EVOLUTION OF CYCLE TRACK DESIGNS IN KELOWNA

City of Kelowna

WHAT IS CYCLE TRACK?

An exclusive one-way or two-way cycling facility that can be at road, sidewalk or an intermediate level and is physically separated from both vehicular and pedestrian traffic (Source: City of Kelowna Draft Pedestrian & Bicycle Master Plan, 2016)

Physical Separation between Sidewalk & Cycle Track

Physical Separation between Roadway & Cycle Track

WHAT'S NOT CYCLE TRACK?

OTHER NAMES

- Separated Bike Lane (Massachusetts DOT)
- Cycle Track (Toronto, Calgary)
- Protected Bike Lane (Victoria)
- Segregated Bike Lane (Ottawa)
- Buffered Bike Lane

KELOWNA CYCLE TRACKS

No.	Road	Length, m	Flow	Side	Level	Year Built
1	Leckie Rd	225	One-way	Both	Raised	1995
2	Abbott St	1,200	Two-way	One	Raised	2002
3	South Ridge Dr	1,075	Two-way	One	Raised	2004
4	Clifton Rd	525	One-way	Both	Raised	2015
5	Ethel St	3,375	One-way	Both	Raised	2015-2020
6	Sutherland Ave	2,200	Two-way	One	Street-level	2017-2020
7	Dilworth Dr	1,550	One-way	Both	Street-level	2016-2020
	Total	10,150				

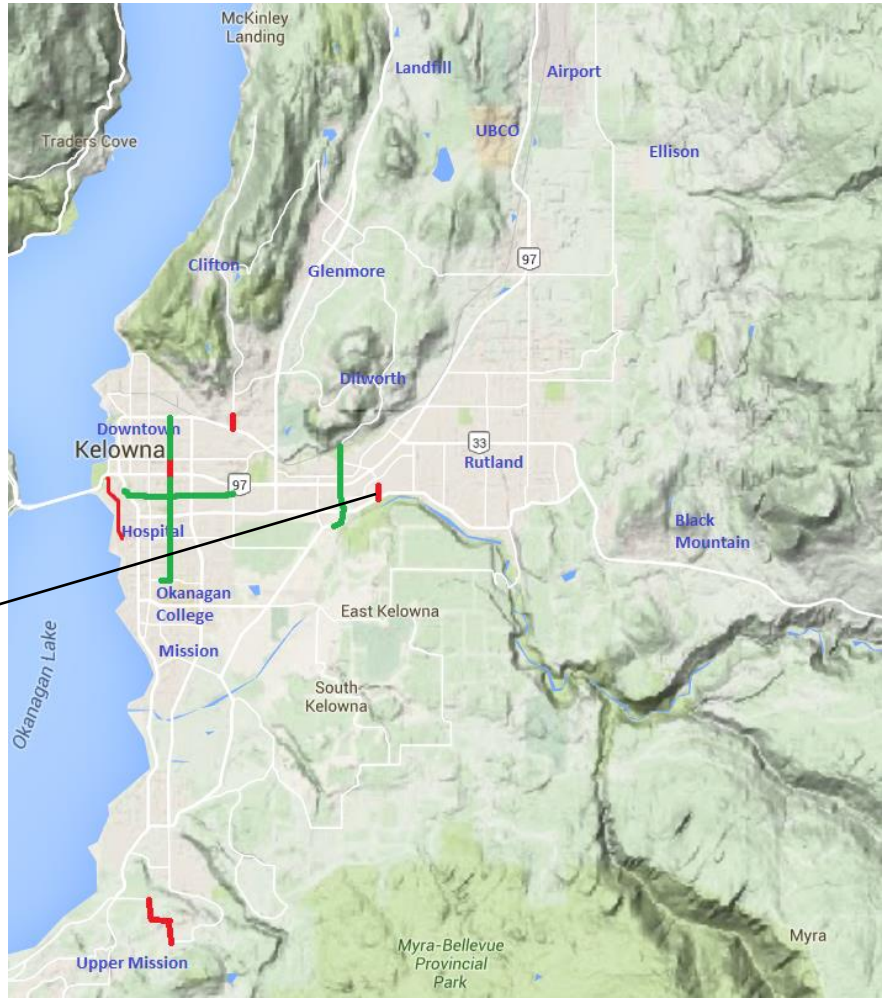
LECKIE CYCLE TRACKS (LOCATION MAP)

