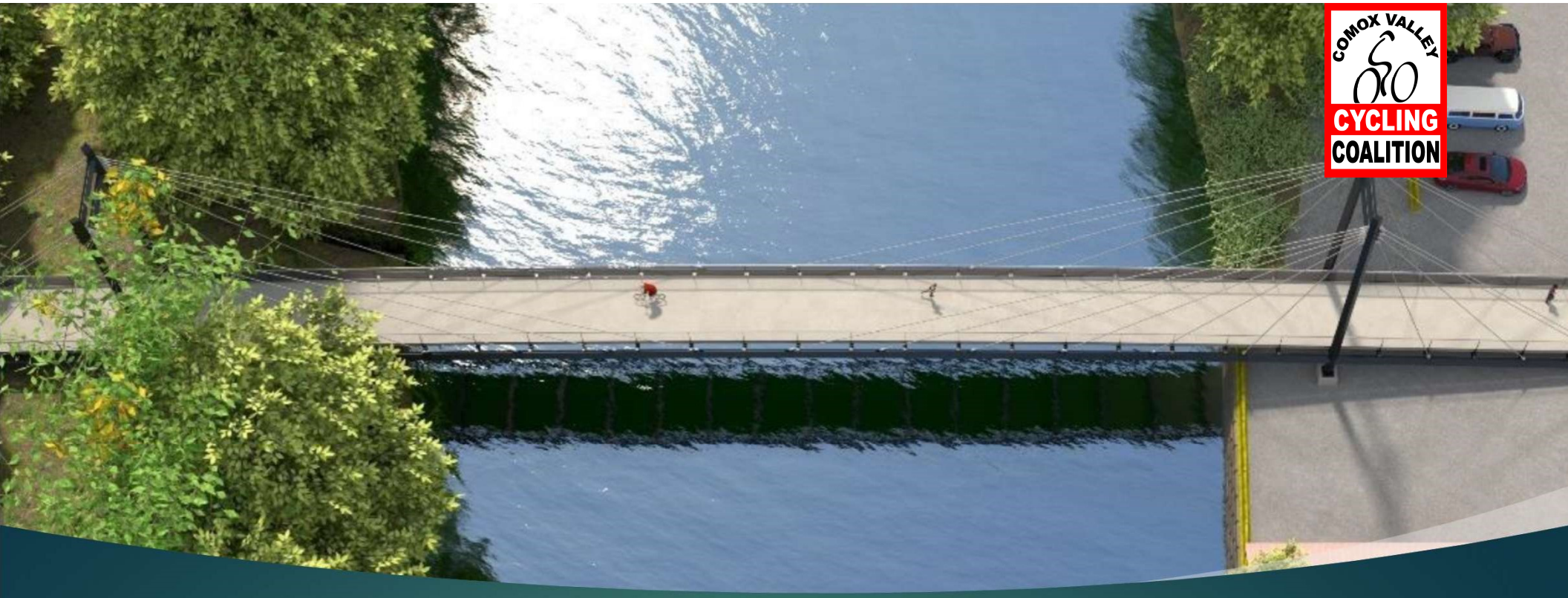


6th Street Active Transportation Bridge

COMOX VALLEY CYCLING COALITION

PRESENTATION TO COURTENAY CITY COUNCIL

JANUARY 18, 2021

City of Courtenay - 6th St Bridge Update

On Dec 9, based upon staff recommendations, council voted unanimously to proceed to the **detailed design stage** for a **4 meter wide** Balanced Cable Stayed active transportation bridge crossing at 6th Street and limit further public engagement to "Information Only"

- *Staff to proceed with detailed design of a **4 metre wide** Symmetrical Cable Stayed Bridge, as per the project schedule presented;*
- *Staff to commence public engagement to **inform** the public of the project*

CVCCo Issues with 6th St Bridge Proposal

1. The user count forecast **underestimates user numbers** for the 6th St bridge by a significant margin. Based on 2019 user count data, the proposed bridge **requires separated lanes for pedestrians and cyclists**

2. The delineation of **separate pedestrian/bike lanes** is critical for **safety**. This requires, at minimum, a **4.8m wide bridge deck**

The current 6th St Bridge width proposal of 4 meters is based on a low user forecast and will not allow for lane separation - either now or in future.

Bridge User Forecast

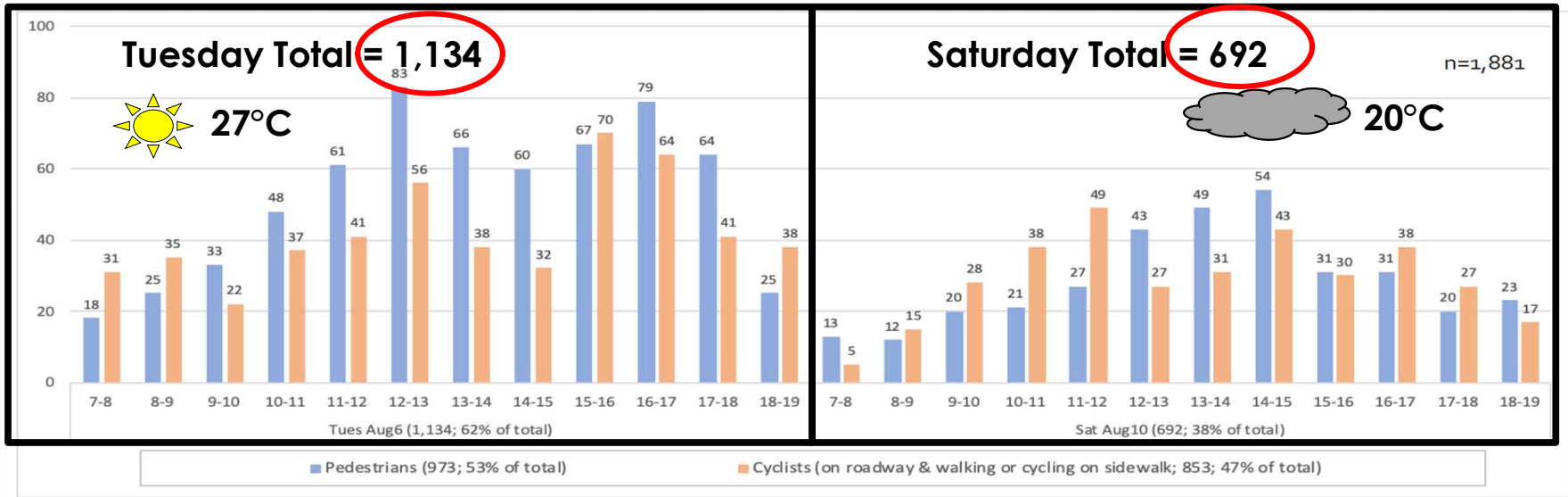
The **Jan 2020 Urban Systems Report** created a user forecast which has been relied upon for design decisions to date:

