



***Analysis of Traffic/Intersection
Treatments for Highway
22/Glenbow Drive***

Bike Cochrane Active Transportation Committee

Nov 2021

Highway 22 intersection for West Valley/Glenbow

- Problem

- Highway 22 at Glenbow/West Valley is a heavily used crossing for the active transportation network
- School access to Glenbow School along with Mitford, Ecole Notre-Dame Des Vallees use this path (none of whom are bussed)
- Right and left-turning vehicles are creating a LOT of near misses

- Affected constituents

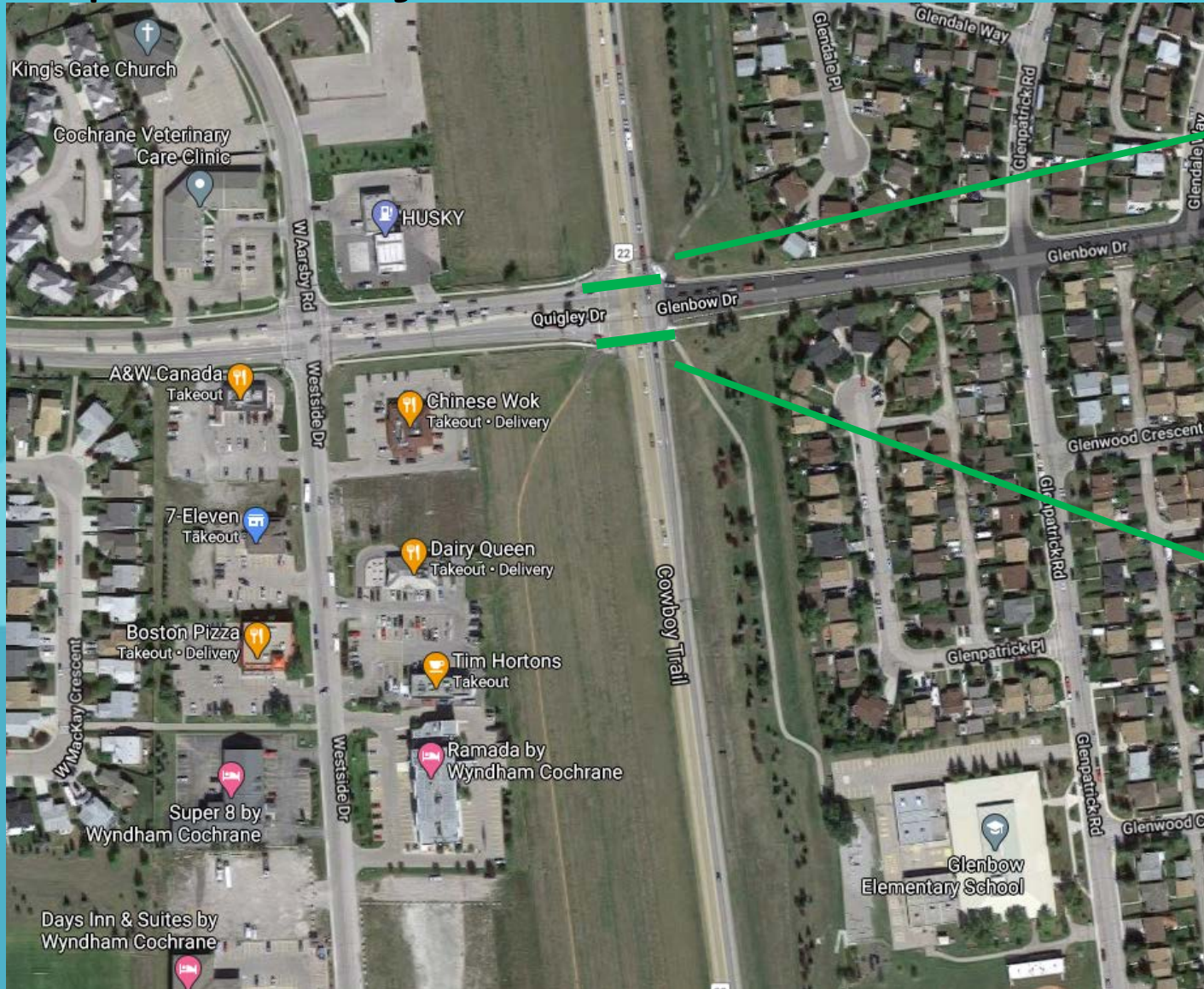
- West Valley/Terrace/Pointe Heartland, Heritage Hills, Glenbow (**population ~8745** per 2019 census)

- Scope of project/Costing estimate

- Channelized islands (right turns)
- Signal phase changes
- Temporary vs permanent solution