Length
225 m

Connection (N End)
None

Connection (S End)
Bike Lanes & Linear Trail

Destinations En-route
Regional Park



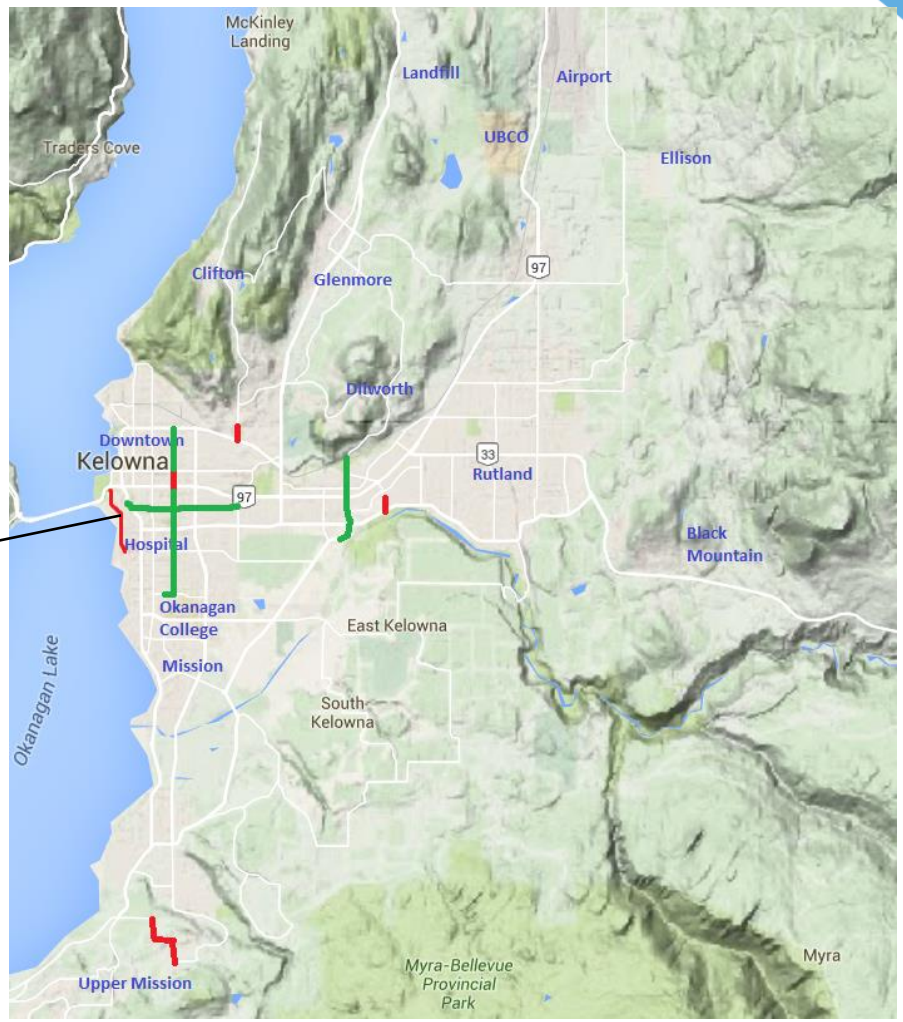
LECKIE CYCLE TRACKS (DESIGN FEATURES)

- One-way on both sides
- Raised at sidewalk level
- No Blvd. separation between cycle track & roadway
- No bike signal detection, display & control
- 4-lane arterial roadway
- No on-street parking
- Infrequent driveways

LECKIE CYCLE TRACKS REPORT CARD)

No.	Design Features	Poor	Acceptable	Successful
1	Network Connectivity, Proximity to Destinations		◯	
2	Intersection Layout & Control	◯		
3	Width		◯	
4	Length	◯		
5	Sidewalk-Cycle Track Separation		◯	
6	Roadway-Cycle Track Separation	◯		
7	Supporting Environment (Blvd. Tree, Traffic Volume/Speed, Pedestrian Activity, Grade)		◯	
8	Mitigation of Hazards, Conflicts, Transitions	◯		
9	Wayfinding, Signs & Markings	◯		
10	Lighting		◯	

ABBOTT CYCLE TRACKS (LOCATION MAP)

