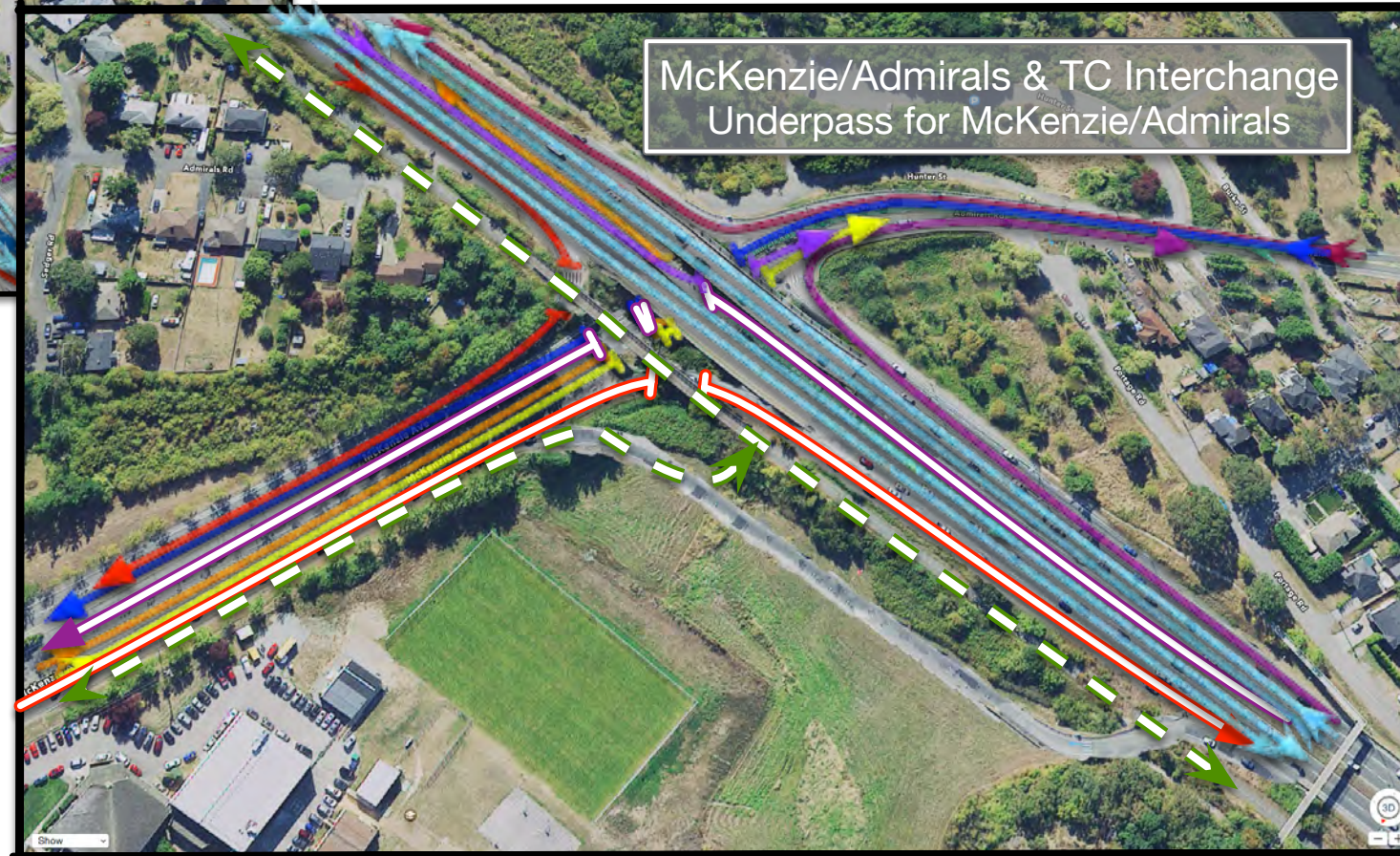




Burnside Rd W to TC inner up-ramps
New bridge and TC on-ramp from Burnside Rd W

McKenzie/Admirals Underpass & Burnside Road W at Interurban Road TC On-ramp



McKenzie/Admirals & TC Interchange
Underpass for McKenzie/Admirals

Proposal for the McKenzie Interchange with Burnside Rd W project extension by Andrew Jung

March 15, 2016
email: gov@an-drew.com

McKenzie/Admirals Underpass at Trans Canada

With Burnside Rd West (Interurban Rd) Trans Canada on-ramp

MODIFICATION DATE	Sat Mar 19 2016
CREATION DATE	Thu Feb 25 2016
CREATOR	Andrew Jung
PROFESSION	Information Architect and Usability Designer at the University of Victoria
EMAIL	gov@an-drew.com

DESCRIPTION Proposed alternative interchange with McKenzie Rd and Admirals Rd intersection below grade with two at grade N/S TC bridges and inner up and down ramps between the bridges controlled by a single traffic light which gives preference to left-hand turns from TC southbound down-ramp to McKenzie Rd and TC northbound down-ramp to Admirals Rd.

PAGES McKenzie/Admirals Underpass - Benefits (page 2)
McKenzie/Admirals Underpass - All routes (pages 3-5)
McKenzie/Admirals Underpass - Normal flow routes (pages 6-7)
McKenzie/Admirals Underpass - Normal flow routes stopped Stop State 1 (pages 8-9)
McKenzie/Admirals Underpass - Normal flow routes stopped Stop State 2 (pages 10-11)
McKenzie/Admirals Underpass - Construction Stage descriptions (pages 12-13)
McKenzie/Admirals Underpass - Construction Stage diagrams (pages 14-19)
McKenzie/Admirals Underpass - Future options (pages 20)
Burnside Rd W (Interurban Rd) Trans-Canada Inner Up-ramp (pages 21-23)

RIGHTS I, Andrew Jung, hereby give the British Columbia Government permission to use these plans.

CREDITS Satellite imagery source from Apple Inc. Maps application.

