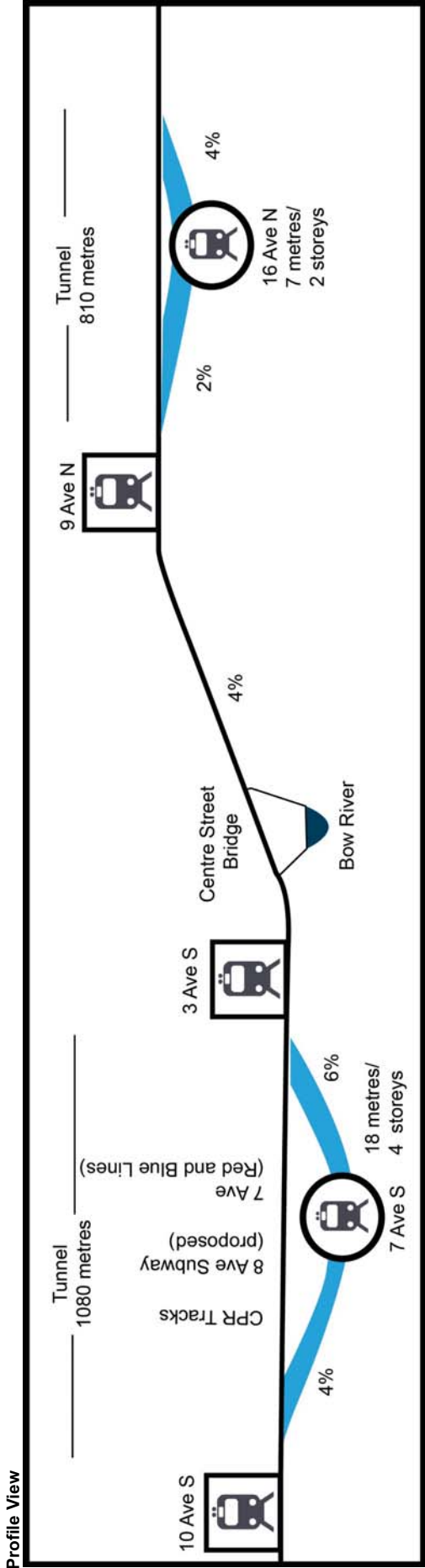




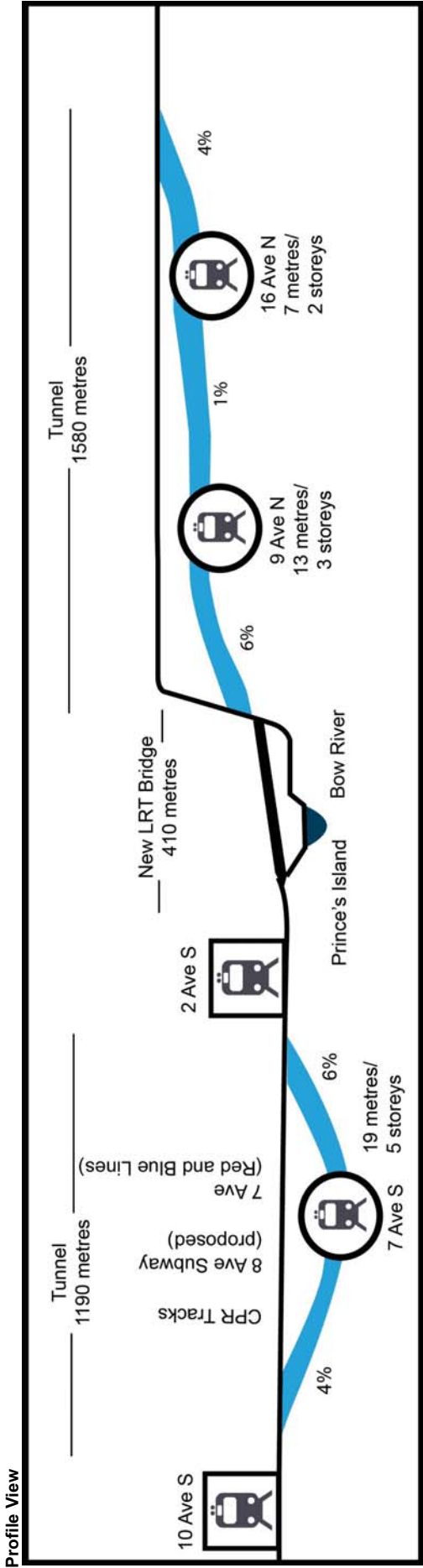
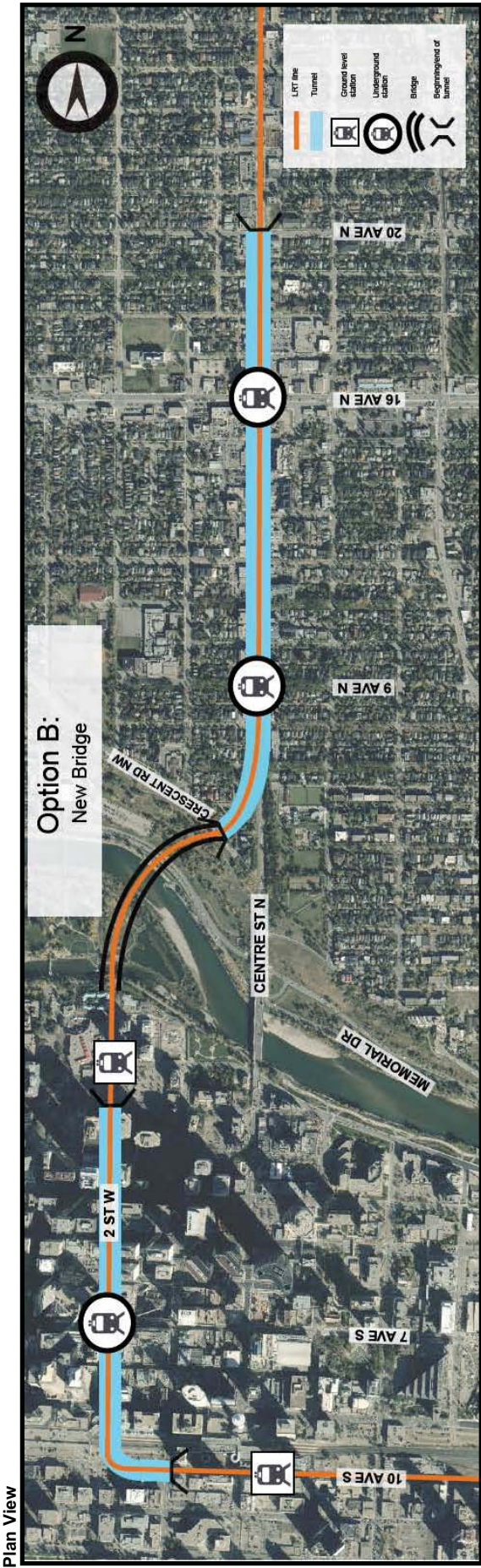
Advantages: Option A – Existing Centre Street Bridge

- Lowest cost option (approximately \$600 million for the segment of the route between 10 Avenue South and 24 Avenue North)
- At-grade station provided on Centre Street at 9 Avenue North (Crescent Heights), and on 3 Avenue at 1 Street Southwest (Chinatown/Eau Claire)
- At-grade stations are easier to access than above or below ground stations
- Route is easy to understand for customers because it is highly visible
- Utilizes existing infrastructure (Centre Street bridge)
- Low environmental impact
- Relatively short tunnels
- Likely to have lowest operations and maintenance costs due to at-grade alignment, shorter tunnel sections