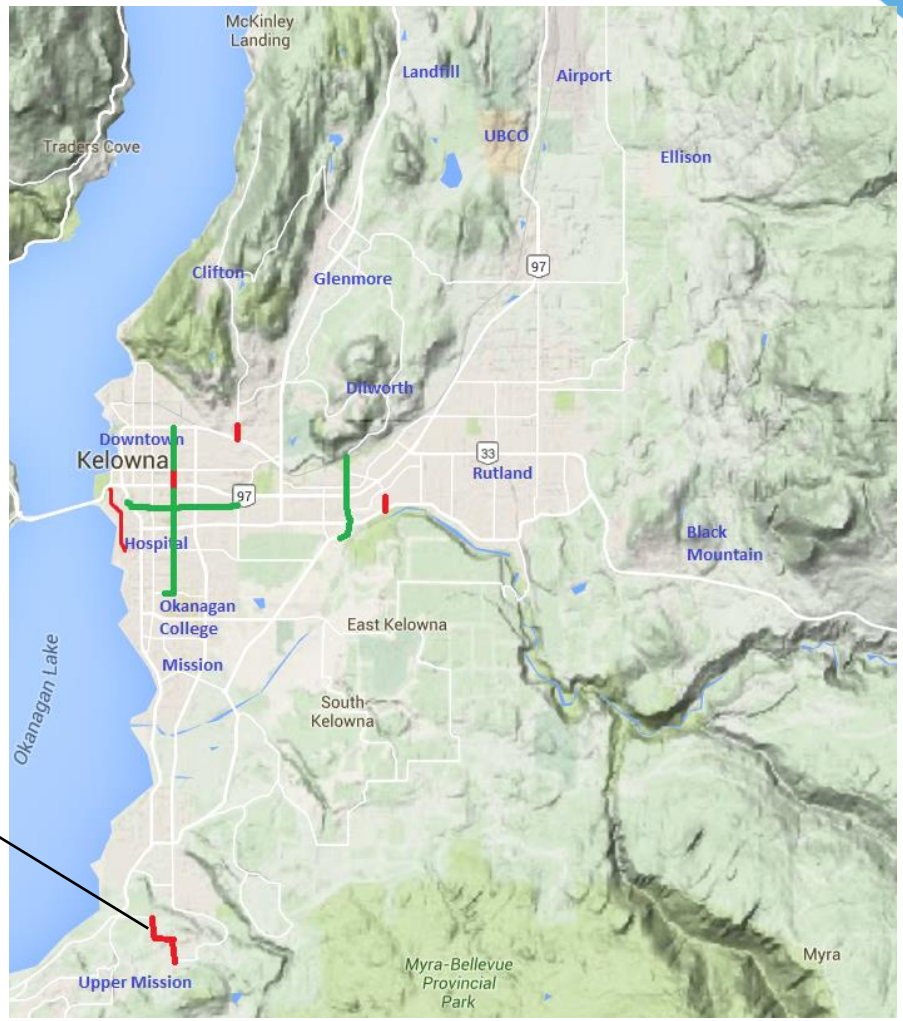


DESIGN FEATURES: ABBOTT CYCLE TRACKS

ABBOTT CYCLE TRACKS (REPORT CARD)

No.	Design Features	Poor	Acceptable	Successful
1	Network Connectivity, Proximity to Destinations			◯
2	Intersection Layout & Control	◯		
3	Width		◯	
4	Length		◯	
5	Sidewalk-Cycle Track Separation		◯	
6	Roadway-Cycle Track Separation			◯
7	Supporting Environment (Blvd. Tree, Traffic Volume/Speed, Pedestrian Activity, Grade)			◯
8	Mitigation of Hazards, Conflicts, Transitions		◯	
9	Wayfinding, Signs & Markings		◯	
10	Lighting		◯	

SOUTH RIDGE CYCLE TRACKS (LOCATION MAP)



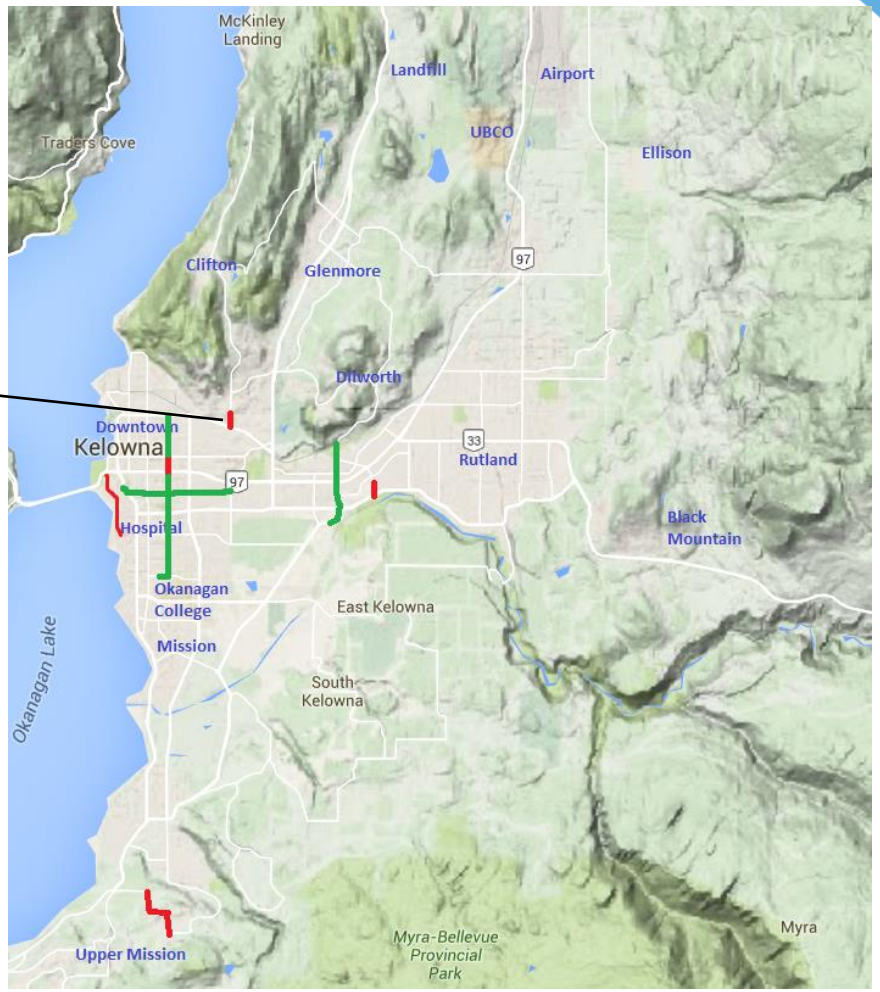
SOUTH RIDGE CYCLE TRACKS (DESIGN FEATURES)