McKenzie/Admirals Underpass at Trans Canada Benefits

of proposed solution over existing solutions

McKenzie/ Admirals Underpass Benefits

- No or minimal encroachment into Cuthbert Holmes Park required
- No increased height, sight lines maintained
- Reduction of traffic noise due to same or below grade traffic
- Only one traffic signal required
- Trans-Canada to McKenzie Rd given preferential signal
- Galloping Goose Trail can remain At-Grade and above ground
- Galloping Goose right-of-way maintained for future LRT
- Existing Pedestrian overpass is maintained
- Existing Bus stop locations could be in similar locations
- Access to Portage Rd maintained
- Construction cost reduced due to reduced structural requirements
- Excavation should be easier since most material will be previous infill from original construction
- Drainage requirements and flooding risks are reduced
- Seismic stability could be enhanced due to reduction of elevated structures and at-grade bridges

Burnside Rd W (Interurban Rd) to Trans-Canada Up-ramp Benefits

- Reduction of traffic bottleneck at Tillicum/Trans-Canada Intersection
- Elimination of the ability and need for drivers to use Burnside Rd W as a by-pass
- Provide Esquimalt commuters with an alternative to Admirals Rd
- Provide Camosun Interurban and VI Tech Park commuters with an alternative to Helmcken Rd
- Right-of-way already exists between the northbound and southbound Trans-Canada bridges
- Construction of up-ramp will not require any traffic diversions or closures
- Will not interfere with and will enhance any McKenzie/Admirals Interchange plans

McKenzie/Admirals & TC Interchange showing key features

McKenzie & Admirals below-grade signal

Single traffic light controls traffic for three stages:

Normal flow:

- TC southbound inner down-ramp to McKenzie Rd left-turn
- TC northbound inner down-ramp to Admirals Rd left-turn

Stop State 1 (Normal flow stopped)

- McKenzie Rd to TC southbound inner up-ramp left-turn
- Admirals Rd to TC northbound inner up-ramp left-turn

Stop State 2 (Normal flow stopped)

- McKenzie Rd to Admirals Rd cross-traffic

Trans-Canada southbound at-grade bridge

Crosses Non-Stop over below-grade Admirals Road

Multi-use Access Lane

for Fire & Oversize Vehicles
and Galloping Goose Trail

Galloping Goose TC trail at-grade bridge

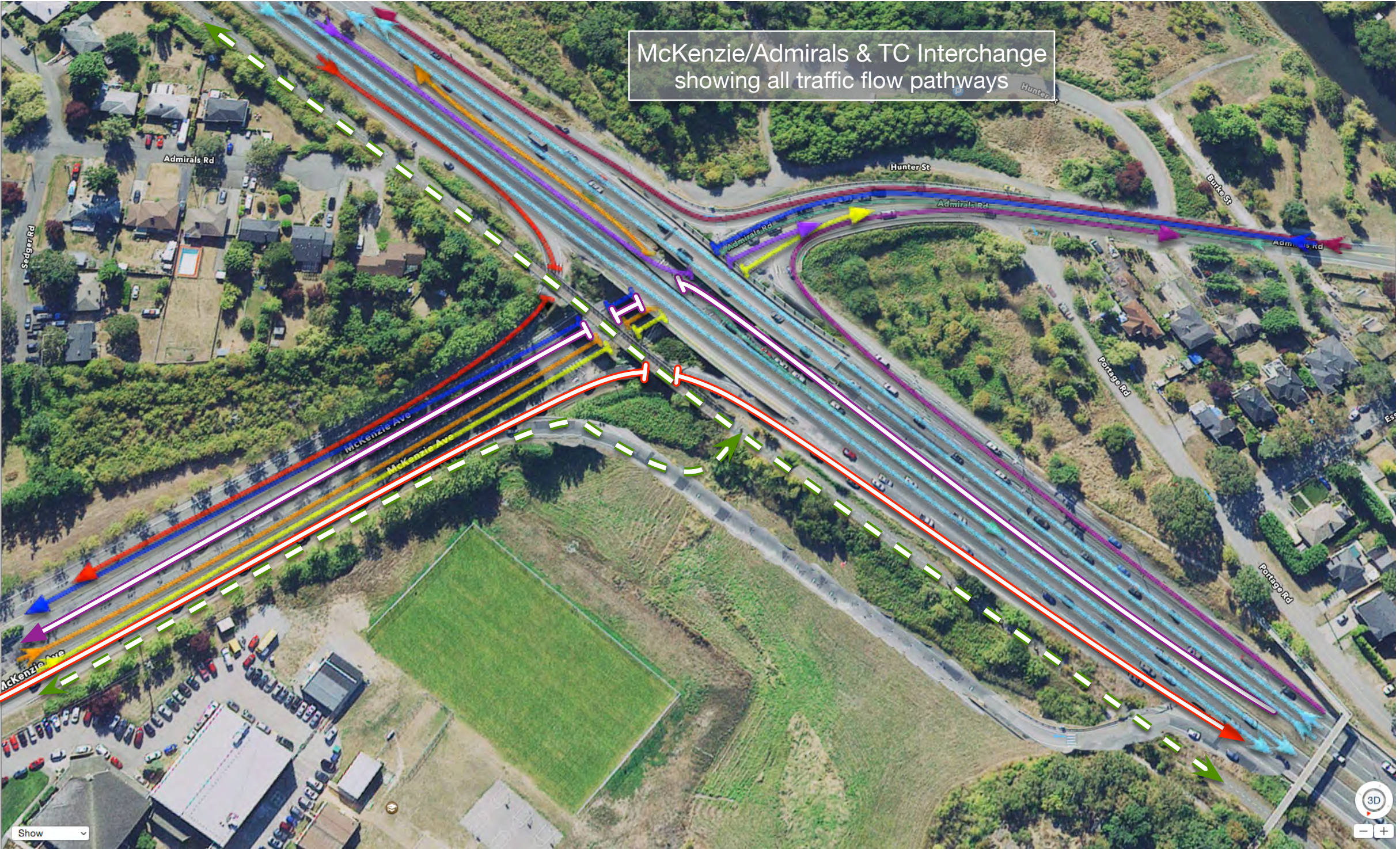
Crosses over below-grade:

- McKenzie Road and
- McKenzie TC off-ramp and on-ramps.

Trans-Canada northbound at-grade bridge

Crosses Non-Stop over below-grade McKenzie Road

McKenzie/Admirals & TC Interchange
showing all traffic flow pathways



McKenzie/Admirals & TC Interchange
Conceptual rendering



Normal Flow

TC southbound inner down-ramp to McKenzie Rd eastbound
 TC northbound inner down-ramp to Admirals Rd westbound