Disadvantages: Option A – Existing Centre Street Bridge

- Slowest travel time of the four options due to sharp corners. Estimated travel time from 10 Avenue South to northern terminus at North Pointe (Country Hills Boulevard): 33-35 minutes
- Higher risk of service disruptions due to conflicts with people in vehicles/people walking
- Impact to traffic and LRT operations at intersection of Centre Street and 3 Avenue S
- Impact to traffic operations on Centre Street, south of 16 Avenue North, due to single traffic lane in each direction
- Removal of on-street parking on Centre Street, south of 16 Avenue North
- Creates narrow traffic lane on Centre Street bridge
- Noise from LRT running in-street, and sharp corners
- Sharp corners can limit the types of light rail vehicles (LRVs) that can be used, and can increase maintenance costs due to wheel and track wear

North Central LRT Centre City Options

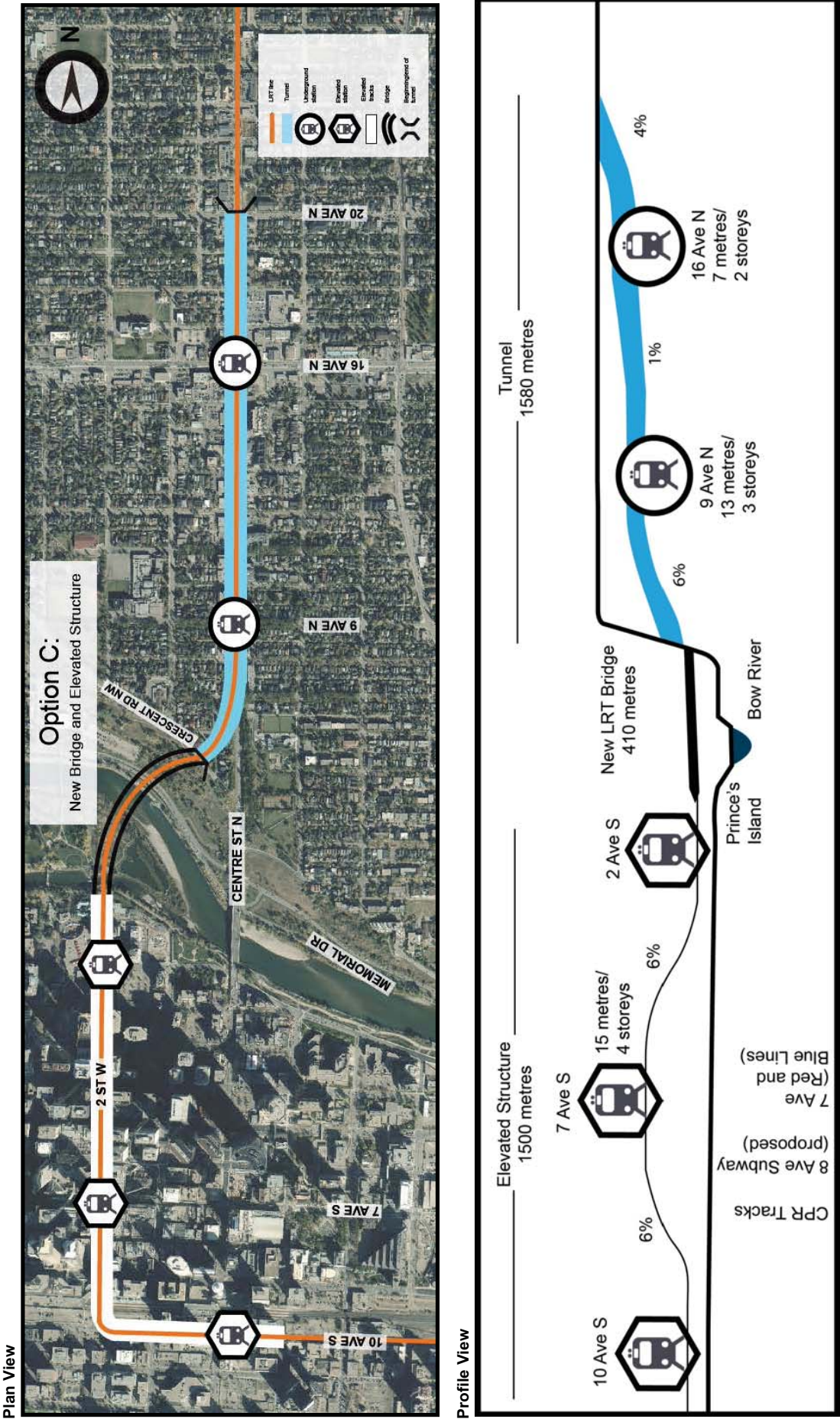


Advantages: Option B – New Bridge West of the Centre Street Bridge

- Mid-cost option when compared to Options A and D (approximately \$800 million for the segment of the route between 10 Avenue South and 24 Avenue North)
- Shallow station can be provided at Centre Street and 9 Avenue North (Crescent Heights)
- Improved travel time compared to Option A
- No impact to existing Centre Street bridge
- Maintains existing traffic capacity on Centre Street, south of 16 Avenue North
- Reduced risk of service disruptions due to conflicts with people walking, compared to Option A. Eliminates at-grade vehicle crossings.