- Two-way on one side
- Raised at sidewalk level
- Boulevard separations from sidewalk & roadway
- No bike signal detection, display & control
- 2-lane arterial roadway
- No on-street parking
- No driveways

SOUTH RIDGE CYCLE TRACKS (REPORT CARD)

No.	Design Features	Poor	Acceptable	Successful
1	Network Connectivity, Proximity to Destinations	◯		
2	Intersection Layout & Control	◯		
3	Width		◯	
4	Length		◯	
5	Sidewalk-Cycle Track Separation		◯	
6	Roadway-Cycle Track Separation			◯
7	Supporting Environment (Blvd., Traffic Volume/Speed, Pedestrian Activity, Grade)		◯	
8	Mitigation of Hazards, Conflicts, Transitions			◯
9	Wayfinding, Signs & Markings	◯		
10	Lighting		◯	

CLIFTON CYCLE TRACKS (LOCATION MAP)



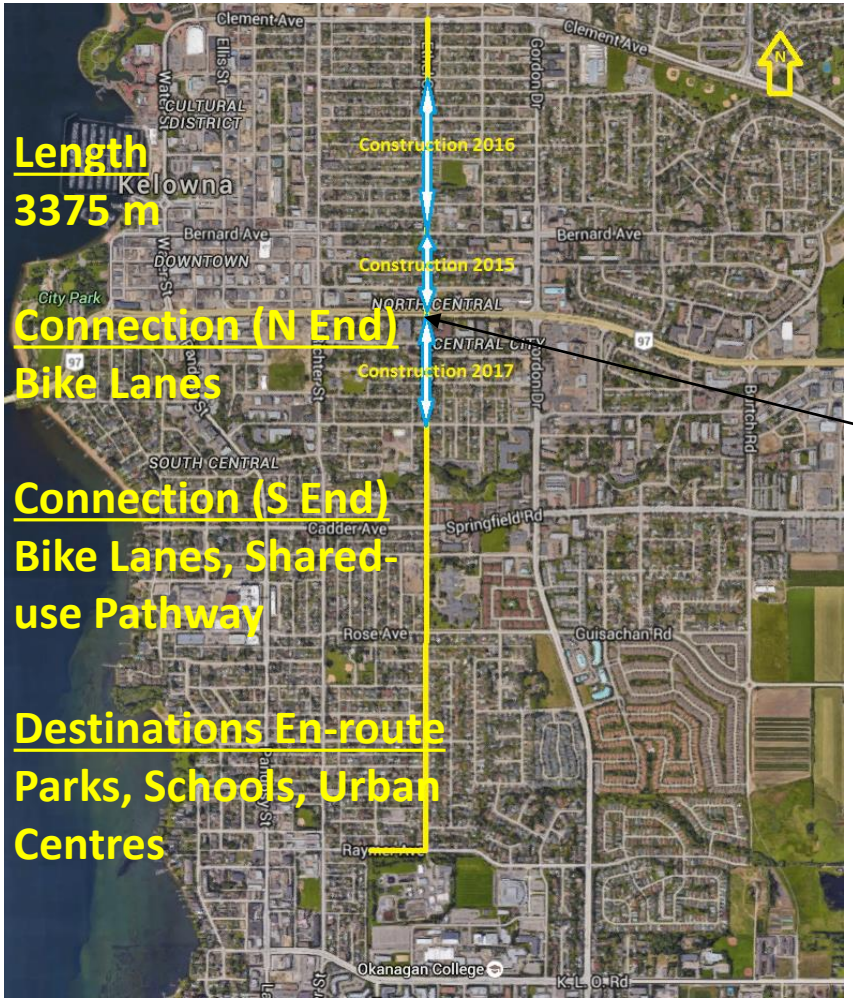
CLIFTON CYCLE TRACKS (DESIGN FEATURES)