Admirals eastbound to Trans-Canada northbound

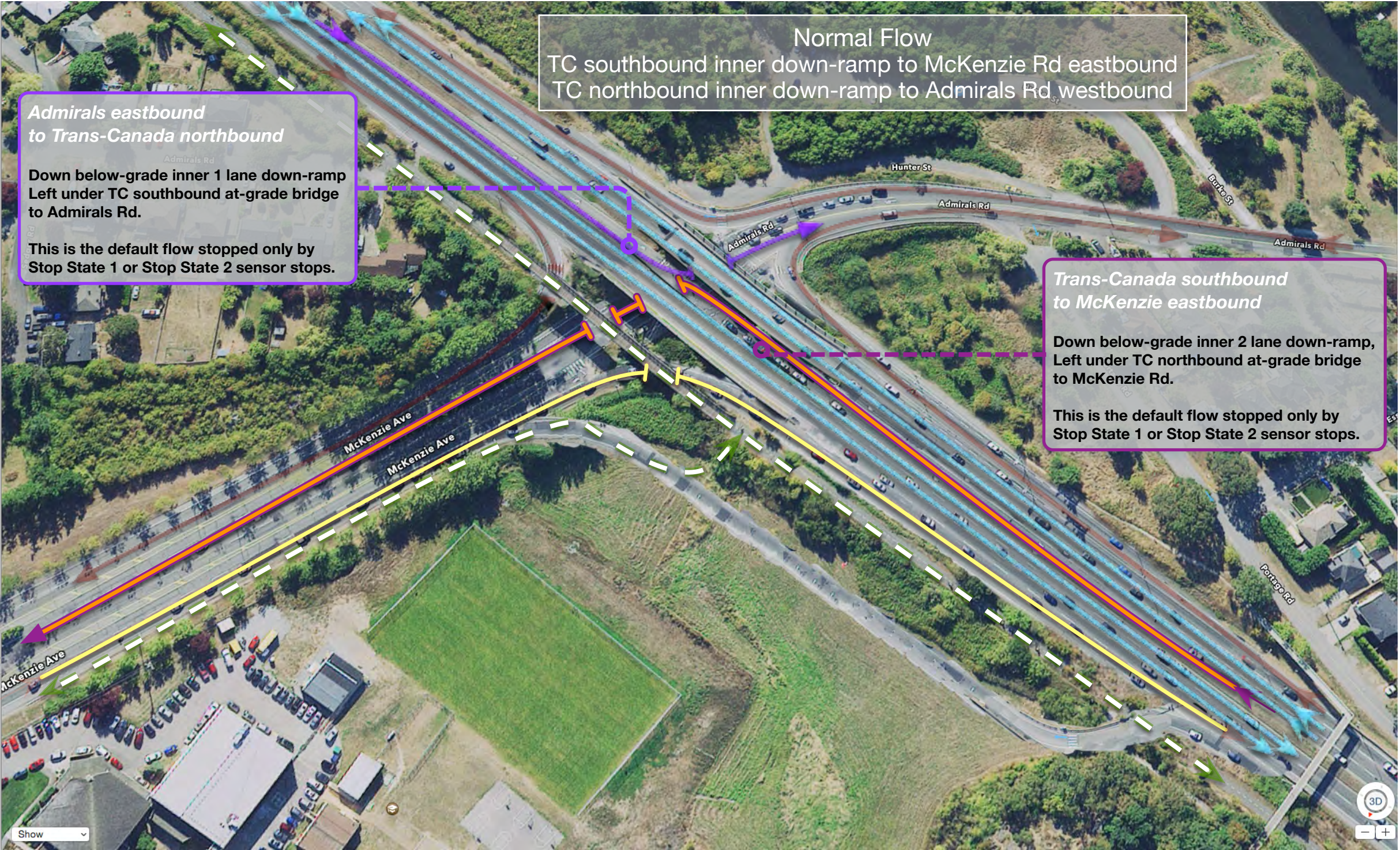
Down below-grade inner 1 lane down-ramp
 Left under TC southbound at-grade bridge
 to Admirals Rd.

This is the default flow stopped only by
 Stop State 1 or Stop State 2 sensor stops.

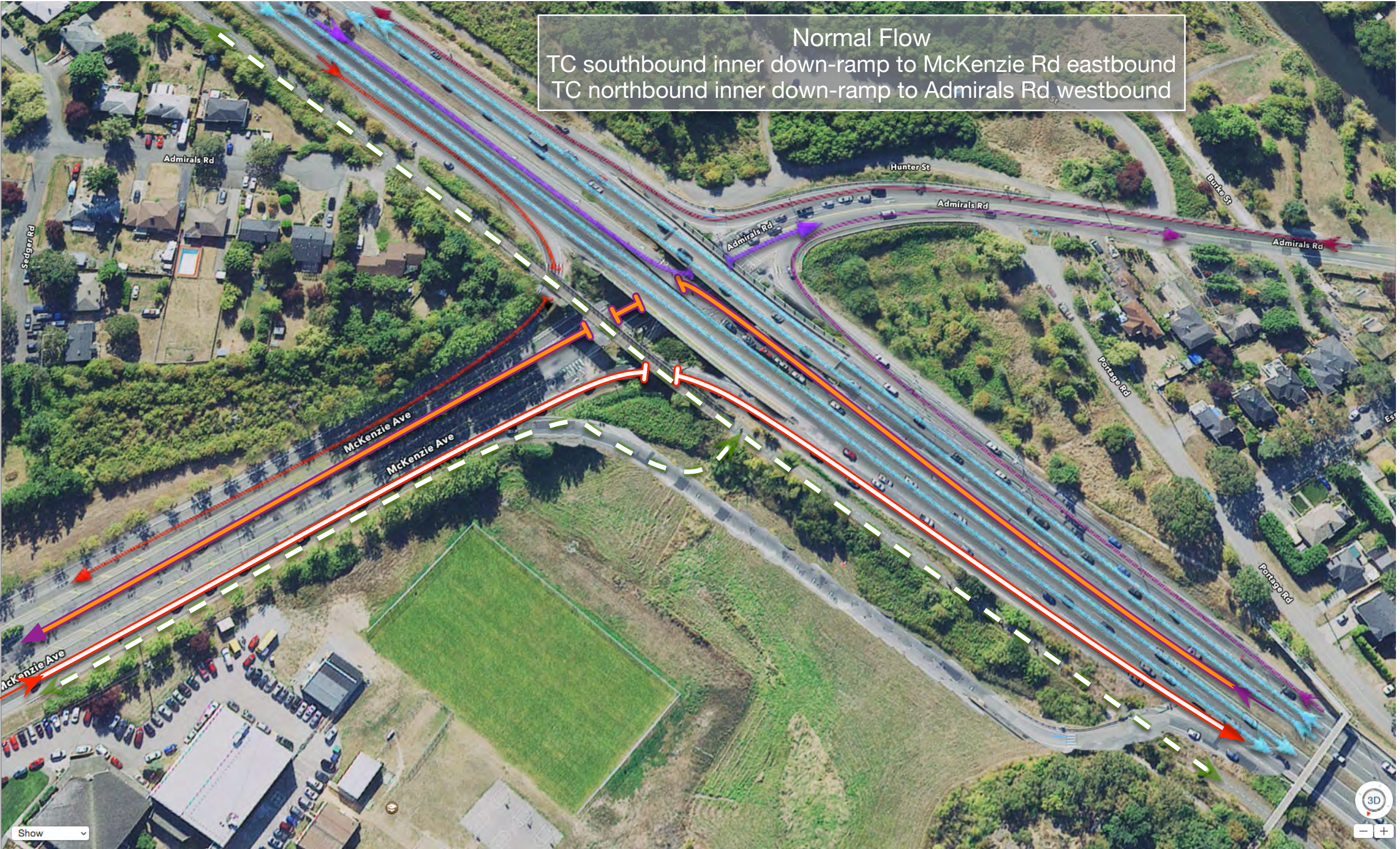
Trans-Canada southbound to McKenzie eastbound

Down below-grade inner 2 lane down-ramp,
 Left under TC northbound at-grade bridge
 to McKenzie Rd.