- New bridge can provide connectivity for pedestrians and cyclists

Disadvantages: Option B – New Bridge West of the Centre Street Bridge

- Requires new bridge over the Bow River
- Environmental impacts to Prince's Island Park, and escarpment on north side of the river (McHugh Bluff)
- Requires further investigation of impact to Bow River Pathway, and existing accesses to condominiums in Eau Claire
- At-grade segment on 2 Street Southwest (Eau Claire) not previously identified in functional plans (Southeast LRT functional plan shows an underground alignment on 2 Street Southwest)
- Likely requires closure of 2, 3, and Riverfront Avenues at 2 Street SW to accommodate station and tunnel entrance



Advantages: Option C – New Bridge West of the Centre Street Bridge and Remaining Elevated Through the Centre City

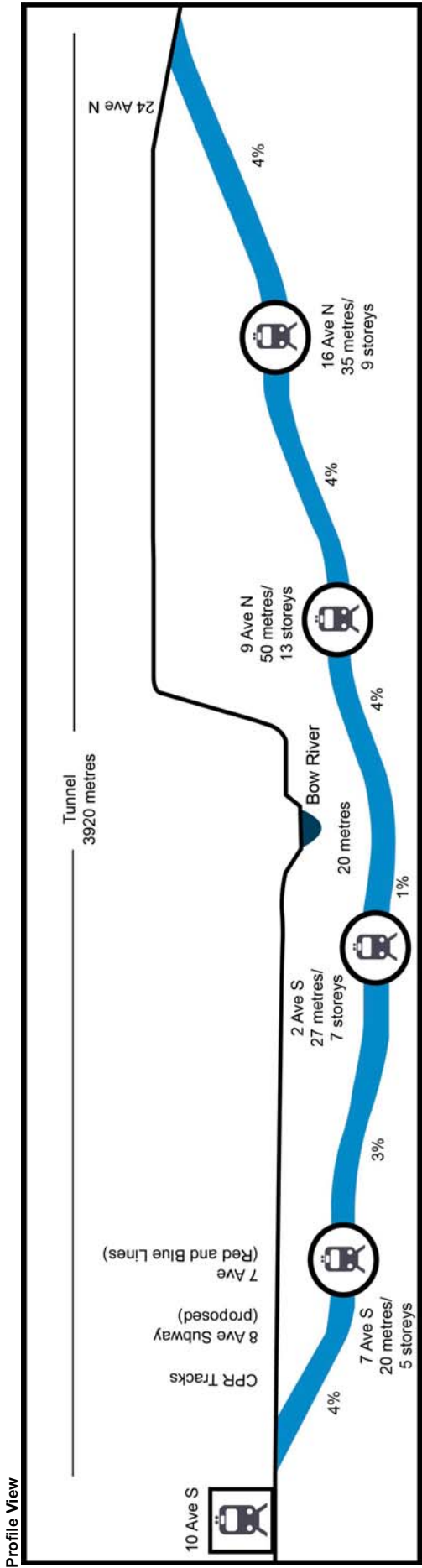
- Mid-cost option when compared to Options A and D (approximately \$800 million for the segment of the route between 10 Avenue South and 24 Avenue North)
- Elevated structure is more resistant to overland and underground flooding
- Shallow station can be provided at Centre Street and 9 Avenue North (Crescent Heights)
- Improved travel time compared to Option A
- No impact to existing Centre Street bridge
- Reduced risk of service disruptions due to conflicts with people walking, compared to Option A and B. Eliminates at-grade pedestrian and vehicle crossings.
- Maintains existing traffic capacity on Centre Street, south of 16 Avenue North
- Maintains existing traffic capacity on Centre City streets
- New bridge can provide connectivity for pedestrians and cyclists