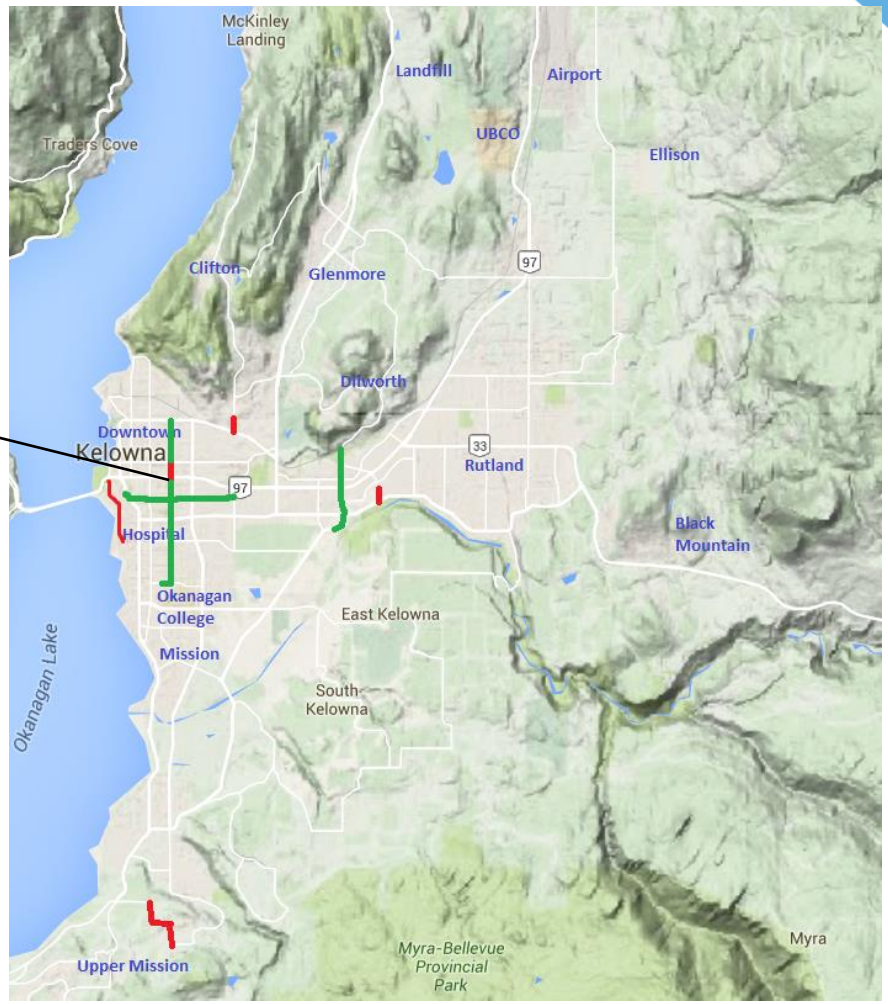
- One-way on both sides
- Raised at sidewalk level
- Boulevard separations from sidewalk & roadway
- New bike signal detection, display & control
- 4-lane arterial roadway
- No on-street parking
- Infrequent driveways

CLIFTON CYCLE TRACKS (REPORT CARD)

No.	Design Features	Poor	Acceptable	Successful
1	Network Connectivity, Proximity to Destinations		◯	
2	Intersection Layout & Control		◯	
3	Width	◯		
4	Length	◯		
5	Sidewalk-Cycle Track Separation	◯		
6	Roadway-Cycle Track Separation		◯	
7	Supporting Environment (Blvd., Traffic Volume/Speed, Pedestrian Activity, Grade)	◯		
8	Mitigation of Hazards, Conflicts, Transitions	◯		
9	Wayfinding, Signs & Markings	◯		
10	Lighting		◯	

ETHEL CYCLE TRACKS (LOCATION MAP)





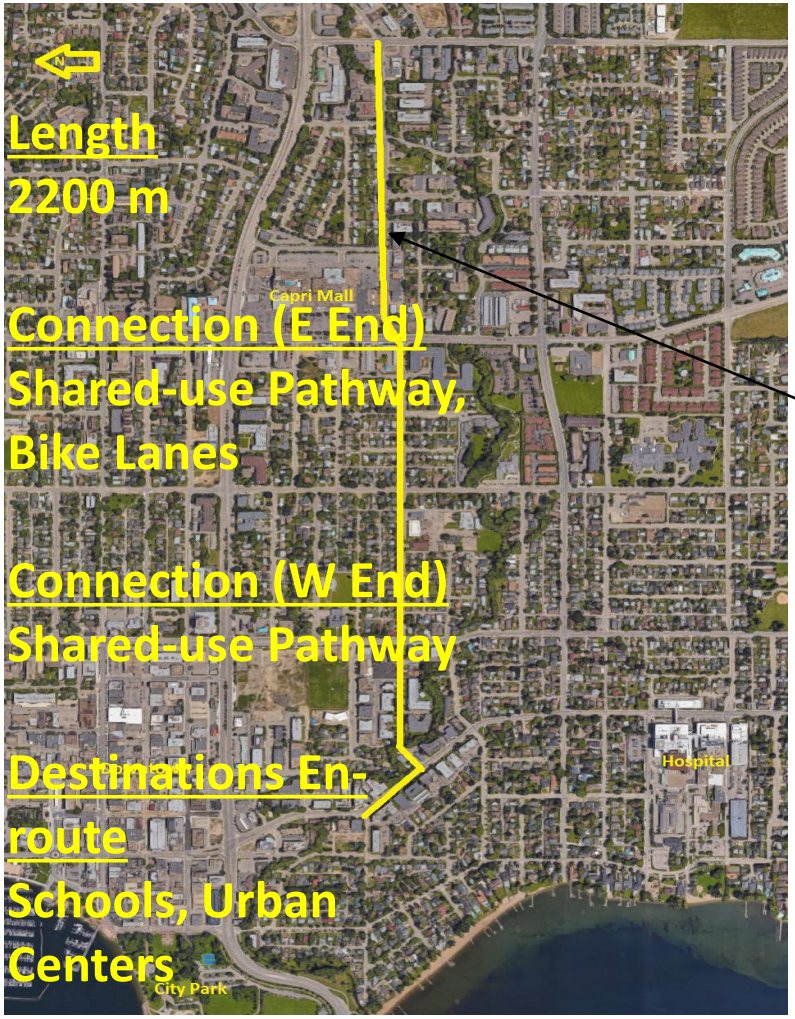
ETHEL CYCLE TRACKS (DESIGN FEATURES)