1. Urban Systems have **used the lowest count day** from 2019 data as the basis for their user forecast
2. Forecast assumes **only 50% of 5th St active transportation users will move to the new 6th St Bridge**
3. **Growth rates of 3% per year for cycling are very pessimistic**…

Aug 2019 Data Counts

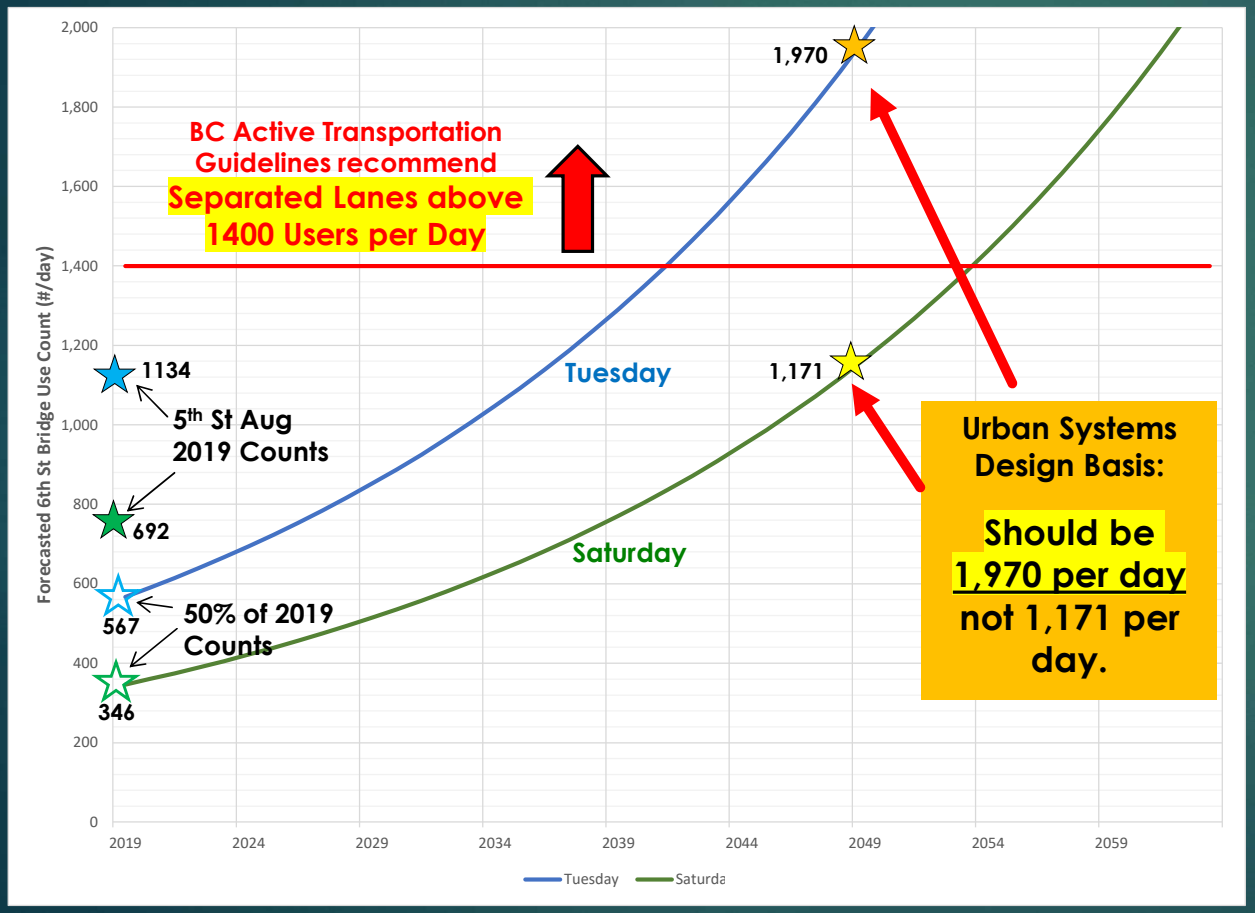
- Aug 2019 counts showed **1,134 users on Tuesday** and **692 users on Saturday**
- **Tuesday numbers higher due to commuter traffic and far better weather**

Figure 11: Comparing pedestrian to cyclist counts, by day & hour



Note: these counts do not include other users such as mobility scooters or skateboards (Tue = 44, Sat = 25, Total = 69)

User Forecast Comparison



- **Chose to use** the 5th St data from the Saturday count which was the **lowest of the two samples**
- Only used a **30 year window** (to 2049) when the **life span of the bridge is 75 years**
- As the graph shows, even using the 50% uptake and slow growth assumptions **suggests that the bridge must be built to support separated lanes (4.8m minimum)** sometime in the first 30-40% of its life span

How Many Users Will Choose 6th St?

User forecast assumes that only 50% of active transport users will choose THIS

over THIS?