Map of Project Area

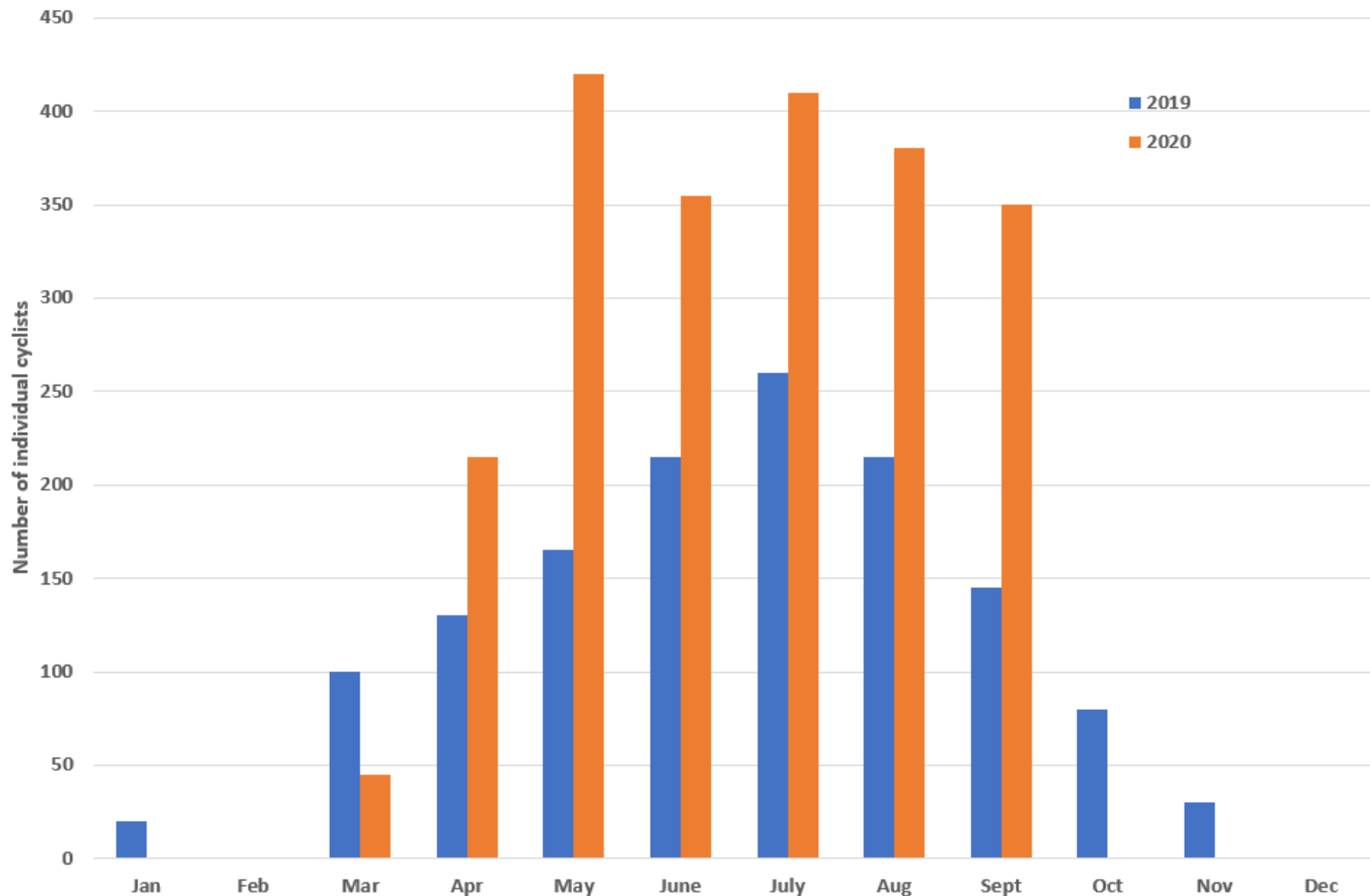


Intersection lines haven't been painted in 2+ years



Strava Data on this crossing

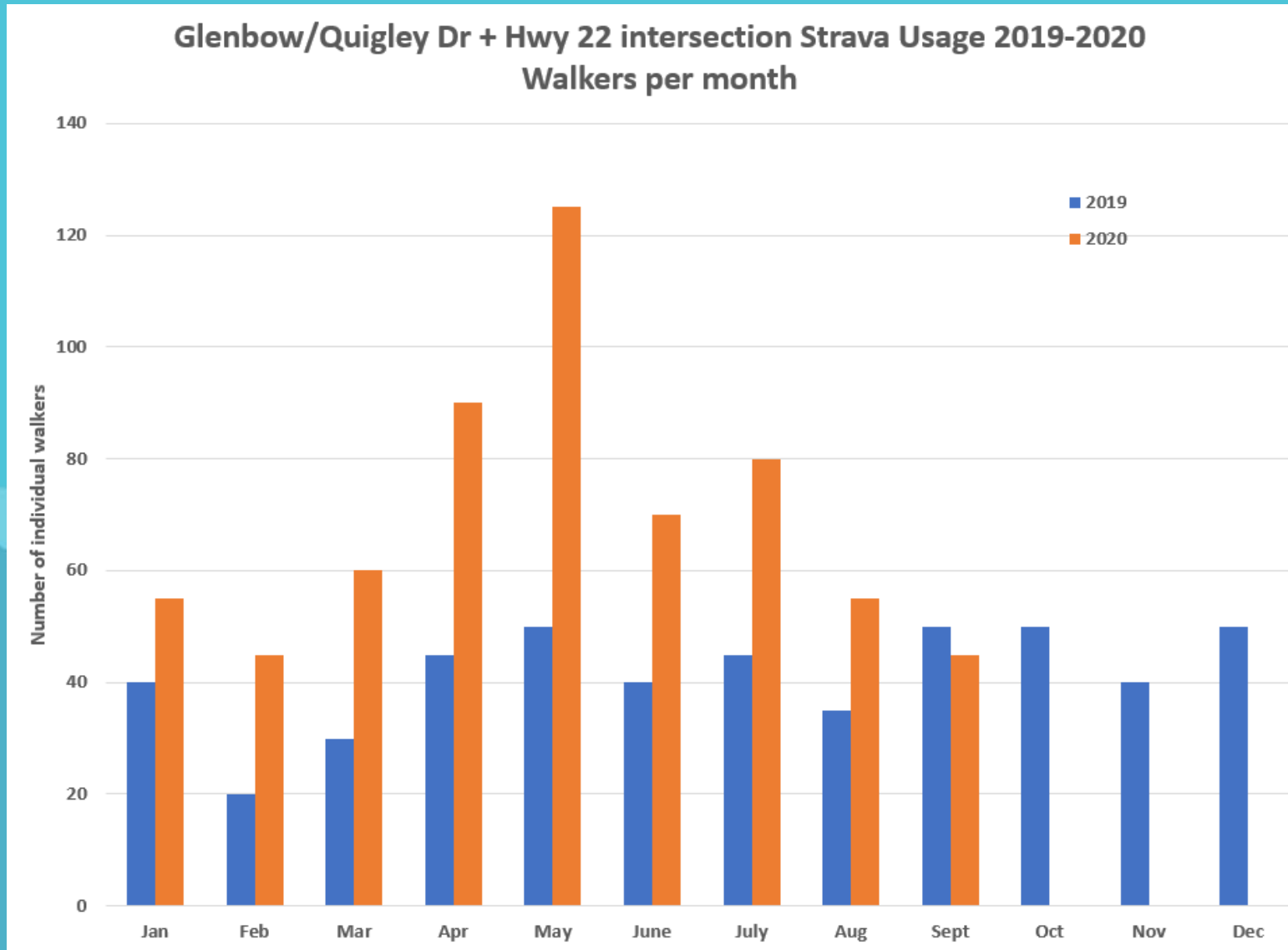
Glenbow/Quigley Dr + Hwy 22 intersection Strava Usage 2019-2020
Cyclists per month



- Monthly Strava Data on crossing this intersection by cycle
- Oct/Nov/Dec 2020 data not available yet
- **Cycling usage up by ~60% from 2019 to 2020**
- Using a multiplier of ~10x regular users to Strava users shows
 - **21,750 cycling crossings in 2020**
 - **13,600 cycling crossings in 2019**



Strava Data on this crossing



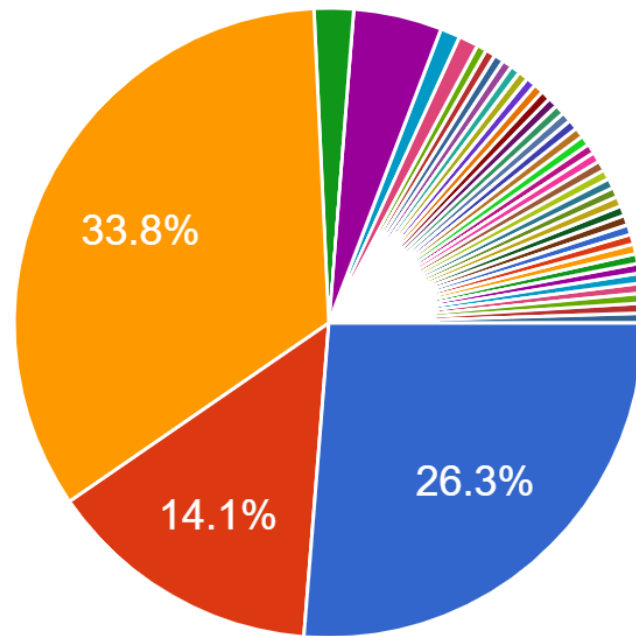
- Monthly Strava Data on crossing this intersection by foot
- Oct/Nov/Dec 2020 data not available yet
- **Foot traffic up by ~26% from 2019 to 2020**
- Using a multiplier of ~10x regular users to Strava users shows
 - **6,250 foot crossings in 2020**
 - **4,950 foot crossings in 2019**



If you never use active transportation, why not*?

If you never (or rarely) use active transportation to get to school, why is this?