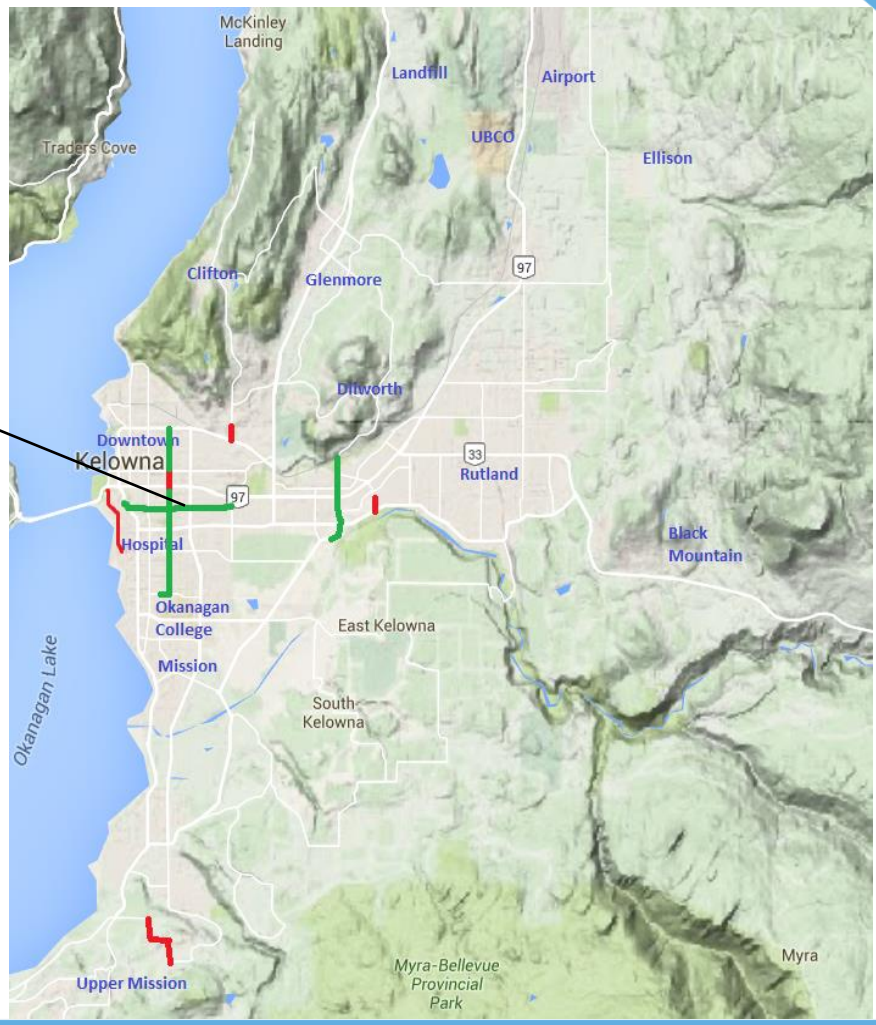
- One-way raised on both sides
- Boulevard separations from sidewalk & roadway
- Full roadway urbanized
- On-street parking removed at least from one side
- Intersection reconfigured for bike crossings
- Vehicular lane width reduced to 3.2 m

ETHEL CYCLE TRACKS (REPORT CARD)

No.	Design Features	Poor	Acceptable	Successful
1	Network Connectivity, Proximity to Destinations			◯
2	Intersection Layout & Control		◯	
3	Width		◯	
4	Length			◯
5	Sidewalk-Cycle Track Separation		◯	
6	Roadway-Cycle Track Separation		◯	
7	Supporting Environment (Blvd. Tree, Traffic Volume/Speed, Pedestrian Activity, Grade)			◯
8	Mitigation of Hazards, Conflicts, Transitions		◯	
9	Wayfinding, Signs & Markings		◯	
10	Lighting		◯	