This is the default flow stopped only by
 Stop State 1 or Stop State 2 sensor stops.



Normal Flow
TC southbound inner down-ramp to McKenzie Rd eastbound
TC northbound inner down-ramp to Admirals Rd westbound



**Stopped: Trans-Canada northbound
inner down-ramp to Admirals Rd**

Stop State 1: Normal Flow stopped at intersection

**McKenzie westbound
to Trans-Canada southbound**

**Under TC northbound at-grade bridge,
left to inner up-ramp merge right**

**Stop State 1 normal flow stop
activated by lefthand turn lane sensors**

Stop State 1 (Normal Flow stopped)

**McKenzie to TC south &
Admirals to TC north enabled with
TC left turn inner down-ramps stopped**

**Admirals eastbound
to Trans-Canada northbound**

**Under TC southbound at-grade bridge
left to inner up-ramp merge right**

**Stop State 1 normal flow stop
activated by lefthand turn lane sensors**

**Stopped: Trans-Canada southbound
inner down-ramp to McKenzie Rd**

Stop State 1: Normal Flow stopped at intersection



Stop State 1 (Normal Flow stopped)

McKenzie to TC south &
Admirals to TC north enabled with
TC left turn inner down-ramps stopped



**Stopped: Trans-Canada northbound
inner down-ramp to Admirals Rd**

Stop State 2: Normal Flow stopped at intersection

**McKenzie Rd westbound
to Admirals Rd eastbound**

**Under TC southbound, TC northbound,
and Galloping Goose at-grade bridges**

Stop State 2: activated by thru lane sensors

Stop State 2 (Normal Flow stopped)

**McKenzie Rd to Admirals Rd thru traffic
enabled with TC left turn inner down-ramps stopped**

**Admirals Rd eastbound
to McKenzie Rd westbound**

**Under TC southbound, TC northbound,
and Galloping Goose at-grade bridges**

Stop State 2: activated by thru lane sensors

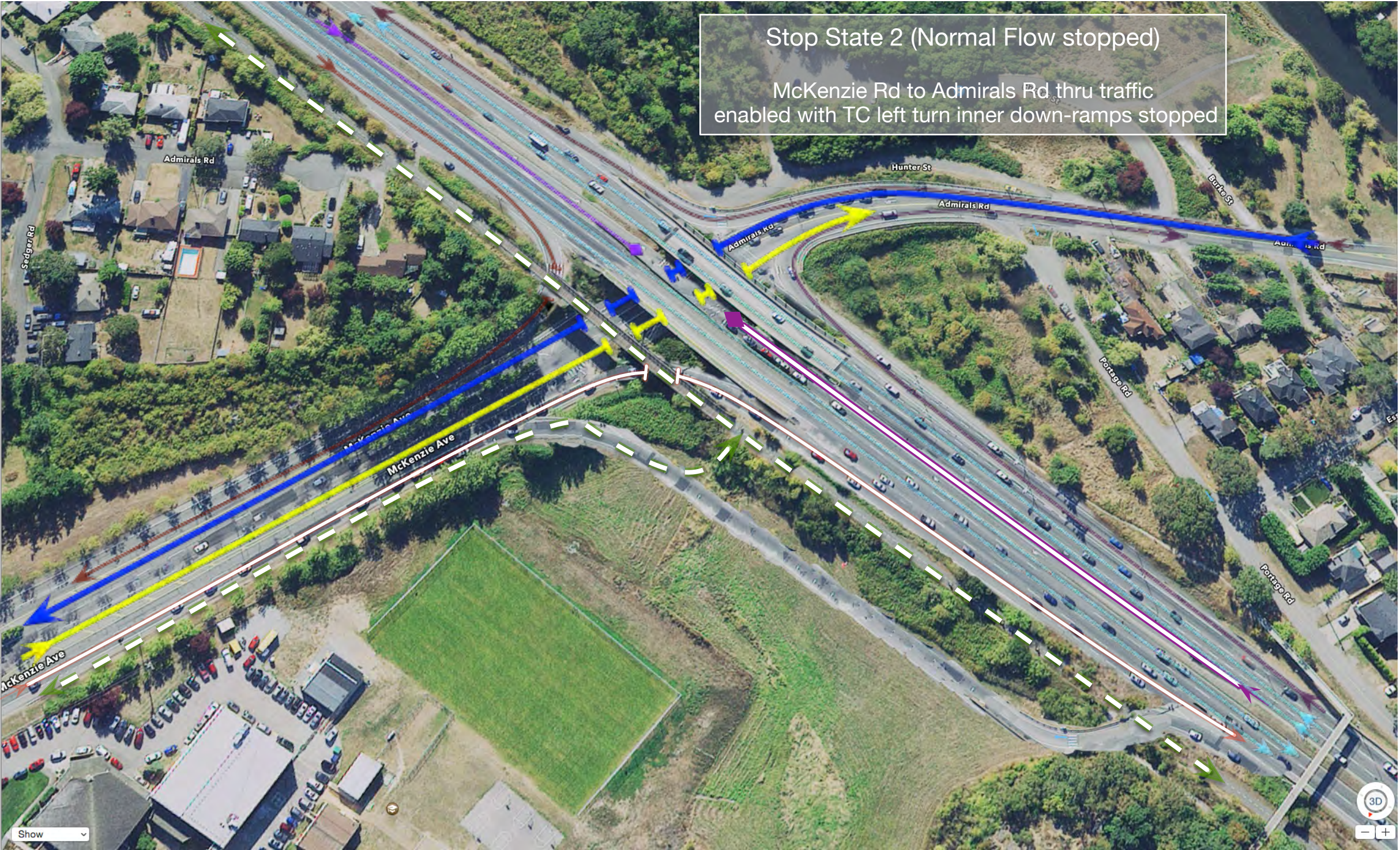
**Stopped: Trans-Canada southbound
inner down-ramp to McKenzie Rd**