198 responses



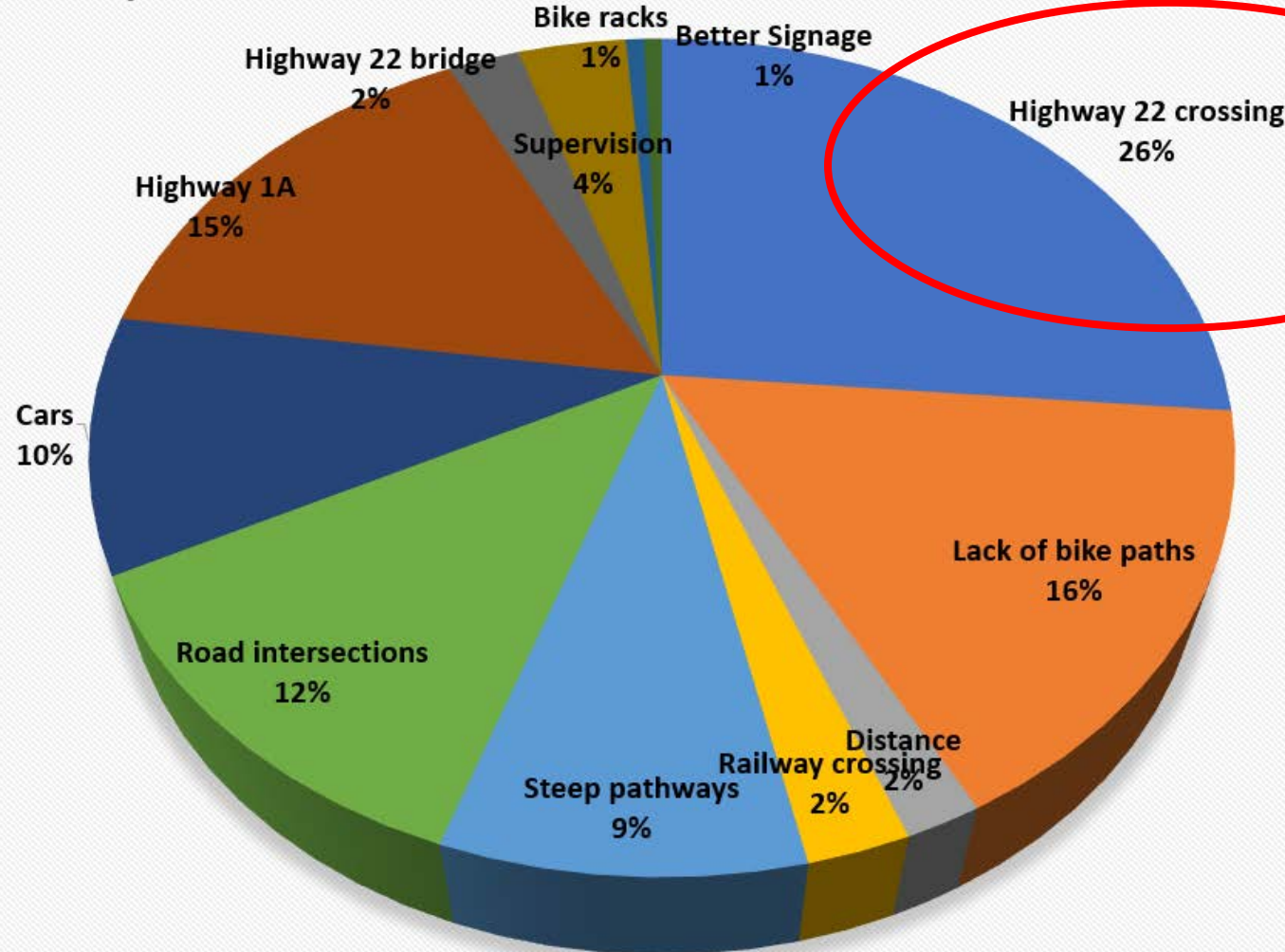
Top 3 answers

- Too far/take too long
- Too much uphill
- Unsafe
- Don't like it
- Never think of it
- Extreme cold
- Want a friend to bike with
- Kids are too little

▲ 1/6 ▼

Summary of specific issues that feel unsafe

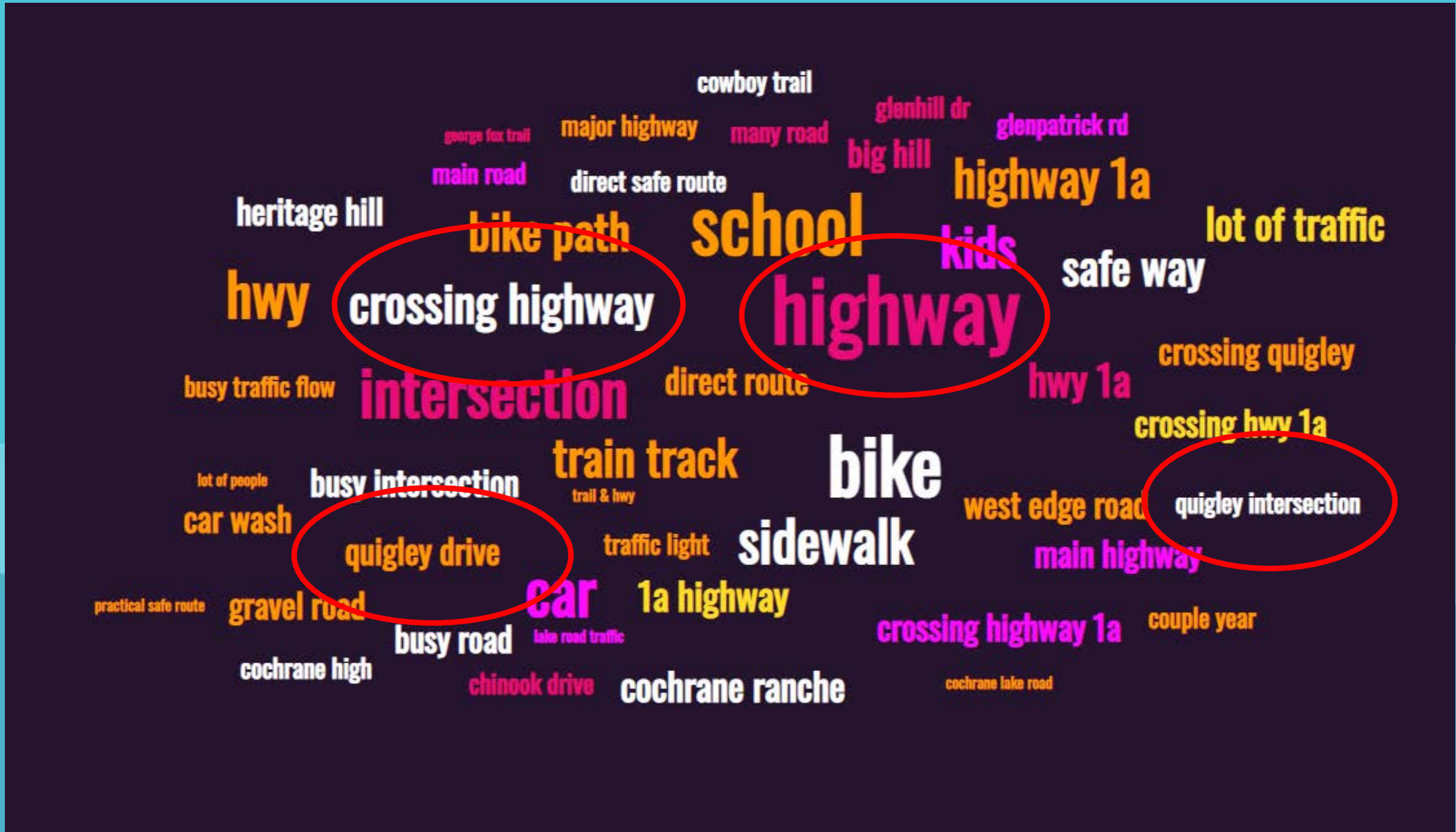
Specific Issues That Make You Feel Unsafe on a Bike to School