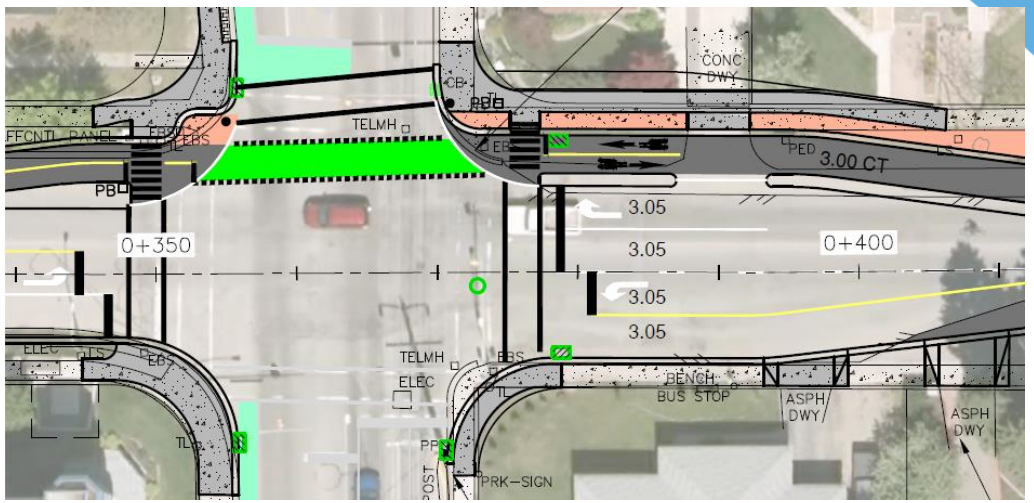
SUTHERLAND CYCLE TRACKS (LOCATION MAP)

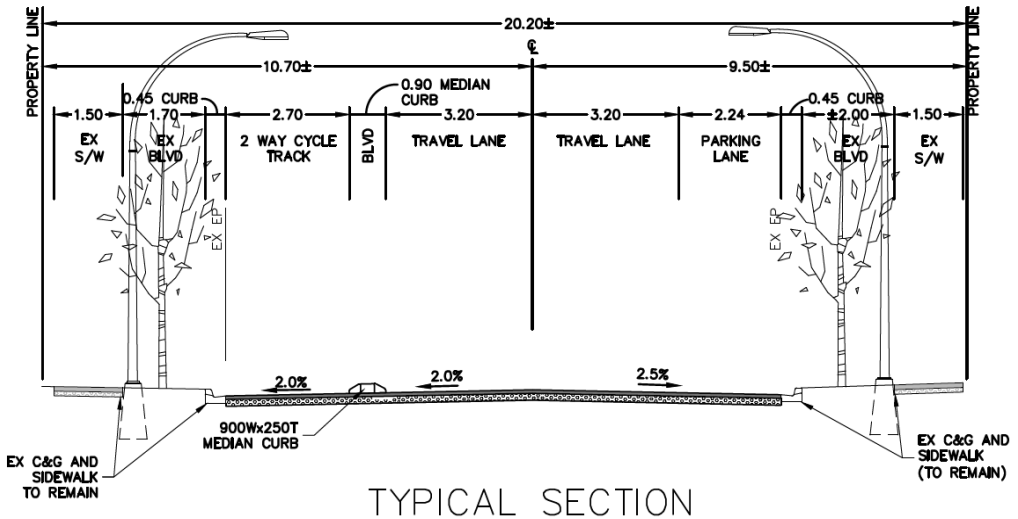




SUTHERLAND CYCLE TRACKS (DESIGN FEATURES)

- 2.7 m two-way street-level cycle track on north side
- Boulevard separation from sidewalk & 0.9 m median separation from roadway
- Existing sidewalk, boulevard, curb, gutter on north side mostly untouched
- On-street parking removed from north side
- South side mostly untouched
- Intersection reconfigured for bike signal phases
- Vehicular lane width reduced to 3.2 m