Stop State 2: Normal Flow stopped at intersection



Stop State 2 (Normal Flow stopped)

McKenzie Rd to Admirals Rd thru traffic
enabled with TC left turn inner down-ramps stopped



McKenzie/Admirals Underpass at Trans Canada

Construction Stages

Stage 1

- Admirals Rd traffic would be blocked as before with Craigflower Bridge construction;
- Temporary McKenzie Rd eastbound diversion lanes built next to existing lanes (trying to maintain as many of the lining trees as possible);
- McKenzie Rd signal and intersection moved temporarily south;
- A large two lane temporary Bailey Bridge deck is lowered over existing Trans-Canada southbound lanes to prevent cave-ins due to excavation;
- Admirals Rd approach to the Trans Canada would be excavated down to a grade level which would allow sufficient over height clearance under the Trans Canada with local traffic access to Portage and Esson Roads maintained.
- Retaining walls along Trans Canada southbound and entrance to the Admirals to McKenzie Rd cut built
- A second large two lane Bailey Bridge deck is lowered over existing Trans-Canada to McKenzie Rd left turning lanes.
- Admirals Rd cut and shoring would begin under the Trans-Canada southbound temporary Bailey Bridge
- Trans-Canada southbound to Admirals Rd outer down-ramp and Admirals Rd to Trans-Canada outer on-ramps excavated and shored.

Stage 2

Stage 2 begins with the completion of the Admirals Rd down and up ramps.

- Trans-Canada southbound lanes are diverted to use the Admirals Rd ramps;
- Reciprocal access between Admirals Rd and Trans-Canada southbound can be restored;
- Galloping Goose trail temporarily diverted to Burnside Rd W between Forestry Centre and TC School pedestrian overpass;
- Galloping Goose trail near Admirals Rd E (the residential road) is excavated to allow for TC northbound to McKenzie Rd right turn;
- McKenzie Rd to Trans-Canada northbound turning lane is temporarily moved east of closed northern section of Galloping Goose trail;
- Trans-Canada northbound to McKenzie Rd right turn is closed, traffic detoured to use McKenzie/Pat Bay interchange or Carey Rd (local);
- The temporary Trans-Canada southbound Bailey Bridge is relocated to cover the Trans-Canada northbound lanes;
- Excavation and shoring begins for McKenzie Rd to Admirals Rd Cut under the two temporary Bailey Bridges;
- Excavation and shoring begins along east wall of northbound Trans-Canada for new 2 lane McKenzie to TC northbound outer up-ramp;
- Construction begins on Permanent Trans-Canada Southbound Bridge.

McKenzie/Admirals Underpass at Trans Canada

Construction Stages 2

- Stage 3** **Stage 3 begins with the completion of the Permanent Trans-Canada Southbound bridge and Northbound Outer (On) Up-ramp.**
- Trans-Canada Southbound to McKenzie Rd Left-turn and signal moved north of project to temporarily use the northbound outer up-ramp;
 - Northbound Trans-Canada traffic is moved to Southbound Trans-Canada bridge (southbound traffic remains on Admirals Rd ramps);
 - The two temporary Bailey bridges are removed and decommissioned;
 - Excavation and shoring begins along south eastern wall of northbound Trans-Canada for new TC northbound to McKenzie Rd outer down-ramp;
 - Excavation and shoring begins for north-side inner ramp (2 lanes down from TC southbound and 1 lane up to TC northbound);
 - Excavation and shoring begins for south-side inner ramp (2 lanes down from TC northbound and 1 lane up to TC southbound);
 - Construction begins on Permanent At-Grade Galloping Goose Bridge;
 - Construction begins on Permanent At-Grade Trans-Canada Northbound Bridge;
- Stage 4** **Stage 4 begins with the completion of the Permanent Trans-Canada Northbound Bridge.**
- Trans-Canada Northbound and Southbound thru traffic moved to final locations on Permanent Trans-Canada bridges;
 - McKenzie/Admirals Underpass construction continues to completion;
 - Construction of the Inner Ramps continues to completion (see Future notes for possible HOV lanes);
 - Below-Grade Traffic Intersection installed and activated;
 - Remove Temporary TC Southbound to McKenzie Rd Signal and diversion;
 - Outer On and Off Ramps opened and traffic restored for Full Access to and from Admirals Rd and McKenzie Rd;
- Stage 5** **Stage 5 begins with the opening off the Inner Ramps and the Outer McKenzie side Ramps.**
- Repurpose Temporary Outer edge McKenzie to Trans-Canada Northbound right-hand turn road as a Multi-purpose Fire & Oversize Vehicle lane and Galloping Goose Trail and Bridge access path;
 - Restore At-Grade Galloping Goose Trail and connect to At-Grade Galloping Goose Overpass Bridge;
 - Restore any trees and greenery that needed to be temporarily removed.

McKenzie/Admirals & TC Interchange Stage 1 Construction flow pathways

McKenzie & Admirals temporary signal

Single traffic light controls traffic for two stages:

Normal flow:

