City of Pitt Meadows
THE Natural PLACE

Harris Road Complete Street Feasibility Study

APLIN MARTIN

PREPARED FOR
City of Pitt Meadows

PREPARED BY
Aplin & Martin Consultants Ltd.

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ENGINEERS & GEOSCIENTISTS
BRITISH COLUMBIA

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CORPORATE AUTHORIZATION

This Report is prepared and submitted by:

APLIN & MARTIN CONSULTANTS LTD.

PROFESSIONAL PROVINCE OF N. B. CHAUVIN # 59757 BRITISH COLUMBIA ENGINEER
2025-12-10
Permit to Practice # 1001018

Jai Park, AScT
Engineering Designer

Noah Chauvin, P.Eng.
Project Engineer

PROFESSIONAL PROVINCE OF D. R. SKEET # 41807 BRITISH COLUMBIA ENGINEER
EGBC #1001018
2025-12-10

Roy Skeet, P.Eng.
Senior Project Manager

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1 EXECUTIVE SUMMARY

Aplin Martin Consultants Ltd. (Aplin Martin) has been retained by the City of Pitt Meadows to complete a feasibility study for the Harris Road Complete Street project. The goal of the study is to evaluate the suitability and practicality of implementing Complete Street improvements along Harris Road, from Fraser Way to Lougheed Highway, an essential north-south arterial route through the City.

The development of conceptual design options for Harris Road reflects careful consideration of existing conditions, public feedback, and technical feasibility. Through engagement with residents, stakeholders, and the Active Transportation Advisory Committee, a range of perspectives and priorities were gathered that have informed the design process.

Key themes that emerged include support for improving pedestrian and cycling safety, interest in protected facilities, and a desire for better multimodal connections, particularly at high-risk locations such as the railway crossing and major intersections. Additionally, community feedback emphasized the importance of cost-effective solutions.

The traffic operations assessment indicated minimal operational differences across all shortlisted options, confirming that lane reductions and road reconfigurations to accommodate improved active transportation facilities could proceed without negatively affecting overall corridor traffic performance. This assessment provides confidence that implementing recommended improvements will not adversely impact intersection capacity or general traffic flow.

The corridor was divided into segments based on roadway characteristics and adjacent land uses. Initial design concepts explored a spectrum from minimal retrofit to complete reconstruction. After consideration of technical feasibility and public input, four refined design options were developed for each segment:

- **Option 1 (Retrofit):** Upgrading existing bike lanes to sidewalk-level facilities with roadside buffers. Lower cost and minimal impacts to existing trees and utilities, but limited improvements to sidewalks, pedestrian amenities, and intersections.
- **Option 2 (Reconstruction):** Comprehensive reconstruction with fully separated bike lanes, wider sidewalks, landscaped boulevards, and improved transit infrastructure. Provides substantial safety and comfort enhancements but at higher cost and complexity.
- **Option 3 (Hybrid):** Combines reconstruction elements (sidewalk and bike lane upgrades) in prioritized areas, while preserving existing conditions elsewhere. Moderate impact on existing features, but relatively high construction cost.
- **Option 4 (Rapid Implementation):** A quick-build solution developed in response to community feedback for lower-cost, rapidly deployable improvements. It features precast concrete bike lane dividers, offering minimal utility impacts and eligibility for TransLink’s Rapid Implementation funding.

Class D cost estimates were developed for planning-level comparison among the options, incorporating a 40% contingency allowance, as well as estimated costs for utilities and design fees:

Option	Construction Cost	Design Cost	Net Maintenance Adj. / YRLY	40% Contingency	Total
1. Retrofit	$7.95M	$1.64M	$0.19M	$3.84M	$13.63M
2. Reconstruction	$12.88M	$1.99M	$0.17M	$5.95M	$20.99M
3. Hybrid	$11.14M	$1.91M	$0.23M	$5.22M	$18.49M
4. Rapid Implementation	$2.21M	$0.81M	$0.12M	$1.21M	$4.34M

Table 1: Class D Cost Estimates Summary for 4 Options

Based on comprehensive feedback, technical analyses, and cost considerations, the following segment-specific design options are recommended:

- **Segment 1-2 (Fraser Way to Fieldstone Walk)**: Option 1 (Retrofit) – leverages recent infrastructure developments and minimizes disruption.
- **Segment 3 (Fieldstone Walk to Hammond Road)**: Option 2 (Reconstruction) – significantly improves pedestrian and cycling safety, connectivity between key trails, and aligns with public preferences.
- **Segment 4-5 (Hammond Road to 122A Ave)**: Option 4 (Rapid Implementation) – provides immediate safety benefits, substantially reduces upfront costs and disruptions, and mitigates impacts to mature trees and utilities.
- **Segment 6-7 (122A Ave to Lougheed Highway)** – Should be advanced through ongoing collaboration with Railway Crossing and Lougheed Highway Intersection projects.

The recommended construction phasing plan, informed by public engagement and city priorities, is as follows:

- Phase 1 (Segment 3): Improvement of pedestrian and cycling access and safety, enhancing connections to community amenities and trails. ***The multi-use pathway (MUP) and neighbourhood bikeway components of Segment 3 could be considered as a standalone, early-phase project.**
- Phase 2 (Segment 4): Serves as a pilot for the Rapid Implementation approach using quick-build materials. Located in a high-traffic area, this segment connects to Hammond Road bike lanes and provides access to civic facilities and schools. It offers an opportunity to test protection types and gather user feedback before expanding to other segments.
- Phase 3 (Segment 5) : Builds on Phase 2 by extending protected cycling infrastructure south of Ford Road, completing the central corridor. Design refinements based on the Segment 4 pilot can be incorporated to optimize user experience and cost-efficiency.

- Phase 4 (Segment 1 and 2): Lower priority due to recent development; implementation can proceed once higher-priority segments are complete.
- Phase 5 (Segment 6 and 7): To be pursued in collaboration with Railway Crossing and Lougheed Highway projects.

2 PROJECT OVERVIEW

2.1 Introduction

Aplin Martin Consultants Ltd. (Aplin Martin) has been retained by the City of Pitt Meadows to complete a feasibility study for the Harris Road Complete Street project. The goal of the study is to evaluate the suitability and practicality of implementing Complete Street improvements along Harris Road, from Fraser Way to Lougheed Highway, an essential north-south arterial route through the City.

This report summarizes the concept development process, presents the four proposed design options, and outlines feedback received through stakeholders and public engagement. It also details the design considerations and applicable design criteria that informed the development of each option. Each design has been evaluated based on its feasibility and alignment with community and stakeholder priorities, as well as its implications for overall project cost, potential for funding, environmental impacts, potential disruption to adjacent properties, and effects on the general public. The results of this study will help inform the City's decision-making for future stages of design and may support future funding applications for detailed design and implementation.

2.2 Background

Harris Road is a significant thoroughfare in Pitt Meadows, running north-south through the heart of the City and intersecting with key routes like the Lougheed Highway (Highway 7). It hosts important civic buildings like Pitt Meadows City Hall and the Pitt Meadows Family Recreation Centre, as well as several parks such as Harris Road Park, providing recreational opportunities. The road is also near various schools, reinforcing its role as a community hub, and connects with the Pitt Meadows Station on the West Coast Express, linking the area with downtown Vancouver. Harris Road features a mix of commercial establishments, including shops, restaurants, and service providers, alongside residential neighborhoods. It experiences significant traffic, especially during peak hours, prompting ongoing efforts to manage traffic flow and improve safety for all users.

The complete street design for Harris Road was identified as a top priority in the City's 2023 Active Transportation Plan (ATP). Transforming Harris Road into a Complete Street is a key step towards enhancing active transportation in Pitt Meadows. The ATP recommended full road reconstruction from 122A Ave to Fieldstone Walk and Partial Retrofit from Fieldstone Walk to Fraser Way. Partial upgrades to Harris Rd from Fieldstone Walk to Fraser Way were recently completed as part of the Golden Ears Business Park Development by Onni Group. The section of Harris Road between 124 Ave to 122A Ave is part of the future plans for Railway Crossing Improvements being undertaken by the Vancouver Fraser Port Authority (VFPA) in partnership with Canadian Pacific Kansas City Ltd. (CPKC). In addition, upgrades to the Lougheed Highway/Harris Road intersection are currently under design by the Ministry of Transportation and Transit (MoTT).

The existing corridor varies within the project extents (Lougheed Hwy to Fraser Way). The available right-of-way is approximately 30m where there are two lanes in each direction and 26m where there is one lane in either direction. In addition to varying right-of-way widths, the corridor also varies in adjacent land use which has a direct impact on the use of the road. In order to develop the desired condition that applies to that area taking into account varying right-of-way allowances and adjacent land uses, it is proposed that the corridor be subdivided into different segments and evaluated separately. For example, the area between Fraser Way to

Fieldstone Walk is mostly a business park, so there may be less desire for public realm and more emphasis on through movement, cycling facilities, and transit.

The following is a summary of the existing corridor for the different segments within the project extents:

Segment	Right-of-Way	Adjacent Land Use	Travel Lanes	Bike Lanes	Sidewalk	Bus Route	Truck Route
Segment 1: Fraser Way to Airport Way[1]	29m	Business Park	Two lanes	Painted	1.5m both sides	No[2]	No
Segment 2: Airport Way to Fieldstone Walk[1]	29m	Business Park	Two lanes	Painted	1.5m both sides	No[2]	No
Segment 3: Fieldstone Walk to Hammond Rd	22-30m	Airport/ industrial /Airport Trail/ Residential Single Family	Two lanes	Painted	1.5m both sides	No[2]	No
Segment 4: Hammond Rd to Ford Rd	30m	Residential Multi Family / Institutional/ Commercial	Four lanes divided	Painted	1.8m both sides	Yes	No
Segment 5: Ford Rd to 122A Ave	30m	Residential Multi Family / Commercial	Four lanes divided	Painted	1.8m both sides	Yes	Yes - Limited
Segment 6: 122A Ave to 124 Ave[3]	21-30m	Residential Multi Family / Commercial	Four lanes divided	Painted	1.5m both sides	Yes	Yes - Limited
Segment 7: 124 Ave to Lougheed Highway[4]	30m	Residential Multi Family / Commercial	Four lanes divided	Painted (South of McMyn Rd)	1.8m both sides	Yes	Yes - Limited

Table 2: Summary of Existing Segments

[1] Segments 1 and 2 were recently upgraded as part of Golden Ears Business Park Development by Onni Group
[2] TransLink is planning to add service on Harris Road from Hammond Road to Fraser Way
[3] Segment 6 has the potential to be part of the future railway crossing grade-separation project.
[4] Segment 7 requires Coordination with MoTT for intersection upgrades at Lougheed Hwy, the intersection is designed by MoTT.

2.3 Scope of Work

This feasibility study aims to evaluate the potential to transform Harris Road into a Complete Street Corridor that supports multimodal transportation and improves safety, accessibility, and livability. The study incorporates input from City staff, stakeholder groups (e.g., School District 42, local businesses), the Active Transportation Advisory Committee (ATAC), and the broader public through survey and open house engagement. The goal is to deliver practical, community-informed options that align with City policies and priorities that can be feasibly implemented.

Figure 1: Feasibility Study Timeline

The scope includes:

- Reviewing existing conditions through a Corridor Audit
- Establishing applicable design criteria and reference guidelines
- Exploring and summarizing all feasible design alternatives
- Developing an initial five conceptual design options
- Detailing four preferred conceptual design options
- Assessing service level implications for all users
- Traffic study and impact assessment for the four preferred conceptual design options
- Preparing Class D cost estimates for the four options
- Outlining a preliminary construction phasing strategy
- Stakeholder and public consultation

3 BACKGROUND INFORMATION COLLECTION AND REVIEW

3.1 Data Collection and Review

A background data collection and review was conducted utilizing available background documentation from the City. This included as-built drawings, background reports and documents, existing traffic data, GIS and LiDAR data and base plans.

3.2 Topographic Survey

A topographic survey of the Harris Road corridor using drove survey was completed by Aplin & Martin Geomatics Land Surveying Ltd. The following was included in the survey:

- Property lines based on Land Title Office records (GIS and plans) and few ties to legal evidence.
- Harris road surveyed from property line to property line between Lougheed Highway and Fraser Way (approx. 3 KM in length)
- Fraser Way/Pitt River Greenway surveyed up to fence line.
- Intersections surveyed up to curb returns in all directions
- Drone survey included orthophoto, linework and surface model preparation
- Ground truthing via total station / GPS to confirm drone data
- The survey data and plans are in meters
- UTM coordinates and elevations derived from ties to geodetic benchmarks
- Cross-sections at approximately 20m intervals
- Detail within the road portion included visible street furniture, edge of pavement, pavement markings, driveways, valves, catch basins, sanitary and storm manholes with rim elevation (inverts not included)
- Boulevard trees and trees greater than 300mm in DIA located and shown on the plan

The topographic survey was utilized to develop an existing base file which serves as the basis for the conceptual design drawings and option development.

3.3 Traffic Data Collection

Bunt & Associates was retained to complete additional traffic data collection for this project. Bunt requested any existing traffic counts along the Harris Road corridor from the City of Pitt Meadows at that start of the project. Based on their review, all the counts were more than three (3) years old and were considered to be out of date and not appropriate for this project.

As such, Bunt conducted additional traffic data collection at all the major intersections along Harris Rd withing the project extents:

- Traffic counts at identified intersections were undertaken between the hours of 7 – 9 AM and 3 – 6 PM on a weekday.

- Counts will be undertaken in person with personnel using JAMAR boards.

Summary of Traffic Data Collection

- Updated traffic volume data at major intersections along Harris Road were collected by Bunt & Associates in January 2025.
- South of Lougheed Highway to approximately 122 Ave, Harris Road carries approximately 16,000 vehicles per day (VPD).
- From approximately 122 Ave to Hammond Rd, the volume drops to approximately 11,000 VPD.
- These volumes suggest that a four-lane cross-section is generally appropriate in these areas. As a guideline, widening from two to four lanes is typically considered when volumes exceed 8,000 VPD.
- Between Fraser Way and Hammond Road, traffic volumes are lower - around 6,000 VPD south of Hammond Road - indicating that a two-lane cross-section remains suitable in this segment.

A full summary of the traffic data counts area included in **Appendix A: TIA Report by Bunt**.

3.4 BC 1 Call

A BC 1 Call was completed for the project area to capture the existing third-party utilities such as BC Hydro, Fortis BC Gas, and Rogers and TELUS Communications. The Harris Road corridor contains significant existing infrastructure that was taken into consideration into the development of the options.

4 SUMMARY OF CORRIDOR AUDIT

The initial step in the feasibility study was to conduct a Corridor Audit. The purpose of the Corridor Audit was to provide a framework for developing conceptual design options for the feasibility study. The following section provides a high-level summary of the corridor audit, the complete audit memorandum is included in **Appendix C.**

Auditing a corridor involves evaluating the "completeness" of specific street segments in the existing condition as well as developing a "desired condition" for the street to help designers determine which Complete Streets elements should be prioritized. This approach followed a similar approach as outlined in the City of Hamilton Complete Streets Design Guidelines.