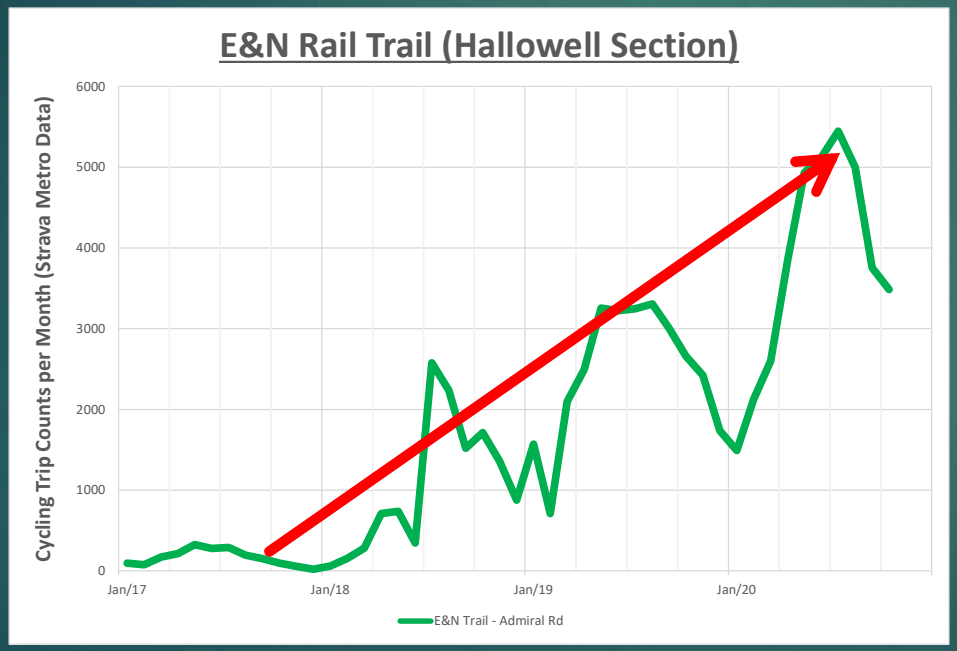
- We anticipate that **the vast majority of cyclists will chose to utilize the new 6th St Bridge**, if it is of proper design width and connected to cycle routes.
- **Pedestrian** choice will depend on **destination and time constraints**

E&N Rail Trail: Hallowell Rd - Esquimalt

- Prior to 2018, cyclists were forced to use roadways to connect two portions of the E&N Trail through Esquimalt – few riders used this route due to safety concerns
- A **new cycling pathway** was constructed **beside the roadway** in 2018 and it proved **immensely popular**

Build it and They Will Come…

- Strava Metro data shows **number of users has grown by 25 times** what it was prior to a trail being installed beside the roadway



Note that this data reflects cyclists who use the Strava app and, although this is expected to be only a percentage of total cyclists in BC, it represents relative growth values

Lessons:

1. Cyclists will use **safe infrastructure** built in the proper place
2. **Do not underbuild** a **key connector** such as a **bridge** pathway that is nearly **impossible to expand later**

Almost 200% growth per year!

We should anticipate similar growth in usership for the proposed 6th St Bridge once cycling network is complete

BC Active Transportation Design Guide

BCAT Design Guide contains no specific guidelines for bridge width design

- First section in the guide speaks to **"Design Width"** of Pathways. **Table E-20** sets a **desired width of 5.2m** for high volume with varied users (4.0m + 2 x 0.6m side clearance)
- **Table E-21** provides guidance for separating users (bikes/pedestrians). **User separation is required** for a **4.0m path with over 1400 users per day**.
- Section 4.2.2 of the V+M Report quotes from Section E.2 of the BCAT Guide: **"If the required space is available, it is recommended to provide separation between bicycle users and other pathway users"** and goes on to further quote from Section E.3 recommending **"a total delineated use pathway width of 4.8m, at a minimum."**
- V+M Report Conclusions included **"If it is desired to have the option to potentially delineate user modes at a future date, a minimum deck width of 4.8m would allow modal separation**, although the pedestrian zone would be rather tight."

Separated Lanes for Safety

BC Active Transport Guide – E.3

Benefits compared to multi-use pathways

- Separated bicycle and pedestrian pathways create a more comfortable environment and minimize the potential safety conflicts between people walking and faster-moving active transportation users, such as people cycling, in-line skaters, and other modes.

- The proposed design width of **4.0m DOES NOT ALLOW for separated** bike/pedestrian **lanes** which are critical to **reduce congestion and accidents**

4.8m Wide Separated Ped/Bike Pathway

San Francisco

4m Wide Pathway with No Separation

Burnaby

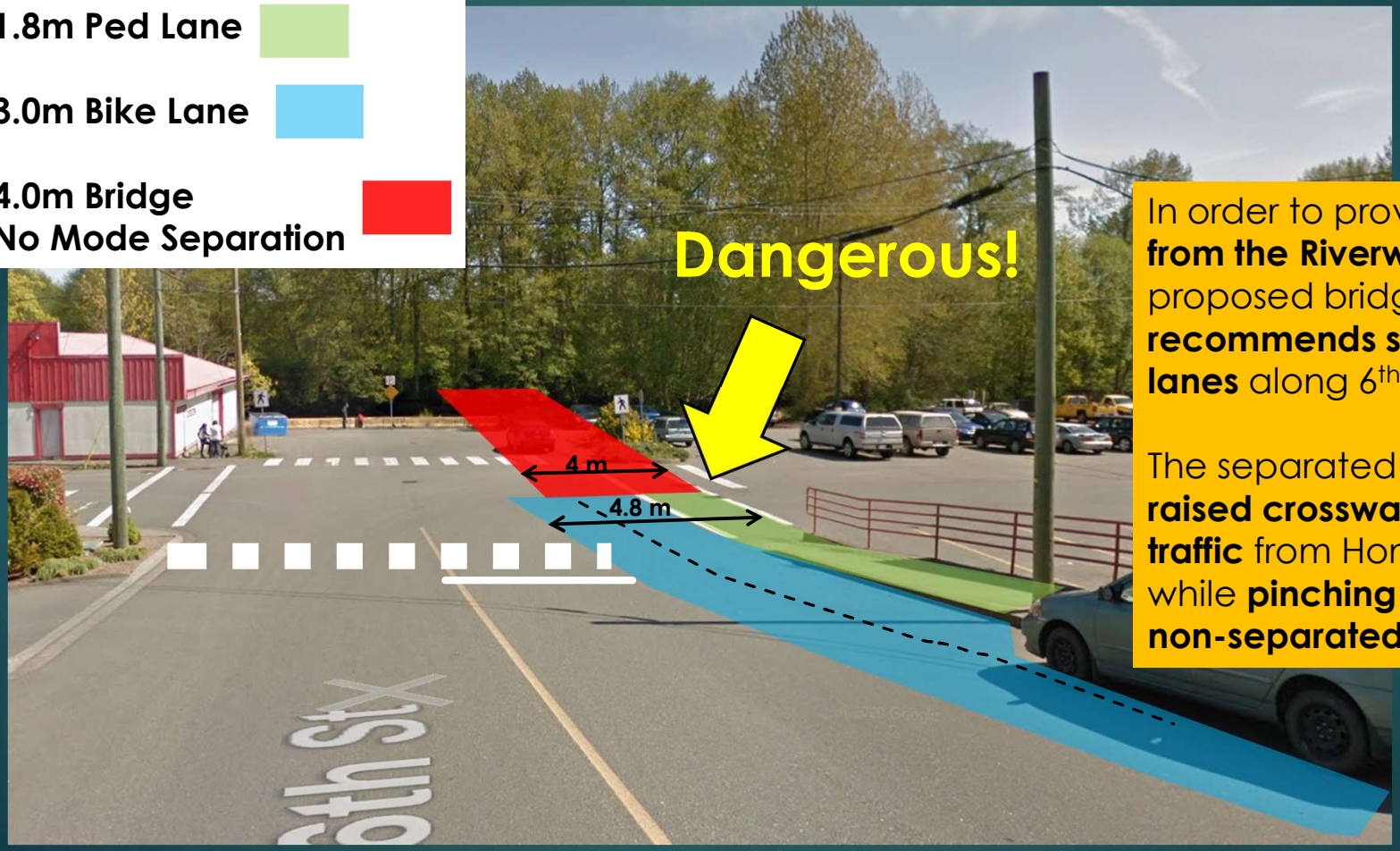
ure 13: Four-metre wide deck on Central Valley Greenway pedestrian bridge