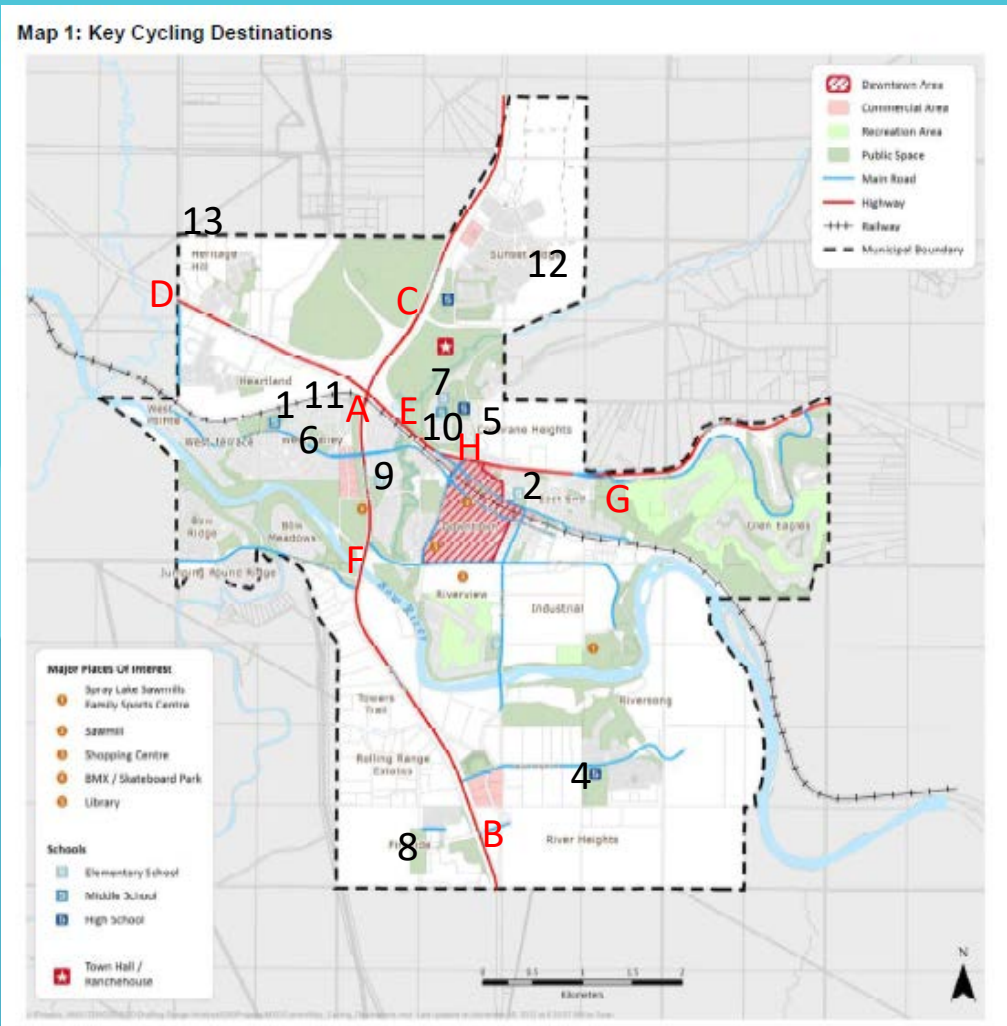
Major challenge with 'Bike to School' – see routes on next slides



Word cloud of 'safety issues'



Schools, catchments, 'hotspots'



- 1 – Ecole Notre Dame des Vallees – Whole Town (K-8)
- 2 – Holy Spirit Elementary School – Whole Town (K-6)
- 3 – St Timothy’s Junior/High School – Whole Town (7-12)
- 4 – Bow Valley High School – Sunset Ridge, Heartland, West Valley, Fireside, River Heights, Riverview, Glenbow (9-12)
- 5 – Cochrane High School – Bearspaw, Gleneagles, East End, Heritage Hills, Cochrane Heights, Sunterra, Cochrane South, North to Bottrell, West to Benchlands (9-12)
- 6 – Cochrane Christian Academy – Whole Town (K-8)
- 7 – Elizabeth Barrett Elementary – same as Manachaban (K-5)
- 8 – Fireside School - south of Bow River, Fireside, River Heights, Riversong, Riviera (K-8)
- 9 – Glenbow Elementary – Heartland, West Valley, Bow Meadows, Jumping Pound, Glenbow (K-5)
- 10 – Manachaban Middle School – Bearspaw, Gleneagles, East End, Heritage Hills, Cochrane Heights, Sunterra, Cochrane South, North to Bottrell (5-8)
- 11 – Mitford School – same as Glenbow (6-8)
- 12 – RancheView School – Sunset Ridge (K-8)
- 13 – Future RVS High School (9-12) – likely Sunset Ridge