4.1 Corridor Segmentation and Functional Context

As described above, the Harris Road corridor was divided into seven distinct segments to reflect meaningful changes in roadway characteristics, adjacent land use, and multimodal function. These divisions provide a logical framework for evaluating existing conditions and developing context-sensitive Complete Street design strategies. The segmentation was based on variations in right-of-way width, adjacent land use types, number of travel lanes, and the presence or absence of transit service and truck routes.

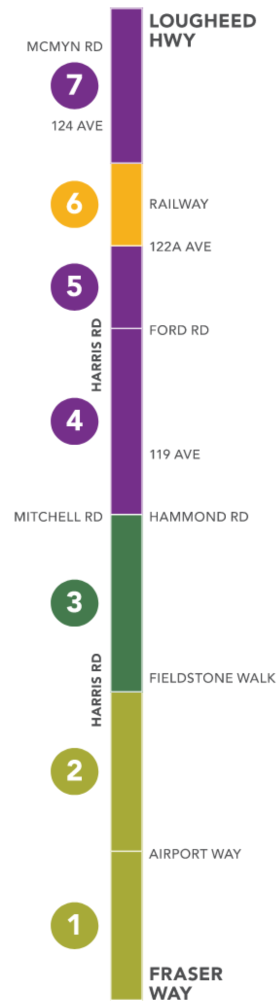

Figure 2: 7 Segments of Harris Road

4.2 Audit Guidelines and References

The main guiding document behind this project is the City's 2023 ATP, which identifies Harris Road as a top priority. As the City of Pitt Meadows does not currently have any design guidelines for complete street design, the proposed conceptual design for the Harris Road Complete Street Study references design guidelines and policy frameworks from other municipalities in North America to develop comprehensive design options. One of the major references for our study is the City of Hamilton Complete Street Design Guidelines (2022); See **Appendix B** for detail breakdowns of scoring system. These guidelines provide a framework for designing streets that prioritize safety, accessibility, and mobility for all users, including pedestrians, cyclists, and motorists. The guidelines focus on integrating active transportation, improving public spaces, and enhancing connectivity while balancing transportation and environmental needs.

The audit evaluated the following six (6) key complete street elements for both the current and desired street conditions:

- Pedestrian Realm
- Cycling Facilities
- Transit Service
- Through Movement (Vehicles and Freight)
- Street Parking
- Green Infrastructure

The audit was carried out through the following steps:

1. **Assess the Current Street Conditions** – This step reviewed the existing conditions of the different segments and assigned a value from 1 to 5 for each street element.
2. **Develop the Desired Street Conditions** – This step proposed desired conditions for the different street elements for each segment. The desired conditions considered the priorities outlined in relevant design guidelines, the needs of the community, and the functional requirements of the corridor.
3. **Review Results** – The step compared the current condition to the desired conditions to determine if each element failed, met, or exceeded the priorities. The results highlighted areas that were balanced or needed improvement. If an element exceeded the priorities, then consideration was given to rebalance street space to another element.

4.3 Current Street Conditions

An assessment of existing conditions was conducted for the seven segments along Harris Road, focusing on six key Complete Street elements: Pedestrian Realm, Cycling Facilities, Transit Service, Through Movement (Vehicles and Freight), Street Parking, and Green Infrastructure. Each segment was evaluated using a 1-to-5 scoring system adapted from the City of Hamilton Complete Streets Design Guidelines (2022), where a score of 1 indicates a significant need for improvement, and a score of 5 indicates a high level of accommodation; See **Table 3** for a Sample Existing Segment Scoring Table.

Across all segments, the audit revealed the following general patterns:

- **Pedestrian Realm**: Sidewalks are present throughout but are typically narrow and often lack boulevards. Most segments scored 2, indicating a basic level of pedestrian infrastructure that could be improved for comfort and safety.
- **Cycling Facilities**: Painted bike lanes exist along the entire corridor, though their width and buffering vary. Some critical gaps exist, particularly near the railway and north of McMyn Road. Most segments scored a 3, with some lower scores due to missing or shared spaces.
  **Note: Bike lane widths in this exercise were measured from the edge of the gutter*
- **Transit Service**: Transit infrastructure is limited in the southern sections of the corridor. Shared-space bus stops with shelters begin to appear in the central and northern segments, north of Hammond Road. Scores range from 1 to 3, reflecting inconsistent service coverage.
- **Through Movement (Vehicles and Freight)**: Roadway capacity generally increases north of Hammond Road from one lane per direction into two lanes per direction with medians and turning lanes in the north. Scores range from 2 to 5, reflecting greater vehicular accommodation in the northern segments.
- **Street Parking**: Availability is inconsistent. Some areas offer limited or time-restricted on-street parking, while others prohibit parking altogether. Scores vary from 1 to 3.

- **Green Infrastructure**: Street trees are present in most segments but vary in maturity, spacing, and distribution. The southern segments feature recently planted but immature trees, while the central and northern segments have more established greenery, often in medians. Scores range from 1 to 3.

A detailed segment-by-segment breakdown of existing conditions and scoring is provided in **Appendix C.**

Segment 4: Hammond Rd to Ford Rd		
Complete Street Element	**Existing Condition**	**Score**
Pedestrian Realm	1.8-2.0m Sidewalk without a Boulevard	2
Cycling Facilities	1.2-1.3m Painted Bike Lane without Buffer	3
Transit Service	Shared Space Bus Stop with Shelter or bench	3
Through Movement (Vehicles and Freight)	Two lanes per direction, center median and auxiliary turn lanes at intersections	4
Street Parking	Loading Zone in front of the Pitt Meadows Elementary School and 2 Hours Parking Permitted on the SW Corner of Harris and Ford Intersection	2
Green Infrastructure	Frequently Spaced Street Trees on Both Sides of the Street, and on the Median with other vegetation	3

Table 3: Sample Existing Segment Scoring Table – Segment 4: Hammond Rd to Ford Rd

4.4 Desired Street Conditions

The desired conditions for Harris Road reflect the City's Complete Street principles and the multimodal priorities outlined in the ATP. A key focus of this study is to support the implementation of All Ages and Abilities (AAA) cycling infrastructure along the entire corridor. This is reflected in the consistently high desired score of 4 for cycling facilities across all seven segments, representing the goal of delivering fully protected, separated bike lanes or multi-use paths (MUPs) that offer safe, comfortable, and intuitive options for people of all ages and skill levels. Refer to **Table 4** for the summary chart of desired conditions providing a visual representation of the scores assigned to each street element across different segments.

Each segment has been evaluated and scored using a consistent 1-to-5 framework:

- **Score 1** indicates minimal or no accommodation,
- **Score 3** represents moderate or functional accommodation, and
- **Score 5** reflects the highest level of service or integration.

Across all segments:

- **Cycling Facilities** consistently scored a 4, emphasizing the corridor's priority for AAA infrastructure.
- **Pedestrian Realm** typically scored a 3, aiming to improve sidewalk conditions and buffers, or provide shared MUPs where appropriate.
- **Transit Service** scores varied between 2 and 3, recognizing current service limitations while allowing for future upgrades.

- **Through Movement (vehicles and freight)** consistently scored 3, preserving general-purpose travel while supporting a balanced multimodal design.
- **Street Parking** generally received low scores (1 or 2), indicating a lower priority and potential trade-off area to create space for walking and cycling improvements.
- **Green Infrastructure** scored between 1 and 4, depending on the feasibility of integrating stormwater and landscape features within each segment.

These scores guide design priorities while acknowledging existing conditions, constraints, and opportunities. Not every element is expected to score a 4 or 5—rather, the objective is to optimize the corridor for walking and cycling while maintaining core functionality for vehicles and future transit.

Segment/ Complete Street Element Score	Pedestrian Realm	Cycling Facilities	Transit Service	Through Movement	Street Parking	Green Infrastructure
Segment 1: Fraser Way To Airport Way	3	4	2	3	1	4
Segment 2: Airport Way To Fieldstone Walk	3	4	2	3	1	4
Segment 3: Fieldstone Walk to Hammond Rd	3	4	2	3	1	1
Segment 4: Hammond Rd to Ford Rd	3	4	3	3	2	4
Segment 5: Ford Rd to 122A Ave	3	4	3	3	1	3
Segment 6: 122A Ave to 124 Ave	3	4	3	3	2	3
Segment 7: 124 Ave to Lougheed Highway	3	4	3	3	1	2

Table 4: Summary Chart of Desired Conditions

4.5 Review Results

This audit evaluated existing conditions along Harris Road using a multi-criteria scoring system that aligned with Complete Streets and Active Transportation objectives. For each of the seven segments, street elements—such as the pedestrian realm, cycling facilities, transit service, green infrastructure, street parking, and vehicular movement—were scored from 1 (low priority or poor condition) to 5 (high priority or excellent condition). These scores reflect both current conditions and aspirational targets based on land use context, user needs, and community priorities.

To determine where improvements are needed, the audit compared current scores against desired scores for each element in every segment. This comparison, visualized in a series of bar charts, revealed whether the allocation of street space aligns with the City's goals or requires adjustment. Refer to **Figure 3** for a Sample Bar Chart Analysis of Current vs Desired Conditions and Priorities. More details can be found in **Appendix C.**

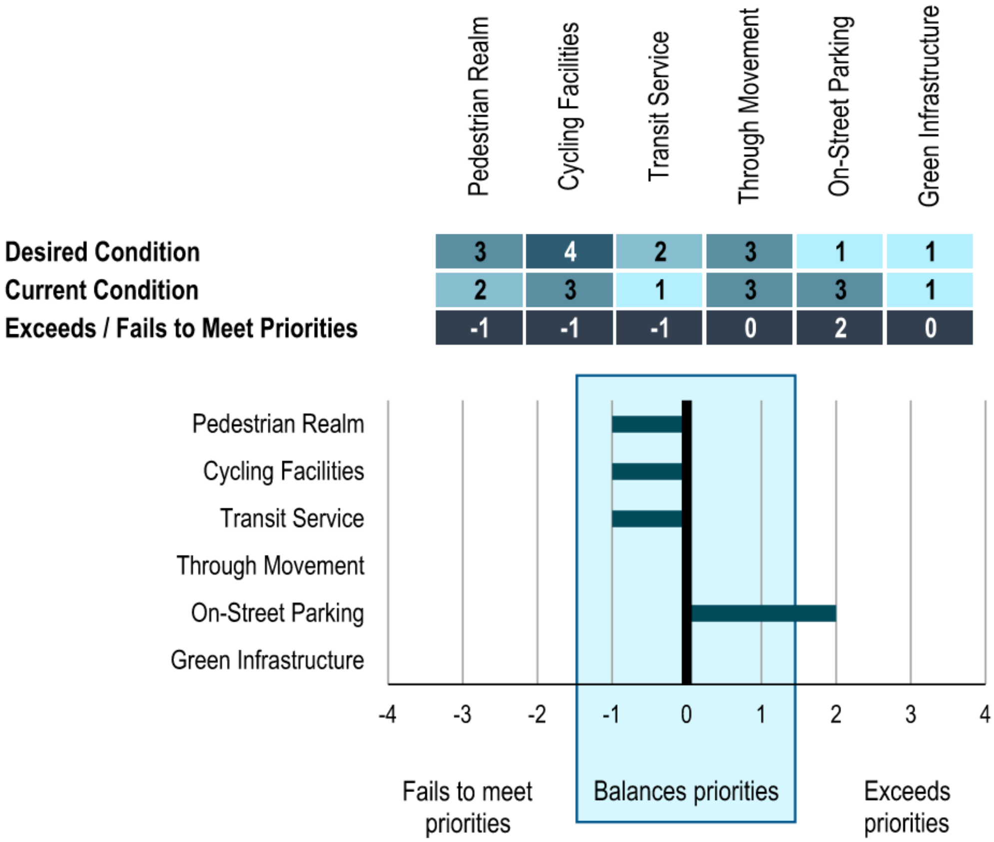

Figure 3: Current vs Desired Conditions and Priorities Analysis for Fieldstone Walk to Hammond Rd

Across all segments, the analysis identified consistent underperformance in cycling facilities, pedestrian realm, and green infrastructure—suggesting these are corridor-wide priorities. Cycling facilities typically scored 3 out of 5 under current conditions, due to the presence of painted bike lanes that do not meet AAA standards. Desired scores of 4 reflect the need for protected or separated infrastructure. Similarly, sidewalks in many segments are narrow or lack adequate buffers, leading to a pedestrian realm score of 2–3, while the desired condition is generally 3–4. Green infrastructure also underperformed, especially in older or more constrained segments, highlighting opportunities to retrofit boulevards with tree pits or other ecological enhancements.

The design focus emerging from this analysis is to rebalance the corridor by:

- Enhancing the active transportation network through separated cycling infrastructure and wider sidewalks or MUPs.
- Removing or reallocating on-street parking strategically based on local needs and available right-of-way.
- Reserving space for future transit services, especially in the southern segments.

- Introducing or improving green infrastructure to support stormwater management and urban tree canopy coverage.

This audit memo, completed in January 2025, served as a foundational step in the Harris Road Complete Street planning process. Through a detailed comparison of current and desired conditions, the audit identified key gaps and opportunities across seven segments of the corridor, helping to clarify priorities related to walking, cycling, transit, green infrastructure, and overall multimodal balance.

Since the audit was completed, the project has progressed through initial concept design development, engagement with stakeholders and the public, and refinement of design strategies based on community feedback and technical review. The audit findings informed the development of the design options by highlighting areas for improvement and guiding decisions on street space reallocation.

The memo is included as an appendix to this report to provide context and rationale for the selected design directions. It offers a clear snapshot of existing conditions and a structured framework for identifying improvements, ensuring that the evolving design remains rooted in a balanced, data-driven, and user-focused approach.

5 DESIGN CRITERIA AND GUIDELINES

The design criteria and guidelines for the Harris Road corridor upgrade are informed by relevant municipal, regional, and provincial policies, as well as best practices for delivering safe, inclusive, and functional Complete Streets. These criteria guide the evaluation and development of concept options that align with project objectives and community priorities.

5.1 Codes, Guidelines, and Policies

The design of the Harris Road corridor improvements is guided by the following standards, policies, and best practice documents:

Provincial & Regional Guidelines

- BC Active Transportation Design Guide (2019) – Primary reference for AAA facility design, intersection treatments, and shared-use path guidance.
- BC Ministry of Transportation and Transit (MoTT) Engineering Standards – For coordination at Lougheed Highway intersection and to ensure compatibility with provincial infrastructure.
- TransLink's Transit Design Guidelines – Design Guide for Bus Stops Adjacent to Cycling Infrastructure, and Rapid Implementation Design Guide for Bikeways in Metro Vancouver

Municipal Policies and Plans

- Pitt Meadows Active Transportation Plan (ATP) – Establishes Harris Road as a priority corridor for AAA cycling improvements and Complete Streets implementation.
- City of Pitt Meadows Subdivision and Development Servicing Bylaw No. 2589, Schedule C: Design Criteria.