Current Design – West Side – 4.0m Bridge Width

1.8m Ped Lane

3.0m Bike Lane

4.0m Bridge
No Mode Separation



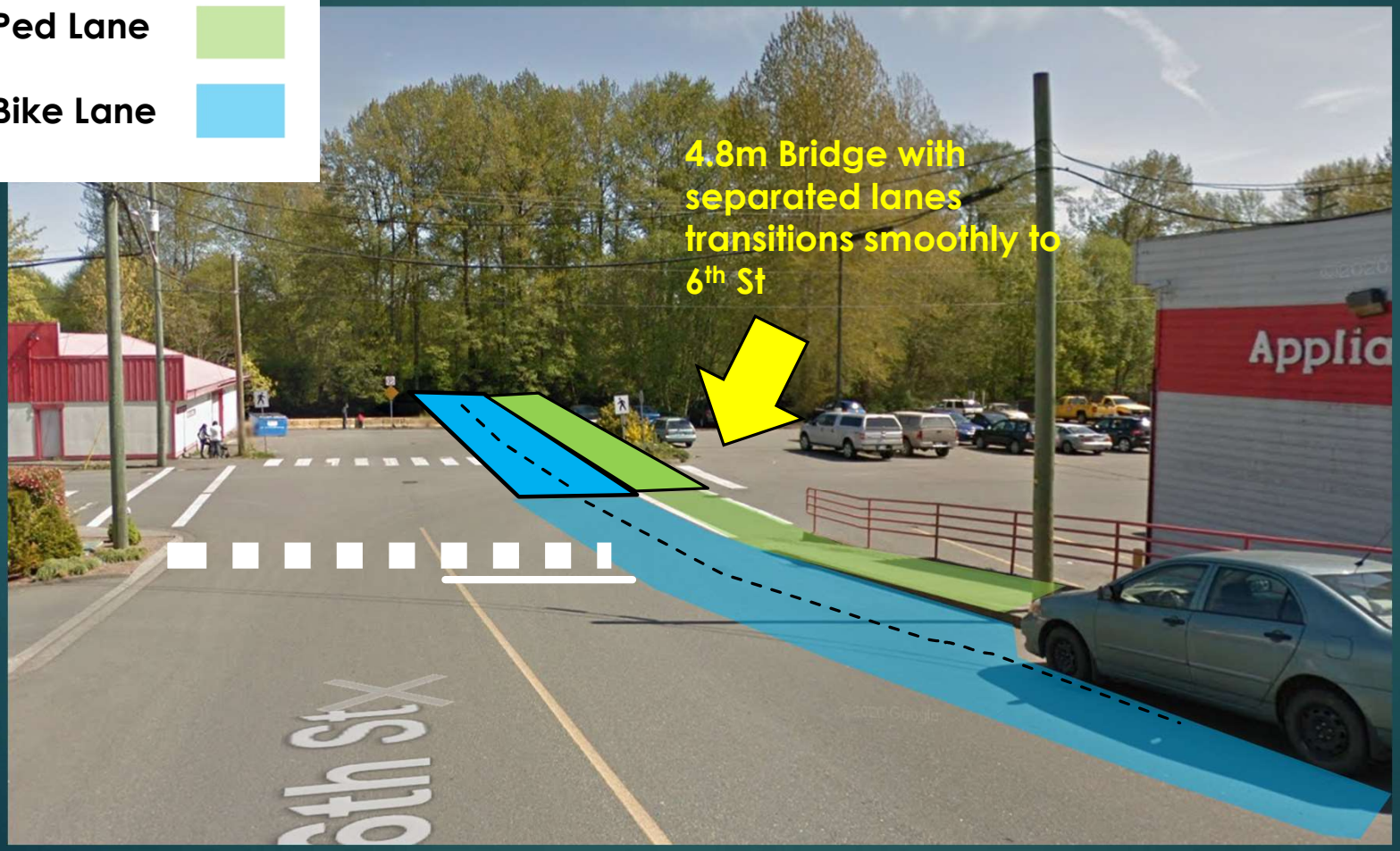
In order to provide a **safe corridor from the Riverway Path** to the proposed bridge, **V+M recommends separated bike/ped lanes** along 6th St hill.