A – Highway 22 at Glenbow Drive

B – Highway 22 at Fireside/James Walker

C – Highway 22 at RR43A

D – Highway 1A at Horse Creek Road

E – Underpass at Ranch

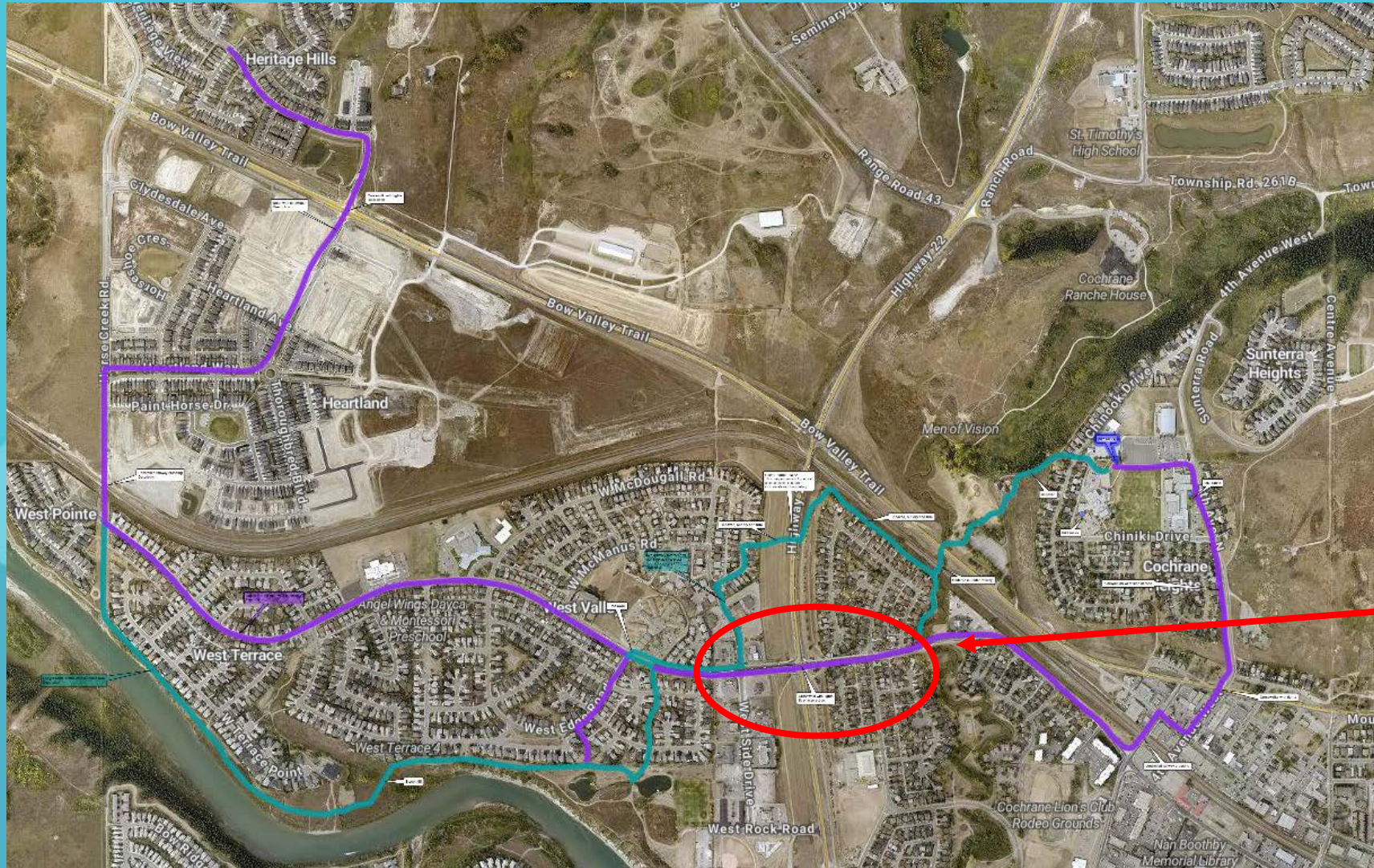
F – Bow Bridge

G – Steep hill in Gleneagles

H – Highway 1A at 4th Avenue



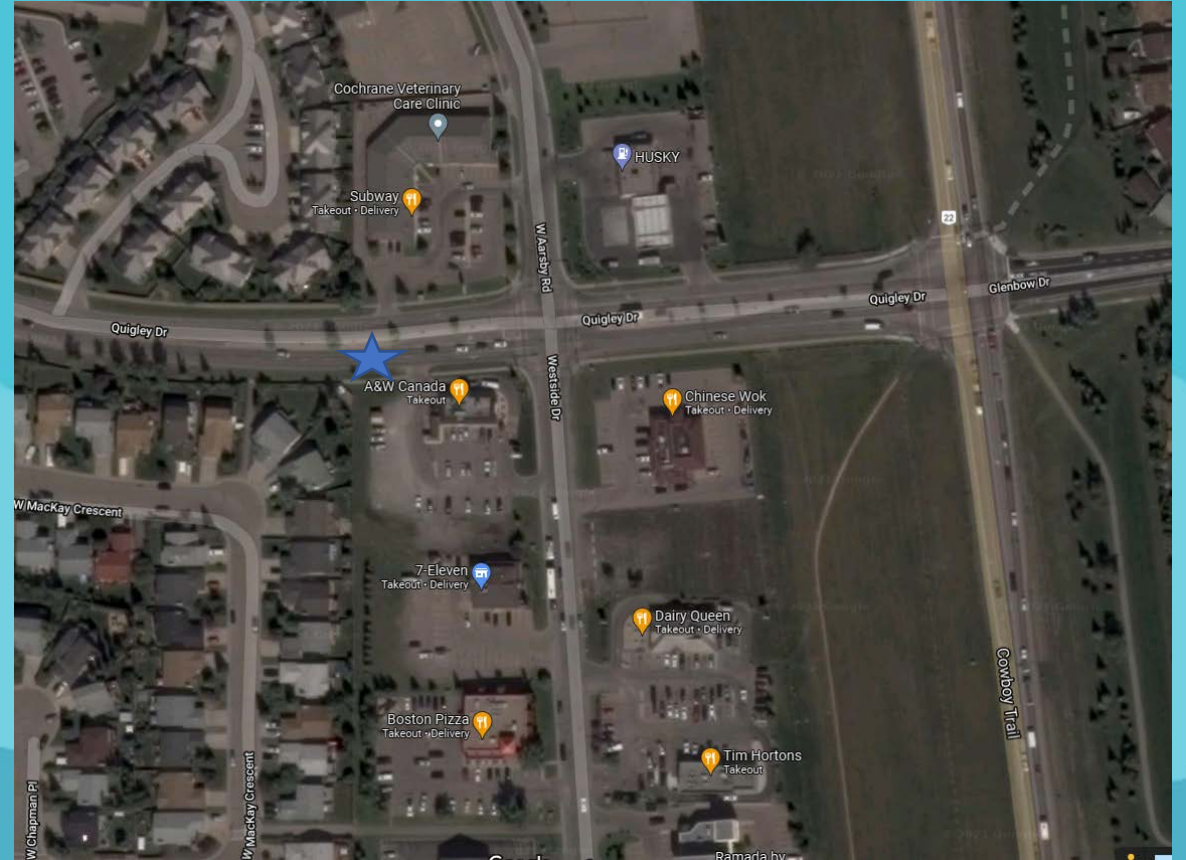
Heritage/Heartland/West Valley to Tri Schools



Glenbow Drive at highway 22 is most efficient way to get to Tri schools and Glenbow School



June 2021 Counter Survey



Counter placed on sidewalk on south side of Quigley Drive, a popular 'bike to school' route to Glenbow School, along with major corridor to Mitford, Ecole Notre Dame, and Cochrane Christian Academy



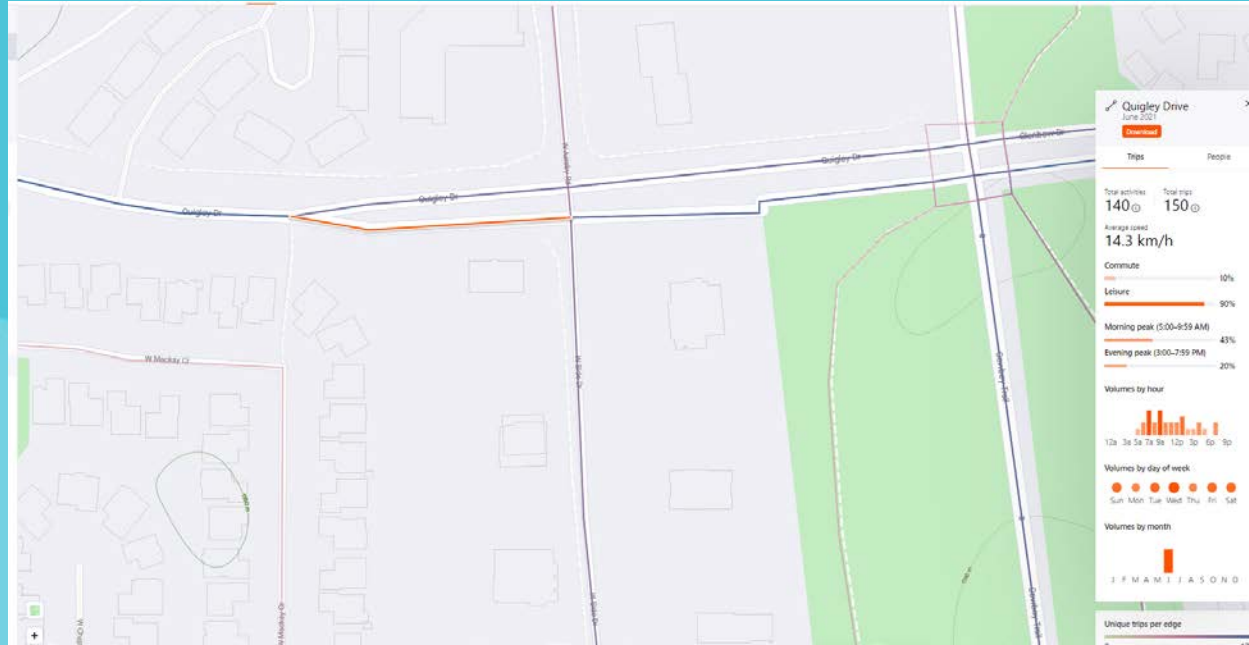
Summary data

- **5764 bikes counted** for the month of June on the sidewalk along Quigley Drive (south side) by A&W
- Obvious **bike commuting patterns seen in timing** (bike to school 7am to 8am, 2pm to 3pm)
- Sidewalk in this space is much preferable to roadway due to traffic and intersection hazards
- Opportunity for 'separated bike lane' to make this bike to school traffic that much more safe and desirable



Correlation to Strava Metro data

- Strava counts 140 activities and 150 total trips in June 2021
- Massive undercount per Strava
- Strava User Rate (SUR) looks like $140/5764 = 2.4\%$ or **41:1**
- For school-focused corridors, Strava Metro doesn't look like a representative data set, but it shows that 10:1 is conservative for Strava correlation



Edge UID 236894000 'Quigley Drive'

Conclusions/Thoughts from Bike to School survey

- **91% of survey respondents WANT to bike to school!**
- 70% of survey respondents are within a 30-minute bike ride to school or less
- The top 3 reasons given for not biking are **safety, too far, and too much uphill/slopes**
 - Bike Parking At Schools Should Be Improved Too
- **Highway 22/1A Intersections Need Better Signage/Crossings!**



Traffic data from this intersection

Reference No.: 997071
 Intersection of:
 22 & GLENBOW DR IN COCHRANE 3-26-4-513820533

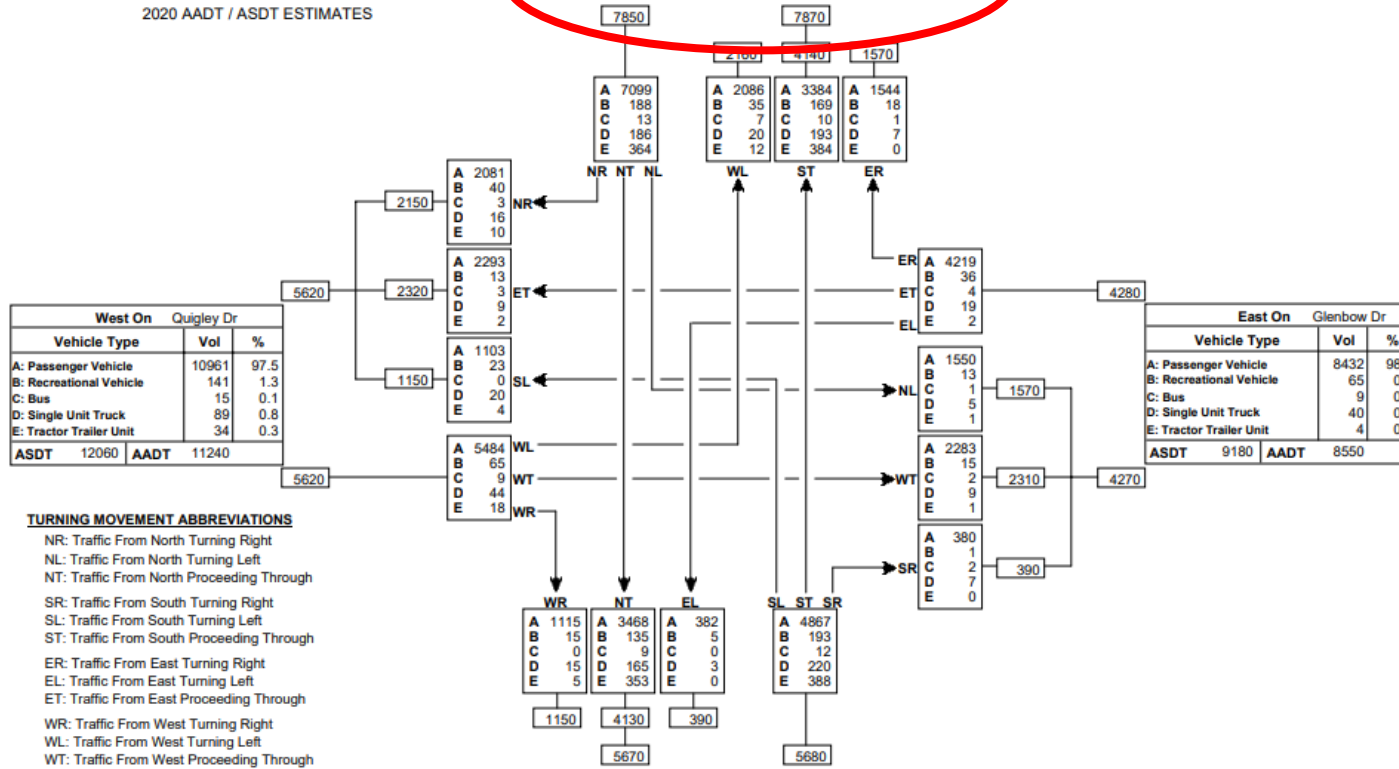
2020 AADT / ASDT ESTIMATES

Turning Movement Summary Diagram

North On 22		
Vehicle Type	Vol	%
A: Passenger Vehicle	14113	89.8
B: Recreational Vehicle	133	0.9
C: Bus	31	0.2
D: Single Unit Truck	406	2.6
E: Tractor Trailer Unit	760	4.8
ASDT	16870	AADT 15720

Source:

<http://www.transportation.alberta.ca/mapping/>



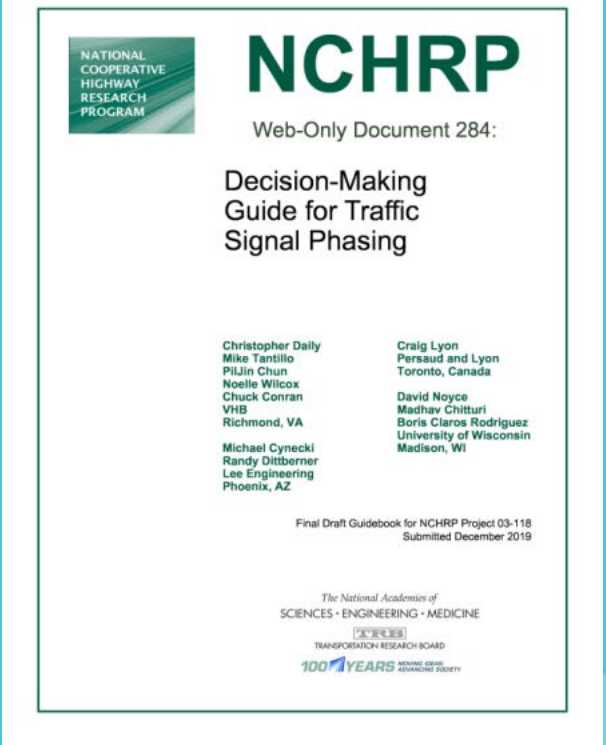
Significant left-turning and right-turning traffic with pedestrian crossing active makes for MANY near-misses presently

South On 22		
Vehicle Type	Vol	%
A: Passenger Vehicle	9832	86.6
B: Recreational Vehicle	348	3.1
C: Bus	21	0.2
D: Single Unit Truck	403	3.6
E: Tractor Trailer Unit	746	6.6
ASDT	12180	AADT 11350

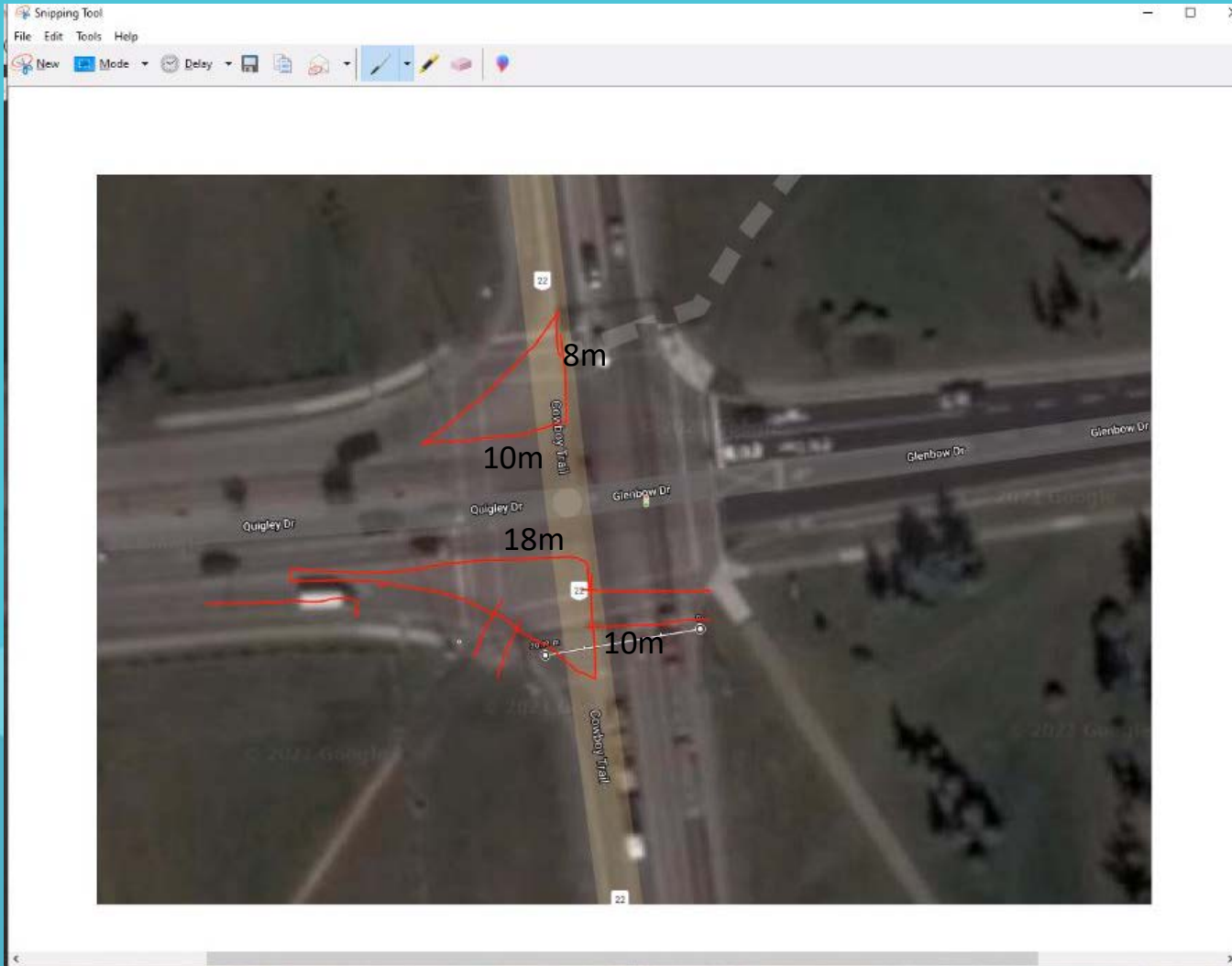


Recommendations to Alberta Transportation for Hwy 22/Glenbow Dr

- Bike Cochrane recommends **annual crosswalk painting**
 - Preferred zebra-stripe with 'elephant's foot' crossing standard
 - Green higher-visibility paint would be ideal although not presently supported in TAC standards
- Bike Cochrane recommends **improving intersection treatment with concrete refuge islands, alternate turn phasing, tightened corner radii in order to reduce conflicting movements**



Option A – Channelized right turns on west side of intersection



Potential to reduce crossing on south side from ~30m down to 15-18m

Square footage of south channel concrete
 $\sim 18 \text{ m} * 10 \text{ m} / 2 = 90 \text{ m}^2 \Rightarrow$ **963 sq ft**

Square footage of north channel concrete
 $\sim 10 \text{ m} * 8 \text{ m} / 2 = 40 \text{ m}^2 \Rightarrow$ **428 sq ft**

Concrete costs $\sim \$350/\text{m}^3$ in Calgary*
 $130 * 0.15$ (6 inches) = 19.5 m^3
 $19.5 \text{ m}^3 * \$350/\text{m}^3 = \6825

Materials/labour costs $\sim \$5.50/\text{sq ft}^*$ for 4 inch thick (materials and labour)

Concrete total $\Rightarrow 1391 \text{ sq ft}$ (130 m^2)
 $\$5.5 = \7650

Materials/Labour = $\$7650$

Concrete cost = $\$6825$

Subtotal = $\$14,475$ + taxes, mobilization costs

Excavation/earthworks not required since this will be poured on existing asphalt

* Using envirocrete.ca for estimation



Option B – Use Calgary’s ‘Traffic Calming curbs’ to do a trial*

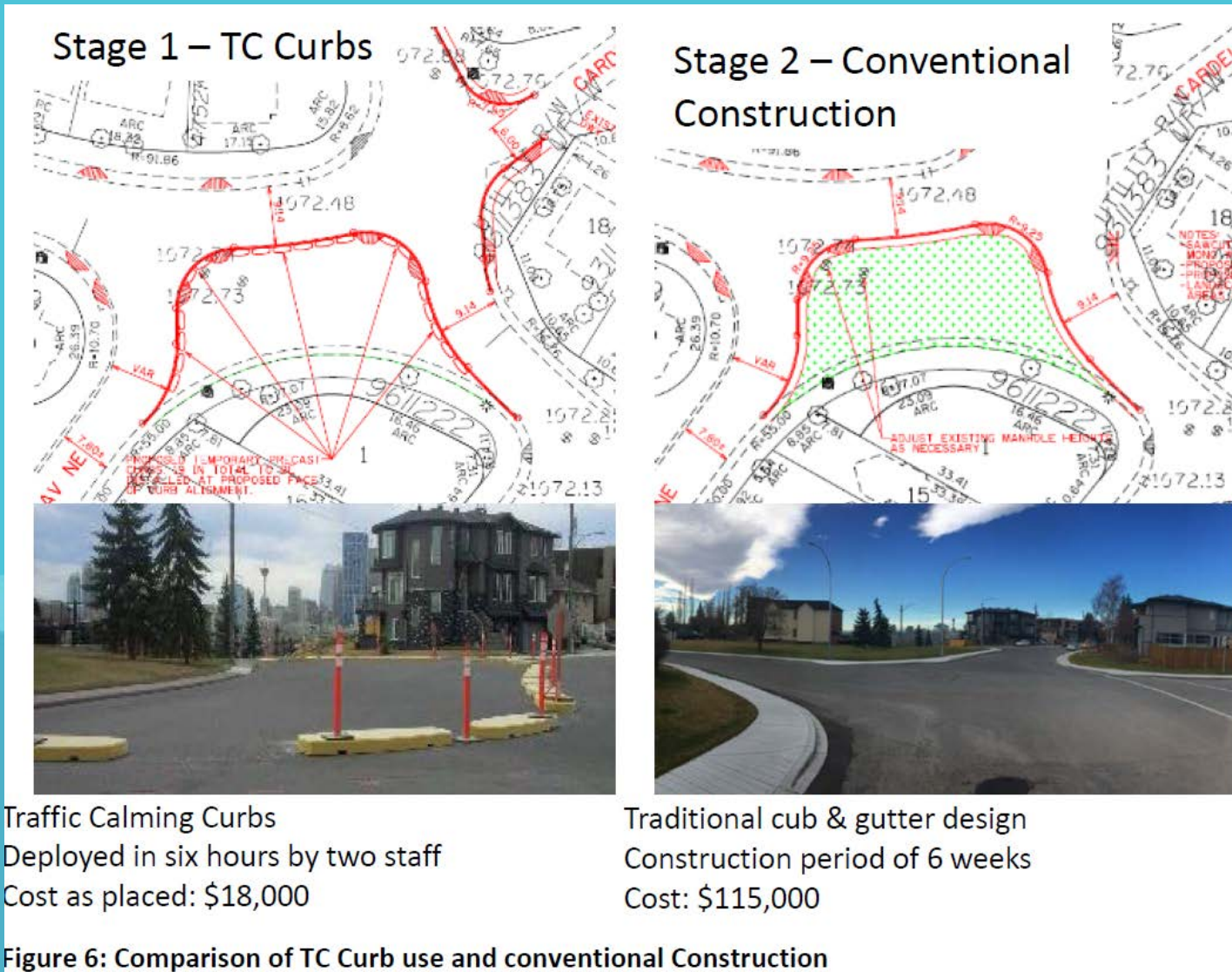


Figure 6: Comparison of TC Curb use and conventional Construction

* 2017 TAC, City of Calgary, new Traffic Calming Tool

Use TC curbs to try out a change to the intersection

\$18,000/22 curbs (installed) = ~\$800/curb (~1m by 2.75m)