Other References

- TAC Geometric Design Guide for Canadian Roads – Used for general roadway design, including cross-section layout, lane widths, and sightlines.
- NACTO Urban Bikeway Design Guide – Supplementary guidance for innovative cycling infrastructure treatments, such as protected intersections or buffered bike lanes.
- City of Hamilton Complete Street Design Guidelines (2022) – Primary guidance for existing corridor study and prioritization of street elements.
- Nanaimo's MOESS – Transportation Standards & Standards Drawings (2020) – Supplementary reference for Complete Streets Cross-Sections.

5.2 Design Inputs, Tools, and Assumptions

Corridor Characteristics

Design inputs were based on data collected during the audit phase and further refined during concept development:

- Segment-Specific Measurements: Road widths, right-of-way (ROW) constraints, sidewalk and boulevard dimensions, and lane allocations were measured and analyzed for each of the seven segments.
- Land Use Context: Residential, commercial, civic, and industrial frontages were considered to assess user needs and functional requirements based on the City's current zoning.
- Future Needs: Anticipated transit service and truck routes were considered, particularly in the northern sections of Harris Road.

Design Tools

- Civil 3D – Used for base mapping, analyzing network connectivity, topography, and existing infrastructure.
- Cross-section Diagrams – For visualizing and comparing typical cross-section options.
- Scorecard Methodology – A 1-to-5 scoring framework used to assess current and desired conditions for each Complete Street element, helping to quantify gaps and evaluate design options.

Assumptions

- AAA Cycling is a Core Priority: Each segment is designed with the goal of achieving fully protected, separated cycling facilities suitable for users of all ages and abilities.
  - Measurement of Bike Lane Widths: In this report, two different approaches to measuring bike lane widths are used. For the corridor audit, initial design development, and the original three design options, bike lane width was measured from the face of curb, which was consistent with existing conditions at the time and TAC Design Guide.

    For the four refined design options, the measurement method was updated based on feedback from TransLink. Bike lane width is now measured from the edge of gutter, in alignment with TransLink's design guidelines, which specify that the gutter pan should be excluded from the bike lane width. This change ensures consistency with funding eligibility criteria.
- Transit Infrastructure to be Flexible: While current service is limited, design allowances are made for future bus stops where applicable.
- Maintain Vehicular Capacity: General traffic lanes are retained to accommodate existing volumes and future truck/bus routes unless data suggests otherwise.
- Green Infrastructure Incorporated Where Feasible: Particularly within wider segments or boulevard areas, with opportunities to retrofit tree pits.

- Phased Implementation is Possible: Segments identified as higher priority through public feedback may be implemented first. Quick-build solutions can be implemented to accelerate safety and mobility improvements.

5.3 Design Constraints

5.3.1 Existing Right-of-Way

Challenge: The existing RoW along Harris Road varies significantly across the corridor. In some areas, the constrained ROW presents challenges to implementing the full range of Complete Street elements, such as protected cycling infrastructure, wider sidewalks, boulevards, and transit enhancements, without compromising existing vehicular capacity or adjacent property access.

Mitigation Measures: To address these limitations, the conceptual design process adopted a tailored approach to each segment's available ROW, adjacent land use, and functional classification. In narrower segments, some options emphasize retrofit solutions with minimal changes to existing curbs and utilities, while wider segments accommodate more comprehensive upgrades including landscaped boulevards and protected intersections. Trade-offs were carefully considered to balance multimodal improvements with spatial limitations, and each design option includes a rationale for ROW utilization and user prioritization.

5.3.2 Intersections

Challenge: Intersections are critical points of conflict in any multimodal corridor and represent the highest risk locations for collisions involving pedestrians and cyclists. The geometry of existing intersections along Harris Road, include wide crossing distances and in some cases free-flowing right-turning lanes, which presents safety concerns for vulnerable users. These conditions complicate the integration of protected facilities and consistent connectivity across intersection approaches.

Mitigation Measures: Design options for intersections were developed in accordance with current standards and guidelines. Treatments include features such as protected intersection geometry, setback crossings for cyclists, and shorter curb radii to reduce turning speeds. These measures are intended to improve visibility, reduce conflict points, and support safe and efficient movement for all users.

5.3.3 Railway Crossing

Challenge: The segment of Harris Road between 122A Avenue and 124 Avenue includes a critical at-grade railway crossing that presents a significant design constraint for the Complete Street project. This crossing is currently under active consideration for a future grade separation project. Design options being considered for this location include a grade-separated crossing and an enhanced at-grade configuration. However, until the final alignment and structure type are confirmed, the Complete Street design in this area must remain flexible.

Mitigation Measures: The conceptual design for this segment has been developed with a flexibility to accommodate the evolving nature of the grade separation project. Short-term improvements such as updated pavement markings and lane configurations have been explored as interim solutions, with minimal capital investment, to enhance active transportation safety until the full grade-separated solution is implemented.

5.3.4 Bus Stops

Challenge: Harris Road serves as a transit corridor between Hammond Road and Lougheed Highway, with several existing and potential future bus stops located along this segment. Integrating bus stops within a Complete Street design that includes protected bike lanes introduces design challenges, particularly related to safety and accessibility for both cyclists and transit users. Key concerns include conflicts between cyclists and passengers boarding or alighting buses, and adequate space for transit shelters.

Mitigation Measures: In all proposed design options, existing transit stops are upgraded in accordance with TransLink design guide to bus stops adjacent to cycling infrastructure. The designs aim to minimize the conflicts and consider opportunities to upgrade stops with accessible pads, shelters, and pedestrian crossings.

5.3.5 Existing Utilities

Challenge: Existing utility infrastructure, including streetlights, overhead power lines, telecommunications boxes, and underground utilities, poses constraints to the corridor design. Relocation or adjustment of these utilities can significantly increase costs, project complexity, and timelines.

Mitigation Measures: A detailed topographic survey and base file were prepared to identify utility locations, allowing the conceptual designs, particularly retrofit options, to avoid or significantly reduce the need for relocation. Options that required utility adjustments were also identified as alternatives to ensure feasibility.

5.3.6 Existing Trees

Challenge: The Harris Road corridor includes mature street trees that contribute to the area's character, provide shade, and offer environmental benefits. The removal of existing trees may impact public acceptance of the project.

Mitigation Measures: Similar to the approach taken for utilities, the proposed design options were developed to reduce impacts to trees, where feasible. Trees potentially impacted by each design option were clearly identified in the conceptual designs, allowing the City and stakeholders to review and assess trade-offs. Where removal was unavoidable, design options also identified opportunities to plant replacement trees, offering potential enhancements to the urban canopy and overall green infrastructure.

5.3.7 Funding Requirements

Challenge: An important constraint in the development of conceptual design options was the requirement to meet eligibility criteria for external funding, particularly from TransLink and the federal government. Funding eligibility typically is tied to conformance with key design standards, primarily the TAC Geometric Design Guide for Canadian Roads and TransLink's Transit Design Guidelines, including expectations for AAA cycling infrastructure. These guidelines set minimum thresholds for elements such as facility widths, roadside buffers, intersection treatments, and transit accommodation. While the proposed design options were generally developed to align with these standards, certain physical and contextual constraints—such as limited right-of-way availability required design compromises. For instance, in one option, a 0.3m roadside buffer was provided instead of the recommended 0.6m, due to space limitations. However, the overall design intent remains consistent with the principles of safe, comfortable, and accessible multimodal facilities.

Mitigation Measures: To address funding-related challenges, the design team explored a range of conceptual options that balance physical constraints with improved service levels, with a strong focus on supporting multimodal functionality. Several options were developed to incorporate full-width roadside buffers and enhanced boulevards to meet AAA cycling design standards, consistent with TransLink's Transit Design Guidelines and the TAC Geometric Design Guide for Canadian Roads. Where constrained conditions limited the ability to achieve ideal cross-section dimensions, such as buffer widths, these trade-offs were carefully documented along with supporting rationale. This approach was intended to demonstrate alignment with funding program objectives and to strengthen future applications for federal and regional infrastructure funding.

6 INITIAL CONCEPTUAL DESIGN DEVELOPMENT

The next step in the feasibility study following the corridor audit was to develop initial conceptual design options including cross sections and plan view sketches. The conceptual design options were developed for each of the segments of Harris Road. The segment division, as described above, reflects variations in right-of-way width, land use context, and multimodal needs observed during the site audit and confirmed through existing base mapping and survey data.

Each segment includes up to five conceptual options that explore different trade-offs between user comfort, right-of-way constraints, construction feasibility, and long-term implementation potential. Options were developed to align with the City's vision for active transportation while considering the preservation of existing trees, utilities, and access to adjacent properties.

For each option, a summary of the key design elements, pros and cons, and overarching design intent is provided to support future decision-making and stakeholder engagement. See **Appendix D: 5 Preliminary Conceptual Options** for details.

For the purposes of the initial conceptual design option, some of the segments were combined based on the existing right-of-way allowances. The initial option development focused on cross-section option development which fits within the existing right-of-way allowances. The selected cross section options can then be applied to the greater corridor and modified to suit the individual segments as needed.

6.1 Segment 1-2: Fraser Way to Fieldstone Walk

Segment 1-2 Design Options Overview

Option	Description	Pros	Cons
Option 1: Retrofit Precast Concrete Curbs on Existing Bike Lane Buffer **(Recommended)**	Retains existing sidewalk lines and curbs, adds buffers to existing painted bike lanes in the form of precast concrete curbs.	Preserves most of the existing road - Minimal impact to trees/utilities, low-cost upgrade. Enables rapid implementation and provides a protected bike lane.	Limited pedestrian improvement, cyclists remain close to traffic.
Option 2: Retrofit Extruded Cast-In-Place Curbs on Existing Bike Lane Buffer **(Recommended)**	Retains existing sidewalk lines and curbs, adds buffers to existing painted bike lanes in the form of cast-in-place extruded curbs.	Preserves most of the existing road – More durable and robust compared to precast curbs, providing a longer-lasting solution. Enables rapid implementation.	Limited pedestrian improvement, cyclists remain close to traffic. Provides a more permanent solution compared to precast curbs, which limits flexibility for future modifications.

Option	Description	Pros	Cons
Option 3: Retrofit Precast Concrete Curbs on Existing Bike Lane Buffer with Wider Sidewalk (Recommended)	Expands existing sidewalk lines while retaining existing curbs, adds buffers to existing painted bike lanes.	Expands width of sidewalk for increased pedestrian comfort and accessibility.	Increased cost and disruption due to widening of sidewalk.
Option 4: 4m MUP on East Side	MUP on east side only, replaces bike lanes.	Separates cyclists from traffic lanes, reducing the number of potential conflict zones. Allows for separated landing zone for future bus stops. Provides connectivity to adjacent MUPs.	Conflicts between pedestrians and cyclists on the shared MUP, Limited access from the west side.
Option 5: Bi-directional Bike Lane on East Side with Separate Sidewalk	Two-way cycle track on east.	Protected bike lanes; strong west-side connectivity. Minimal disruption on outside curb-to-curb existing features.	More complex Intersections – cyclists must cross the road for west-side access.

6.2 Segment 3: Fieldstone Walk to Hammond Road

Segment 3 Design Options Overview

Option	Description	Pros	Cons
Option 1: Raised Bike Lane without Street Parking (Recommended)	Retains existing sidewalk, add raised bike lanes with buffer between sidewalk and bike lane.	Provides fully separated bike lanes on both sides of the road. Ensuring safety and comfortable travel for cyclists in both directions.	Street parking would be removed in narrower right-of-way, no roadside boulevards, leaving cyclist still adjacent to travel lanes.
Option 2: Raised Bike Lane with Parking on East Side and Roadside Boulevard (Recommended)	Adds raised bike lane with street boulevard on both sides. Maintains street parking on the east side. Replace existing sidewalk on west side with 1.8m sidewalk.	Provides fully separated bike lanes on both sides of the road. Maintains street parking for residents' needs.	Greater impact to existing roadway, increasing overall project cost and disruption. Narrower boulevards in areas with constrained right-of-way. Increased impact on the west side.
Option 3: Raised Bike Lane with Wider Sidewalk, and Parking	Add raised bike lane on both sides. Adds boulevard between the	Expands width of sidewalk for increased pedestrian comfort and	Increased impact to the eastern property frontages. No boulevard

Option	Description	Pros	Cons
and Boulevard on East Side **(Recommended)**	bike lane and sidewalk on the east side. Retains street parking on the east side.	accessibility. Maintains street parking for residents' needs. Existing boulevard on the southern portion of the segment can be maintained, create a consistent boulevard to the north.	or buffer to the bike lane on the West.
Option 4: 4m MUP on West Side	MUP on west side only; replaces bike lanes.	Separates cyclists from traffic lanes, reducing the number of potential conflict zones. Allows for separated landing zone for future bus stops. Adds roadside boulevard and trees on both sides.	Conflicts between pedestrians and cyclists on the shared MUP, Limited access from the east side. Potential connectivity issues with segments to the north.
Option 5: Bi-directional Bike Lane on West Side with Separate Sidewalk	Two-way cycle track on west.	Protected bike lanes; strong west-side connectivity. Add boulevard on the east side, retains street parking on the east side.	More complex Intersections: cyclists must cross the road for west-side access. Impact to existing boulevards and trees on the west side.

6.3 Segment 4-7: Hammond Road to Lougheed Highway

Segment 4-7 Design Options Overview

Option	Description	Pros	Cons
Option 1: Uni-directional Bike Lane with Reduced Centre Median and No Roadside Boulevards **(Recommended)**	Raised bike lanes; reduced median; no boulevards.	Maintains the existing outside edge of sidewalks reducing the impact on large mature trees and utilities within the frontage zones. Dedicated bike lanes.	Existing trees in centre median would likely need to be removed, adjustments to grading and drainage systems will be required.
Option 2: Uni-directional Bike Lane with Roadside Boulevard	Adds raised bike lane on both sides, boulevard only on the west.	Highest comfort for all users; aligns with long-term urban vision.	Major frontage impacts, requires utility relocations.

Option	Description	Pros	Cons
(Recommended)			
Option 3: Uni-directional Bike Lane with Boulevard on West Side with Reduced Centre Median (Recommended)	Expands existing sidewalk lines while retaining existing curbs, adds buffers to existing painted bike lanes.	Retains east-side frontage and tree protection.	Reduced centre median may impact existing trees in the median. No roadside boulevard/ buffer on the east side.
Option 4: 3.5m MUP on West Side	Add shared-use path west side; boulevard on east.	Strong west-side connectivity; fewer impacts on east. Limited impact on existing trees and utilities in the frontage zones on both sides.	MUP width is less desirable. Shared use may cause user conflicts; less direct for east-side access.
Option 5: 3.5m Bi-directional Bike Lane on West Side with Separate Sidewalk	Two-way cycle track on the west side; sidewalks improved.	Comfort and safety for west-side users; full separation.	More complex Intersections - cyclists must cross the road for west-side access. Increased impact on western property frontages, potentially affecting landscaping and utilities.