The separated lanes meet a **new raised crosswalk and parking lot traffic** from Home Hardware all while **pinching onto a narrower, non-separated bridge deck…**

West Side (with 4.8m Bridge Width)

Ped Lane

Bike Lane



Separated bike and pedestrian **lanes** down 6th St **match up** with separated lanes on a **4.8m wide bridge deck**

Cable-Stayed Cost Estimate (V+M Report)

Class C Estimate: Expected Cost Range is 25% below to +35% above

Bridge Construction		
General & Site Work		$250,000
Foundations		$504,200
Approaches		$77,500
Superstructure		$1,863,400
Railing		$93,600
Engineering/Design		$524,000
Lighting		$187,500
Wind Engineering		$75,000
Pathways		$150,000
Sub-total		**$3,725,200**
Contingency		$698,000
4m Deck Total		**$4,423,200**
Widen to 4.8m		$674,000
4.8m Deck Total		**$5,097,200**

80% of $843,000 in V+M report to go from 4.0 to 5.0m width

- Estimate for **4.0m Deck = $4.4 M**
- Total for a **4.8m Wide Deck = $5.1 M**

Optional Items		
Premium Railing		$152,100
Bridge Lighting		$137,500
Aesthetic Lighting		$75,000
Public Artwork		$200,000
Sub-total		**$564,600**

Lighting and Artwork can be **added any time in future**, bridge width cannot be increased

Cost Considerations

- **5th St Bridge rehab costs (2021)** were **lowered by $2M** when **cantilevers were excluded** in favor of the 6th St Multi-Modal option

4.8m Wide 6th St Bridge Cost	**$5,097,200**
Less: 5th St Rehab Cost Savings	**-$2,000,000**
Net Cost 4.8m 6th St Bridge	**$3,097,200**

Net cost of a 4.8m wide bridge = $3.1M

- If **Active Transportation grants for 50%** can be obtained ($2.5M), the **net cost to taxpayers** after considering the $2M savings on 5th St Bridge **is only $600,000.** (current CVRIS grant program could cover 100% but project is not far enough along to qualify, more grants expected in future to promote pandemic recovery)
- In order to limit current capital costs, **optional items can be added later** rather than build too narrow a bridge **(50+ year life span)!**

How Do We Continue Forward?

1. Move ahead with planned engineering and design but ensure it **does not include a restriction on width to 4m** until this matter can be revisited by council
2. Re-open **council discussion** on decision to limit bridge width to 4m – **hope is to amend the motion to "at least 4.8m width"** in order to **allow for separated modes**
3. Revisit **Public Engagement** - consider "**Collaborative**" for at least the early portion of the design. This is a **$5M** project that is **key to the Active Transportation network**.
4. Update **Cycling Network Plan** to ensure optimum connectivity to the proposed 6th St Bridge (update on **Tunner Drive E/W Connector** study by staff and tie in with **CVRD Regional Active Transportation Network Plan**)

Some Final Thoughts

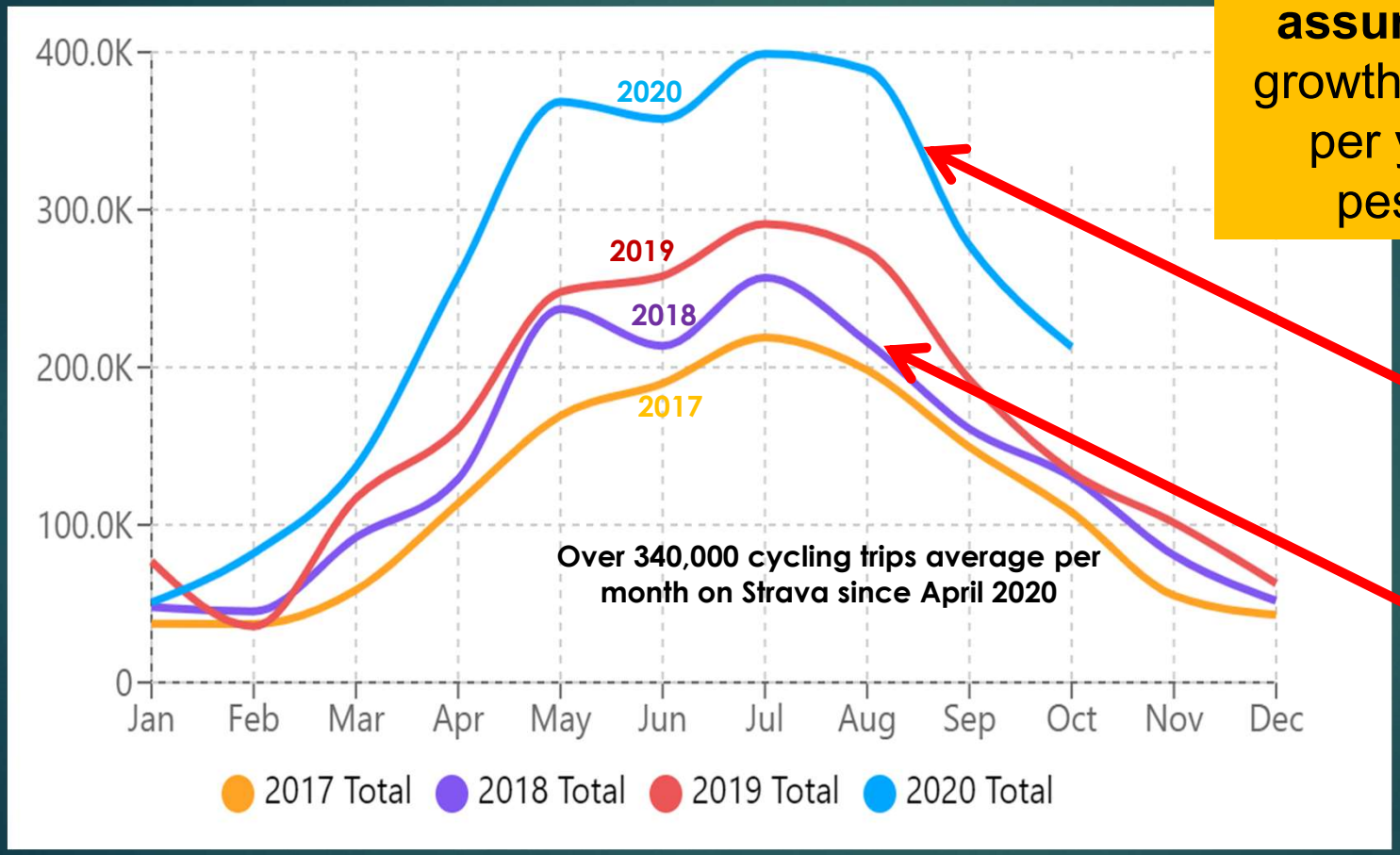
- We have **one chance** **to get the bridge width correct.**
- This project is to be the **centrepiece of Courtenay's active transportation network** and we need to provide a **SAFE** and functional bridge, not only now but for **50 - 75 years into the future**.

