



Ministry of
Transportation
and Infrastructure

Trans Canada Highway 1 –
Malahat Corridor Improvements

Goldstream Median Barrier Widening

August 2020



Overview

1. Corridor Background

- Progress to Date
- Detour Opportunities
- Traffic
- Safety
- Collisions
- Closures

2. Constraints

- Goldstream Provincial Park
- A Rock and a Hard Place
- Limited Right of Way
- Finlayson Arm Intersection

3. Design

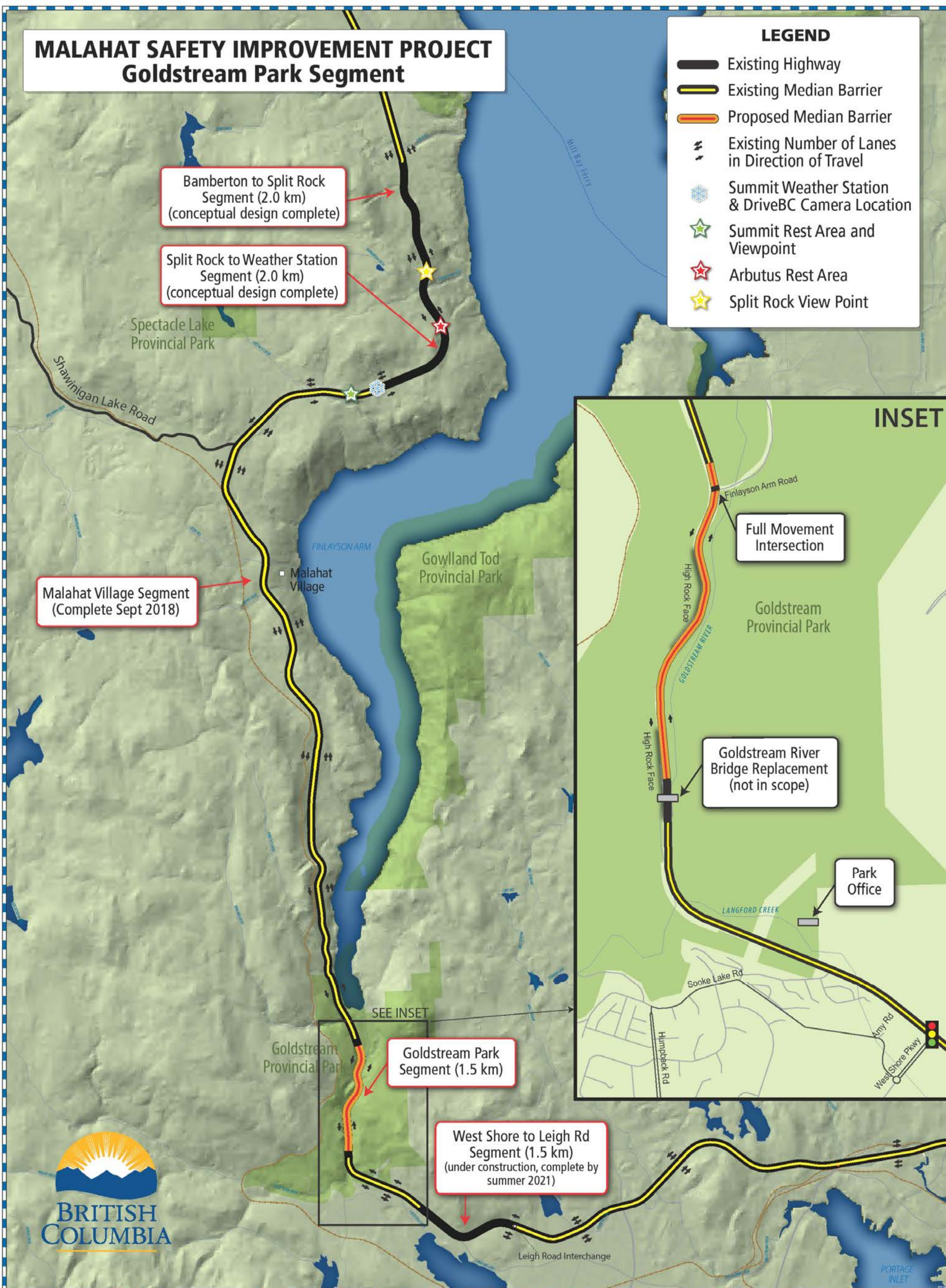
- Cantilevered Roadway
- Retaining Walls
- Enclosed Drainage
- Goldstream River Bridge
- Intersection Improvements
- Park Improvements
- Retention of vegetation

4. Next Steps

- Project Timeline
- Share Your Comments
- Contacts and Links



1. Corridor Background



Progress to Date

- Malahat Summit median division Shawnigan Lk. Rd. to Summit Weather Station completed 2014
- Malahat Village median division and 4-laning Aspen Rd. to Shawnigan Lk Rd completed 2018
- Over 60% of the Malahat corridor is now currently median divided with the following segments remaining;
 1. Goldstream Park (1.5km)
 2. Summit to Split Rock View Point (2km)
 3. Split Rock View Point to Bamerton (2km)
- Goldstream segment engineering investigations started in spring 2019

Detour Opportunities

- Pacific Marine Circle Detour

170 km / 3.5 hrs

- Finlayson Arm Route

11 km / 20 mins.

** non-commercial vehicles only and requires a pilot vehicle during detour*

- Shawnigan Lake Route

19 km / 21 mins.

- Mill Bay Ferry

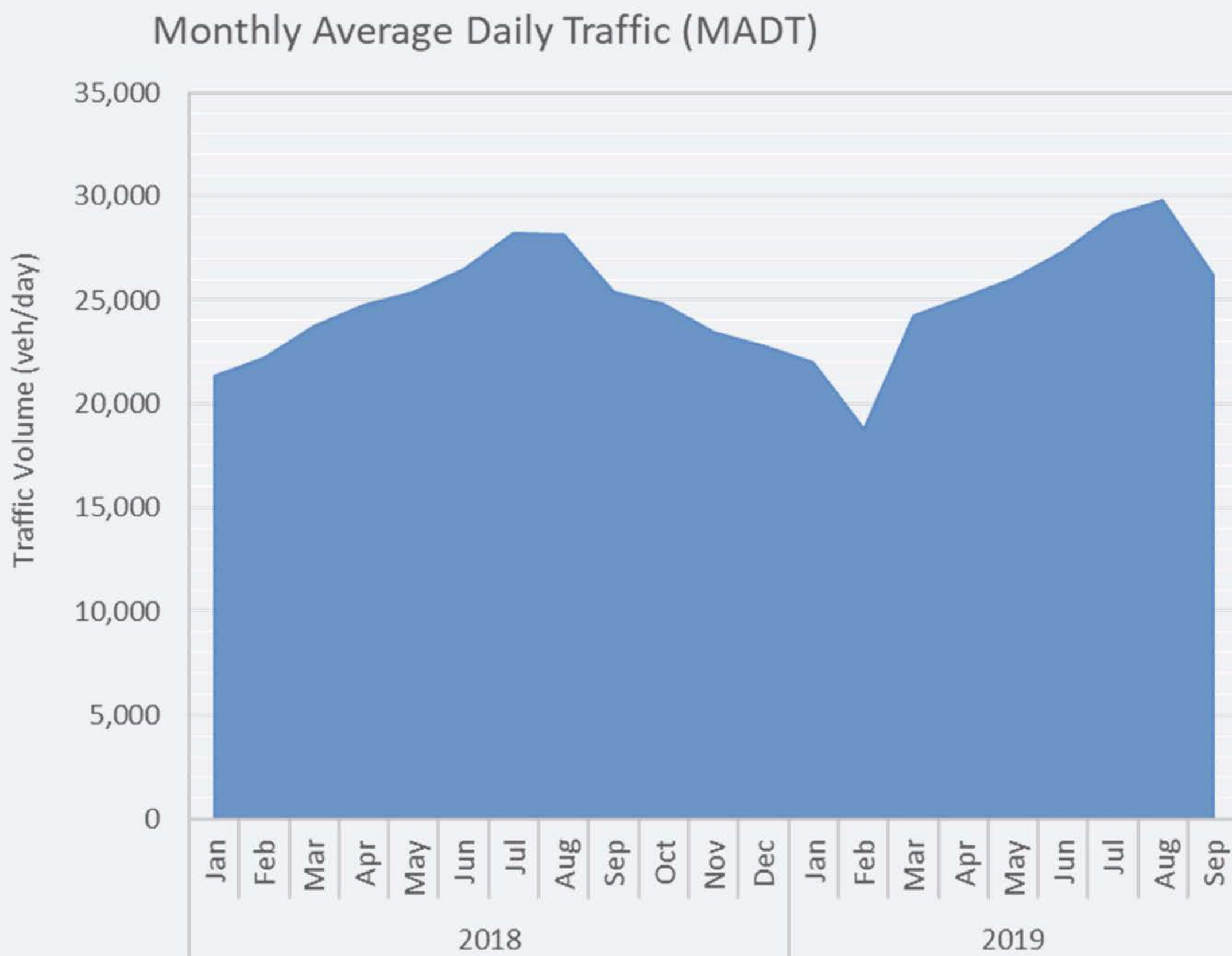
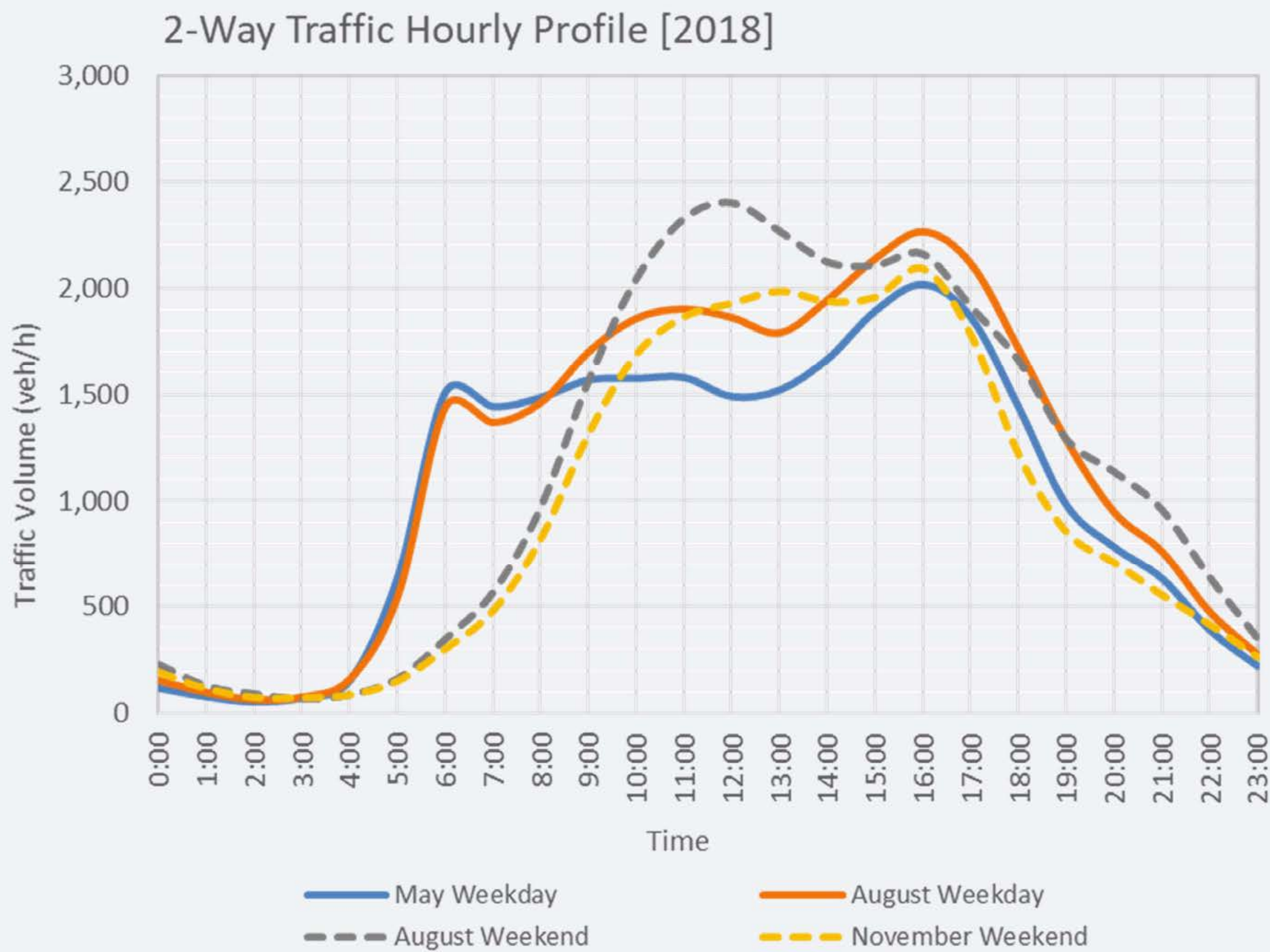
0.5 – 1.5 hrs / capacity 19 vehicles / hr

- Swartz Bay – Salt Spring – Crofton Ferries

42 km / 2.0-3.5 hrs / capacity 30 vehicles / hr

** Note - even BC Ferries largest vessel has limited capacity of 358 vehicles / sailing*





■ Peak hour volumes

	AM	PM
NB	360	1,420
SB	1,370	900

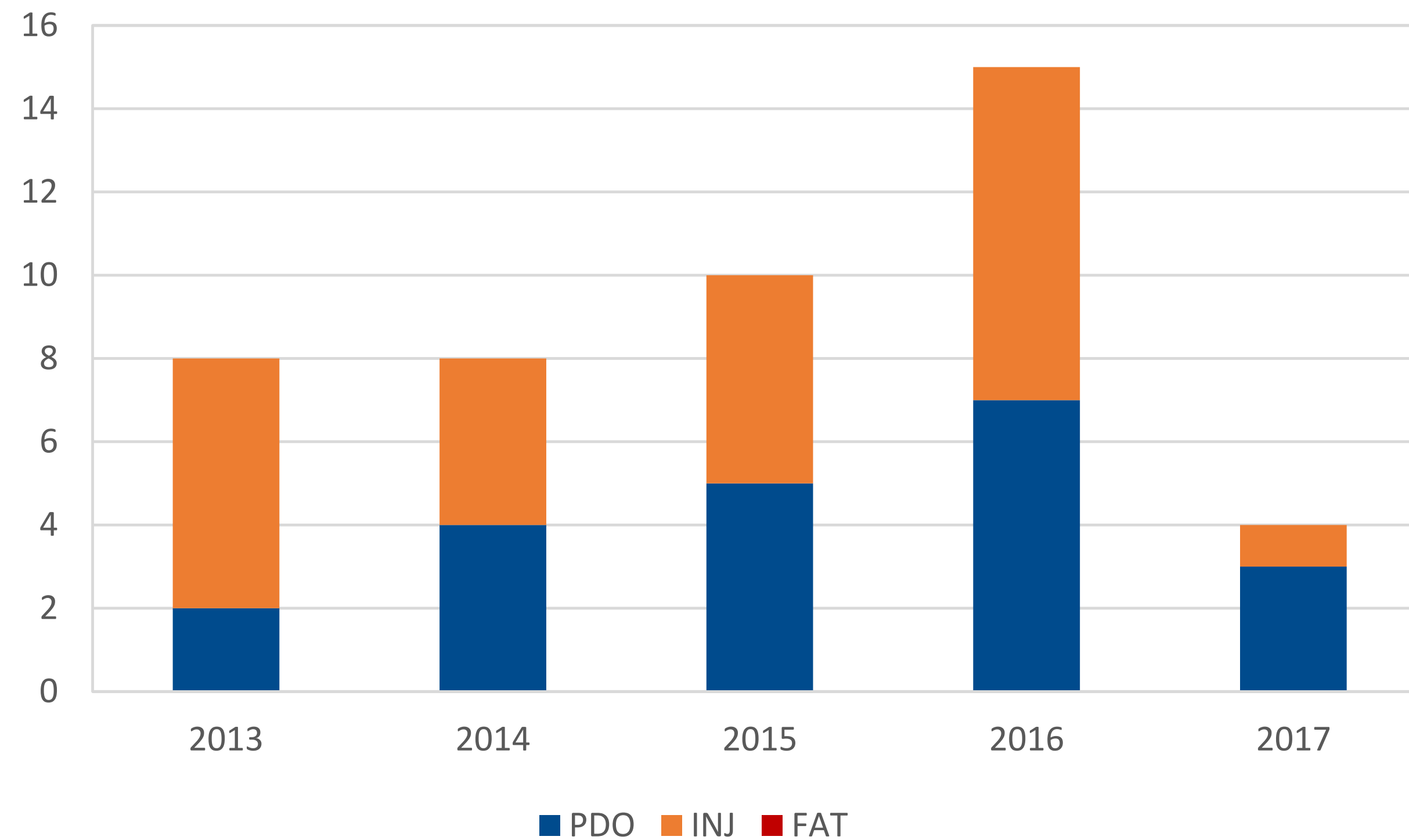
- 2019 Annual Average Daily Traffic (AADT) = 25,300
- 2019 Summer Average Daily Traffic (SADT) = 29,400
- Growth ~1.15% annually
- Goldstream is a vital corridor for the movement of goods and services
- Trucks comprise ~10% of traffic volume, including dump trucks that facilitate ongoing south Island development

Safety

- 45 collisions for the study area in 5 years (2013-2017):
 - 21 Property Damage Only (PDO)
 - 24 Injuries
 - 0 Fatalities
- Collision prone - observed collision rate (0.21 coll/MVK) greater than critical collision rate (0.17 coll/MVK)
- Typical closure durations due to collisions:
 - PDO 0.5 hrs
 - Injury 2 hrs
 - Fatality: 6 hrs



Collisions by Year for Project Segment

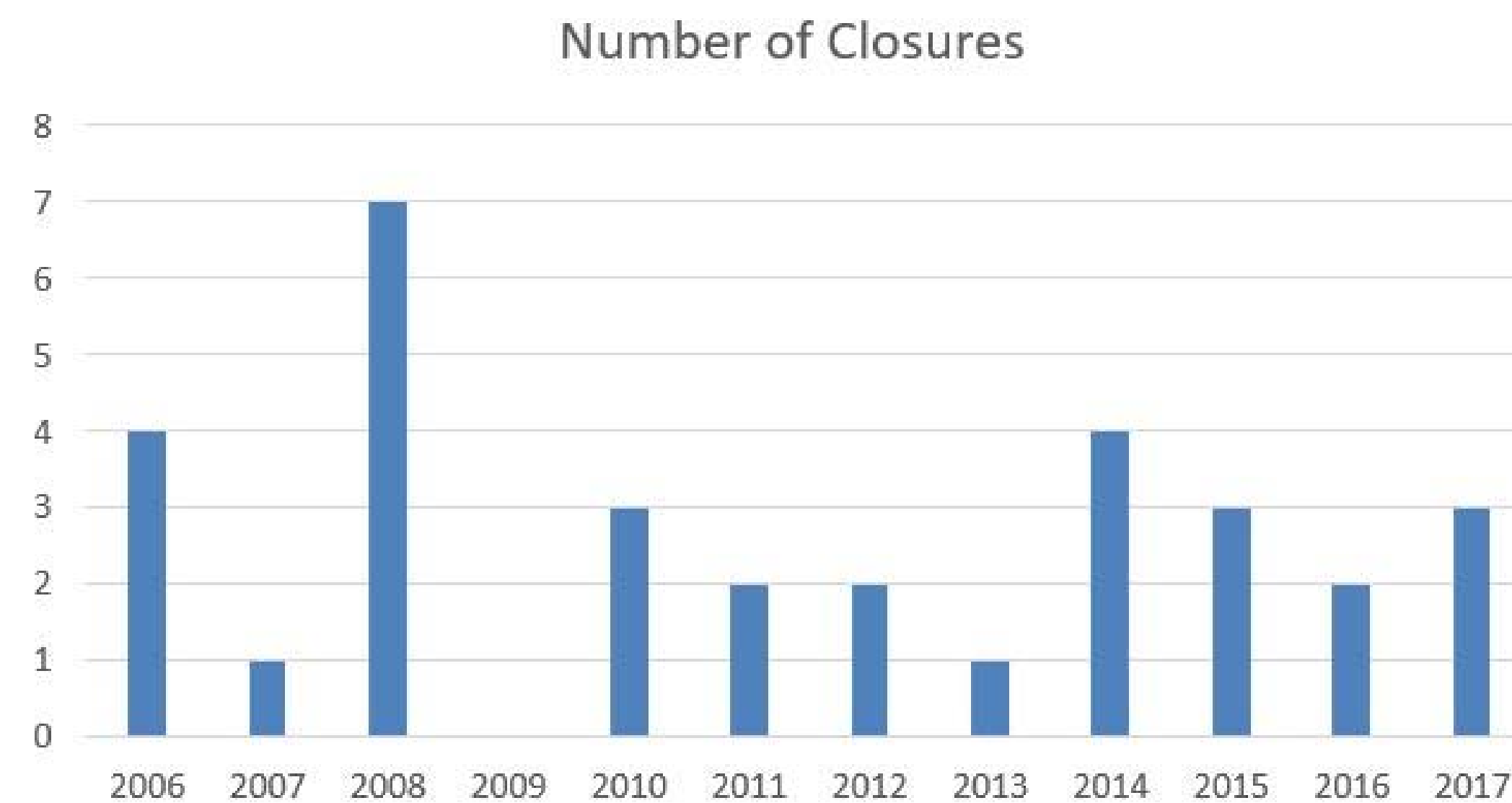
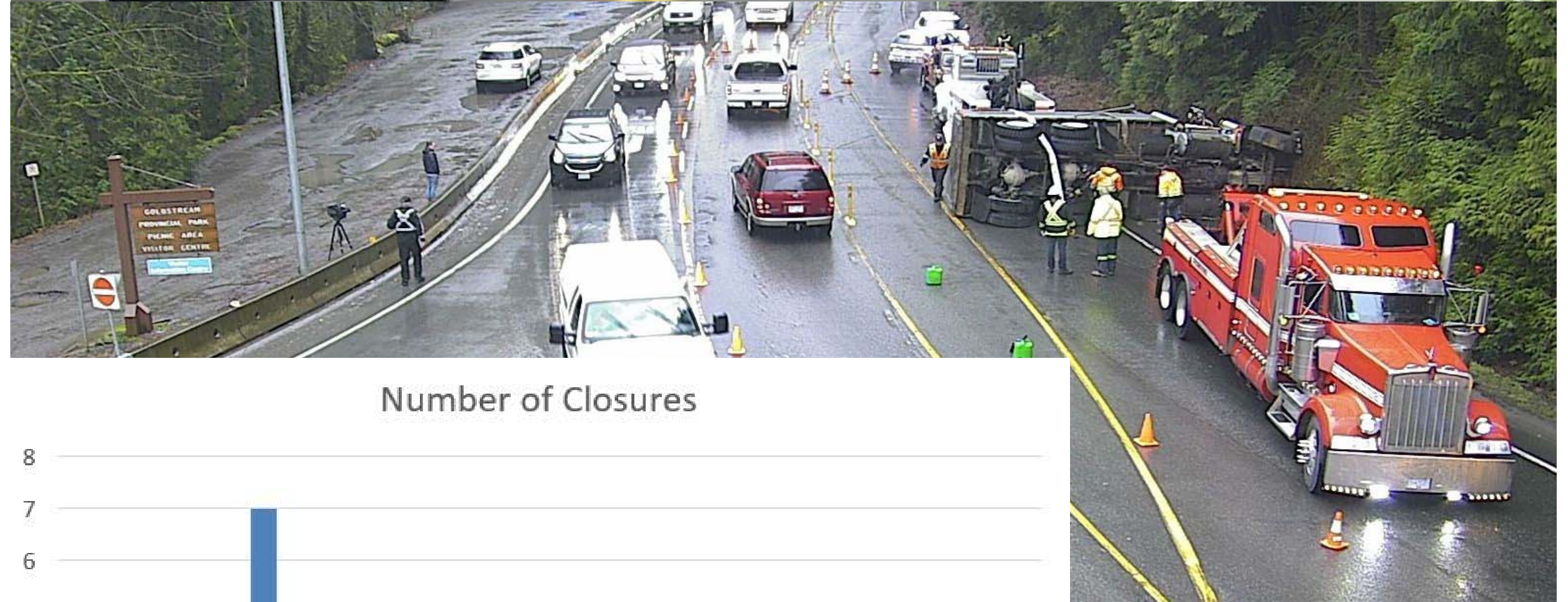


Collisions

- Improvements will reduce collisions:
 - ~10% reduction from shoulder widening
 - Median barrier
 - ~5% reduction in severe (injury + fatal)
 - ~3% increase in PDO (vehicles striking barrier)
- Overall collision reduction = improved reliability through less/shorter closures

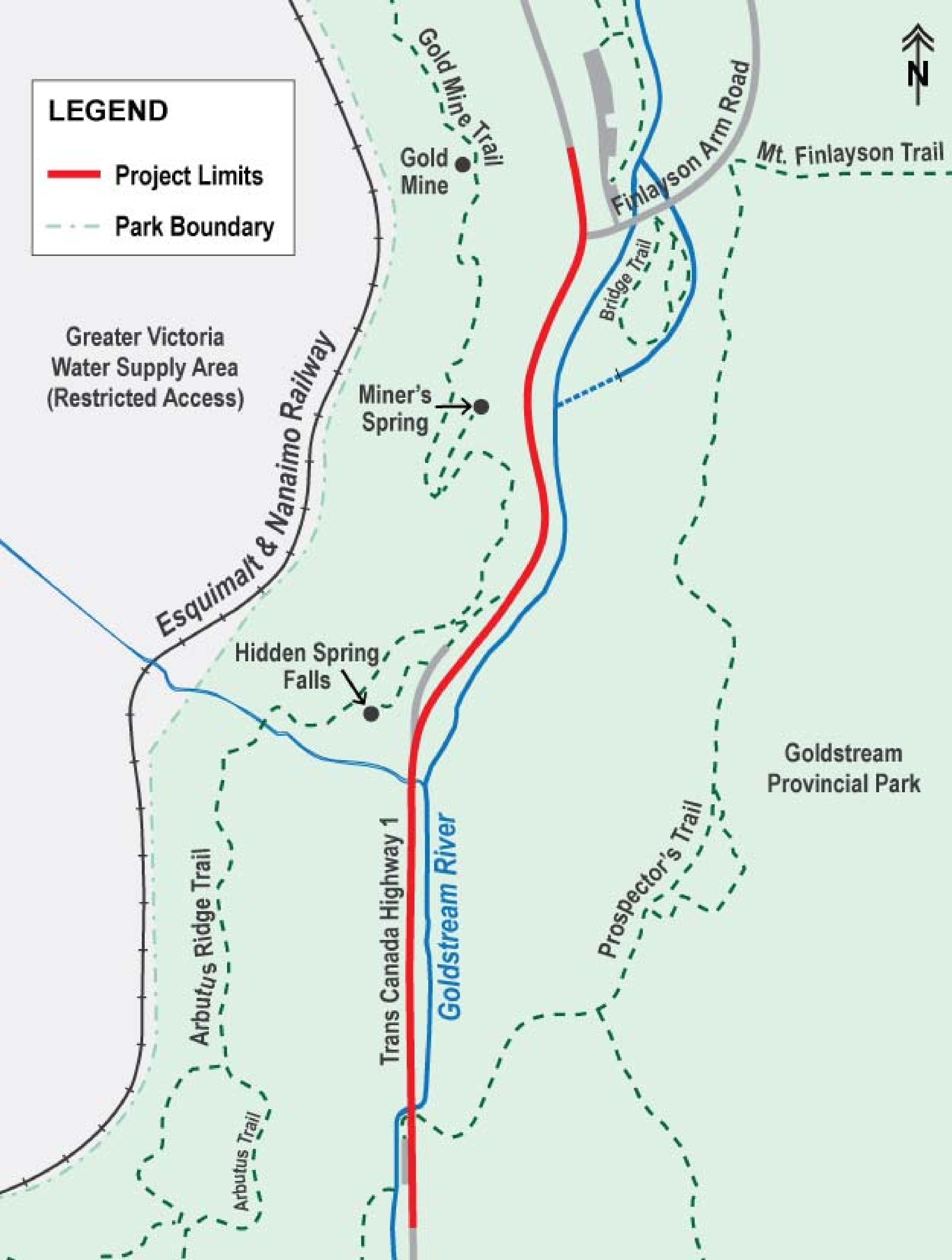
Closures

- 32 DriveBC events within project segment between 2006 and 2017
 - 15 due to collisions
 - 11 due to vehicle incidents/recovery
 - 5 due to maintenance activities
 - 1 police incident
- Average road closure time: 1.5 hrs
- Approximately 2.7 closures / year
- Impacts to critical goods movements, medical appointments and impact to overall provincial economy
- Spill response, containment, and cleanup requirements add to closure durations





2. Constraints



Goldstream Provincial Park

- Park parallels both sides of the highway
- High ecological and environmental values including Goldstream River
- Class A park visited by over 600,000 people each year, with thousands of visitors daily in summer and salmon spawning peaks
- Existing unofficial trail alongside highway – heavily used for salmon viewing
- Trail networks either side of highway are cutoff by highway
- Trail networks promote Active Transportation and public access to nature.

A Rock and a Hard Place

- Existing rock cuts of over 20m height with tops extending into park boundaries.
- Existing drainage infrastructure is limited, with direct outflow into river from highway
- Sensitive habitats and ecosystems, with unique ecological values
- Dry rock-stacked retaining wall currently supporting highway

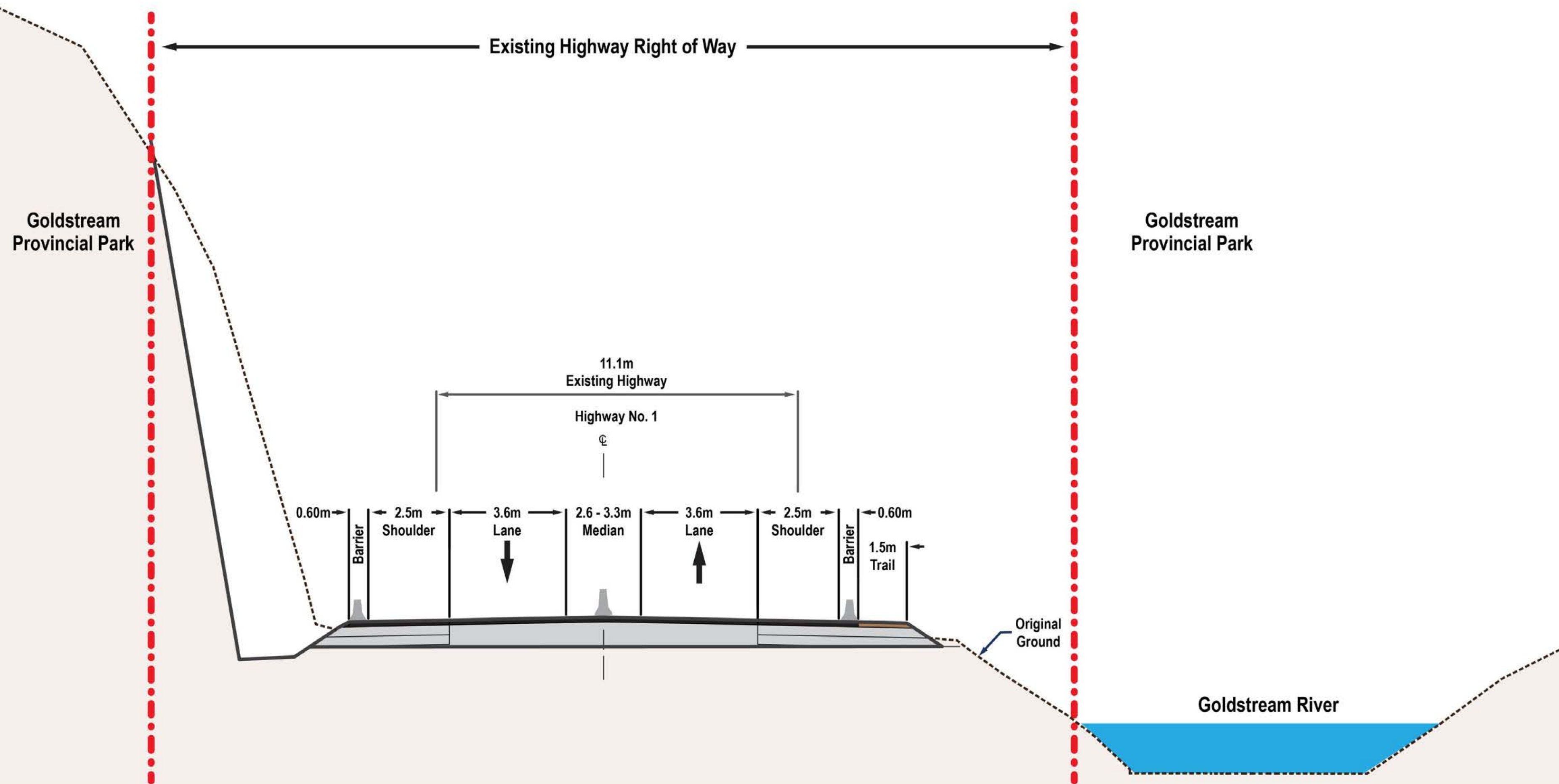


Steep rock



High Fisheries Value
Goldstream River

Limited Right-of-way



- Median division and roadside barrier protection can be achieved within existing right of way
- Additional laning would require encroachment into park with extensive and extremely challenging rock cuts
- Retaining walls upslope and downslope as well as a cantilever bridge structure required to mitigate park boundary encroachments
- Temporary construction access within edge of park required adjacent to Goldstream River bridge to access top of rock cut. Rock cut resides within highway right of way.

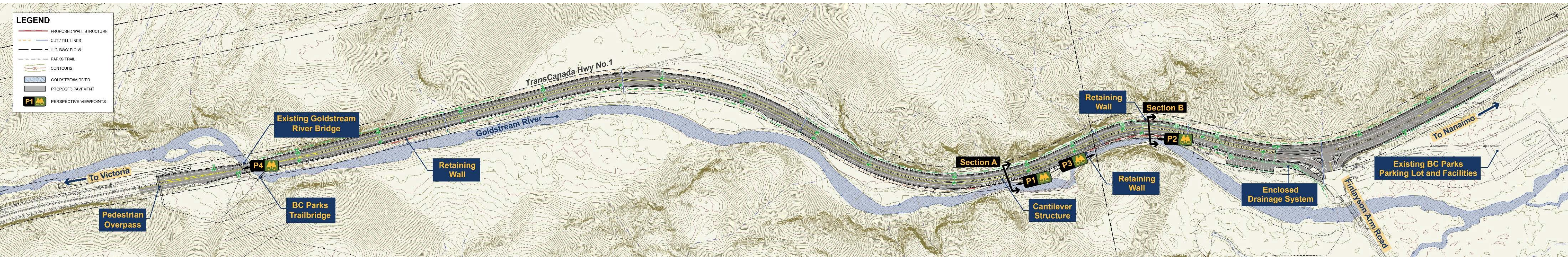
Finlayson Arm Intersection

- Improved deceleration lane and addition of northbound acceleration lane and lighting installed in 2012
- Concrete median barrier currently terminates 220 m north of the intersection, resulting in no or limited crossover protection at the intersection currently.
- Closest U-turn facility alternative to the left out movement onto highway is located at Okotoks Drive to the north (12.2 km roundtrip)



An aerial, high-angle view of a modern, multi-lane concrete bridge spanning a river. The bridge has a yellow center line and white edge lines. Several cars are visible on the bridge, including a silver car in the foreground and a white car further ahead. The bridge is surrounded by a dense forest of tall trees, and the river below is dark and calm. The overall scene is a mix of natural and man-made elements.

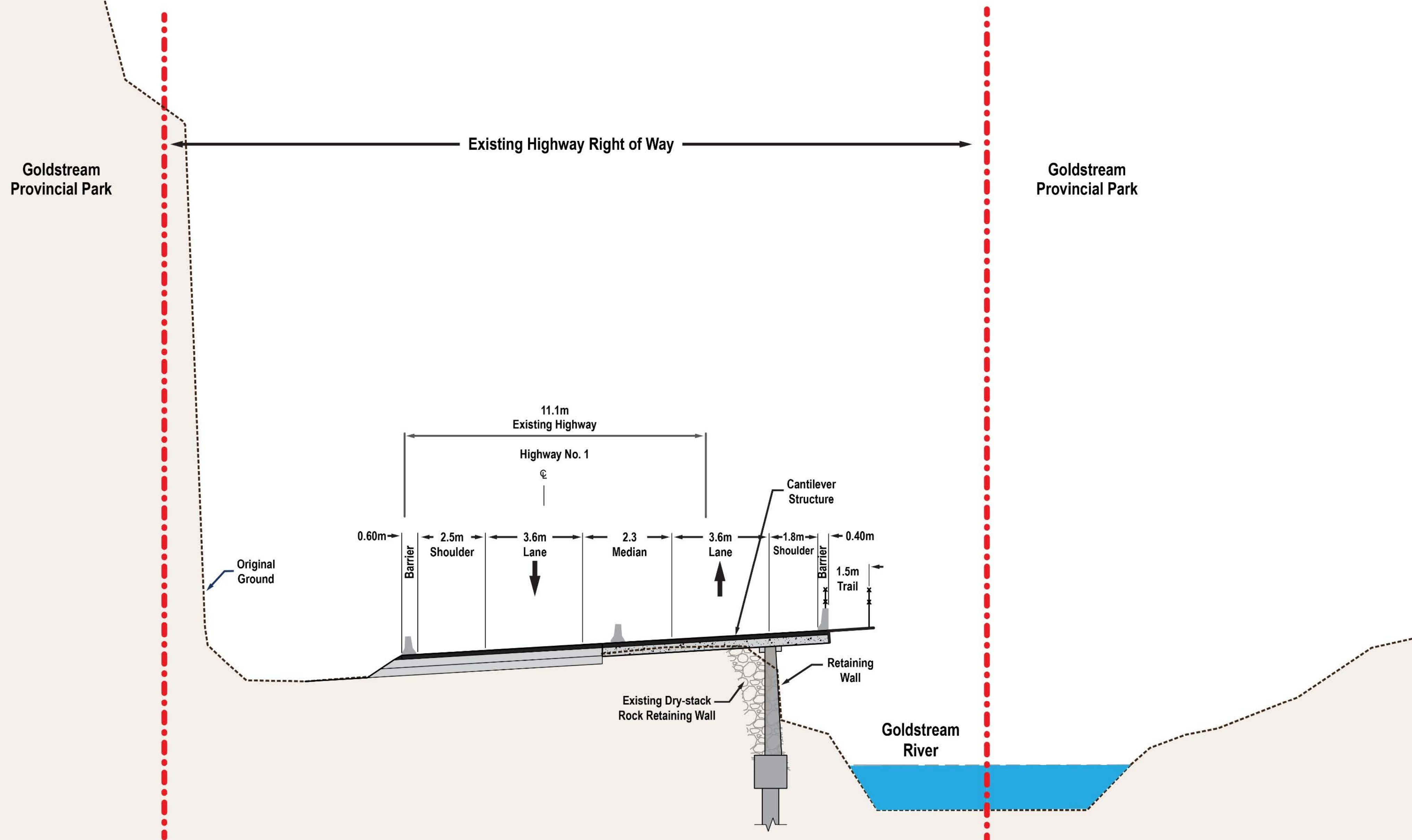
3. Design



Overview

Cantilevered Roadway

Section A

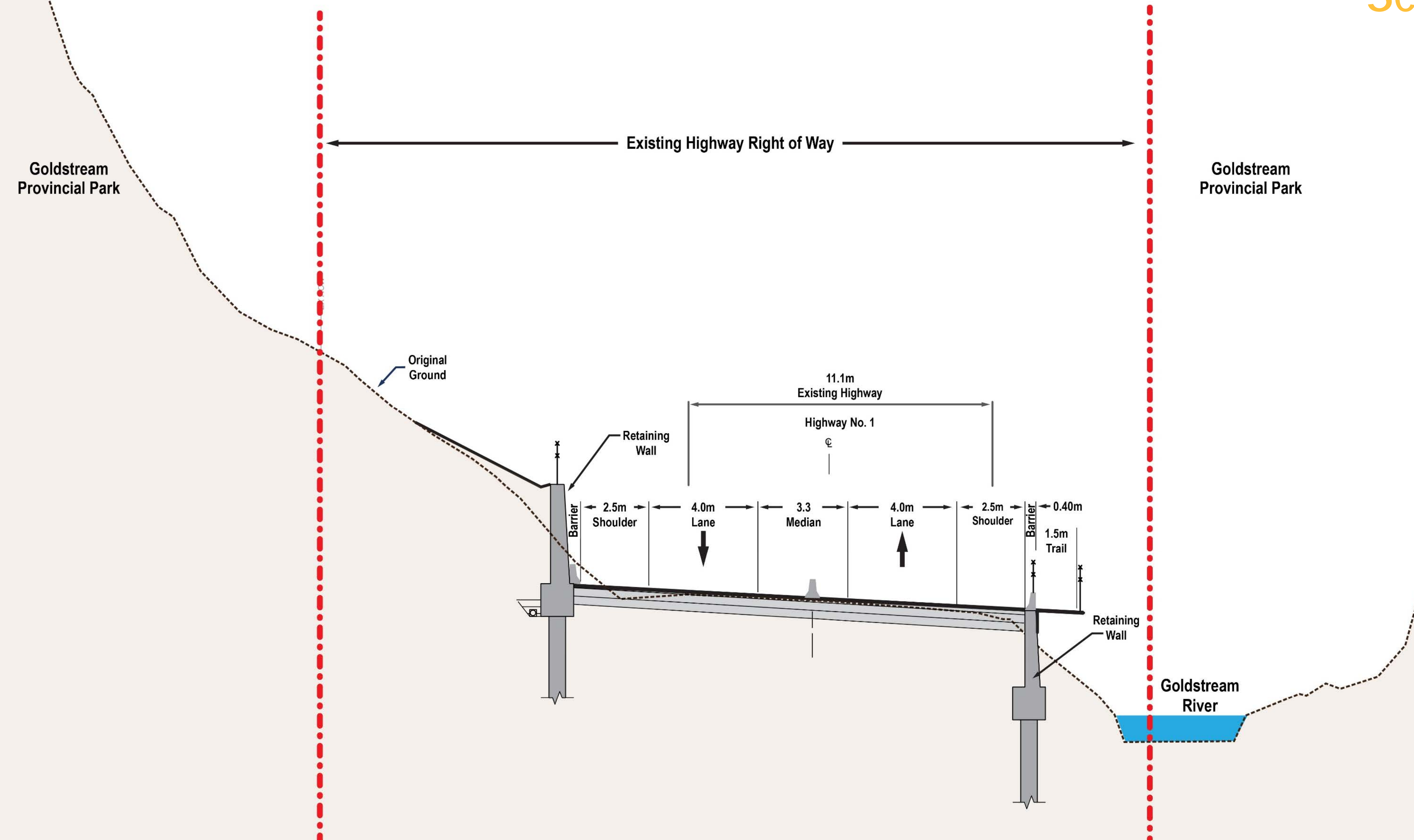


Cantilevered Roadway



Retaining Wall

Section B



Retaining Wall



Retaining Wall

Perspective 3

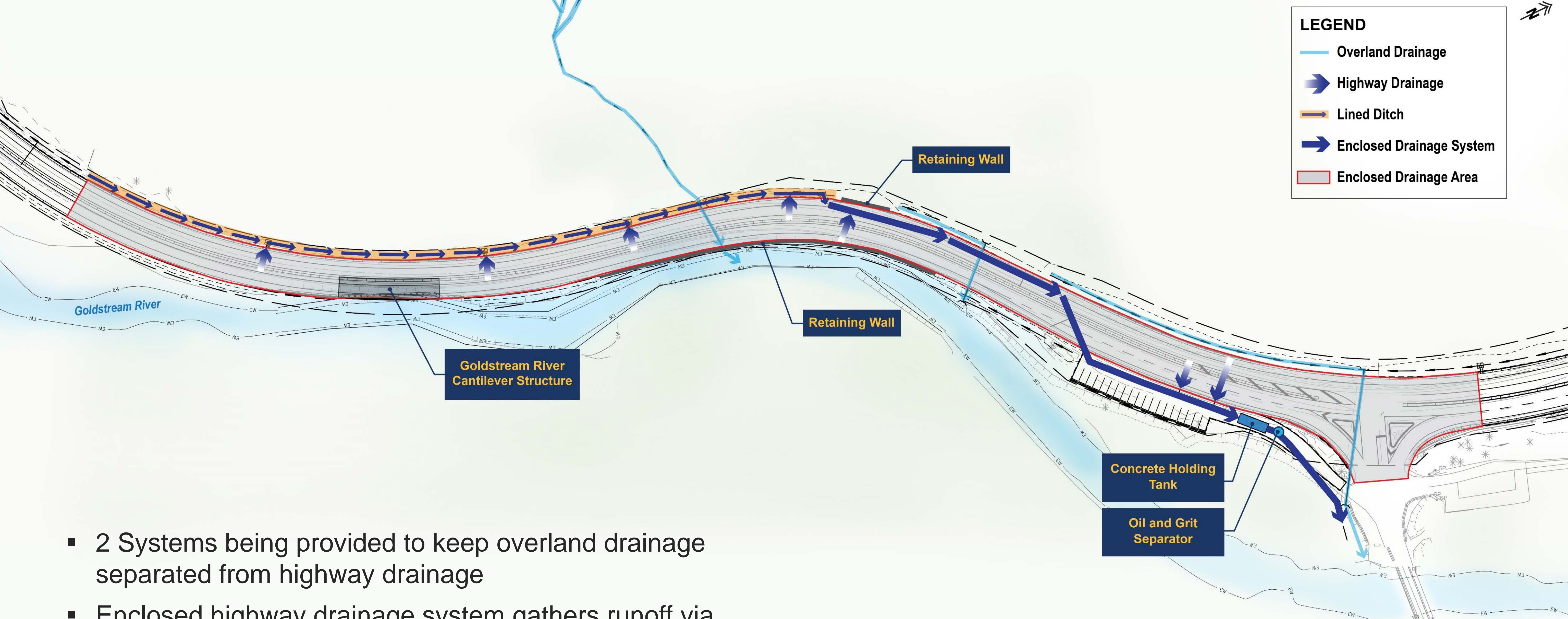


Proposed Retaining Wall



Existing River

- Retaining wall limits intrusion into river
- Vegetation retained or replaced
- Walkway above river provides safe, unobstructed overhead viewing of salmon spawning
- Retaining wall and walkway provide shade for fish



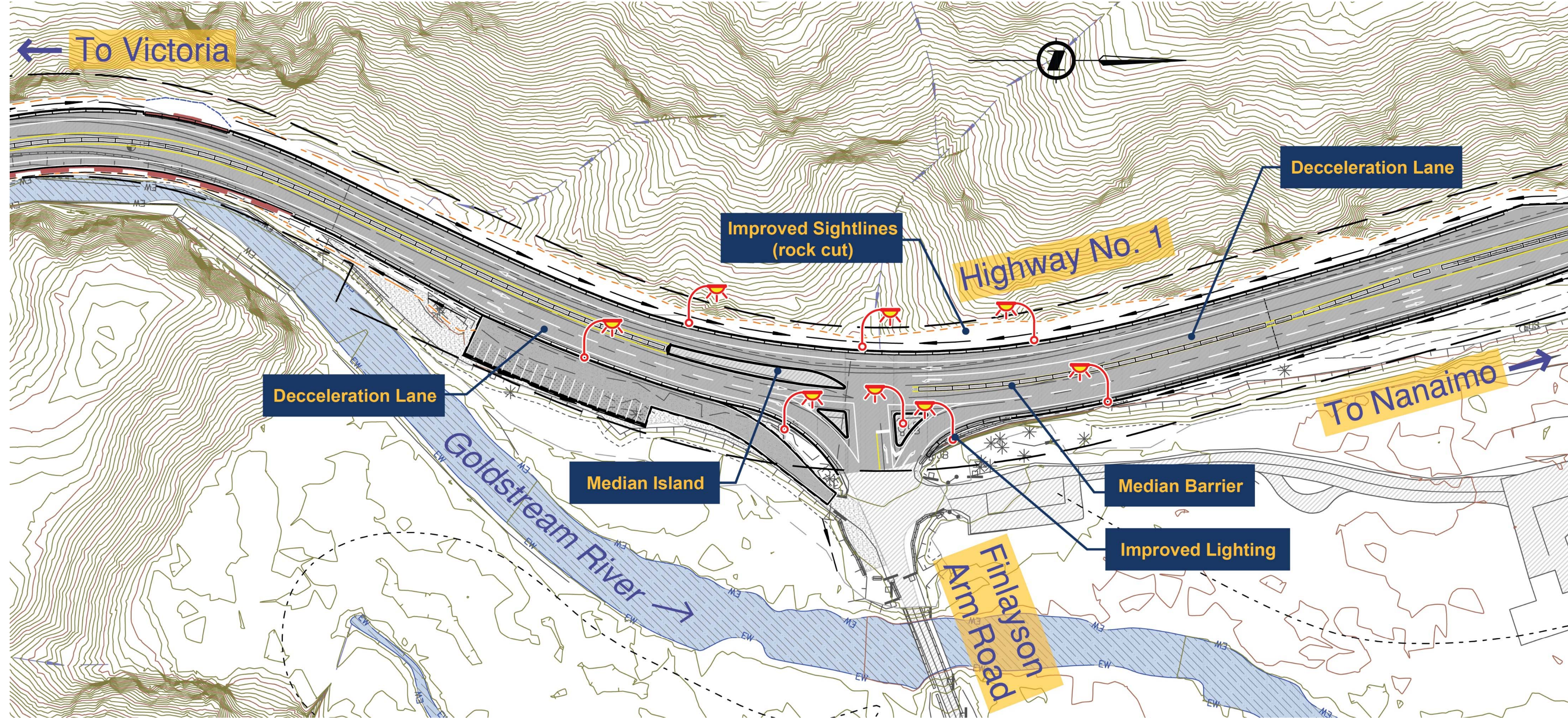
- 2 Systems being provided to keep overland drainage separated from highway drainage
- Enclosed highway drainage system gathers runoff via catchbasins and lined ditch to storm pipes and into a 45,000 litre storage tank. Drainage is treated with an oil/grit separator to improve water quality before discharge.
- Storage tank can hold a tanker truck volume of liquid, and allow time to capture any spilled material to avoid discharging it directly into Goldstream River

Enclosed Drainage

Goldstream River Bridge

- Bridge was constructed in 1936 and widened in 1956
- Minor structural and barrier changes are included in project to extend bridge life and provide wider shoulders
- Additional widening to accommodate a median barrier would trigger need for full bridge replacement
- Deck and immediate highway approaches will remain divided by picket delineators only
- Gap in median barrier will facilitate emergency cross over point as in past median projects within the corridor



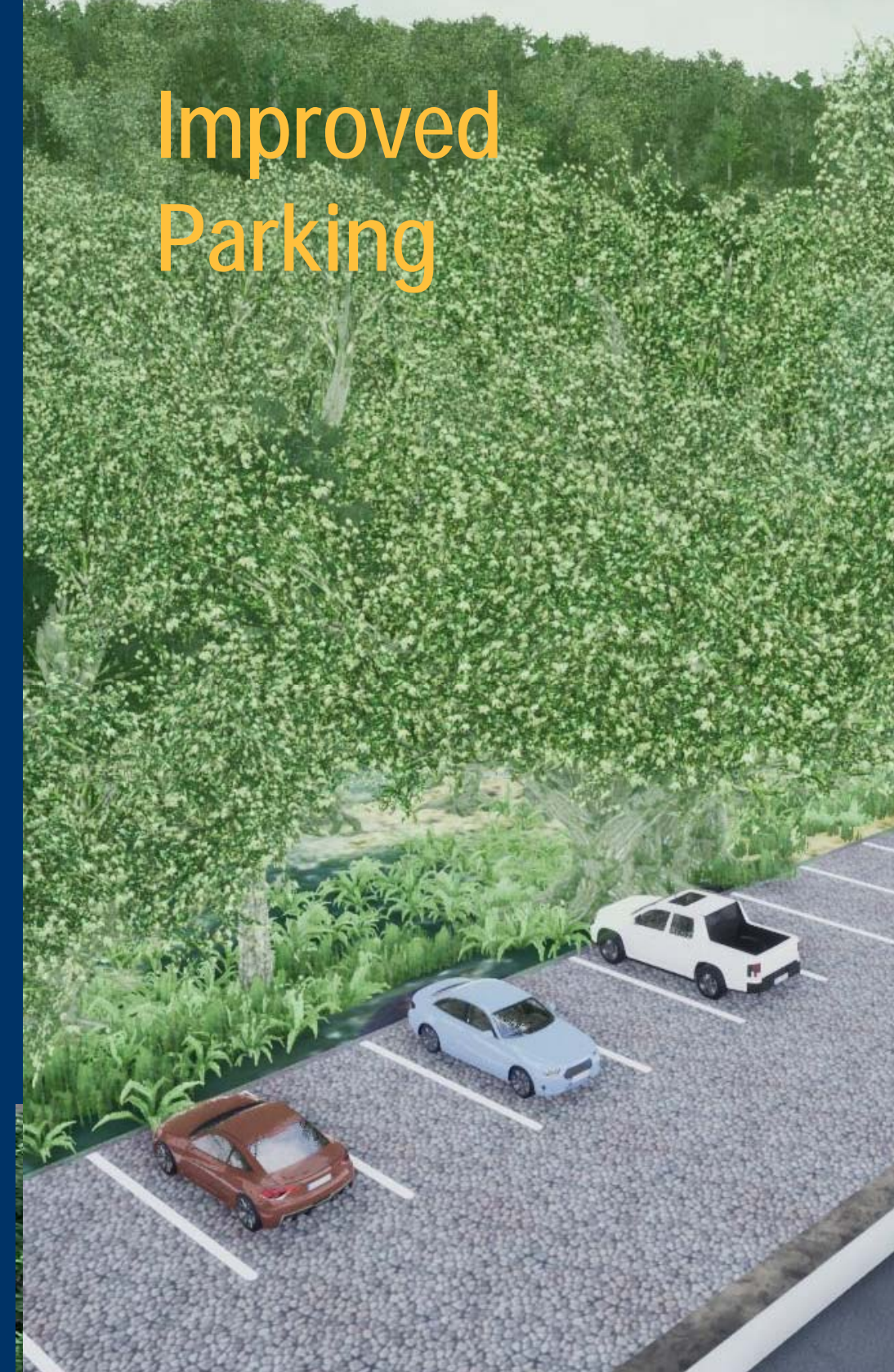


Intersection Improvements

- Median barrier/island extended to intersection
- Improved deceleration lanes and lighting
- Rock excavation will improve sightlines

Park Improvements

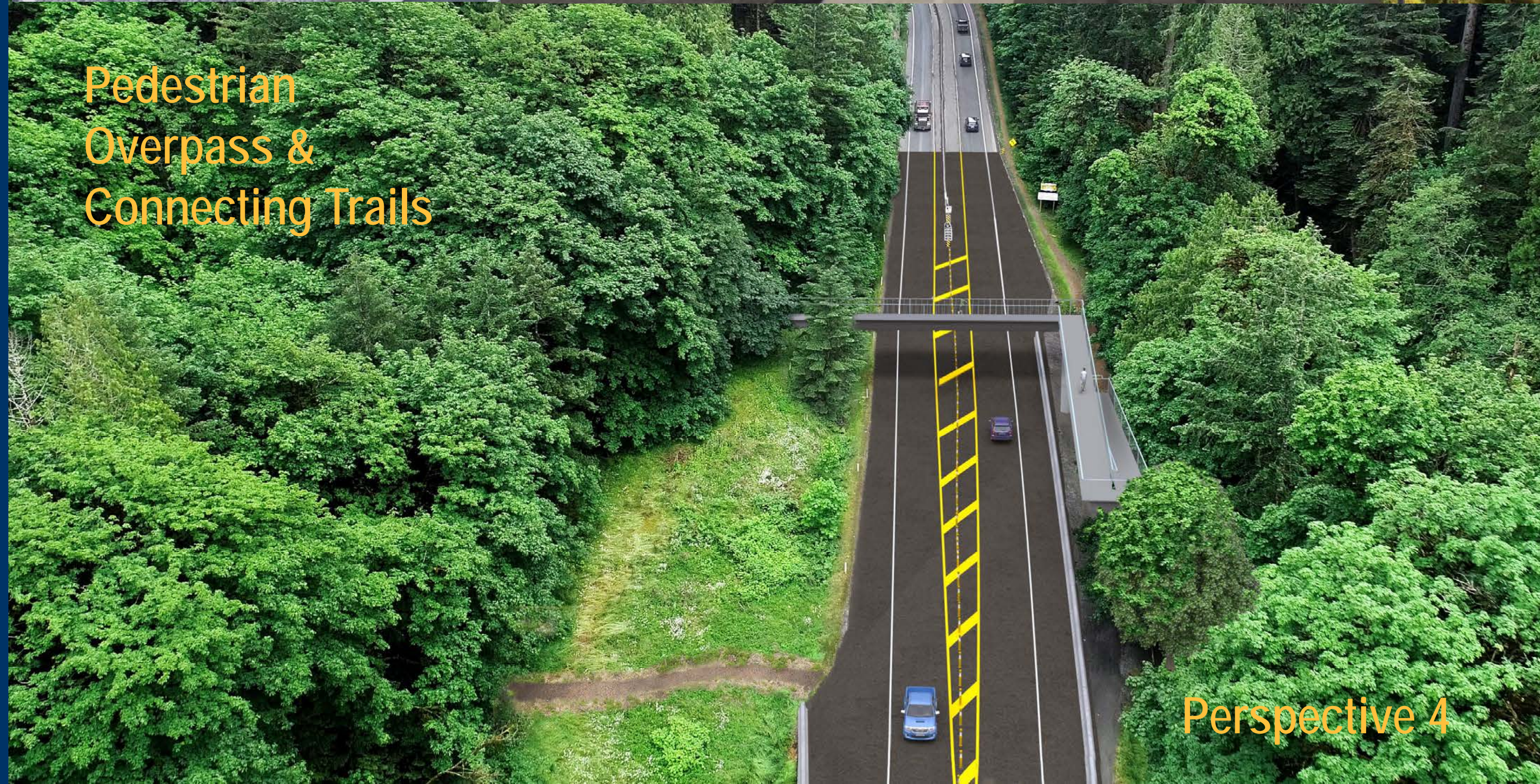
- Improved Parking
- Trail along river
- Pedestrian Bridge over Goldstream River
- Pedestrian overpass across highway
- New trails to connect existing Park network trails, as well as to Goldstream Campground and West Shore Parkway



Improved
Parking



Trail along River



Pedestrian
Overpass &
Connecting Trails

Perspective 4

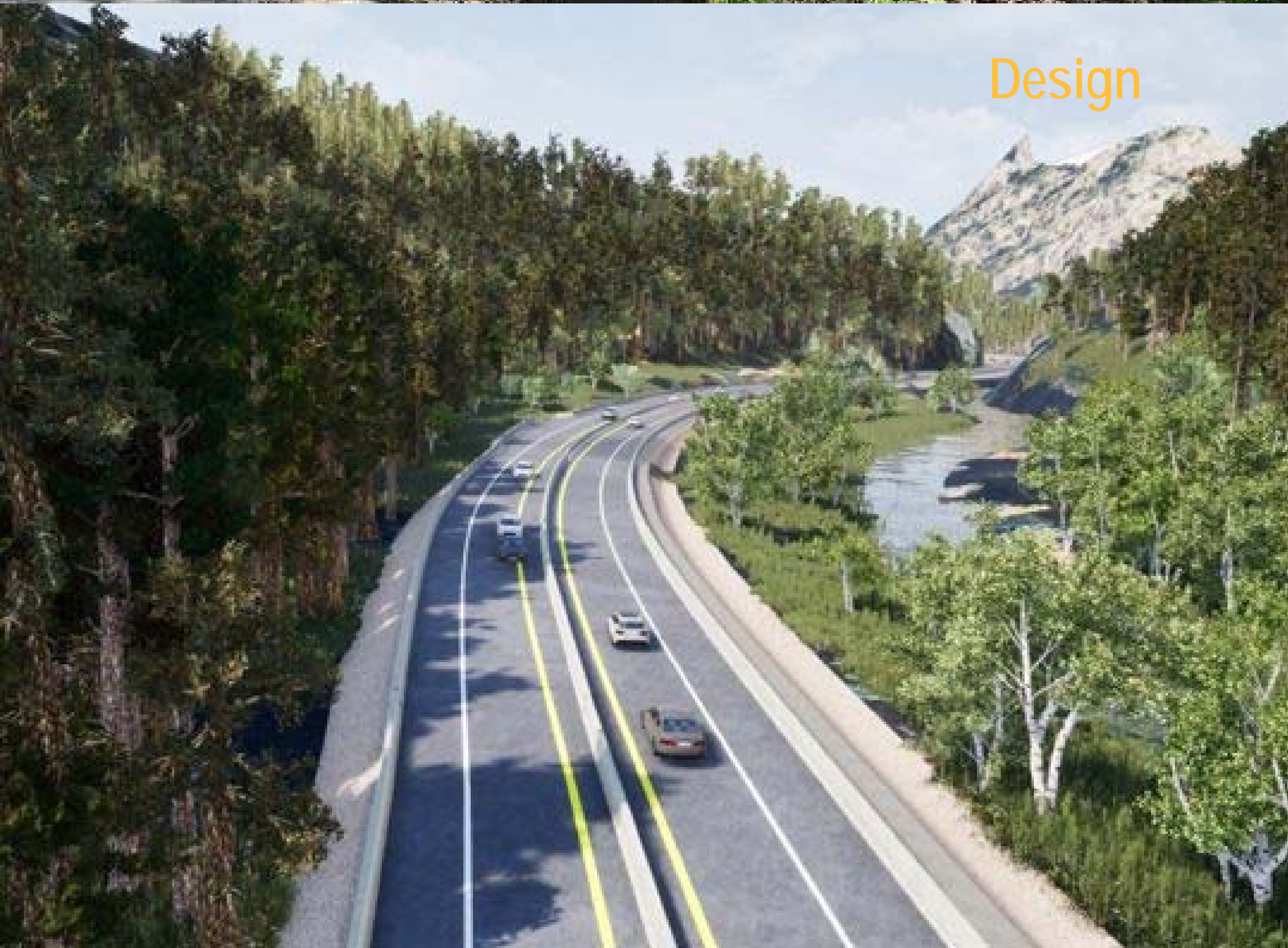
Existing Conditions



Retention of Vegetation

- Limit tree removal adjacent to the river
- Danger tree removals ongoing in partnership with BC Parks
- Areas where design approaches close to river (e.g. cantilever structure and retaining wall) typically are sparsely vegetated currently due to existing boulders and scour by the river
- Offsetting with vegetation and habitat enhancements and replanting along highway to be incorporated in conjunction with environmental regulators

Design



A scenic view of a winding highway through a forested valley. The road curves through a lush green landscape with dense trees on both sides. In the background, a range of mountains is visible under a clear sky. Several cars are driving on the road. The text "4. Next Steps" is overlaid in the center of the image.

4. Next Steps

Project Timeline



- Timeline dates to be determined subject to engagement feedback, design revisions/adjustments, and permitting required.
- Budgetary figures to be determined subject to engagement feedback, final design, and funding approvals
- Please fill out a project feedback form:
<http://www.gov.bc.ca/malahatsafetyimprovements>



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Contact us

Online feedback form:

www.gov.bc.ca/malahatsafetyimprovements

Follow us on Twitter (@TranBC, @DriveBC),
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Phone: 250-952-4515 (District Office)