6.4 Initial Design Options Summary

6.4.1 Limitations of MUPs and Bi-Directional Bike Lanes

During the concept design development, Multi-Use Pathways (MUPs) and bi-directional (two-way) bike lanes were also considered. While these configurations offer flexibility, they were not recommended as preferred design options for several reasons:

- **User Conflicts on MUPs:** Shared-use pathways combine pedestrians and cyclists, increasing conflict risk in higher-use urban corridors. TransLink and the City's feedback highlighted concerns about safety, comfort, and predictability for vulnerable users.
- **Intersection Complexity for Bi-Directional Facilities**: Bi-directional cycle tracks require cyclists to cross streets to access the appropriate side of the road. This adds complexity at intersections and

driveways with cyclist going in both directions through the intersection, heightens the potential for vehicle-bicycle conflicts, and complicates signal timing and visibility .

Guideline Compliance: Both MUPs and bi-directional cycle tracks are discouraged on urban arterials with frequent intersections, according to the BC Active Transportation Design Guide and TransLink's Transit Design Guidelines. These facilities are better suited for recreational greenways or rural/limited-access roads. Given these limitations, the design team selected three design options that focus on uni-directional protected bike lanes on both sides of the corridor, supplemented by upgrades to pedestrian and transit infrastructure. These options are better aligned with regional and national guidelines, improve safety for all users, and reflect stakeholder priorities identified through the engagement process.

6.4.2 Refinement of Options

The five initial conceptual designs developed for each corridor segment offered a range of infrastructure treatments, ranging from minimal retrofits to full reconstruction, to improve pedestrian, cycling, and transit facilities. These were evaluated based on feasibility, safety, stakeholder feedback, corridor constraints, and alignment with relevant guidelines.

After assessing the pros, cons, and constraints associated with each option, three representative design strategies were selected for detailed refinement and costing:

- **Option 1 – Retrofit:** Targets cost-effective improvements with minimal disruption using precast concrete or extruded curbs to create protected bike lanes. Maintains most existing infrastructure.
- **Option 2 – Reconstruction:** Provides comprehensive upgrades including fully protected bike lanes, enhanced boulevards, new sidewalks, and transit-ready facilities. Requires more extensive construction and investment.
- **Option 3 – Hybrid:** A combination of retrofit and reconstruction that balances improved safety and multimodal functionality with moderate construction complexity and cost. Typically includes sidewalk widening and curb improvements in targeted areas.

These three options were selected for further development as they provide scalable design solutions suited to the varied contexts of Harris Road while remaining responsive to stakeholder concerns and technical feasibility.

7 INITIAL 3 DESIGN OPTIONS SUMMARY

As part of the Harris Road Complete Street feasibility study, three recommended design options were developed and presented to the public and stakeholders for review. These options were selected from an earlier set of five preliminary concepts, based on technical analysis, corridor constraints, and feedback from the City. The three shortlisted options represent varying levels of infrastructure enhancement—from low-impact retrofit to full reconstruction—and were applied consistently across each segment. See Appendix E: 3 Initial Design Options for details.

Option 1: Retrofit

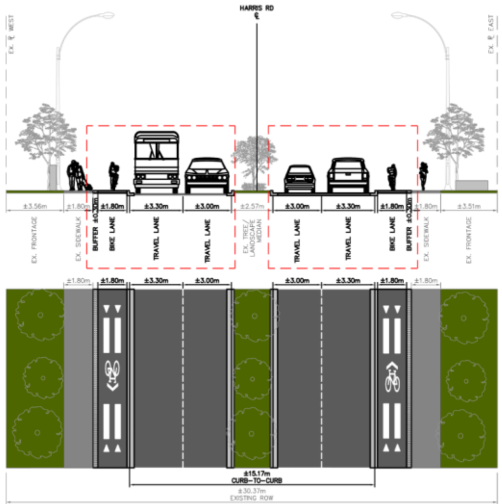

Figure 4: Segment 4-7: Initial Option 1 Retrofit Cross-Section

Approach

Builds on the existing painted bike lanes using low-impact upgrades such as precast concrete curbs, generally within the existing curb-to-curb space for the southern segments. Sidewalk-level bike facilities are introduced with minimal disturbance on existing sidewalk and frontage for the northern segments.

Option 2: Reconstruction

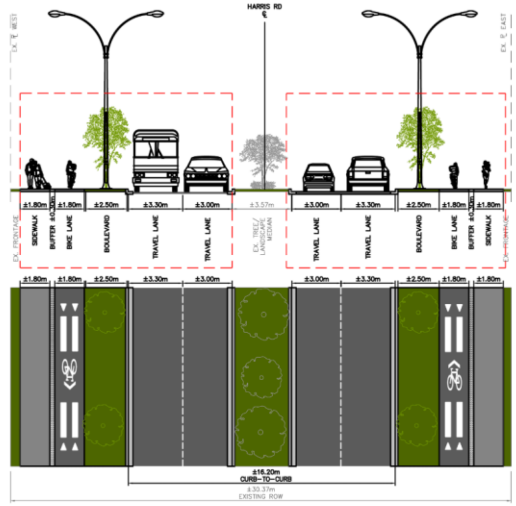

Figure 5: Segment 4-7: Initial Option 2 Reconstruction Cross-Section

Approach

Involves full reconstruction of the road edge to add fully protected bike lanes, widened sidewalks, landscaped boulevards, and improved transit facilities.

Option 3: Hybrid

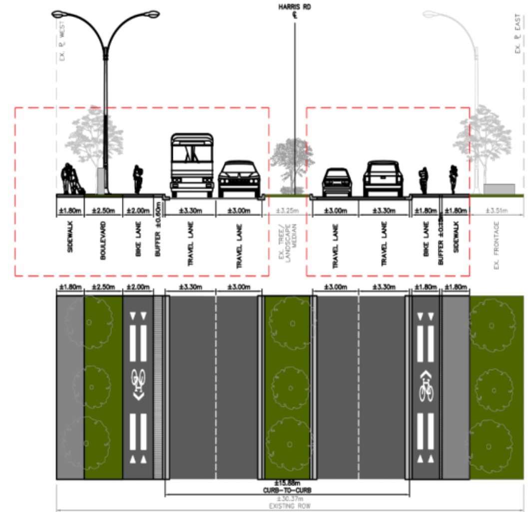

Figure 6: Segment 4-7: Initial Option 3 Hybrid Cross-Section

Approach

Combines elements from both retrofit and reconstruction approaches, strategically applying upgrades where most needed while minimizing impacts elsewhere.

7.1 Railway Crossing

For the purposes of this study, both a future grade-separated crossing and an upgraded at-grade crossing are being considered. While the final configuration has not yet been determined, this segment requires careful planning to ensure compatibility between the future rail infrastructure and the Complete Street design vision.

A number of important design considerations were identified for this segment:

- Vertical and Horizontal Transition: A potential grade-separated structure will require transition zones which must be carefully integrated with pedestrian, cycling, and vehicle facilities to ensure comfort, safety, and accessibility for all users.
- Right-of-Way Coordination: The corridor narrows down to approximately 21 meters at the railway crossing. A thoughtful design is required to accommodate all transportation modes and potential structural elements, while maintaining access and minimizing impacts to adjacent properties.
- Design Coordination: Close coordination between the Complete Street project and the railway crossing planning process will be essential. This includes aligning design objectives, maintaining multimodal access, and minimizing the need for future rework as plans evolve.

Given the evolving nature of the grade separation project, the conceptual designs for this section remain high-level and adaptable until further details of the grade separation project are finalized.

More information about the Rail Improvements Project can be found at https://www.pittmeadows.ca/our-community/city-planning-projects/pitt-meadows-road-and-rail-improvements-project.

7.2 Harris Road and Lougheed Highway Intersection

The Lougheed Highway (Highway 7) at Harris Road is a key intersection within the project corridor and a major commuter and goods movement route in the region. The MoTT is currently leading a separate improvement project for this intersection.

The proposed improvements include:

- Relocating northbound and eastbound left-turn movements to alternate intersections with greater capacity, to reduce conflict and improve safety.
- Enhancing transit access and active transportation connectivity across the highway.
- Reducing signal delays and congestion to improve travel times for both motorists and transit.
- Supporting future population and traffic growth in Pitt Meadows and Maple Ridge and improving regional goods movement.

As a result, the intersection area presents several important planning and coordination considerations for this project:

- Limited Influence over Design: The intersection lies within the jurisdiction of the Ministry of Transportation and Transit (MoTT), meaning that any changes or proposed cross-section treatments at or near the highway must be closely coordinated with the provincial design and approvals process.

- Design Integration: The proposed highway improvements may introduce changes to traffic patterns, turning movements, and intersection geometry. These design elements will need to be reviewed in tandem with Complete Street upgrades to ensure that pedestrian and cyclist facilities on Harris Road transition safely and effectively near the intersection.
- Phasing and Implementation: MoTT's intersection project is advancing on a parallel timeline, and construction phasing may not fully align with the City's schedule for Harris Road improvements. As such, interim design solutions or flexible implementation strategies may be needed to accommodate both projects effectively.

Given these factors, the cross-section designs near the Lougheed Highway intersection remain conceptual and will require further coordination with MoTT as their project progresses.

More information about MoTT's improvements can be found at gov.bc.ca/Highway7Harris.

8 STAKEHOLDER ENGAGEMENT AND FEEDBACK

A key component of the Harris Road Complete Street Feasibility Study was to engage stakeholders and the broader public to understand concerns, preferences, and opportunities from a variety of perspectives. Stakeholder engagement included a series of focused meetings with key interest groups as well as public-facing activities including an online survey and an in-person open house. The purpose of the engagement process was to ensure the proposed design options reflect local priorities, are inclusive of all users, and align with the long-term vision for Harris Road.

A detailed report on stakeholders' engagement and feedback is available in **Appendix F: What We Heard Report**.

8.1 Summary of Stakeholder Group Meetings

A series of targeted stakeholder meetings were held to present draft design options and collect feedback. Each meeting was tailored to the interests and responsibilities of the specific group:

- **Active Transportation Advisory Committee (ATAC):** Emphasized the need for physically protected cycling infrastructure, mode separation, and buffered designs that support people of all ages and abilities. Participants supported unidirectional bike lanes and highlighted safety concerns at major intersections like Hammond Road and Ford Road.
- **City Advisory Committees and RCMP:** Stressed the importance of accessibility, comfortable sidewalks, and transit integration. Trees, landscaping, and aesthetics were also key considerations.
- **School District 42:** Focused on student safety, particularly near school zones, and emphasized the need for secure walking and cycling routes. Sidewalk width and buffer zones were flagged as critical near schools.
- **Business Community:** Expressed concern about the potential loss of on-street parking, loading access, and delivery disruptions. Participants supported a more walkable commercial environment but emphasized the need for flexible curbside designs.

Overall, all groups expressed support for improved active transportation infrastructure, but priorities varied by role. While some groups emphasized safety and comfort, others prioritized parking, access, or landscaping preservation.

8.2 Public Survey and Open House Summary

A public survey was launched online and promoted via the City's website, social media channels, and community networks. The survey collected 260 complete responses. Respondents were asked about general corridor issues, segment-specific design preferences, and overall project priorities. The engagement reached a meaningful, though limited, portion of the community and reflects diverse opinions rather than a representative statistical sample of all residents.

In addition to the survey, an in-person open house was held at Pitt Meadows City Hall on May 8, 2025. The open house featured printed boards with the design options for all corridor segments, illustrations of cross-sections, and information on project goals and constraints. Attendees were invited to leave comments on sticky notes, fill out feedback forms, and engage directly with members of the project team.

Key Statistics:

- Survey Responses: 260
- Open House Attendees: 52
- Written comments received: Over 300 individual responses (including survey comments, sticky notes, and emails)

Summary of Community Feedback

- General Support: 55% of respondents expressed support for the Complete Street concept, with another 13% neutral. However, support varied significantly by segment and design option.
- Top Segment Priorities: The railway crossing (Segment 6) was the top priority for 46% of respondents, followed by Segments 4–7 (32%), Segment 1–2 (15%), and Segment 3 (7%).
- Top Design Option: Option 1 (Retrofit) received the most overall support (45%)—though not a majority—due to its lower cost and faster implementation potential. However, concerns about safety and long-term adequacy were also raised.
- Pedestrian safety ranked as the top priority in the survey, followed by cost, cyclist safety, and tree retention.
- Feedback was mixed on lane width reductions, with 48% opposed, 14% neutral, and 39% supportive.
- Interest in interim retrofits (e.g., quick-build bike lanes) wasn't a priority, with 51% not supportive.
- Most of those who selected 'not supportive for interim retrofits' do not support the trade-offs also indicated they do not support the project overall. This suggests a segment of respondents holds broader reservations about project impacts or priorities beyond the specifics of the interim design measures.

8.3 Engagement and Priorities Committee (EPC) Meeting Summary

An EPC meeting was held on July 15, 2025, to present updated concept designs and summarized community feedback received to date. The meeting included members of Council, City staff, and local residents. Additional written feedback was also received following the meeting.

Summary of EPC Feedback

Public and Council feedback was mixed, with strong support for improved walking and cycling infrastructure from some, and concern about the project's financial and operational impacts from others. Segment 3 was supported as the recommended starting point due to its network connectivity and lower implementation impacts. A phased approach to delivery was generally supported.

Key concerns raised included the removal of mature trees, the ability of large vehicles to navigate curb extensions and narrower lanes, and the safety of narrow bike lanes proposed in rapid implementation designs. Some residents felt that certain cross-sections could worsen existing conditions for traffic. Others questioned the need to revisit segments that were recently upgraded and emphasized the importance of minimizing costs to taxpayers.

Feedback for consideration included reducing the speed limit to 30km/h to improve safety, preserving existing travel lane configurations, and prioritizing improvements that serve pedestrians, seniors, children and persons with disabilities.

This feedback was reviewed and incorporated into the refinement of design options and is reflected in the following summary of key themes and considerations.

8.4 Key Themes and Considerations

Feedback from the public engagement, stakeholder groups, the EPC meeting, and written submissions revealed several recurring themes and priorities, which are summarized below:

Active Transportation and Safety

- Support for protected cycling infrastructure, especially from families, youth, and older adults who currently feel unsafe using the existing painted bike lanes.
- Importance of buffered sidewalks, especially near schools, civic facilities, and commercial areas.
- Concern about narrow bike lanes, especially in the rapid implementation, which may reduce usability and safety for cyclists.
- Concern about conflict zones at driveways and intersections; requests for protected intersections.
- Preference for uni-directional bike lanes over MUPs or bidirectional designs due to safety and intersection complexity.

Design Trade-Offs and Operational Concerns

- Mixed views on road narrowing: Although reducing vehicle travel lane widths is necessary to accommodate the Complete Street initiative, some view narrower lanes as beneficial for traffic calming, others expressed concerns about potential impacts on emergency access, trucks, and high-volume vehicles such as Amazon vans. Approximately 48% of the survey respondents indicated they do not support lane reductions. However, the traffic assessment confirmed that such lane reductions would have minimal or negligible impact on overall vehicle flow and intersection performance – See Section 9: Traffic Assessment Summary for additional details. In addition, lane width reductions are still within the recommended widths per the TAC guidelines.
- Parking trade-offs: Some expressed concern over losing street parking due to steep driveways and limited alternatives; others supported parking removal to enable active transportation improvements and corridor consistency.
- Tree preservation: Strong concern about removal of mature trees. Many residents favored design options that minimize tree loss or provide replanting strategies.
- Cost concerns: Several respondents expressed concern about capital and long-term maintenance costs. Others emphasized the importance of aligning the project with grant eligibility (e.g., TransLink, federal infrastructure programs).

Transit and School Access

- Support for upgraded bus stops, especially with shelters, lighting, and safe crossings.
- Support for safe school access, including improved sidewalks and speed control near Pitt Meadows Elementary.
- Desire for better integration with existing and future transit, especially at pinch points like the railway crossing and Lougheed Highway.

Railway Crossing and Lougheed Highway

- Feedback from multiple groups expressed concerns about the railway crossing between 122A Avenue and 124 Avenue, identifying it as a significant safety risk for all users, including pedestrians, cyclists, and drivers. Currently, there are no separated bike facilities at the crossing, forcing cyclists to share either the narrow sidewalk or the roadway, both of which present safety challenges. Many respondents emphasized that any future grade separation must prioritize safe, accessible, and fully integrated multimodal connections.
- The Lougheed Highway intersection was frequently mentioned as a major source of delay, confusion, and safety risk for all road users. Support was expressed for realigning turning movements and improving pedestrian and cycling connectivity across the highway.

Business and Property Owner Concerns

- Some businesses expressed concern over access management, loading zones, and parking impacts that may result from new curbside uses or boulevard treatments.
- Support was voiced for streetscape improvements and traffic calming to enhance the appeal of Harris Road as a walkable commercial corridor.

9 TRAFFIC ASSESSMENT SUMMARY

As part of the Harris Road Complete Street Feasibility Study, a detailed traffic operations assessment was conducted by Bunt & Associates Engineering Ltd. to evaluate the impact of the three shortlisted design options along the Harris Road corridor, between Lougheed Highway and Fraser Way. See **Appendix A: TIA Report by Bunt** for the full report.

9.1 Study Objectives and Methodology

The assessment reviewed existing traffic operations and evaluated the operational implications of each proposed design option. Using recent traffic data, Synchro 11 modeling software, and analysis of peak-hour volumes, Bunt compared intersection and corridor performance across the three shortlisted design options.

9.2 Key Findings

Overall, the analysis showed no significant operational differences among the four proposed design options in terms of intersection capacity or corridor traffic flow. Specific intersections, however, were highlighted for potential improvements or operational considerations:

- Harris Road & Lougheed Highway: This intersection is under separate review and planning by the MoTT. As such, detailed analysis and recommendations for this intersection are simplified in this report. For comprehensive details regarding this intersection, please refer to the **Appendix A**.
- Harris Road & 122/122A Avenue and Harris Road & Ford Drive: Slight variations between Option 1 and Options 2 and 3 were identified at these intersections, primarily relating to lane configurations. However, these differences were found to have a minimal impact on overall intersection performance.

9.3 Intersection Lane Reductions

Bunt's assessment explored the feasibility of reducing travel lanes on intersecting streets, particularly Ford Road and 122A Avenue. The analysis confirmed that such lane reductions would have minimal or negligible impact on intersection performance, indicating that lane reduction strategies can be pursued without adversely affecting overall traffic operations.

9.4 Conclusions

Bunt & Associates concluded that all four proposed design options are similarly viable regarding intersection operations and corridor capacity. No significant operational concerns emerged that would clearly favor one option over another. Recommendations from the traffic assessment, including the feasibility of intersection lane reductions, have been incorporated into the overall conceptual design refinement.

10 SUMMARY OF 3 REVISED DESIGN OPTIONS

This section presents the three primary concept design options for the Harris Road Complete Street project, developed through a multi-step process including a corridor audit, engineering analysis, stakeholder discussions, and public engagement. The design options represent varying levels of intervention and aim to improve safety, accessibility, and comfort for all road users, while balancing feasibility, cost, and impacts on adjacent properties.

Public and stakeholder feedback raised important points regarding user safety, particularly for cyclists. In response, minor refinements were made to Options 1 and 3 to include roadside buffers in constrained areas where feasible, improving cyclist protection without requiring full reconstruction.

In addition, based on the community's interest in low-cost improvements and eligibility for rapid implementation funding, a fourth option—Quick-Build—was developed as a complementary alternative. This new option prioritizes low-cost, fast-deployment infrastructure to improve active transportation safety and visibility in the short term.

Plans and typical cross-sections for the three proposed options are included in **Appendix G,** and the Quick-Build Option is presented in Section 10 of this report.

10.1 Segment 1-2: Fraser Way to Fieldstone Walk

Segments 1–2 include a mix of narrower and wider cross-sections, existing painted bike lanes, narrow sidewalks (in some areas below 1.5m), and limited boulevard space. The corridor has overhead utilities, recently planted street trees, and an adjacent business park. Improvements must carefully consider these constraints to avoid costly utility relocations or tree removal while still addressing active transportation needs. See for the Existing Condition.

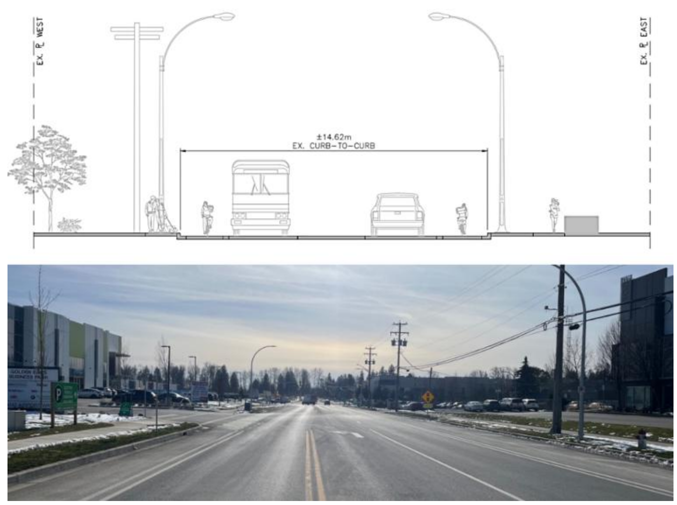

Figure 7: Segment 1-2 Existing Conditions

10.1.1 Design Option 1: Retrofit

This option builds upon the existing on-street painted bike lanes by converting them into protected facilities using precast concrete curbs. It is designed in accordance with TransLink's Rapid Implementation Design Guide, enabling quick and cost-effective upgrades to cycling infrastructure. The approach minimizes changes to the road layout and maintains the current sidewalk widths and property frontages, reducing impacts to utilities and mature trees.

10.1.2 Design Option 2: Reconstruction

This option enhances the level of protection for cyclists by using extruded cast-in-place concrete curbs within the existing buffered bike lane space. While still following a retrofit model, this version creates a more permanent cycling facility with a higher degree of durability. Like the retrofit option, it retains the majority of the existing road layout and minimizes disruptions to adjacent properties.

10.1.3 Design Option 3: Hybrid

This hybrid approach combines the protected bike lane features of the previous options with a sidewalk upgrade to meet the current 1.8m accessibility standard. Extruded cast-in-place curbs are used for bike lane separation, while the sidewalks on both east and west sides are widened to enhance pedestrian comfort. This option represents a more balanced improvement for both pedestrians and cyclists while still maintaining most of the road's footprint.

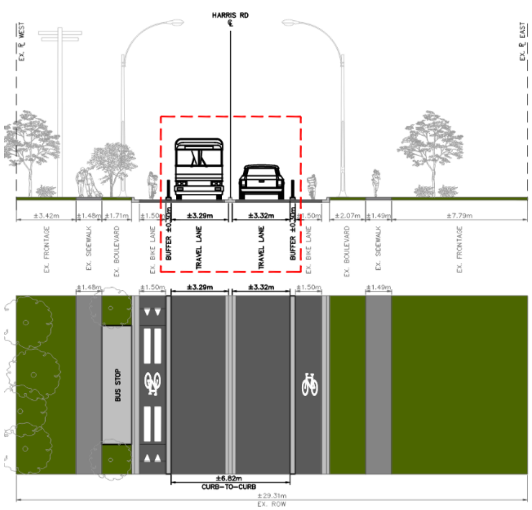

Figure 8: Segment 1-2: Option 1 Retrofit Cross-Section

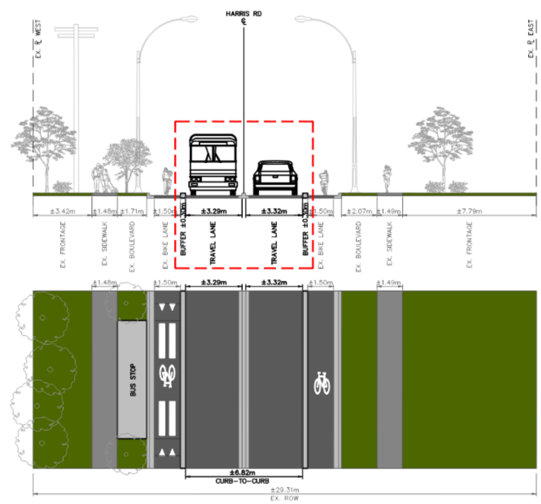

Figure 9: Segment 1-2: Option 2 Reconstruction Cross-Section

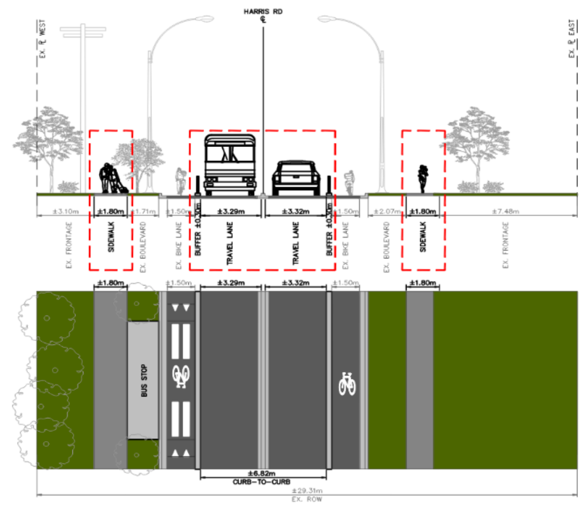

Figure 10: Segment 1-2: Option 3 Hybrid Cross-Section

10.1.4 Comparison Summary of Segment 1-2

Feature	Option 1: Retrofit	Option 2: Reconstruction	Option 3: Hybrid
Bike Facility	Precast curb protection	Cast-in-place protection	Precast curb protection
Sidewalk Width	Existing widths (narrow)	Existing widths (narrow)	Upgraded to 1.8m both sides
Curb/Boulevard Impact	None to minimal	None to minimal	Minor, more impactful
Tree Preservation	Maintained	Maintained	Mostly maintained
Cost	Low	Medium	Medium-High
Short-term Feasibility	High	Medium	Medium
Long-term Alignment*	Interim solution	Better infrastructure longevity	Best aligns with long-term city goals

*Long-term Alignment with City's ATP and Complete Street Designs.

10.1.5 Key Differences and Opportunities

- Option 1 is suitable for rapid implementation with minimal budget and high visibility, improving cycling safety with temporary elements.
- Option 2 is longer-lasting, slightly more complex to implement, and ideal for an interim program leading to a full build.
- Option 3 aligns most closely with accessibility, safety, and placemaking goals identified in Complete Street Design Elements.

10.2 Segment 3: Fieldstone Walk to Hammond Road

Segment 3 has a wider right-of-way and more opportunities for cross-section reconfiguration. The area serves both residential and institutional uses and has consistent vehicle access needs. Existing sidewalks are narrow and disconnected, and the on-street bike lanes are unprotected and conflict-prone. Opportunities exist for improved trail connections and boulevard greening.

Figure 11: Segment 3 Existing Conditions

10.2.1 Design Option 1: Retrofit

This option introduces sidewalk-level, uni-directional raised bike lanes on both sides of the road, replacing the existing on-street bike lanes. A roadside buffer of 0.3m is included to add a separation between the cyclists and traffic. Street parking is removed on the west side to accommodate the new cycling facility, but existing sidewalks and residential frontages are maintained. The design also includes a new MUP connection linking Parkside Trail and Airport Trail, improving off-street pedestrian and cycling connectivity.

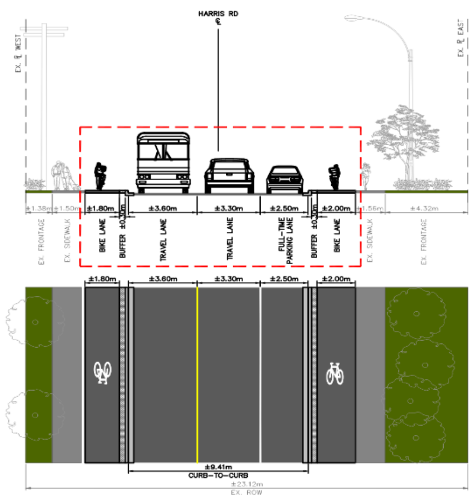

Figure 12: Segment 3: Option 1 Retrofit Cross-Section

10.2.2 Design Option 2: Reconstruction

This reconstruction option retains on-street parking on the east side while incorporating sidewalk-level, uni-directional bike lanes on both sides, separated by landscaped buffers. The street parking is removed on the west side. A new, wider sidewalk is proposed to meet accessibility standards and enhance walkability. Landscaped boulevards provide opportunities for tree planting, green infrastructure, and improved streetscape aesthetics. This option also includes a formal connection between Parkside Trail and Airport Trail.

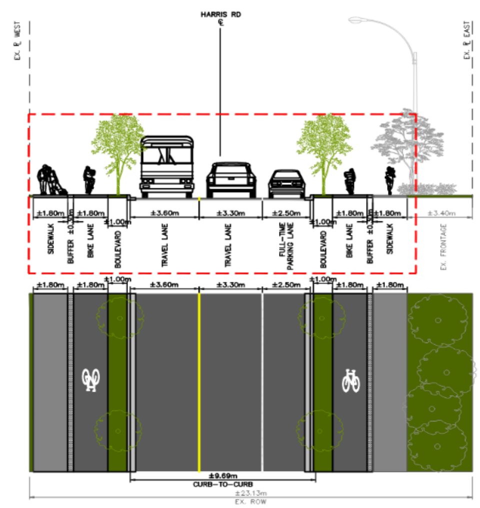

Figure 13: Segment 3: Option 2 Reconstruction Cross-Section

10.2.3 Design Option 3: Hybrid

This hybrid option incorporated a fully buffered, sidewalk-level bike lane on both sides, and a boulevard between the bike lane and the sidewalk on the west side to provide separation and aesthetic landscaping. The street parking is removed on the west side, and the parking on the east side is retained. This approach maintains existing frontages while enhancing active transportation facilities and streetscape quality on one side of the road. This option also includes a formal connection between Parkside Trail and Airport Trail.

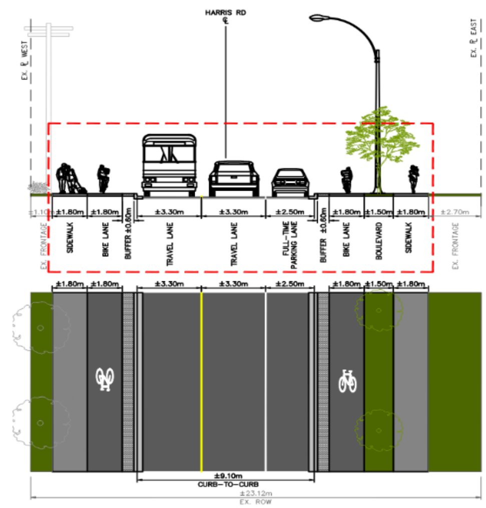

Figure 14: Segment 3: Option 3 Hybrid Cross-Section

10.2.4 Comparison Summary of Segment 3

Feature	Option 1: Retrofit	Option 2: Reconstruction	Option 3: Hybrid
Bike Facility	Raised bike lanes with minimal buffer	Fully protected + landscaped buffer	Raised bike lanes with standard buffer
Sidewalks	Existing (limited upgrade)	Widened, accessible	Widened, accessible
Tree Preservation	Maintained	Mostly Maintained	Maintained
Parking	Removed west side	Removed west side	Removed west side
Trail Connection	Yes	Yes	Yes
Cost	Moderate	High	Moderate-High
Short-term Feasibility	High	Low–Medium	Medium
Long-term Alignment	Limited	Strong	Moderate

10.2.5 Key Differences and Opportunities

- Option 1 is the most financially feasible, but lacks full width buffers and reduces parking, which raised public concern.
- Option 2 best supports long-term transportation goals and safety but comes with the highest cost and complexity.
- Option 3 strikes balance; retaining parking and providing standard width roadside buffers.

10.3 Segment 4-7: Hammond Road to Lougheed Highway

This segment features a wider cross-section with landscaped center medians and mature street trees. It is currently vehicle-oriented, with narrow sidewalks and no protected bike infrastructure. There is sufficient width for multimodal upgrades, but maintaining street trees and utilities is critical. The public strongly supported tree preservation and active transportation safety.

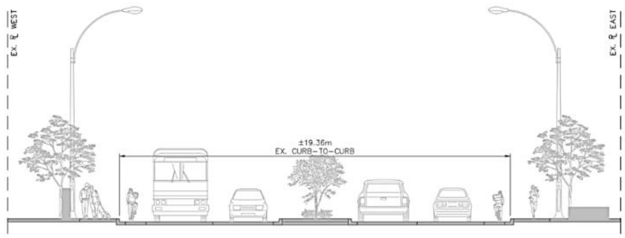

Figure 15: Segment 4-7 Existing Conditions

10.3.1 Design Option 1: Retrofit

This option includes the addition of sidewalk-level, uni-directional bike lanes on both sides of the road. The design includes a 0.3m wide roadside buffer zones for cyclist safety. Travel lanes and the center median are slightly reduced in width to accommodate the cycling facility while maintaining existing trees and the minimum thresholds for vehicles. Bus stop and intersection improvements are included and impacts to existing sidewalks and frontages are minimal.

10.3.2 Design Option 2: Reconstruction

This option proposes fully separated, sidewalk-level bike lanes on both sides, buffered by wide boulevards or flex zones that support street trees, parking pockets, and enhanced transit amenities. Travel lanes are narrowed slightly, and intersections are upgraded to fully protected crossings. While this design significantly enhances the corridor for all users, it involves greater impacts on existing trees and requires more substantial reconstruction.

10.3.3 Design Option 3: Hybrid

This hybrid option implements a buffered, sidewalk-level bike lane and a wider sidewalk with a frontage zone on the west side only, maintaining most of the existing road configuration on the east side with a sidewalk-level bike lane and buffer. The travel lanes and center median are narrowed slightly. It improves transit stops and intersection safety and aims to limit impacts to the existing urban forest and utilities.

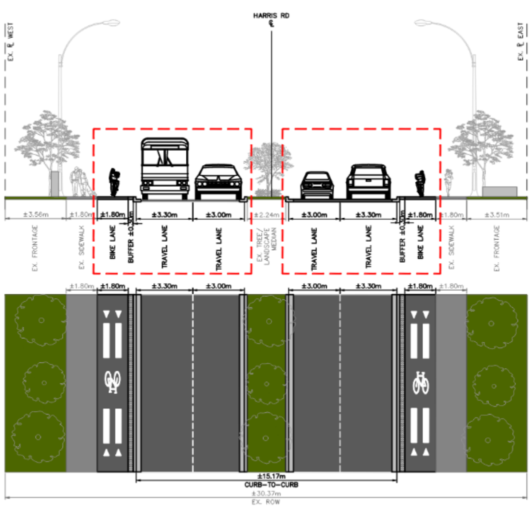

Figure 16: Segment 4-7: Option 1 Retrofit Cross-Section

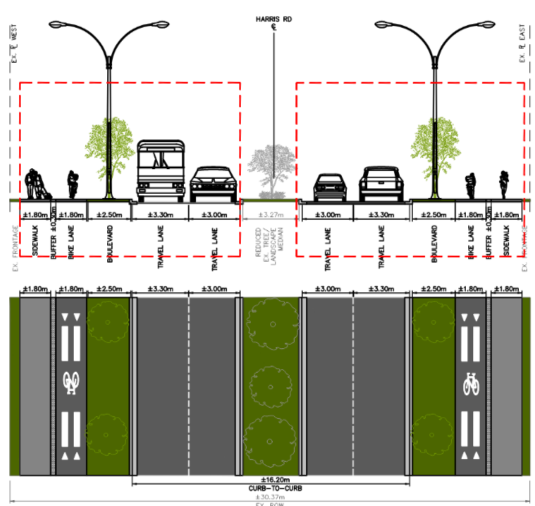

Figure 17: Segment 4-7: Option 2 Reconstruction Cross-Section

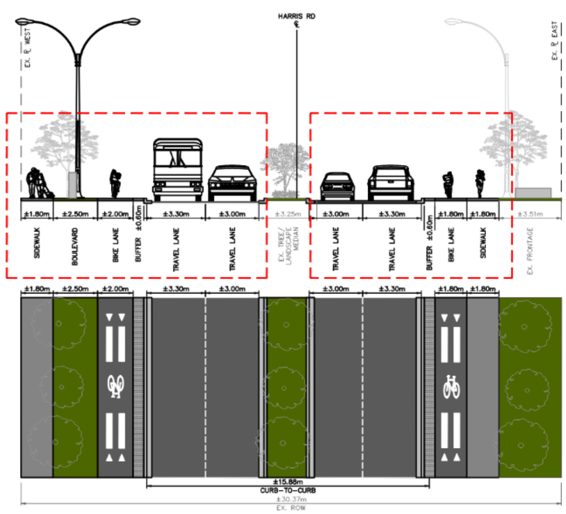

Figure 18: Segment 4-7: Option 3 Hybrid Cross-Section

10.3.4 Comparison Summary of Segment 4-7

Feature	Option 1: Retrofit	Option 2: Reconstruction	Option 3: Hybrid
Bike Facility	Raised bike lanes with minimal buffer	Fully protected w/ boulevard	Raised bike lanes with standard buffer
Sidewalks	Existing	Widened + accessible	West side upgraded only
Tree Preservation	15 removed and 0 added trees	123 removed and 116 added trees	37 removed and 25 added trees
Transit Integration	Basic improvements	Full-featured stops	Improved west side only
Cost	Moderate	High	Moderate to high
Short-term Feasibility	High	Low–Medium	Medium
Long-term Alignment	Basic compliance	Full strategic alignment	Moderate

11 RAPID IMPLEMENTATION OPTION

As a result of public and stakeholder feedback, particularly with concerns regarding construction costs and delivery timelines, a fourth design option was developed for all segments of the Harris Road corridor. This Option 4: Rapid Implementation provides a lower-cost approach that prioritizes near-term improvements in cycling safety and is designed to align with TransLink's Rapid Implementation Program funding criteria.

11.1 Approach

This option proposes converting the existing painted bike lanes into protected cycling facilities by installing precast concrete curbs within the existing curb-to-curb space. To remain eligible for Rapid Implementation (RI) funding, the design does not include replacement of the existing standard curb and gutter. The previously considered bike-friendly curb option, which would have improved effective bike lane width by reducing the gutter pan, was explored during the concept development phase. However, it was not supported due to cost ineligibility under the RI program and minimal width gain in the constrained cross-section.

As a result, the final proposed design maintains the existing curbs, with physical separation achieved through surface-mounted protection treatments only.

Where necessary, median reductions are proposed in constrained areas to accommodate the protected bike lanes while staying within the existing road allowance. No changes are proposed to the overall road alignment, sidewalk, or boulevard areas. This approach focuses on delivering a low-cost, lower-disruption upgrade to cycling infrastructure using quick-build materials while preserving the existing infrastructure footprint.

During detailed design, alternative protection types, such as flexible delineators or modular curbs, may be considered to further reduce implementation costs and improve usability. These alternatives can help create additional maneuvering space within the bike lanes, allowing cyclists to pass more comfortably in narrow segments.

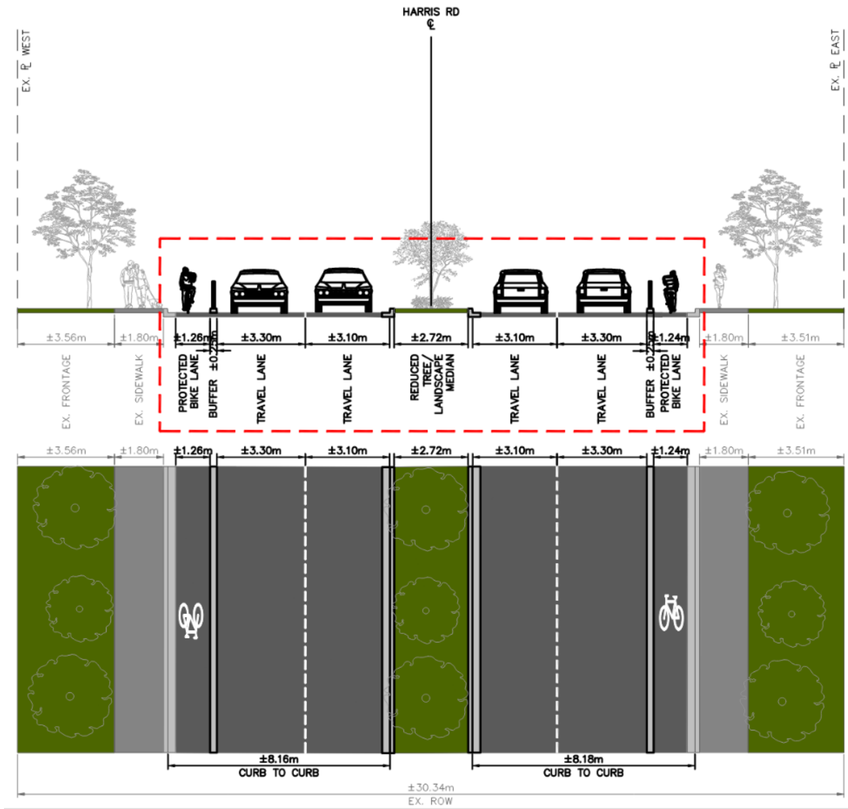

Figure 19: Segment 5: Option 4 Rapid Implementation Cross-Section

11.2 Key Benefits

- Quick Implementation: Can be delivered rapidly with limited construction staging and traffic disruption.
- Cost-Effective: Uses existing asphalt surface and avoids major reconstruction; reduced scope means lower capital investment.
- Safety Improvement: Adds physical separation between cyclists and vehicles, addressing a key theme raised in the public engagement.
- Low Disruption: Minimal excavation; low impact on utilities, sidewalk, or boulevard areas.
- Flexible Design: Allows for phased deployment and future refinement. Alternate protection types (e.g., delineators) can optimize usability and cost.
- Opportunities for Testing, Monitoring and Feedback: Quick-build options would allow a low-cost option to implement more protected bike lane measures and test and solicit more feedback from the public before going ahead with more permanent options.

11.3 Limitations

- Curb-to-Curb Constraint: Width of travel lane must be reduced in certain segments to accommodate roadside buffers, potentially impacting user comfort, particularly for buses and large vehicles. However, lane width reductions are required in all design options and cannot be avoided due to the existing roadway constraints.
- Compromised bike lane and roadside buffer widths: While safety is improved, some elements remain below TransLink recommendations and TAC Design Guide due to limited space withing existing curb-to-curb —specifically:
    - Bike lane widths remain at ~1.20 m in constrained areas (north of Hammond Road), below the 1.5 m recommended minimum.
    - Roadside buffer width is 0.3 m in many locations – less protection provided to the cyclists compared to the reconstruction option (over 1m boulevard buffer) and the hybrid option (0.6m roadside buffer).
- No Pedestrian or Major Transit Upgrades: This option does not include sidewalk widening, boulevard treatments, or enhanced transit facilities, which are key components of the Complete Street framework.
- No Intersection Electrical Upgrades for Cyclists: This option does not include bike-specific intersection treatments such as remote push buttons or signal modifications for cyclists.
- Limited Longevity: While more robust than a temporary pilot, this option does not address full corridor needs and may require future upgrades as funding and coordination allow.

11.4 Intent and Use Case

This option is intended as a realistic, standalone solution under current funding and implementation constraints, not just a temporary measure. It could be deployed corridor-wide or in priority segments where full reconstruction is delayed due to budget or external dependencies (e.g., railway crossing or Lougheed Highway intersection).

The City could also consider an option of conducting "Pilot" programs implementing short sections of protected bike lanes to test the functionality and solicit more feedback from the public and stakeholders. This could help the City guide future implementation of quick-build or more permanent options.

11.5 Bus Stop Integration

For this option, consideration should be given to the integration of the existing bus stops along the corridor. With the addition of the precast curbs, this will limit the buses' access to the existing bus stops. A couple of options could be considered during detailed design if this option is pursued:

1. Do not include precast curbs for a section near the bus stop to allow the bus to pull into the existing curb. This would be similar to the existing condition where the buses cross the painted bike lanes when at the stops. This option would be less safe for cyclists, however, would prioritize the transit stop.
2. Alternatively, a constrained bus stop with a shared landing pad as per **Figure 20** below from the TransLink Design Guide for Bus Stops Adjacent to Cycling Infrastructure could be explored. In this option the bike lane would be elevated to the curb height for a short duration to create a shared landing zone for transit users to board the bus. Transit users would still wait for the bus on the sidewalk or in the existing shelters and only cross the bike lane to board and the bus. This configuration reduces the conflict zone between cyclists and the buses.

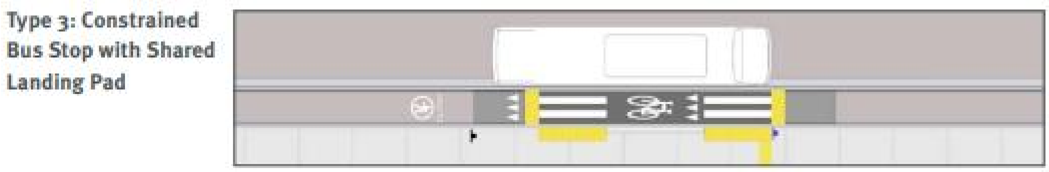

Figure 20: Constrained Bus Stop - TransLink Design Guide for Bude Stops Adjacent to Cycling Infrastructure

12 SUMMARY OF SERVICE LEVEL IMPACT

This section summarizes the anticipated service level impacts of the four shortlisted design options across the full project corridor (Segments 1–7). Service levels are assessed qualitatively for pedestrians, cyclists, transit, and general vehicle movement, considering comfort, safety, and multimodal functionality. The assessment reflects both the design features proposed and the limitations or constraints observed in each approach.

Service Area	Option 1 – Retrofit	Option 2 – Reconstruction	Option 3 – Hybrid	Option 4 – Rapid Implementation
Pedestrian Experience	Moderate – sidewalks retained with no major upgrades	High – sidewalks widened or rebuilt; improved separation from traffic; boulevards added where feasible	Moderate – Upgraded sidewalks with boulevards where feasible	Moderate – sidewalks retained with no major upgrades
Cycling Experience*	Moderate to High – retrofit adds some separation via precast curb on the segment 1&2, raised bike lane for the other segments with roadside buffer	Extremely High – protected bike lanes meet modern standards in width and separation; improved crossings at major intersections	High – protected bike lanes with standard buffer width enhance comfort and accessibility	Moderate – retrofit adds some separation via precast curb
Transit Readiness	Moderate – lane widths suitable for buses, but some constrained areas	High – designed with transit accommodation in mind, added boulevards provide safer space for bus stops	Moderate to High – added boulevards provide safer space for bus stops on west side	Moderate – lane widths suitable for buses, but some constrained areas
Vehicle Movement	Moderate – traffic lanes slightly narrowed; maintains existing curb-to-curb dimensions	Moderate to High – traffic lanes slightly narrowed; upgrades may involve short-term disruption	Moderate – traffic lanes slightly narrowed; upgrades may involve short-term disruption, but less	Moderate – traffic lanes slightly narrowed; maintains existing curb-to-curb dimensions

			disruption than full reconstruction	
Safety	Moderate – some improvement for cyclists but existing sidewalk widths and crossing conditions remain unchanged	High – greater separation, intersection upgrades, and better visibility benefit all users	High – separated facilities reduce conflict points; improved comfort and clarity for pedestrians and cyclists	Moderate – some improvement for cyclists but existing sidewalk widths and crossing conditions remain unchanged
Implementation Complexity	Moderate – Minimal impact on existing sidewalk, frontage, and utilities	High – extensive construction, potential utility impacts, longer implementation timeline	Moderate – combines retrofit and reconstruction; complexity managed by targeting upgrades strategically	Low – none to minimal impact on existing sidewalk, frontage, and utilities
Cost Impact**	Moderate – lower investment than full construction or hybrid option	High – full reconstruction and upgrades across all segments	Moderate to High – higher investment than retrofit but lower than full reconstruction of all segments	Low – Lowest investment compared to Option 1-3

**Bike lane widths in these options are measured from the edge of the gutter (excluding the gutter pan), consistent with TransLink guidelines. Previous options and audit findings measured from the face of curb.*

***Refer to Section 13 in this report for Class D Cost Estimates details.*

Note: Service level ratings reflect typical user experience expectations, conceptual design features, and implementation implications. Final outcomes may vary based on detailed design and phasing.

13 CLASS D COST ESTIMATES FOR 4 REVISED OPTIONS

A Class D cost estimate has been prepared for each design option to support preliminary planning and comparison of capital and lifecycle costs. The estimates are based on the conceptual design drawings and reflect 2025 unit rates, referenced from recently closed tenders and similar projects in adjacent municipalities. While these unit rates provide a reasonable planning-level benchmark, actual construction costs may vary depending on local market conditions, contractor availability, proximity to material suppliers, and other location-specific factors in Pitt Meadows. A standard contingency of 40% has been applied to the construction cost and the professional cost, consistent with industry practice at the conceptual design stage.

13.1 Cost Estimate Methodology

The estimates follow the Master Municipal Construction Documents (MMCD) Platinum Edition format, which provides standardized specifications, item descriptions, and measurement guidelines widely used across British Columbia for municipal infrastructure projects. This format ensures consistency in cost development, facilitates comparability with other municipal projects, and aligns with expected construction practices in Pitt Meadows.

Quantities were derived from the conceptual design plans and included a contingency allowance to account for design refinement during detailed design and construction. Unit prices were developed using typical rates for roadworks, landscaping, curb installation, street lighting, and traffic signal components, and assume standard construction methods.

Primary Costs include all Capital Construction costs, such as curbs, asphalt, gravels and sidewalks, streetlights, etc. as required for each option and have been sub-divided into the main categories such as Roadworks, Storm Sewer, Street lighting& Traffic Signal. We have also included indirect costs in the estimate which include design and inspection allowances, site investigations for Environmental, Geotechnical as well as allowances for adjusting Third party utilities (e.g., Hydro & Fortis).

13.2 General Assumptions for Consideration

The following assumptions should be considered in the assessment of the cost estimates provided:

13.2.1 All Options:

- Estimates are based on 2025 unit rates.
- Quantities are taken from conceptual design plans included and contain a 40% contingency.
- Estimates are completed without a detailed geotechnical, environmental, archeological or soil classification report;
- Assumes Harris Road repaving will be completed as a separate project. Costs included here are limited to cycling and pedestrian infrastructure improvements, such as bike lanes, sidewalk upgrades, curb slot paving, and pavement markings;
- Cost estimate assumes no road structure rehabilitation (i.e., base, subbase, or full asphalt replacement) except for central median modifications, curb slot paving, bike lanes, and sidewalks as applicable.

- No allowances are included for primary utility upgrades (Water, Sanitary, Storm) outside of the drainage modifications required to accommodate each listed option;
- Electrical costs are established without the completion of a detailed illumination study or traffic signal timing / warranted analysis.
- Estimate includes upgrades to traffic signals at major intersections to accommodate shown concept works only
- No allowances are included for property acquisition, easements, or third-party land agreements;
- Estimate assumes generally favorable soil conditions (i.e., no allowance for extensive sub-grade repairs or contaminated soil disposal);
- includes a Geotechnical & Soil Classification allowance of $95,000 for the Project Area (Segment 01-07)
- Includes an Environmental Analysis allowance of $25,000 for the Project Area (Segment 01-07)
- Segment 04-07 includes an allowance ($350,000) for Railway Upgrade Costs & Flagging Coordination
- Estimate for Segments 03-07 include an allowance ($136,000) for preserve Fiber Optic utility
- Estimate includes an allowance ($180,000) for Erosion & Sediment Control Protection during Construction;
- The distribution of Lump sum allowances costs (e.g. Design, Inspection, Analysis, ESC etc.) is distributed across each segment per the following:

  Segment 01-02 = 20%   Segment 03 = 30%   Segment 04-07 = 50%

- Lifecycle cost comparisons assume similar maintenance regimes across each option

13.2.2 Option 01 Assumptions

- An Engineering Design Budget of $350,000 is included for Civil, Electrical & Landscape Design Services
- An Allowance of $600,000 for Construction Services (Inspection & Contract Administration) is included;
- Construction duration for the Project Area (Segment 01-07) is Estimated at 18 months
- Paving quantity only includes 0.3m wide curb slot on either side of road to tie into existing pavement

13.2.3 Option 02 Assumptions

- An Engineering Design Budget of $450,000 is included for Civil, Electrical & Landscape Design Services
- An Allowance of $750,000 for Construction Services (Inspection & Contract Administration) is included;
- Construction duration for the Project Area (Segment 01-07) is Estimated at 24 months
- Paving quantity only includes 0.3m wide curb slot on either side of road to tie into existing pavement

13.2.4 Option 03 Assumptions

- An Engineering Design Budget of $400,000 is included for Civil, Electrical & Landscape Design Services
- An Allowance of $675,000 for Construction Services (Inspection & Contract Administration) is included;
- Construction duration for the Project Area (Segment 01-07) is Estimated at 20 months
- Paving quantity only includes 0.3m wide curb slot on either side of road to tie into existing pavement

13.2.5 Option 04 Assumptions

- An Engineering Design Budget of $200,000 is included for Civil, Electrical & Landscape Design Services
- An Allowance of $300,000 for Construction Services (Inspection & Contract Administration) is included;
- Construction duration for the Project Area (Segment 01-07) is Estimated at 12 months
- Assumed existing pavement, curbs, sidewalks, and boulevards are retained
- No modifications to existing catch basins

13.3 Cost Estimates Summary

Segment	Storm Sewer	Roadworks	Street Lighting & Traffic Signals	Third Party Utilities	Professional Costs	Sub Total
			OPTION 1			
Segment 1-2	$0	$550,000	$0	$0	$154,000	$704,000
Segment 3	$150,000	$790,000	$350,000	$107,500	$403,500	$1,801,000
Segment 4-7	$580,000	$3,337,039	$1,750,000	$338,770	$1,085,700	$7,091,600
OPTION 1 TOTAL	**$730,000**	**$4,677,039**	**$2,100,000**	**$446,270**	**$1,643,200**	**$9,596,600**
					Total + Contingency (40%)	**$13,435,300**
			OPTION 2			
Segment 1-2	$0	$600,000	$0	$0	$241,500	$841,500
Segment 3	$120,000	$1,248,166	$350,000	$411,500	$501,000	$2,630,700
Segment 4-7	$210,000	$6,271,714	$2,700,000	$969,270	$1,248,200	$11,399,200
OPTION 2 TOTAL	**$330,000**	**$8,119,880**	**$3,050,000**	**$1,380,770**	**$1,990,700**	**$14,871,400**
					Total + Contingency (40%)	**$20,820,000**
			OPTION 3			
Segment 1-2	$0	$1,490,000	$0	$0	$304,000	$1,794,000
Segment 3	$80,000	$1,125,950	$530,000	$304,000	$445,500	$2,485,500

Segment 4-7	$380,000	$4,423,770	$1,840,000	$969,270	$1,155,700	$8,768,800
OPTION 3 TOTAL	**$460,000**	**$7,039,720**	**$2,370,000**	**$1,273,270**	**$1,905,200**	**$13,048,300**
					Total + Contingency (40%)	**$18,267,700**
OPTION 4						
Segment 1-2	$0	$589,900	$0	$0	$169,500	$759,400
Segment 3	$0	$405,300	$0	$0	$231,000	$636,300
Segment 4-7	$0	$1,211,100	$0	$0	$413,200	$1,624,300
OPTION 4 TOTAL	$0	**$2,206,300**	$0	$0	$813,700	**$3,020,000**
					Total + Contingency (40%)	**$4,228,200**

Table 5: Option 1-4 Construction Cost Estimate Summary

13.3.1 Maintenance Cost

As requested to help establish the full life cycle cost of each option, a NET YEARLY maintenance cost adjustment has been provided for consideration. The intent is to provide a yearly adjustment that is based on the overall net change of each asset (Asphalt, Curb, Sidewalk, drainage, boulevard) for each option within the existing Harris Road corridor.

If the overall quantity of the asset is anticipated to increase within the option, then the maintenance cost (per year) for that asset has been increased accordingly. Alternatively, if the proposed change saw a decrease in asset, then an appropriate reduction has been incorporated. It should be noted that the financial impact to the reduction of any boulevard or softscape asset within each option is not included as its understood that any softscape maintenance is not currently part of the City operational requirements and is typically done by the adjacent property. Therefore, there is no net benefit in the reduction of boulevards and landscape.

Segment	Option 01	Option 02	Option 03	Option 04
Segment 1-2	$26,600	$26,600	$49,900	$38,800
Segment 3	$47,200	$29,700	$42,900	$19,800
Segment 4-7	$119,700	$118,400	$132,500	$57,000
Total (Net yearly Adj / year)	**$193,500**	**$174,700**	**$225,300**	**$115,600**

Table 6: Anticipated Option 1-4 Net Maintenance Cost Adjustment / Year

Option 3 represents the largest increase in anticipated overall maintenance costs as it’s the Option that introduces the most assets within the project area with the introduction of larger sidewalks, and bike lanes throughout each option.

14 GRANT APPLICABILITY

The Harris Road Complete Street project has potential eligibility across these funding streams depending on the selected design option. Key considerations for TransLink funding include connectivity improvements, effective use of road space, user group maximization, overall safety enhancements, and project timelines.

14.1 Funding Streams Overview

The following are the three main funding streams available through TransLink that can potentially support the Harris Road Complete Street project.

- Allocated Stream: Typically covers up to 50% of project costs or until allocated funds are fully utilized. Eligibility often depends on project alignment with TransLink's defined Major Bikeway Network (MBN).
- Competitive Stream: Provides funding up to approximately $600,000 per year per municipality, contingent on meeting specific competitive criteria, generally targeting projects with clear safety, connectivity, and community impact benefits.
- Rapid Implementation (RI) Stream: Offers up to 100% funding, capped at approximately $1,000,000 annually for rapid-build projects with a maximum project cost of $500,000 per kilometer. To qualify, projects must be located on TransLink's MBN, within designated Urban Centres, or in Areas of High Cycling Potential. This stream requires projects to be completed within 15 months following grant approval, including both detailed design and construction phases.

14.2 TransLink Funding Criteria

Based on discussions with TransLink and a review of the 2025 Bicycle Infrastructure Capital Cost Share (BICCS) Program Guidelines, the following represent the primary criteria used to evaluate project eligibility and funding priority.

- Connectivity: Projects are evaluated on their effectiveness in improving multimodal connections, especially proximity to urban centres, parks, existing trails, and critical civic facilities.
- Effective Use of Road Space: Preference is given to designs that optimally allocate road space, particularly those that include adequate roadside buffers and clear physical separation for active transportation users.
- Maximization of User Groups and Safety Improvements: TransLink prioritizes projects that significantly enhance safety, comfort, and usability for multiple user groups, particularly pedestrians and cyclists, through protected bike lanes and improved pedestrian amenities.
- Project Timeline and Implementation Readiness: Funding applications must demonstrate that detailed designs can be completed within the application period. Projects under the Rapid Implementation stream must be fully completed, from detailed design to construction, within 15 months following funding approval. Projects may be phased by segment, allowing the City to apply for additional funding in future program years as capacity permits.