Thank-You!

Appendix 1

Cycling Growth Statistics

Cycling Growth in BC



6th St **forecast assumes only 3%** growth in cyclist trips per year, far too pessimistic…

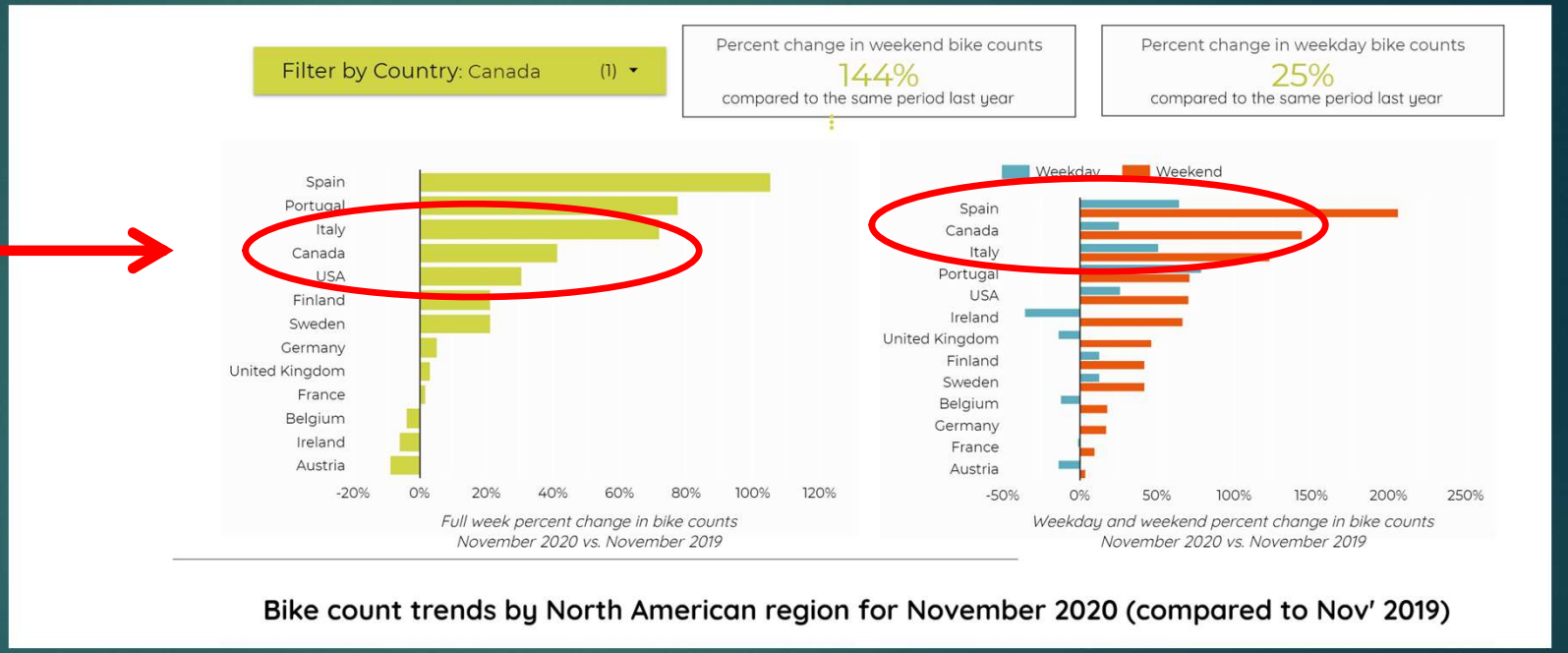
- 2020 cycling trips are **up 40-50%** since start of pandemic
- Average increase in trips for recent years has been **~15%/yr**

** Strava Metro Data for BC (2017-2020)*

Note that this data reflects cyclist who use the Strava app and, although this is expected to be only a percentage of total cyclists in BC, it represents relative growth values

Worldwide Cycling Statistics

- **Bike counts** for 2020 in Canada are **up 45%** in November 2020 from prior year
- Weekend **leisure trips up 144%!**



Worldwide statistics provided by EcoCounter – manufacturer and supplier of automated cycle counters (note that these are permanent counters that measure all cyclists). Data points in each country range from 8 to 37 permanent counter locations.

Appendix 2

BC Active Transportation Design Guide

-Width Design

-Separated User Lanes

BC Active Transportation Design Guide – Pathway Width

- **BCATDG** contains **no specific guidelines for bridge width design**
- First section in the guide speaks to **"Design Width" of pathways**

DESIGN GUIDANCE

Width

The desirable width of a multi-use pathway (see **Table E-20**) is influenced by a number of factors, including:

- Adjacent land uses;
- Available space/right-of-way;
- Topography;
- Location of the pathway (adjacent to a major road, local road, or located within another context); and
- Anticipated volume and type of users.

Because multi-use pathways can be considered all ages and abilities facilities, they often attract a variety of users, some of which may operate at slower speeds. As a result, providing sufficient space to pass others is an important consideration when designing this type of facility. In addition, planning for pathway maintenance – including snow storage and the width of maintenance equipment, such as sweepers and snow plows suitable for maintaining pathways – is another important consideration.

All Other Contexts

Multi-use pathways in all other contexts include pathways located within parks, rail and greenway corridors, and along waterfronts. For bi-directional multi-use pathways in all other contexts, the recommended width of the multi-use pathway is 3.0 metres. An additional 0.6 metres should be provided on both sides of the multi-use pathway for additional clear width. When steep side slopes or large drops are present, the shoulder width should be increased to 1.5 metres on each side (discussed in more detail in the Side Slope section on page E19).

It is important to monitor multi-use pathway use to determine if the width of the facility is appropriate for the number and ratio of users over time. While the Design Guide identifies desirable and constrained limit widths, if space is available, providing a wider facility should be considered particularly if a high volume of users is anticipated.