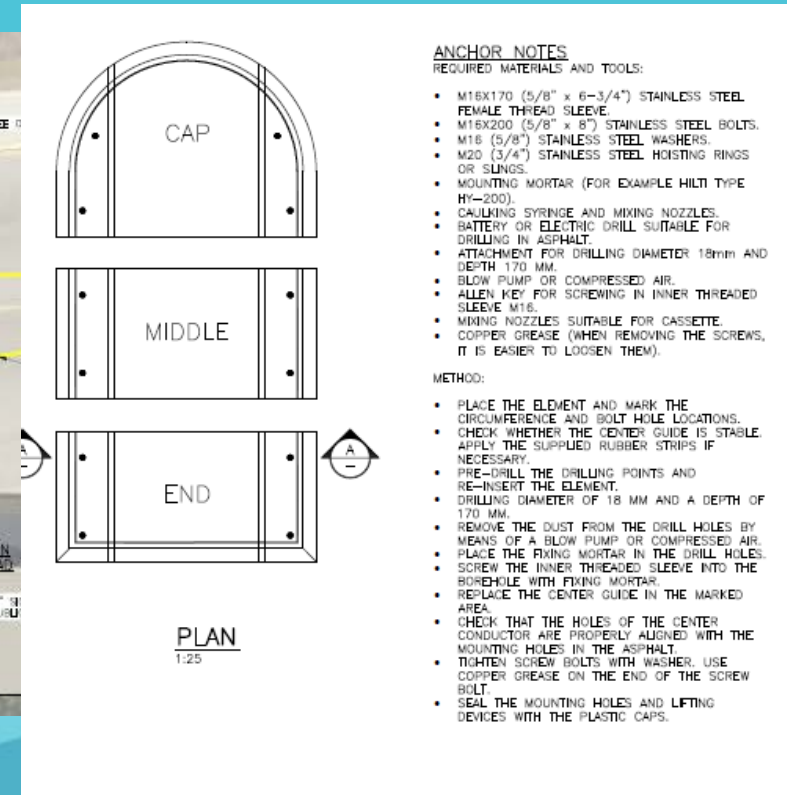
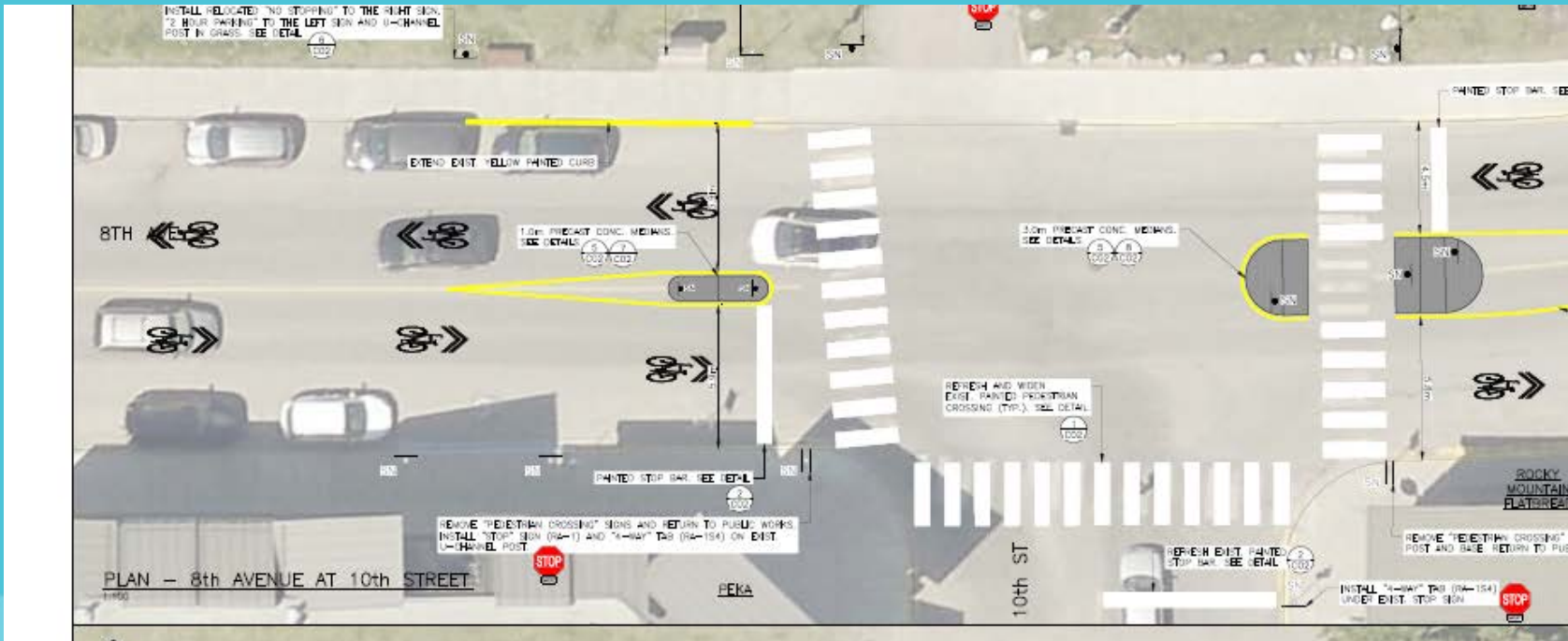
Estimate of 16 needed (3 + 6 + 4) on south side, 9 (3 + 2 + 4) needed on north side, 25 curbs

Expected cost for TC curbs

\$18000 * 25/22 = **\$20,450**



Option C – Consider use of ‘Canmore Kerbs’



- Canmore has created pre-cast design (Lafarge in Calgary) for making safer intersection ‘islands’ without having to rip up roadway
- Takes ~1/2 day to do install, and create new protected ped crossings
- Pieces are ~\$450-\$800 (depending on plain vs inlaid with colour), with install being ~\$200-\$400.
- Town of Canmore is willing to work with Cochrane as a pilot to share this design (exclusive at Lafarge)



Collisions involving cyclists/pedestrians in Cochrane area (from AB Transportation)

- Most recent 5 year period (2013-2017)
 - Total of 33 collisions involving bicyclists
 - 27 injury collisions, 6 property-only
 - Total of 31 collisions involving pedestrians
 - 24 injury collisions, 4 fatal collisions, 3 property damage collisions
- Location data can't be released if less than 5 incidents happened (due to FOIP)
 - No 'reported collision hotspots' per AB Transportation
 - A few locations had multiple collisions
 - Sunset Circle and Sunset Drive (active crosswalk)
 - **Glenbow Drive** and Glenpatrick Road (active crosswalk and bike lane location)
 - 1st St, **Centre Ave**, **Glenbow Drive**, **Quigley Drive**, River Heights Drive, Springbank Road



Talking points for AT

- Concrete refuge islands can help
 - Consider adding this to 1A/22 intersection work
- Phasing turn signals can block potential collisions
 - Adding alternate phasing can help
- Tighten corner radii to slow down speeds
- Raised crosswalks across Quigley/Glenbow will help make pedestrians/cyclists more visible
- Channelized right turns could be considered
 - Set back crossings might be a better option here to achieve a shortened crossing distance without introducing a new hazard

