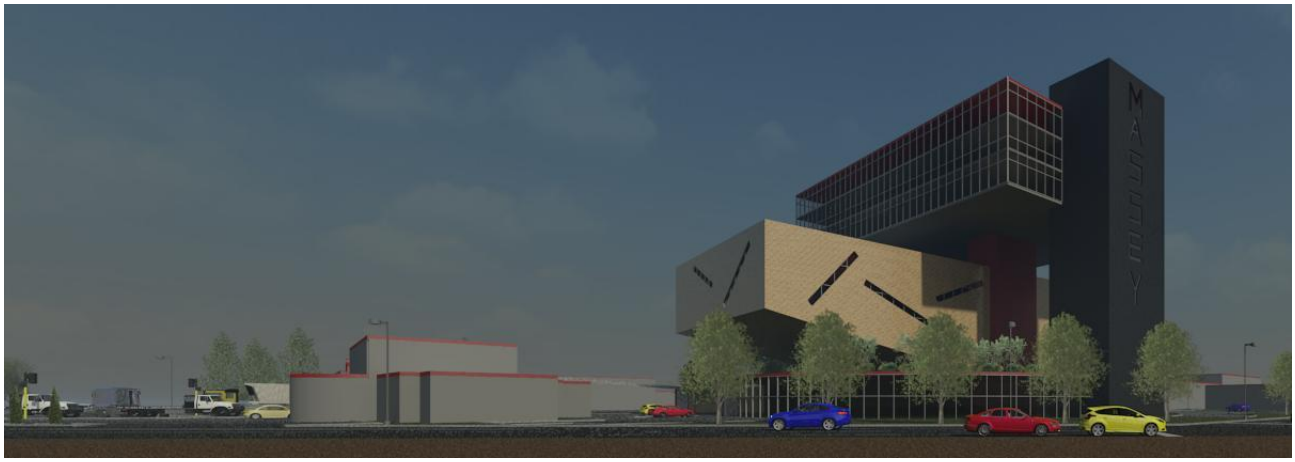
Tunnel boring machine used on Alaksan Way Viaduct
Source: Washington State Department of Transportation



Calgary Airport Tunnel
Source: Calgary City News, May 21, 2014

THE FRASER RIVER TUNNEL

- Greatly reduces the number of inter-municipal 'through' trucks from Surrey, Coquitlam, Burnaby and Vancouver without adding stress to Burnaby
- Significantly reduces congestion at McBride, Royal Ave, Eighth Street, Braid Street, 10th Street, Front Street, Columbia Street, and Brunette Ave.
- Direct heavy trucks around residential neighbourhoods rather than through them
- Provides no additional impact on existing infrastructure in neighbouring cities.
- Provides faster and more immediate access to Queensborough and Burnaby via Stewardson Way and Marine Way.
- Provides opportunity to direct light truck traffic along 12th Street to Kingsway without negatively impacting business and residential along central and north 12th Street.
- Provides immediate and central access to local business by local delivery trucks within New Westminster.
- Creates a revitalized area at the base of 12th Street that maximizes the present establishment of significant commercial amenities.
- Alleviates heavy truck traffic on the Pattulo Bridge, thus extending its life span
- Creates a tourism opportunity during development (see: Seattle promotion of current viaduct project underway)
- Re-directs heavy truck traffic to the Port Mann bridge increasing toll revenue for TransLink
- Reduces the need to divert traffic and negatively impact the Alex Fraser, Queensborough Bridges



THE MASSEY THEATRE

Locating the Massey Theatre as the foundation of the new development would:

- Place it closer to the residential density along Stewardson Way and downtown making it a bigger destination for performances and events
- Locate it closer to the SkyTrain increasing the ability for residents of other municipalities to use the facility
- Be a dynamic signature and calling card to the entry into the downtown arts and entertainment district.
- Spur the growth of New Westminster's arts and culture community and reputation.
- Situate the theatre close to related amenities such as restaurants, pubs and retail outlets thereby increasing the opportunity for people to be drawn into New Westminster and generate business for local entrepreneurs
- Using the Tunnel design's circular ramp proposal would allow for extensive underground parking with would then alleviate issues of parking for a significant theatre and possible associated line/work artist residences and galleries.

THE PATTULLO BRIDGE

There may come a time when the replacement of the Pattullo Bridge is needed. That being said, there are bridges in use throughout Europe that are in excess of 300 years old. The point that seems to be missing in current discussion is *are we proposing the right kind of bridge to replace the Pattullo and is now the right time?*

TransLink proposed a variety of major divided arterials designed for highway speeds to become major heavy truck routes culminating in an influx of traffic into New Westminster without a solution as to how to manage that influx effectively and without negative implications to New Westminster.

4 Lanes vs. 6 Lanes
The City of Surrey has indicated a preference to expand the Pattullo bridge to 6 lanes. The City of New Westminster prefers for it to be 4 lanes. However, simply adding lanes to a bridge crossing the Fraser River does not solve the internal congestion resulting within New Westminster. The attempt to satisfy the diverse set of objectives with a single solution like the ones which were proposed resulted in too many compromises (poor truck solution, overly disruptive to existing communities, poor freeway inter-connect route, highly disruptive of natural greenspace, etc).