TABLE E-20 // MULTI-USE PATHWAY WIDTH GUIDANCE

CONTEXT	DESIRABLE (M)	CONSTRAINED (M)
Highway Corridor		
See **Chapter F.1**		
Roadway Corridor (Arterial and Collector Roads)		
Pathway Width	4.0	3.0
Street buffer Zone Width*	≥ 2.0	0.6
Roadway Corridor (Local Roads)		
Pathway Width	3.0 – 4.0**	3.0
Street Buffer Zone Width*	≥ 1.5	0.6
All Other Contexts		
Pathway Width	3.0 – 4.0**	2.7
Lateral Clearance	0.6***	0.6

*Where a paved shoulder is present, the separation distance begins at the outside edge of the shoulder. The paved shoulder is not included as part of the separation distance.

** For high volume facilities with a variety of different user types, consider using widths at the higher end of the design domain.

*** Desirable lateral clearance increases depending on side slope (see side slope section below).

Desirable width for high volume of varied users is 4.0m plus 2 x 0.6m clearance **= 5.2m**

BC AT Design Guide – Separating Users

Separating Pathway Users

The decision to separate bicycle users from other users is based on a number of factors including: right-of-way width available, the total volume of current and anticipated pathway users, and the ratio of pedestrians to all daily pathway users. If the required space is available, it is recommended to provide separation between bicycle users and other pathway users. This can help to enhance pathway safety and make the facility more comfortable for all users.

For multi-use pathways that have already been constructed, the *TAC Geometric Design Guide for Canadian Roads* provides the following guidance for when to separate users:

- Where there is a high percentage of pedestrians (more than 20% of users) and total user volumes greater than 33 persons per hour per metre of pathway width; or
- Where there is a low percentage of pedestrians (less than 20% of users) and a total user volume greater than 50 persons per hour per metre of pathway width.

In locations where no pathway is currently in place, existing and future land use should be considered as well as ridership numbers on existing facilities within a similar context to obtain an understanding of projected volumes. The width of the pathway is also another important consideration for separating users, as indicated in **Table E-21.** This table applies the guidance described on the left from the TAC *Geometric Design Guide for Canadian Roads* and summarizes when separation is required based on pathway width. For example, if a 3.0 metre pathway has more than 1,000 daily users, and at least 20% of those users are pedestrians (at least 200 pedestrians), then it is recommended that separate pedestrian and bicycle pathways be provided. If the ratio of pedestrians to bicycle users is smaller, then a higher number of pathway users may be appropriate before separation is needed. For example, if the same 3.0 metre pathway has higher volumes (more than 1,500 users), but with a lower mix of pedestrians (less than 20%), then it is recommended that separate pedestrian and bicycle pathways be provided.

More generally, communities such as the City of Vancouver and guidance from Australia suggest that if there are 1,500 combined users on a facility that is between 3.0 to 4.0 metres in width, and if space is available, separation of people walking and cycling is recommended.

The type of separation provided can vary. Separation can involve anything from painted lines to physical separation. More information about types of separation is provided in **Chapter E.3**

TABLE E-21 // CALCULATION GUIDANCE FOR SEPARATING PATHWAY USERS

USER RATIO FOR SEPARATION	DAILY ANTICIPATED USER VOLUME FOR VARIOUS PATHWAY WIDTHS (USERS)		
	3m	3.5m	4m
More than 20% of users are pedestrians and total user volumes are greater than 33 persons per peak hour	1,000	1,200	1,400
Less than 20% of users are pedestrians and total user volume is greater than 50 persons per peak hour	1,500	1,750	2,000

- Next section in BC AT Guide speaks to **"Separation of Users"**
- Separation of users is **highly recommended whenever feasible** on high use pathways to **enhance safety**

Table E-21 shows that user volumes **higher than 1,400 per day are REQUIRED** to have **separated modes** on a 4m pathway

Jan 2020 Report – 3.5m Minimum Width

- January 2020 Report refers to a **"recommended minimum usable width of 3.5m"** based upon "Table 1" which is Table E-21 from BC AT Design Guide
- Table E-21 is intended to be used to calculate at **what user level** a pathway should **provide separated lanes** for bikes and pedestrians, **not necessarily to define the minimum width** requirement.
- What this does tell us is that if we expect **more than 1400 users per day, it is highly reccomended to provide separated lanes on a 4m path**.

Most unfortunately, this **misapplication of Table E-21** combined with a **low user forecast** have carried forward as the **"de facto" design basis for a 3.5m – 4.0m deck width**

Jan 2020 Urban Systems Report

3.1 DESIGN WIDTH

Applying this guidance to Sixth Street Bridge requires some approximation of these user volumes. Current and anticipated user volume was estimated from data collected by the Comox Valley Cycling Coalition (CVCCo) on active transportation users on the Fifth Street Bridge in August 2019. The Sixth Street Bridge was assumed to take half of the observed volume on the Fifth Street Bridge, with 5% annual growth for pedestrians and 3% annual growth for cyclists. Based on the CVCCo counts, there would be approximately 785 pedestrians and 386 cyclists per day using the Sixth Street Bridge by 2049.

Based on BCAT guidelines, pathway width should vary with total user volume and the proportion of pedestrian users among total users. For the estimated 1,171 total users with more than 20% of pedestrian users, the BCAT recommends a minimum usable width of 3.5 metres (see **Table 1**).

Table 1: Calculation Guidance for Pathway Widths (from BCAT)

USER RATIO FOR SEPARATION	DAILY ANTICIPATED USER VOLUME FOR VARIOUS PATHWAY WIDTHS (USERS)		
	3m	3.5m	4m
More than 20% of users are pedestrians and total user volumes are greater than 33 persons per peak hour	1,000	1,200	1,400
Less than 20% of users are pedestrians and total user volume is greater than 50 persons per peak hour	1,500	1,750	2,000

Considering that these guidelines are not specific to multi-use active transportation bridges and accounting for future growth in user volume beyond these current estimates, a minimum functional width of 4 metres is recommended for the Sixth Street Bridge. The bridge will also require additional width for structural supports or other components that would be above-and-beyond the recommended functional width.