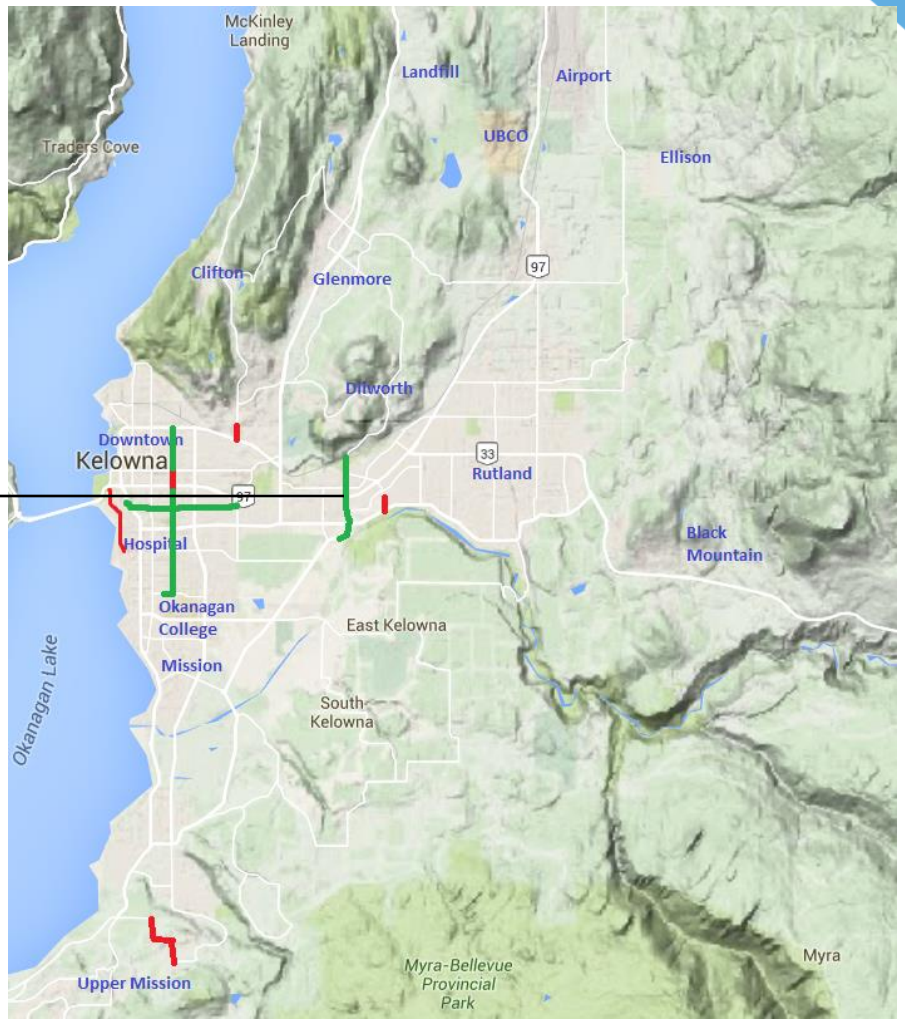


TYPICAL SECTION

SUTHERLAND CYCLE TRACKS (REPORT CARD)

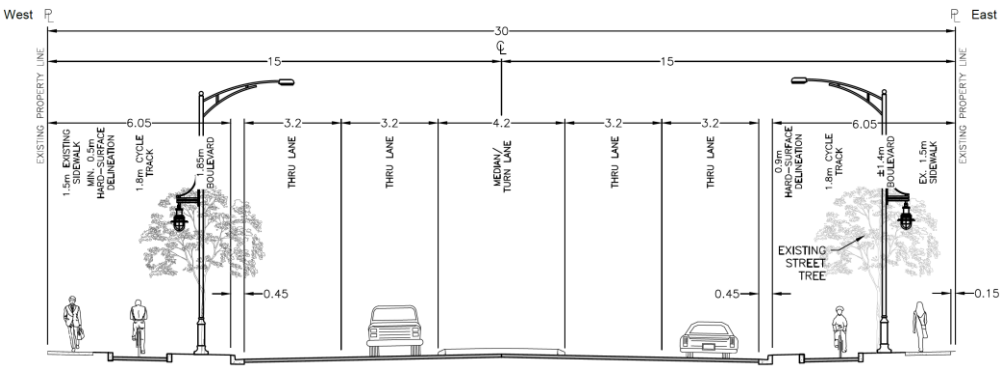
No.	Design Features	Poor	Acceptable	Successful
1	Network Connectivity, Proximity to Destinations			◯
2	Intersection Layout & Control		◯	
3	Width		◯	
4	Length			◯
5	Sidewalk-Cycle Track Separation			◯
6	Roadway-Cycle Track Separation		◯	
7	Supporting Environment (Blvd., Traffic Volume/Speed, Pedestrian Activity, Grade)		◯	
8	Mitigation of Hazards, Conflicts, Transitions		◯	
9	Wayfinding, Signs & Markings		◯	
10	Lighting		◯	

DILWORTH CYCLE TRACKS (LOCATION MAP)



DILWORTH CYCLE TRACKS (DESIGN FEATURES)

- 1.8 m one-way street-level cycle track on both sides
- Boulevard / 0.9 m median separation from sidewalk & roadway
- Existing sidewalk & boulevard mostly untouched
- No on-street parking
- 4-lane arterial roadway
- Intersection reconfigured for bike crossings
- Vehicular lane width reduced to 3.2 m



DILWORTH CYCLE TRACKS (REPORT CARD)

No.	Design Features	Poor	Acceptable	Successful
1	Network Connectivity, Proximity to Destinations			◯
2	Intersection Layout & Control		◯	
3	Width		◯	
4	Length			◯
5	Sidewalk-Cycle Track Separation			◯
6	Roadway-Cycle Track Separation		◯	
7	Supporting Environment (Blvd., Traffic Volume/Speed, Pedestrian Activity, Grade)		◯	
8	Mitigation of Hazards, Conflicts, Transitions		◯	
9	Wayfinding, Signs & Markings		◯	
10	Lighting		◯	

LESSONS LEARNED

1. Street-level is more desirable for advanced cyclists as it offers faster & smoother riding & less conflicts with pedestrians
2. Raised is susceptible to pedestrian encroachments and intersection/driveway ups & downs resulting in reduced speed & comfort
3. Two-way on one side requires less land but is more challenging in terms of intersection layout & signal design to maintain safety
4. One-way on two sides requires more land but is less challenging in terms of intersection & signal design
5. Bike signals, boulevard trees, sightlines, waiting areas & wayfinding signs are often undervalued but are key to the success of cycle tracks
6. A $1,500 per m cycle track may achieve the same results as $4,000-$5,000 per m (with full road upgrades), if planned & designed carefully
7. Requirements for snow clearance, sweeping, driveway accesses, transit stops & on-street parking influence design significantly
8. A small connected network produces quicker results than numerous scattered links