Disadvantages: Option C – New Bridge West of the Centre Street Bridge and Remaining Elevated Through the Centre City

- Access to elevated stations requires additional infrastructure (elevators, escalators) compared to at-grade stations
- Elevated stations are more exposed to the weather compared to underground stations
- Negative impact to the street under elevated structure
- Elevated structure and stations are 15 metres high to clear +15/+30 bridges, CPR tracks – similar height, and station size as Sunalta Station
- Conflicts with six existing +15/+30 bridges (see image at right) and one proposed structure at City Centre Parkade
- Elevated structure passes adjacent to residential condominium towers in Eau Claire, and commercial office buildings
- Would be difficult to integrate stations/elevated structure with existing buildings (can likely be done in the long term)
- Connections from elevated stations to future 8 Avenue underground stations can be difficult due to distance/elevation
- Noise from light rail vehicles on elevated structure



North Central LRT Centre City Options



Advantages: Option D – Tunnel from 24 Avenue North to 10 Avenue South

- Fastest travel time of all three options. Estimated travel time from 10 Avenue South to northern terminus at North Pointe (Country Hills Boulevard): 28-30 minutes
- Does not impact traffic capacity on Centre Street, south of 16 Avenue North, or on Centre City streets
- Reduced risk of service disruptions due to collisions, compared to Option A, B, and C. Eliminates at-grade pedestrian and vehicle crossings
- Minimal environmental impact
- Underground stations provide protection from the elements for waiting customers
- Underground station at 7 Avenue South provides good connection to existing LRT service on 7 Avenue, and future 8 Avenue subway
- Received strong community support during public engagement

Disadvantages: Option D – Tunnel from 24 Avenue North to 10 Avenue South

- Highest construction cost of all three options (approximately \$1.3 billion for the segment of the route between 10 Avenue South and 24 Avenue North)
- Station on Centre Street at 9 Avenue North may not be built due to depth (50 metres/13 storeys), and ongoing operating costs to move passengers to/from track level to surface with elevators/escalators
- Station on Centre Street at 16 Avenue North is 35 metres/9 storeys deep, and station on 2 Street at 2 Avenue South is 27 metres/7 storeys deep
- 2013 flood has highlighted vulnerability of public and private infrastructure in the Centre City

Summary of Construction Cost Estimates (Four Centre City Options)

	Construction Cost Estimate for Centre City Segment (10 Ave S to 24 Ave N)	Construction Cost Estimate for Full Project (10 Ave S to North Pointe)	Additional Cost Compared to Option A (existing Centre Street bridge)	Travel Time Estimate (10 Ave S to North Pointe)	Travel Time Savings Compared to Option A
Option A: use the existing Centre Street bridge	\$600 Million	\$1.1 Billion	N/A	33-35 minutes	N/A
Option B: new bridge west of Centre Street bridge	\$800 Million	\$1.3 Billion	\$200 million	30-32 minutes	1-5 minutes
Option C: new bridge west of Centre Street bridge, remain elevated	\$800 Million	\$1.3 Billion	\$200 million	30-32 minutes	1-5 minutes
Option D: tunnel from 24 Ave N to 10 Ave S	\$1.3 Billion	\$1.8 Billion	\$700 million	28-30 minutes	3-7 minutes

Note: Construction costs and travel times for recommended options will be refined during the functional planning study