"The current alternatives had echoes of 60's style planning that prioritized automobile commuting by building major arterial roads over making cities more livable spaces for people by encouraging more environmentally friendly travel modes such as public transit and cycling. There is an increasing body of evidence that cities are better served by more moderate scale road projects (or even reducing roadway capacity) and focusing primarily on making cities more livable places. The recent inter-provincial crossings project was diametrically opposed to this view.

A downtown bypass tunnel alternative puts the human element back into the planning conversation, providing the only real solution to the region's inter-provincial truck challenges while still also bringing incremental benefits to the driving public without introducing significant additional disruption to existing eastern communities or encouraging further urban sprawl."

Source: The Ottawa Sustainable Solutions/Solutions Durables

TUNNEL VS. BRIDGE

A Case Study: Ottawa

The Ottawa Sustainable Solutions/Solutions Durables website (http://www.ssd-ottawa.ca) was created to provide a logical and sustainable solution to Ottawa's truck traffic problem. After several years, with support for the SSD from communities in Ottawa, the city and province and the federal government have begun a large study into the viability of constructing a truck tunnel.

"In Canada we do not have much experience with tunnels and they can be perceived as highly expensive or impractical projects. However in other parts of the world tunnels are much more common. Some research will reveal in fact recent examples where road tunnels are being built to solve problems very similar to the truck problems in Ottawa-Gatineau.

"In the City of Miami, trucks bound for the port travel through downtown streets. Construction was started on a tunnel in 2010 that will connect the port to the nearest expressway eliminating all trucks from the downtown. The city of Dublin Ireland also had the same issue of trucks travelling through the downtown to reach the port. Dublin finished its downtown bypass tunnel in 2006. Seattle too started in 2012 a downtown tunnel that will carry trucks to/from its port.

"These as well as several other recent examples of road tunnels are summarized in the table below. The intent of providing this information here is to demonstrate that there are numerous contemporary examples where cities have taken the step of undertaking tunnels similar to the kind of tunnel being proposed here."

Source: http://www.ssd-ottawa.ca/tunnel-alternatives/m-c-bridge-access-tunnel

A Look at Calgary

In February 2011, Calgary City Council approved moving forward on the project to construct the Airport Trail tunnel for a number of reasons including:
• The City can build the tunnel in conjunction with the Calgary Airport Authority runway development project, resulting in long term cost saving.
• Accommodates the planned and approved growth in the northeast, both residential and industrial/commercial.
• Assists with the future expansion of the airport by accommodating an alternate route to/from the airport.
• Provides for the best combined access to the airport terminal.

Timeline: 3 years, 3 months from approval to opening the tunnel
Budget: $294.8 million

Source: City of Calgary http://www.calgary.ca/Transportation/TI/Pages/Road-projects/Airport-Trail-Tunnel.aspx

More Innovative Tunnel Solutions to Traffic Problems

- Dublin_Port_Tunnel http://en.wikipedia.org/wiki/Dublin_Port_Tunnel#Purpose
- Port_of_Miami_Tunnel http://www.portofmiamitunnel.com/
  and associated video presentation: Miami Tunnel on YouTube
  https://www.youtube.com/watch?v=Q_ROOwKkzik
- Auckland_Bridge_Access_Tunnel http://en.wikipedia.org/wiki/Victoria_Park_Viaduct
- Brisbane_Downtown_Bypass Tunnel http://en.wikipedia.org/wiki/Clem_Jones_Tunnel
- Calgary Airport Runway Bypass Tunnel
  http://www.calgary.ca/_layouts/cocis/DirectDownload.aspx?target=http%3a%2f%2fwww.calgary.ca%2fTransportation%2fTI%2fDocuments%2fRoad-projects%2fAirport-Tunnel-FAQ-April2012.pdf&noredirect=1
- City of Seattle downtown viaduct replacement Tunnel

Signing part of the SR99 Tunnel
Source: Washington State Department of Transportation

COST

Upon review of similar projects such as the Seattle viaduct project and the recent Vancouver Canada Line project, it is estimated that a 2.2km tunnel excavation could cost approximately $600 million. This estimate does not include soft costs such as land acquisition, design fees, studies, and boring equipment.

This cost is significantly less than the proposed $1.2 Billion price tag for the replacement of the Pattullo Bridge that did not also include the soft costs and does not offer the development benefits to the community.

In addition, the inclusion of the new Massey Theatre Centre to the project provides synergies between the development of the arts centre with the intrinsic costs of the tunnel project with the inclusion of moneys already ear-marked for the new Massey Theatre as well as possible corporate and government sponsorship.

WHY DOES AN ARCHITECTURE FIRM CARE?

Based in New Westminster, Billard Architecture not only calls this a place to do business, but home. We live and experience the traffic and the community on a daily basis. We want to see our community flourish.

Looking at traffic as a way to build a community rather than just move vehicles, Robert Billard, Architect AIBC, LEED AP saw a potential to create a better environment through innovative development that tackled multiple community issues in one project: alleviate space constraints for the high school, elevate our position as a destination for thriving arts and culture and develop a cost-effective way of diverting heavy traffic from our streets and reduce congestion.

An Architect's role is to envision the best possible space and solve problems for clients using the built environment. That's exactly how Robert sees this proposal.