- Cost Considerations and Grant Thresholds: Projects must demonstrate cost-effectiveness, taking into account evolving criteria such as increased minimum funding levels and higher cost-share percentages for regional priorities.

14.3 Grant Applicability by Option

Option 1: Retrofit

- Funding Streams: Allocated and Competitive
- Strengths: Lower capital costs and minimal disruption; eligible for partial funding
- Limitations: Limited roadside buffers may reduce competitiveness in applications

Option 2: Reconstruction

- Funding Streams: Allocated and Competitive
- Strengths: Strong alignment with TransLink's long-term regional connectivity goals, safety improvements, and preferred roadside buffer widths; enhances grant eligibility
- Limitations: Higher costs and complexity; City must invest upfront in detailed design to clarify eligibility

Option 3: Hybrid

- Funding Streams: Allocated and Competitive
- Strengths: Balances connectivity and safety improvements with moderate buffer widths; eligible for partial funding
- Limitations: Partial upgrades may reduce competitiveness compared to full reconstruction

Option 4: Rapid Implementation

- Funding Stream: Rapid Implementation (RI), up to 100% funding for segments on the Major Bikeway Network (MBN), with a maximum project cost of $500,000 per kilometer
- Strengths: Lower upfront capital costs, minimal construction disruption, and eligible for rapid funding approval; rapid delivery aligns with RI criteria
- Limitations: Requires completion within 15 months; narrower bike lanes widths compared to other options may raise concerns regarding user safety and comfort; limited improvements to pedestrian amenities and buffer widths may affect long-term effectiveness and competitiveness of the funding application

Final eligibility and funding levels will be subject to TransLink review and City submission under the applicable program year.

15 PHASING PLANS FOR CONSTRUCTION

To support effective implementation, this section outlines recommended phasing strategies for construction, informed by conceptual design progression, technical constraints, and public engagement feedback. It also includes alternative approaches that could provide interim or supplementary improvements to the corridor, as well as strategies that the City could consider to implement improvements through future developments along Harris Road.

15.1 Public Feedback on Prioritization

The online survey and public engagement sessions provided valuable insights into community priorities regarding construction sequencing:

- Segments 6 to 7 were identified by the public as the highest priority, due to their higher traffic volumes, multimodal conflicts, and safety concerns; particularly near the railway crossing (Segment 6) and the Harris Road–Lougheed Highway intersection (Segment 7).
- However, Segments 6 and 7 involve third-party jurisdictions. These segments are outside the City's direct control and are expected to require additional coordination, extended timelines, and potentially complex permitting or funding agreements.
- Given these constraints, Segments 3 through 5 are recommended as initial construction phases. These segments have clear tie-in points, fewer external dependencies, and are under the City's direct jurisdiction. Segment 3 also provides connectivity between Airport Trail and Parkside Trail, enhancing active transportation opportunities.
- Segments 1 and 2, located in the newer business park area, were considered a lower priority by respondents. These segments have lower traffic volumes, recently constructed infrastructure, and fewer safety concerns relative to the southern parts of Harris Road.

15.2 Recommended Construction Phasing Plan

Based on technical feasibility, jurisdictional considerations, and funding opportunities, the following construction phasing is recommended:

Phase 1: Segment 3

- Improves pedestrian and cycling access and safety near trails and community amenities – specifically the gap between Airport Trail and Parkside Trail.
- Receives strong public support and aligns well with Complete Street and funding criteria.
- Involves minimal external dependencies.
- Lower traffic volumes and less constraints in the existing corridor.
- MUP and neighbourhood bikeway connections within Segment 3 may be delivered earlier as a standalone, lower-cost project.

Phase 2: Segment 4

- Serves as a pilot for the Rapid Implementation approach using quick-build materials.
- Located in a high volume traffic area between Hammond Road and Ford Road.
- Connects to Hammond Road bike lanes and nearby civil facilities (e.g., City Hall, recreation centre, schools)
- Allows early testing or protection types, materials, and public response before scaling up to other segments.
- Strong candidate for TransLink's Rapid Implementation funding being part of the Major Bikeway Network (MBN)

Phase 3: Segment 5

- Completes the central corridor improvements following the Segment 4 pilot.
- Builds on connectivity established in earlier phases.
- Provides continuity south of Ford, with potential for design refinements based on Phase 2 learnings.

Phase 4: Segment 1 and 2

- Given their lower urgency, construction here can follow once central and northern segments are completed.

Phase 4: Segment 6 to 7 (Long-Term Coordination)

- To be pursued in collaboration with VFPA and CPKC (Segment 6) and MoTT (Segment 7).
- Preliminary design and inter-agency discussions can proceed concurrently with Phases 1–3.

15.3 Alternative Construction Option

Several residents highlighted in the public engagement sessions that adjacent roadways could offer opportunities for complementary active transportation improvements. These adjacent streets typically have lower vehicle volumes, fewer jurisdictional constraints, and potentially lower construction costs. However, consideration must be given to balancing available funding, citywide priorities, and service-level trade-offs.

Key opportunities include:

- Improved school and civic centre access: Safer routes to educational and community destinations could be achieved without major work on Harris Road.
- East-west cycling connections: These routes may serve as parallel corridors to Harris Road for those seeking quieter cycling paths.
- Reduced pressure on Harris Road: Enhancements on nearby routes may distribute multimodal demand more evenly across the network.

15.4 Implementation through Future Development

Given the significant investment required for comprehensive improvements along Harris Road, the City may consider alternative approaches for implementing parts of the corridor improvements incrementally through future private developments or redevelopments.

15.4.1 Potential Strategies

Development-Driven Corridor Improvements

The City could incorporate Complete Street standards into development approval processes, requiring developers to deliver improvements adjacent to their property as part of development conditions.

- **Pros:**
  Reduces upfront City capital investment.
  Incrementally builds out improvements as development occurs.
- **Cons:**
  Could lead to inconsistent implementation along Harris Road.
  Dependent on pace and type of development, which could delay improvements.

Segment-by-Segment or Incremental Upgrades

Prioritize and deliver improvements incrementally based on development potential, available funding, or safety needs.

- **Pros:**
  Allows focused investment and incremental budgeting.
  Improves key segments of the corridor in manageable phases.
- **Cons:**
  May delay comprehensive corridor improvements.
  Could result in interim periods of inconsistent facility quality.

15.4.2 Balancing Priorities and Costs

Implementing improvements through future development must be carefully balanced against other citywide infrastructure priorities. Clear and proactive policy alignment (e.g., updates to the Official Community Plan, zoning, subdivision regulations, or development guidelines) will be crucial to guiding and enforcing improvements consistently.

These strategies should be considered in coordination with available grant programs, municipal budgets, and community needs. The City should carefully evaluate trade-offs to ensure resources are efficiently allocated, reflecting both the long-term vision and short-term needs of the community.

16 RECOMMENDATION

Based on comprehensive feedback, technical analysis, Class D cost estimates, and alignment with current funding programs, the following implementation strategy is recommended. This approach reflects the phased plan outlined in Section 15.

Segment 3 – Reconstruction (Option 2)

$3,683,000 Capital, $29,700 Net Annual Maintenance Adj.

This segment offers strong alignment with Complete Street principles and funding criteria. The proposed design includes widened sidewalks, protected cycling infrastructure with standard roadside buffers, and improved connectivity between Airport Trail and Parkside Trail. These features position Segment 3 as a strong candidate for TransLink fundings. In addition, this segment received the highest level of public support for its proposed improvements, reinforcing its suitability for early implementation.

In addition to the full reconstruction scope, the City may consider advancing the MUP and neighbourhood bikeway components of Segment 3 (e.g., 191a Street) as a standalone, early-phase project. These off-street and low-impact connections present a cost-effective opportunity to enhance network connectivity and safety in the near term, while supporting future applications for grant funding. Prioritizing these elements could deliver early benefits to active transportation users and improve the City's competitiveness in future funding rounds.

Segment 4 – Rapid Implementation (Option 4)

$909,700 Capital, $22,800 Net Annual Maintenance Adj.
(Segment 4 construction and annual maintenance costs account for 40% of the total cost estimate for Segments 4–7)

Segment 4 is recommended as a pilot location for the Rapid Implementation approach. It features higher traffic volumes, direct connections to Hammond Road bike lanes, and access to civic facilities, schools, and other community destinations. Implementing this segment as a standalone phase allows the City to test quick-build materials and protection types, evaluate user response, and gather data to inform future phases.

Although the estimated cost per kilometer exceeds TransLink's typical threshold for Rapid Implementation funding, Segment 4 is a strong candidate due to its location on the Major Bikeway Network (MBN) and its role in connecting major civic infrastructure. The segment addresses key safety and accessibility objectives outlined in the funding program and presents a compelling case when evaluated against broader criteria such as network connectivity, near-term deliverability, and potential for increased ridership. If selected, the funding stream would significantly reduce the City's financial contribution toward implementation.

Segment 5 – Rapid Implementation (Option 4)

$386,600 Capital, $9,500 Net Annual Maintenance Adj.
(Segment 5 construction and annual maintenance costs account for 17% of the total cost estimate for Segments 4–7)

Segment 5 is recommended as the next phase following implementation of Segment 4. It completes the central portion of the corridor and builds on the connectivity and design principles tested in the previous phase.

Lessons learned from Segment 4 can be applied to optimize materials, layout, and user experience. As with Segment 4, this option minimizes impacts to utilities and mature tress while delivering protected cycling infrastructure within the existing roadway.

While rapid implementation is recommended for these segments, opportunities for more permanent upgrades could be further explored in the future as funding becomes available and additional design work progresses.

Segments 1–2 – Retrofit (Option 1)

$985,600 Capital, $26,600 Net Annual Maintenance Adj.

For Segments 1–2, the retrofit option is recommended, reflecting the recently upgraded infrastructure in these segments and strong community support for cost-effective, minimally invasive improvements. This option leverages existing infrastructure, maintains recent investments, provides effective physical separation for cyclists, and can be implemented quickly with minimal disruption. Although retrofit approach aligns well with the public's support for cost-effective improvements, these segments fall outside of the MBN and may not be eligible for 100% funding through the Rapid Implementation stream.

Segments 6–7 – Coordination with Railway Crossing and Lougheed Highway Projects

Segments 6 and 7 should be advanced through ongoing collaboration and coordination with the VFPA, CPKC, and MoTT, as these segments require extensive interagency planning and integration with adjacent major infrastructure projects. The City could continue proactive engagement to ensure alignment and future readiness for improvements.

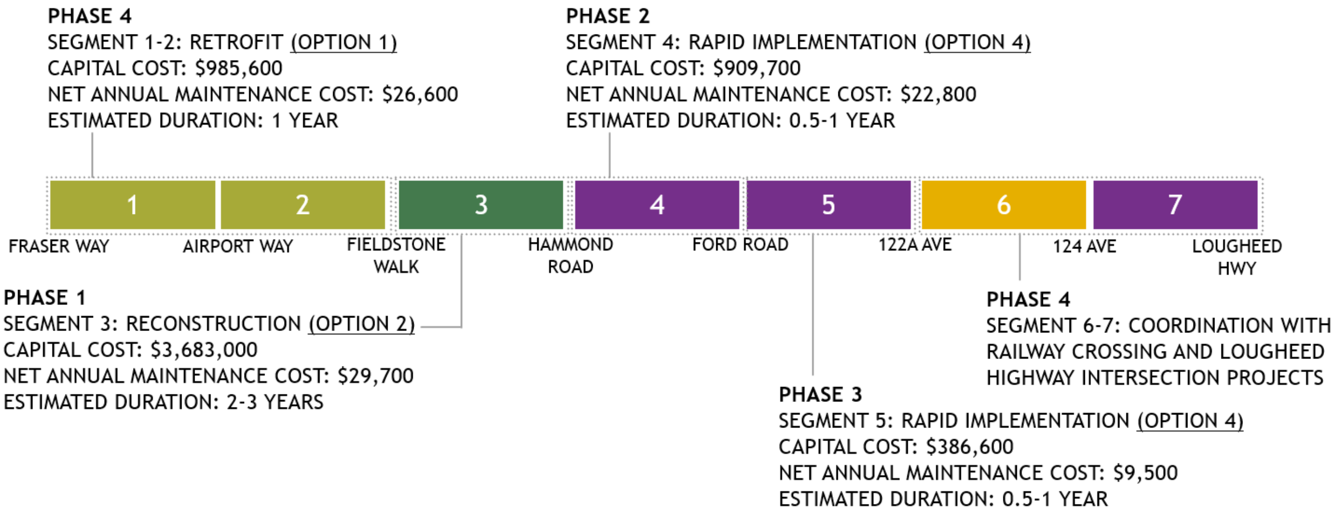

Figure 21: Implementation Overview

At this stage, the recommended approach provides structured guidance while allowing the City flexibility to adapt based on additional technical assessments, evolving funding opportunities, and future community and stakeholder input. Given the significant capital investments required and potential traffic disruptions associated with these construction activities, the recommended phased approach enables careful consideration of budget priorities, external coordination, and implementation feasibility. This balanced, incremental strategy reflects current technical analyses, stakeholder feedback, and public input, aiming to progressively address multimodal safety and connectivity along Harris Road while remaining responsive to evolving conditions and opportunities. Connectivity between different design options can be addressed more thoroughly during the detailed design stage; however, significant connectivity issues are unlikely, as all four design options feature similar roadway alignments, with uni-directional bike lanes on both sides and minimal alteration to overall traffic flow and lane configuration.

Appendix A: TIA Report by Bunt

Appendix B: City of Hamilton Complete Streets Design Guidelines (2022)

Appendix C: Corridor Audit Memorandum, January 2025

Appendix D: 5 Preliminary Conceptual Options

Appendix E: 3 Initial Design Options

Appendix F: What We Heard Report by Uplift

Appendix G: 4 Revised Design Options

Appendix H: Class D Cost Estimates

The project was also carried out with assistance from TransLink's 2024 MRNB Funding Program.

Surrey (Head Office)
201 – 12448 82 Avenue
Surrey, BC V3W 3E9
604-597-9058
surrey@aplinmartin.com

Surrey Central
1680 – 13450 102 Avenue
Surrey, BC V3T 5X3
604-639-3456
centralcity@aplinmartin.com

Vancouver
1818–1177 West Hastings Street
Vancouver, BC, V6E 2K3
604-678-9434
vancouver@aplinmartin.com

Kelowna
1258 Ellis Street
Kelowna BC V1Y 1Z4
250-448-0157
kelowna@aplinmartin.com

Nanaimo
104-6596 Applecross Road
Nanaimo, BC V9V 0A4
778-841-0484
nanaimo@aplinmartin.com

Calgary
#105 – 7326 – 10 Street NE
Calgary, AB T2E 8W1
403-250-8199
calgary@aplinmartin.com

Edmonton
606 – 10117 Jasper Avenue,
Edmonton Alberta, T5J 1W8
780-670-2644

Toronto
405 – 55 St Clair Avenue West,
Toronto, Ontario M4V 2Y7
416-644-1900

Burlington
110 - 980 Fraser Drive
Burlington, ON L7L 5P5
416-644-1900