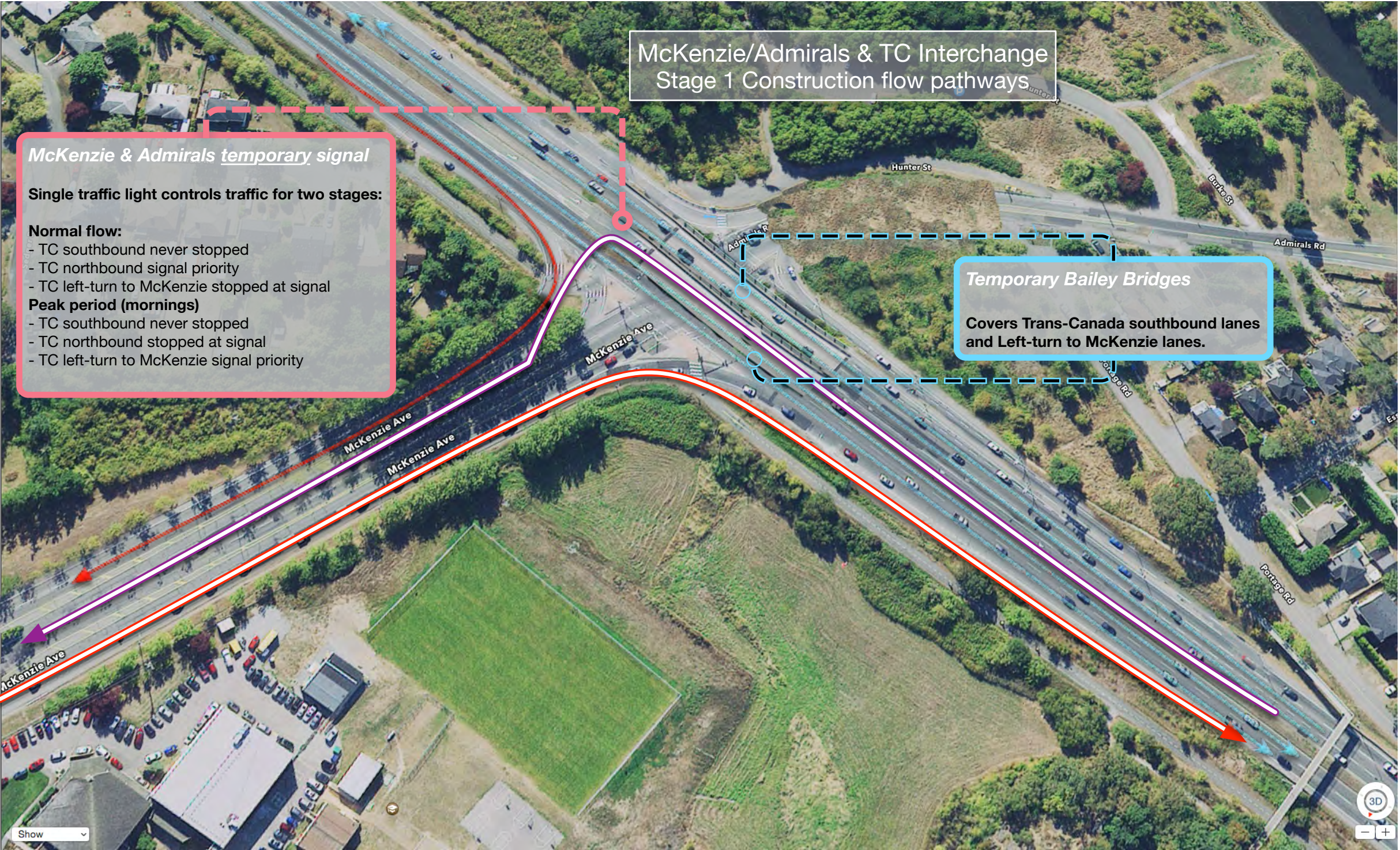
- TC southbound never stopped
- TC northbound signal priority
- TC left-turn to McKenzie stopped at signal

Peak period (mornings)

- TC southbound never stopped
- TC northbound stopped at signal
- TC left-turn to McKenzie signal priority

Temporary Bailey Bridges

Covers Trans-Canada southbound lanes and Left-turn to McKenzie lanes.



Galloping Goose TC trail closed

Trail is detoured to Burnside Rd W:
 - from Pacific Forestry Centre to
 - Grange Rd near Marigold School

McKenzie/Admirals & TC Interchange Stage 2 Construction flow pathways

Southbound Bailey Bridge moved

Bridge moved to Trans-Canada northbound lanes in preparation for northbound excavation and the building of the Permanent Southbound Bridge

Trans-Canada southbound lanes moved

- Southbound lanes are moved to newly completed outer off and on-ramps for Admirals Rd.
- Admirals Rd reopened to southbound Trans-Canada traffic.

McKenzie to TC NB temporary diversion

Traffic is diverted to newly build diversion lane to enable to excavation of the McKenzie side and the new McKenzie to Trans-Canada northbound outer on-ramp.



McKenzie/Admirals & TC Interchange Stage 3 Construction flow pathways

Bailey Bridges removed and decommissioned

With the Trans-Canada Permanent Southbound Bridge completed the two Bailey bridges are removed and Trans-Canada northbound traffic is moved to the Permanent Southbound Bridge

Permanent Southbound Bridge complete

Takes diverted Trans-Canada northbound traffic. Southbound traffic remains on Admirals Rd ramps.

McKenzie & Admirals temporary signal moved

Traffic signal moved north to all excavation of Trans-Canada northbound to McKenzie exit. Single traffic light controls traffic for two stages:

Normal flow:

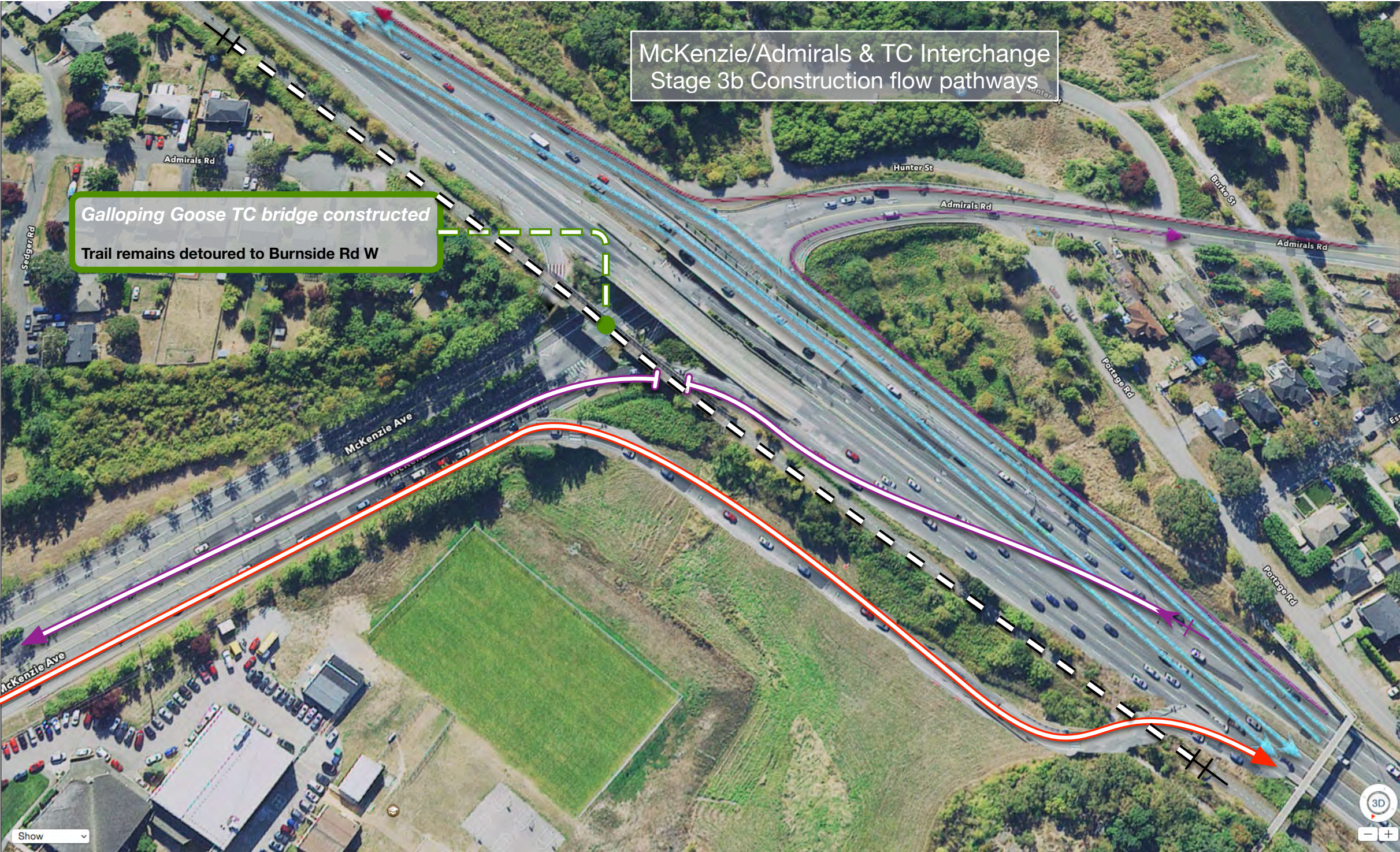
- TC southbound never stopped
- TC northbound signal priority
- TC left-turn to McKenzie stopped at signal

Peak period (mornings)

- TC southbound never stopped
- TC northbound stopped at signal
- TC left-turn to McKenzie signal priority

McKenzie/Admirals & TC Interchange
Stage 3b Construction flow pathways

Galloping Goose TC bridge constructed
Trail remains detoured to Burnside Rd W



McKenzie/Admirals & TC Interchange Stage 4 Construction flow pathways

Galloping Goose closed until project complete

Trail remains detoured to Burnside Rd W until access trail is completed and construction cleared from trail.

McKenzie & Admirals Interchange opened

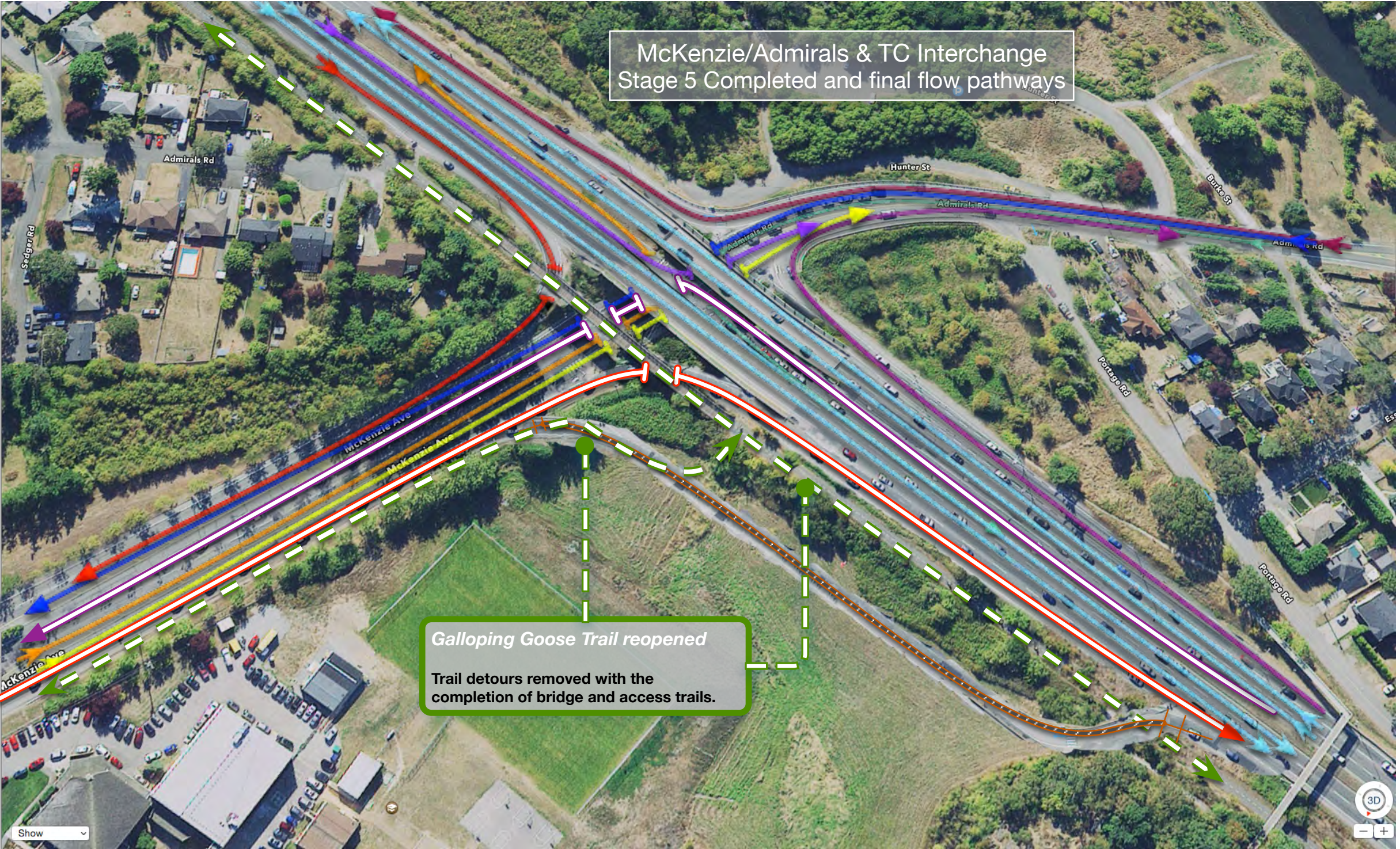
All diversions are removed and normal traffic begins.

Galloping Goose Access Trail
Fire lane or Oversize vehicle movement

The temporary McKenzie to Trans-Canada northbound lane is repurposed into an access route for users of the Galloping Goose Trail as well as a gated Fire Lane and a special request by-pass route for Oversized Vehicles unable to use the underpass.

Closed to vehicular traffic by gates but accessible by pedestrians and cyclists.

McKenzie/Admirals & TC Interchange
Stage 5 Completed and final flow pathways



Galloping Goose Trail reopened
Trail detours removed with the completion of bridge and access trails.

McKenzie/Admirals & TC Interchange Future Options

McKenzie & Admirals HOV Lanes

Optional controlled HOV Lanes for N/S Trans-Canada traffic

Normal flow:

- TC southbound inner down-ramp to McKenzie Rd 2 left-turn lanes
- TC northbound inner down-ramp to Admirals Rd 2 left-turn lanes

Peak flow (southbound)

- TC southbound inner down-ramp thru to up-ramp
- TC southbound inner down-ramp to McKenzie Rd 2 left-turn lanes
- TC northbound inner down-ramp to Admirals Rd 1 left-turn lanes

Peak flow (northbound)

- TC northbound inner down-ramp thru to up-ramp
- TC northbound inner down-ramp to Admirals Rd 1 left-turn lanes
- TC southbound inner down-ramp to McKenzie Rd 2 left-turn lanes

Galloping Goose multi-use corridor

- Galloping Goose TC Trail
- Elevated LRT route

LRT rail station

Potential location for a future LRT station

Bus Lane

In additional use could be added for Bus access

Closed to general vehicular traffic by controlled gates but accessible by pedestrians, cyclists and buses.

Interurban Rd to TC inner up-ramps
New bridge and TC on-ramp from Interurban Rd

*Burnside Rd W northbound & Interurban southbound
to Burnside Rd W northbound*

Peak-traffic flow:

- Left-hand turn Prohibited from Burnside Rd W northbound to McKenzie Rd westbound

Off-peak-traffic flow

- normal (current) signal operation

Traffic encouraged to use TC inner on-ramps from Burnside Rd W

Burnside Rd W to TC inner up-ramp

New bridge from Burnside Rd W
over Colquitz River between existing
TC northbound and TC southbound bridges
Traffic merges right with northbound TC traffic

**Option: Place bridge between TC northbound
and Galloping Goose bridges (not preferred).**

Tillicum Rd northbound to TC northbound

Peak-traffic flow:

- Left-hand turn Prohibited from Tillicum Rd northbound to TC northbound

Off-peak-traffic flow

- normal (current) signal operation

Traffic encouraged to use TC inner on-ramps from Burnside Rd W

*Burnside Rd W to TC inner up-ramp signal
(Burnside Rd W northbound to Interurban Rd northbound non-stop)*

Single traffic light controls traffic for three stages:

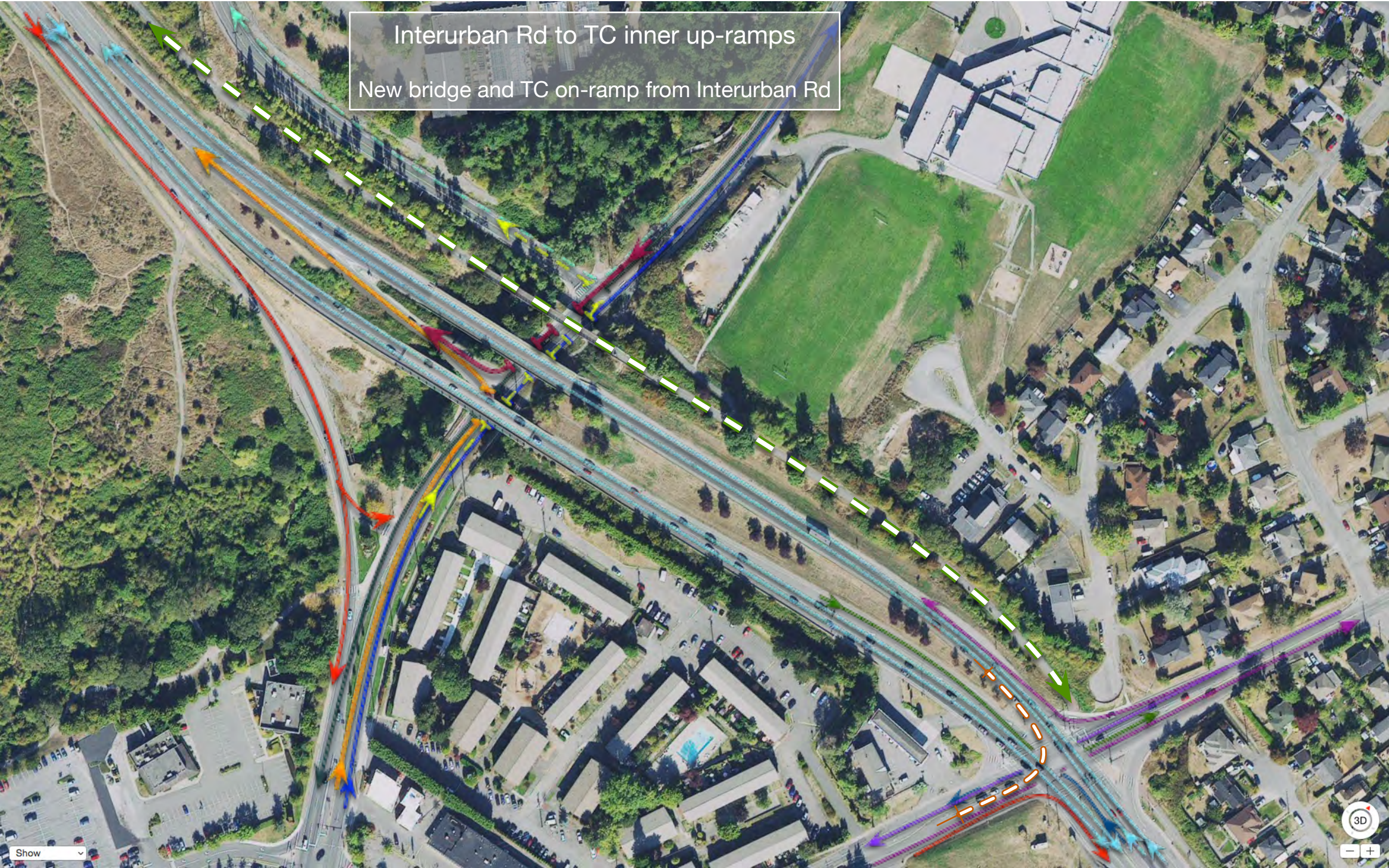
Peak-traffic Normal flow:

- Signal Go: Burnside Rd W northbound to left-hand turn to TC inner up-ramp
- Signal Stop: Interurban Rd southbound to Burnside Rd W southbound

Off-peak-traffic Normal flow:

- Signal Go: Interurban Rd southbound to Burnside Rd W southbound
- Signal Stop: Burnside Rd W northbound to left-hand turn to TC inner up-ramp

Interurban Rd to TC inner up-ramps
New bridge and TC on-ramp from Interurban Rd



Interurban Rd to TC inner up-ramps
New bridge and TC on-ramp from Interurban Rd