Delineation Considerations

V+M Engineering – Delineation Discussion

4.2.2 Delineation Considerations

The previous study included discussions regarding user delineation of the new pathway and onto the bridge. The *BC Active Transportation Guidelines* (the Guidelines) provides the following recommendations:

- Section E.2 of the Guidelines (Multi-Use Pathways) states that "the decision to separate bicycle users from other users is based on a number of factors including: right-of-way width available, the total volume of current and anticipated pathway users, and the ratio of pedestrians to all daily pathway users. If the required space is available, it is recommended to provide separation between bicycle users and other pathway users."
- Section E.3 of the Guidelines (Separated Bicycle + Pedestrian Pathways) recommends minimum constrained travel widths for two-way bicycle traffic of 3.0m and for pedestrian traffic of 1.8m. This would equate to a total delineated use pathway width of 4.8m, at a minimum.

It should be noted that the Guidelines do not specifically address pathway requirements for pedestrian and cyclist bridges. With the above considerations feeding into this study, the formal delineation of users by mode is not recommended at the design deck width of 4.0m. Directional delineation could be implemented at this width, but the Guidelines discourage striped centerlines on multi-use pathways:

- Page E23 of the Guidelines states: "Centreline striping is generally not recommended along multi-use pathways. Although the use of a centreline can reduce the possibility of a conflict between users travelling in different directions, it can contribute to conflicts that arise when faster moving pathway users cross the centreline to pass slower moving users. Many pathway users also disregard centrelines, which can create conflicts. In addition, a centerline implies a 'rule' that is likely to generate complaints but not be enforced."

- **Separate modes when possible**
- **Centerline Striping Not Recommended**

V+M Report Conclusions

V+M STRUCTURAL DESIGN

6th Street Active Transportation Bridge
Detailed Bridge Options Analysis – 100% Submission

Delineation Conclusions

To summarize the topic of delineation, new bridges serving multi-use trails do not typically include mode delineation. If, in the future, the bridge user counts become significant to justify delineation, the base width of 4m could be marked with a dashed yellow centerline and separated by travel direction. This width is challenging to separate modes.

If it is desired to have the option to potentially delineate user modes at a future date, a minimum deck width of 4.8m would allow modal separation, although the pedestrian zone would be rather tight. Wider deck widths can be used, but will add cost to construct the project. Decks wider than 5.5m will also likely have an impact on the existing storm sewer and require its relocation.

4.8m is MINIMUM for Separated Modes

Appendix 3

Stakeholder Engagement

Stakeholder Engagement

- CVCCo was **very appreciative** that we were one of a few select groups to be asked for input on this project. We do feel that we represent a large portion of potential users and **hoped that our safety-based comments would be taken into account in the decision.**

- CVCCo was requested to provide comments by City and had a meeting Sept 18, 2020
- In both written submission and subsequent meeting, CVCCo has **emphasized that safety is our primary concern** and a **suitably wide bridge with separated lanes for pedestrians and cyclists was the most important design aspect**
- **Only one chance to get it right!**

Sept 1 2020 CVCCo Engagement Submission

Width – recommended 4.0m of useable width in report. This was based on 2019 CVCCo counts inflated by 3-5% per year going forward with up to 1400 users per day. Depending on the addition of key future connectivity segments to the cycling/multi-modal transportation network, the actual future user count could be significantly higher than this estimate. CVCCo recommends a minimum width of 6 meters which will allow for separate designated pedestrian lanes on the sides and cycling/other traffic to use the center of the bridge deck. We strongly recommend segregated lanes for safety reasons and in order to handle increased future volumes. The "lanes" can be demarcated using different colored epoxy aggregate and appropriate signage.

Sept 18 2020 Courtenay Eng Meeting Minutes

c. APitcher presented comments from Comox Valley Cycling Coalition
   i. MoTI, Active transportation guidelines recommends 4 metre width for users and grade.
      1. CVCC recommends 6 metres width for separation of different users.
         a. MKeohane - bridges never get less busy. Only one chance to make it the right size. 5m would be a minimum.
         b. LVea reiterated importance of bridge being wide enough.

Engagement Guidelines

Staff Report to Council – Dec 2020

3 groups in total - we met once in September

> Public engagement has been a priority throughout the development of the project. The project team has met with multiple stakeholders throughout the year to solicit feedback about what is important to consider as the City developed design options for the project. Much of the feedback has been incorporated into the design recommendation.

Does not include our safety concerns?

Scorecard of Engagement Experience – IAP2 Core Values

IAP2 developed the Core Values for the Practice of Public Participation for use in developing and implementing public participation processes to help inform better decisions that reflect the interests and concerns of potentially affected people and entities. The Core Values were developed with broad international input to identify those aspects of public participation that cross national, cultural and religious boundaries.

1. **Public participation is based on the belief that those who are affected by a decision have a right to be involved in the decision-making process.**
2. **Public participation includes the promise that the public's contribution will influence the decision.**
3. **Public participation promotes sustainable decisions by recognizing and communicating the needs and interests of all participants, including decision makers.**
4. **Public participation seeks out and facilitates the involvement of those potentially affected by or interested in a decision.**
5. **Public participation seeks input from participants in designing how they participate.**
6. **Public participation provides participants with the information they need to participate in a meaningful way.**
7. **Public participation communicates to participants how their input affected the decision.**

The Core Values define expectations and aspirations of the public participation process. Processes based on the Core Values have been shown to be the most successful and respected.

We do not believe this promise was fulfilled

Most regrettably, stakeholders were not notified of the final report or the Dec 9 report to council

Staff Report - December 07, 2020 Page 2 of 9
6th Street Multi-Use Active Transportation Bridge Update

CAO RECOMMENDATIONS:

THAT based on the December 7th, 2020 staff report "6th Street Multi-Use Active Transportation Bridge Update" Council approve OPTION 1, and direct:

1. Staff to include a line item in 2021 of the 2021-2025 Financial Plan to support design works with potential construction in 2022 subject to successful grant funding and borrowing in place.
2. Staff to proceed with detailed design of a 4 metre wide Symmetrical Cable Stayed Bridge, as per the project schedule presented;
3. Staff to commence public engagement to Inform the public of the project ;
4. Staff to further review potential grant opportunities in 2021, with the goal of supporting construction in late 2022.

COMOX VALLEY CYCLING COALITION

Why Are The Public Not Going to Be Actively Involved Going Forward?

- Moving forward, **communication is** a **"one-way"** street with City **"Informing"** the public of their decisions
- **No public feedback** loop is available

Based on the design recommendation from the report, staff recommend to **Inform** the public and key stakeholder groups based on the IAP2 Spectrum of Public Participation: