

City of Richmond, BC

No. 3 Road Restoration

Preliminary Design Report

February 13th, 2007

Presented to



Presented By



DELSCAN



Opening Day



Long Term

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Executive Summary

No. 3 Road Restoration

The following document constitutes the final report for the “No. 3 Road Restoration – Preliminary Design” Study. This report makes recommendations for the No. 3 Road Restoration Project resulting from the present east side construction of the Canada Line Rapid Transit System and according to the Richmond City Council “Approved Streetscape Concept Design” between Bridgeport Road and Granville Avenue. The project team consists of:

Prime Consultant

IBI Group

Project Management & Urban Design

Sub-Consultants

Delcan Corporation

Roadway Engineering

PWL Partnership Landscape Architects Inc.

Landscape Architecture

BTY Group

Costing

The contract, No. 2878P, was awarded to the consulting team in August 2007. This report will form the basis to the subsequent, Detailed Design, phase of the work program, scheduled for completion prior to the end of 2007.

Report Format

The report is divided into five sections. Section 1 deals with “Corridor-Wide Guiding Principles”; Sections 2 & 3 are focused upon “Urban Design”; Section 4 deals with “Engineering Design”, while Section 5 considers elements that have been placed beyond the scope of the contract as project costs have clarified. The report includes, as well, 3 appendices – a corridor-long urban design drawing; an equivalent corridor-long engineering drawing and a summary of the Class “C” Cost Estimate (also, produced in full as a standalone report).

Study Overview

The City of Richmond, in its Official Community Plan (OCP) 1995 and the and the City Centre Area Plan 1996, identified a need for high-speed public transit connecting Richmond to Vancouver and the Vancouver International Airport, with No. 3 Road as the designated transit corridor in Richmond. The No. 3 Road Restoration program was made necessary by the construction of the elevated Canada Line rapid transit system along, the east side of Richmond’s preeminent retail/commercial street.

Section 1:

Corridor-Wide Guiding Principles

Section 1 summarizes a series of prior studies that served as the starting point for the No. 3 Road Restoration – Preliminary Design Report to place the design recommendations within the context of the broader picture. They include:

- City of Richmond Council Visioning Workshop, No. 3 Road (IBI Group, 2005), ratified the concept of making No. 3 Road both a “Great Street” and its five (5) Canada Line transit stations as the hubs for Transit-Oriented Development (TOD). (See Sections 1.1 & 1.2);
- City of Richmond No. 3 Road Corridor Streetscape Study (IBI Group, 2005 – 2006), that centered upon two parallel topics of ‘streetscape’ design and ‘fronting building’ strategies and, importantly, proposed establishment of a “Culture of Walking and Cycling” along No. 3 Road. This study terminated in delivery of an approved “Short Term” and “Long Term” typical cross-sectional elevation. (See Sections 1.3 & 1.4).

**Section 2:
Urban Design – Elements of Continuity**

Section 2 of this report describes “Elements of Continuity” as those elements that exist on a recurring basis from one end of No. 3 Road to the other within the study area. They include items such as the street’s cross sectional profile – sidewalk/median/boulevard; intersection/crosswalk; street lighting/pedestrian lighting, street signage/wayfinding, etc. They are the elements that contribute to the identity and legibility of the streetscape design.

The major distinguishing feature of the urban design approach is affirmation of the typical cross-section, as developed in the prior Richmond No. 3 Road Streetscape study, namely a street profile that features two lanes of through traffic, both northbound and southbound, left turning lanes as required. Adjacent the roadway is a cycle lane, raised 60mm in height from the roadway. The sidewalk runs parallel to the cycle lane, raised a further 65mm. Further, the sidewalk and the cycle lane are separated by the “Richmond Curb”, a 450mm wide curb of a darker concrete texture. This strip, in addition to prominently separating pedestrians from cyclists, serves as a placement band for streetlights and other urban furniture (see cross sections at right).

**Section 3:
Urban Design – Elements of Distinction**

Section 3 of this report describes those elements that occur within distinctive “Character Zones”, one per each transit station, along the No. 3 Road corridor. These elements contribute individual and unique qualities to the streetscape experience. They include specific urban design treatments of transit plazas surrounding transit stations, and comment on upon the evolution of plaza furnishings and fixtures that will add definition to each Character Zone.

**Section 4:
Engineering Design – Road Design Criteria**

The classification of No. 3 Road is an Urban Collector/Arterial Divided, with a Design Speed of 50 km/h. The Design Criteria for No. 3 Road have been developed generally in accordance with the previously approved and constructed 98B Line Project road standards that it replaces.

Special features of this design include:

- A 4-lane divided section plus left-turn lane at intersections.
- Reduced intersection curb return radii to improve pedestrian mobility and safety.
- Maintained the present traffic lane widths.
- Provided curb side bus stops at the far side of main intersections.
- Tiered bike lanes.
- Raised intersections.

The proposed road alignment runs generally between the proposed Canada Line guideway columns and the existing west side of the road right-of-way, negotiating through the pinch points created by the Lansdowne Station, Aberdeen Station, Capstan Station, and 2 guideway sections north of Alderbridge Way and north of Cambie Road. The proposed gutter profiles will be established to generally follow the existing pavement grades as much as possible while maintaining smooth transitions and positive drainage. A variable width sidewalk/plaza area is proposed to integrate the new streetscape with the adjacent commercial developments, civic plazas, and transit stations. A raised, landscaped median is proposed with left turn bays at major intersections. The existing paved road surface elevation is being maintained where possible along No. 3 Road in order to match elevations of adjacent buildings and utility structures as well as to preserve west side curbs that are designated to be retained.

Traffic signal works are not a part of this assignment, and will be coordinated between CLCO and the City of Richmond. Similarly double davit arm street lights are proposed in the centre medians with separate decorative walkway/plaza lighting.

Impacts to utilities within the road right-of-way were identified, and recommendations for relocation, adjustment, and installing new utilities were made according to discussions with relevant utility companies.

The construction of this design will most likely have to be completed during off-peak night time hours and it is

anticipated that phased single side widening will have to be completed to minimize traffic disruptions. Proper traffic management strategies must be implemented in the construction stage.

A Class C Cost Estimate for the Civil Works is provided in this report as a part of this report.

Section 5: Items Outside of Contract

Section 5 involves those urban design items that have, for purpose of organization, delivery or cost, have been deemed beyond the scope of the streetscape program. Each will likely require policy change within the City of Richmond to effect. They include kiosks, commercial signage and guideway art. In addition this section contains a matrix of other “nice-to-have” urban features and their “order-of-magnitude” associated costs in the hope that monies will be available at some point in the future for their further consideration.

**Appendix:
Class “C” Estimate**

The construction cost summary, prepared by BTY Group, is divided into the following elements – Infrastructure, Civil, Urban Design, General Requirements, Contingencies and Payable Taxes. Expressed in 2007 Construction Costs with a 5% per annum escalation allowance (for 14 months), the estimated project cost for the project is \$24,019,200.

Conclusion

The vision for No. 3 Road is ambitious. It represents the contributions of many departments within the City of Richmond in their collective efforts to ensure that No. 3 Road becomes the showcase for development of the Richmond City Centre in the years to come.

Opening Day



Long Term



Section 1

Corridor-Wide Guiding Principles

1.1

Great Streets

Raise the profile of No. 3 Road, adhering to the qualities of a “Great Street”, one that plays an important symbolic, ceremonial and political role in the life of The City of Richmond.

1.2

Transit-Oriented Development

Designate the transit stations along No. 3 Road as the hub of compact, mixed-use and pedestrian-friendly neighbourhoods where residents “live, work, shop, learn and play” without the need of an automobile.

1.3

No. 3 Road Corridor Streetscape Study

Ensure that the clarity of thought and effort resulting from prior studies for No. 3 Road is both respected and built-upon.

Section 1.1 Great Streets

The No. 3 Road corridor, from West Bridgeport to Richmond’s City Hall, shall become a ‘Great Street’ and the focus of Richmond’s downtown as it grows to become a vibrant, attractive urban place.

The principles for creating ‘Great Streets’ include ensuring they are:

- Pedestrian friendly
- Physically comfortable
- Engaging
- Memorable
- Provide “Sense of Place”
- Encourage participation
- Celebrate Community
- Accessible to all

Qualities that contribute to ‘Great Streets’ include:

1. Street Edge Definition
2. Linearity
3. Density
4. Diversity
5. Many Rather Than Fewer Buildings
6. Complementarity
7. Beginnings And Endings
8. Transparency
9. Contrast
10. Legibility
11. Design Features and Materials
12. Lighting and Seating
13. Street Trees
14. High Quality Maintenance
15. Contrast
16. Length
17. Sight Lines
18. Variety
19. Accessibility
20. Time



Great Streets Are Pedestrian Friendly And Physically Comfortable

1. Street Edge Definition

Building streetwalls and sidewalks create strong visual enclosure

2. Linearity

Block length and streetscape design creates a rhythm on the street and adds legibility

3. Density

Helps because more people and greater activity levels contribute to the quality of street life

4. Diversity

Streets with physical and economic diversity bring people together for different reasons

5. Many Rather than Few Buildings

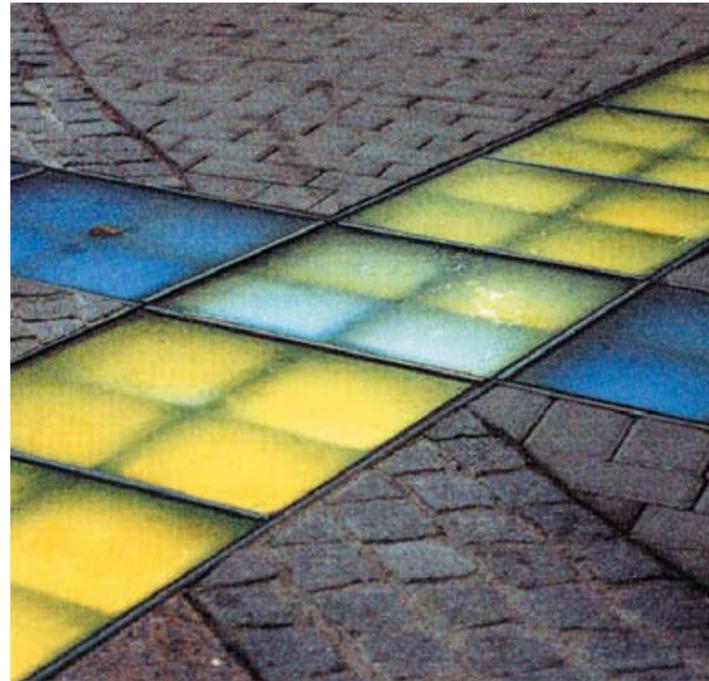
More owners, designers, shops and merchants bring diversity

6. Complementarity

Buildings are respectful of the streetscape context and landmarks are exceptions

7. Beginnings and Endings

Memorable sequence of entry and arrival or departure helps to orient



Great Streets Are Memorable and Engaging



8. Transparency

Implies an invitation to view or know what is behind the streetwall and adds to safety

9. Contrast

Differentiates streets creating a hierarchy in design and sets some streets apart as special

10. Legibility

Cohesive elements of continuity intuitively inform all users about street functionality

11. Design Features and Materials

With qualities that engage the eye such as fountains, public art, and add interest and enjoyment.

12. Lighting and Seating

Create safer and more comfortable streets that encourage pedestrian use

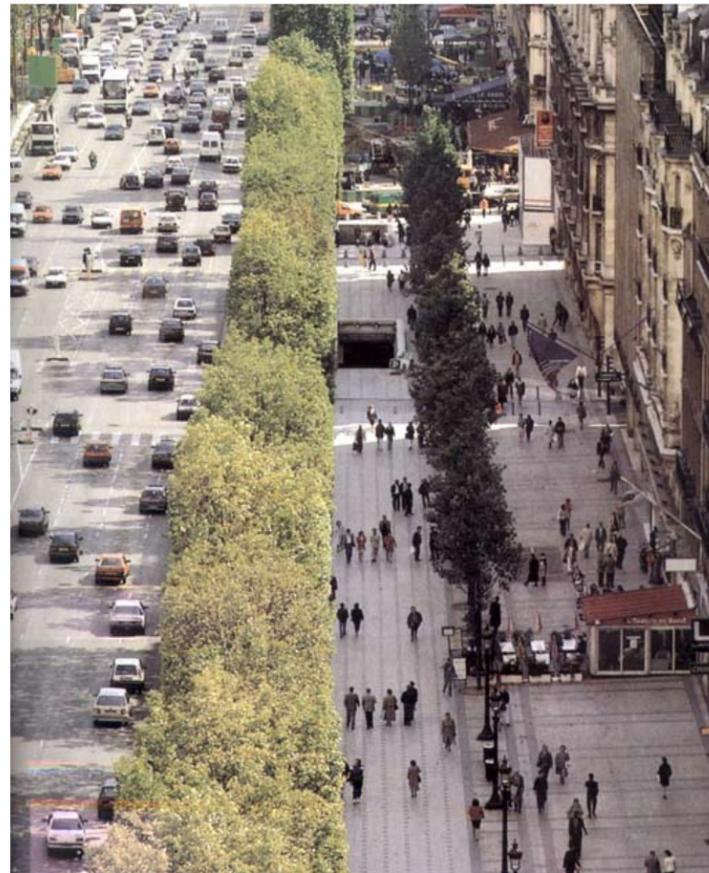
13. Street Trees

Contribute to and enhance the overall quality of the pedestrian-friendly experience

14. High Quality Maintenance

Indicates the street environment is cared for and claimed for public use

Great Streets Celebrate Community, Encourage Participation, and Create a “Sense of Place”



15. Contrast

Differentiates streets creating a hierarchy in design and sets some streets apart as special

16. Length

If a special street continues too long it ceases to be special (± 1 km is a general guideline)

17. Sight Lines

Streets that capitalize on views add drama to the experience and orient users

18. Variety

Variety, activity and liveliness usually result from diversity and animate the street

19. Accessibility

For all users including persons with disabilities, visually decipherable and barrier free

20. Time

Conventional wisdom suggests that time is necessary to achieve diversity.

Section 1.2

Transit-Oriented Development

The Canada Line project, from West Bridgeport to Richmond's Civic Precinct, shall be an attractive and integral part of No. 3 Road, serving to enhance as well as benefit from the corridor's urban character, pedestrian amenities and economic viability as a 'Great Street'.

Compact, mixed use and pedestrian-friendly neighbourhoods containing a range of housing types, workplaces, shops, entertainment, schools, parks, and civic facilities essential to the daily lives of residents, all within a 5 to 10 minute walk from a transit station.

Key TOD guiding principles include:

1. Serve, Not Shape Land Use
2. Compact Development
3. Mixed Land Use
4. Street Facing Buildings
5. Retail Frontage
6. Residential Livability
7. Civic Uses
8. Multi-Cultural
9. Open Space
10. Transit Service
11. Transit Stations
12. Roadway Network
13. Narrow Streets
14. Relaxed Parking Standards
15. Cyclist Friendly
16. Pedestrian Friendly
17. Centre Medians
18. Places for People to Walk
19. On-Street Parking
20. Market Acceptance

A Transit-Oriented Development Corridor



1. Serve, Not Shape Land Use

Canada Line must 'fit' with the City's planned development pattern

2. Compact Development

Higher density discourages lower density uses and activate the public realm

3. Mixed Land Use

A variety of fronting land uses ensures people are on the street longer



4. Street Facing Buildings

With addresses and retail activity spilling out onto the boulevard

5. Retail Frontage

High quality shops reinforce the role of 'main street' as pre-eminent retail district



6. Residential Livability

Reinforce core area growth and emerging image as a modern, progressive city

7. Civic Uses

Major civic uses can punctuate the corridor and reinforce the importance of the street



8. Multi-Cultural

Design aspects enrich the pedestrian experience and invites broader use by others

9. Open Space

Improves diversity and punctuates the street with attractors and generators of activity



10. Transit Service

Convenient connections to rapid transit significantly increase pedestrian traffic

A Transit-Oriented Development Corridor



11. Transit Stations
User friendly, transparent and safe stations with complementary adjacent retail uses

12. Roadway Network
Short blocks with a fine grained network grid of interconnected streets



13. Narrow Streets
Improve pedestrian and cyclist safety creating a friendlier street

14. Relaxed Parking Standards

Densification and convenient transit permits reduced parking standards



15. Cyclist Friendly
Safe, convenient cycle lanes promote sustainable transportation



16. Pedestrian Friendly
With an abundance of pedestrian amenities, inclusive, and at a human scale

17. Centre Medians
Improve streetscape character, roadway legibility and the pedestrian experience



18. Places for People to Walk
Important pedestrian destinations along the street give reasons to walk

19. On-Street Parking
In limited amounts, acts as a modest traffic calming measure enhancing safety



20. Market Acceptance
Respect and enhance the significant public and private investment on the street

Section 1.3

No. 3 Road Corridor Streetscape Study

URBAN LAND | NO. 3 ROAD CORRIDOR STREETScape STUDY

City of Richmond, BC No. 3 Road Corridor Streetscape Study

Phase 1: Concept Design
Final Report—Executive Summary
August 2006

The map illustrates the No. 3 Road Corridor in Richmond, BC, with various planning areas and station locations. The corridor is divided into five numbered segments (1-5) along its length. Key locations include Richmond-Brighouse Station, Lansdowne Station, Aberdeen Station, Capstan Station (future), Bridgeport Station, and West Bridgeport Planning Area Boundary. Other areas shown are Gateway North, Gateway South, International District, Downtown Core North, and Downtown Core South. The map also indicates the North Arm Fraser River, Middle Arm Fraser River, and the Richmond City Centre Area Boundary. Arrows point towards Vancouver and YVR Airport.

IBI GROUP



The purpose of the No. 3 Road Streetscape Study is to establish a vision for No. 3 Road with an elevated guideway as its catalyst.

The newest leg of the region’s rapid transit system will soon link the City of Richmond to both downtown Vancouver and the Vancouver International Airport. The City of Richmond is undertaking a detailed urban design analysis of No. 3 Road in anticipation of rapid transit service. Referred to as the Richmond No. 3 Road Corridor Streetscape Study, its goals and objectives are as follows:

- Integrate the elevated guideway into the east side fabric of No. 3 Road in the interest of making it a ‘Great Street’.
- Develop placemaking strategies to make No. 3 Road more pedestrian-friendly at and beyond transit station plazas.
- Set the stage for subsequent Transit-Oriented Development (TOD) surrounding each transit station.
- Ensure that a functioning rapid transit system contributes positively to other developments within the City Centre such as the Richmond Oval and the Garden City Lands.
- Inform the upcoming City Centre Area Plan update.

Study Components

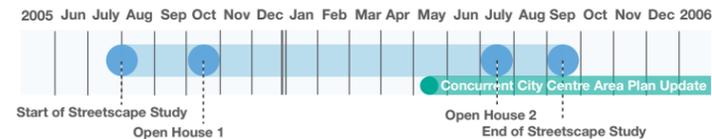
Streetscape

The design of No. 3 Road from City Hall in the south to the Fraser River in the north. Aspects of this work dealt with items such as street curb-to-curb cross-section and function; pedestrian and vehicle zones; and placemaking strategies, including street furniture and lighting.

Fronting Buildings

The investigation of policies and design guidelines to help ensure that buildings on either side of No. 3 Road are developed to complement the guideway structure. This will ensure that No. 3 Road remains the preeminent retail and business precinct in Richmond.

Study Timeline



“All cities that I know have very good traffic departments and perfect statistics about cars. They know how many go east and how many go west. They know how many parking spots there are and how they’re used... Every time there is a planning process, the cars are very visible and somebody looks after them. I know of no city in the world that has a department of pedestrians and public life.”

— Jan Gehl. ‘People-Powered Urban Design’. New Urban News. July/August 2005



No. 3 Road Framework

1. Richmond City Centre Planning Area

An update of the Richmond City Centre Area Plan is currently being undertaken



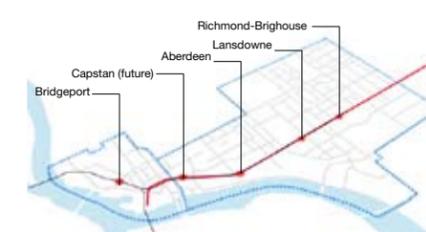
2. No. 3 Road

No. 3 Road is the preeminent retail and commercial street in Richmond and the focus of this study



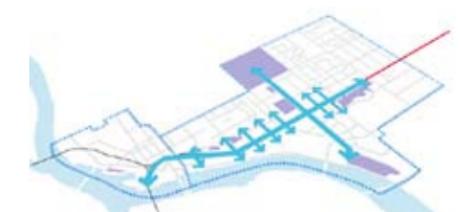
3. Alignment

Five Canada Line stations will reinforce No. 3 Road as the main retail and commercial street in Richmond



4. Landmark Connections

East / West connections are being developed, with a main connection between the Richmond Oval and the Garden City Lands to occur along Lansdowne Road



5. Aircraft Noise Zones

These areas are restricted in terms of future residential development due to noise concerns



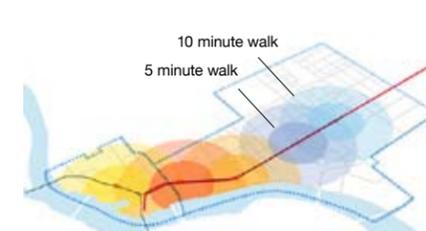
6. Approved Ring-Roads

Further roadway connections will be developed alongside future development



7. Transit-Oriented Development Areas

The inner circle represents a 5 minute walk from a Canada Line station, the outer circle a 10 minute walk



8. Character Zones

Five distinct Character Zones will help promote variety along No. 3 Road, which in turn will help link each zone to the other



The public consultation, analysis and findings helped the consultant team create key recommendations for the City of Richmond to guide the future evolution of No. 3 Road.

Top Ten Features

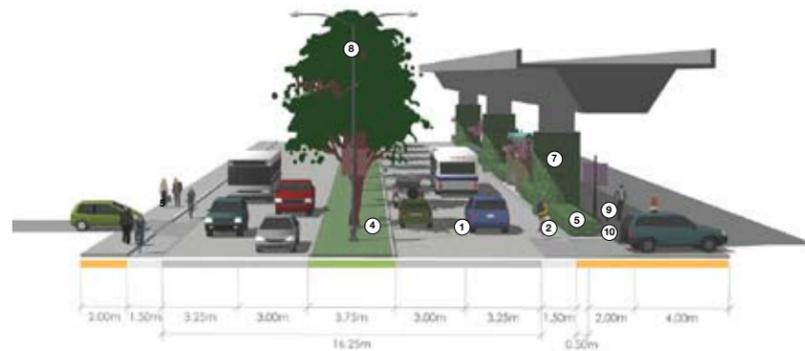
- 1 **Two northbound and two southbound traffic lanes** with dedicated left turn lanes at intersections as required
- 2 **Dedicated northbound and southbound cycle lanes** with clear and easy access to transit stations
- 3 **A straighter roadway alignment** (the current roadway meanders considerably)
- 4 **Retain an ample centre median** complete with the opportunity to plant mature trees
- 5 **An expansive (6.0m) boulevard** on the east side of No. 3 Road
- 6 **Trees on the west side of the street** to counterbalance the effect of the Canada Line guideway on the east side
- 7 **Innovative treatment of guideway columns** near transit stations such as green trellises and low hedgerows under the guideway in select locations
- 8 **Street lights with banner arms, and traffic signals** relocated in orderly fashion to the centre median
- 9 **Continuous sidewalk expression** at crosswalks parallel to No. 3 Road to promote and encourage pedestrian friendliness
- 10 **Further detailing of sidewalk features** such as curb cuts/driveway access points

Streetscape Recommendations

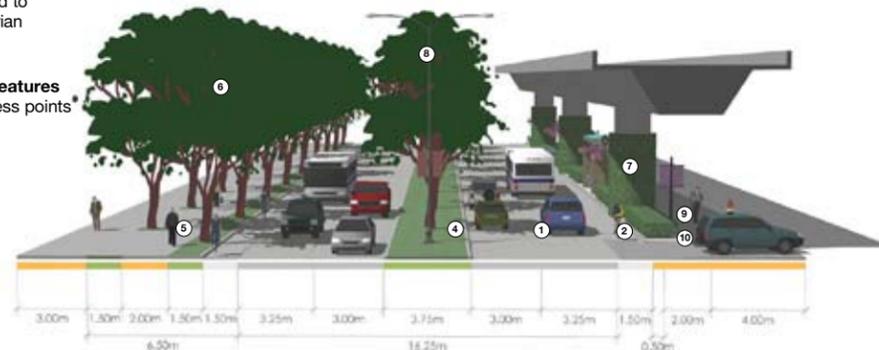
Streetscape Design Concept

A 'Top Ten' design criteria list was defined and both opening day and long term streetscape concepts were provided.

Typical Cross Section—Opening Day



Typical Cross Section—Long Term



Fronting Buildings Recommendations

Fronting Buildings Concept

Fronting buildings serve to define the street. Their facades provide a sense of enclosure, providing for both pedestrian comfort and the walls for civic rooms that contribute to pride of place.

Two key recommendations with respect to fronting buildings emerged:

- The promotion of integrated and associated development in relation to Canada Line Stations.
- The promotion of a variety of options with regard to integration with the Canada Line guideway (with the understanding that spatial variety is necessary to offset the linearity of No. 3 Road).

As examples, six typologies of relationships between fronting buildings and the Canada Line guideway were developed with respect to size, form and massing.

Below

Has a wide range of possibilities from buildings to kiosks and open space.



Above

Can be used to 'punctuate' special locations in space, increase densities and engage/define the street.



Beside Close

Uses guideway as an urban design element that defines and encloses public space in conjunction with the adjacent buildings.



Attached

Opens up possibilities to use rooftops and/or direct access to buildings beside the guideway.



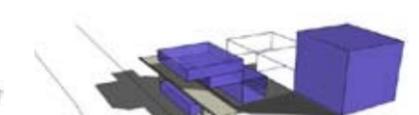
Beside Far

Allows for the creation and definition of larger, more significant open spaces such as parks and squares.



Combination

The use of multiple volumes creates a variety of rich spatial possibilities and punctuates the streetscape with pedestrian places.



The success of the No. 3 Road Streetscape program depends not only upon the ability of the restored street to accommodate the Canada Line guideway, but the degree to which it promotes an active and engaging street life.

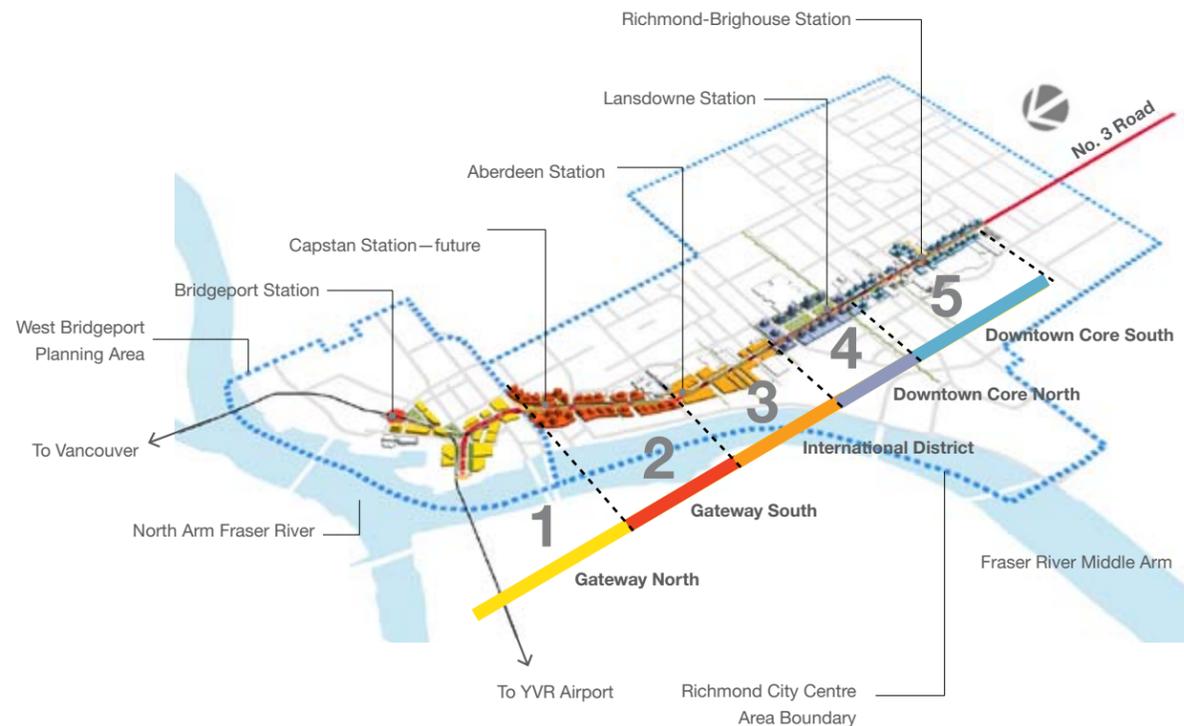
Character Recommendations

Character Zones

After analyzing the streetscape and street-facing buildings, and defining place-making strategies, we introduced the concept of Character Zones.

Each zone will help establish a distinct precinct, complete with a series of 'special places' along the spine of No. 3 Road to improve the rhythm of the street. The zones are each focused on a Canada Line transit station, and encourage the prospect of building Transit-Oriented Development (TOD) villages and developing a culture of walking and cycling along No. 3 Road.

Five Character Zones were defined that are sensitive to the existing residents and business needs, while providing direction and inspiration for the area's future evolution. The Zones were defined with a vision statement and placemaking concept, as well as providing direction for future land use and building typology. Site plans, site perspectives, elevations and typical cross sections were provided for each Character Zone.



1 Zone 1: Gateway North

A zone of large-scale entertainment, tourist accommodation and services, institutional and/or business and office facilities.



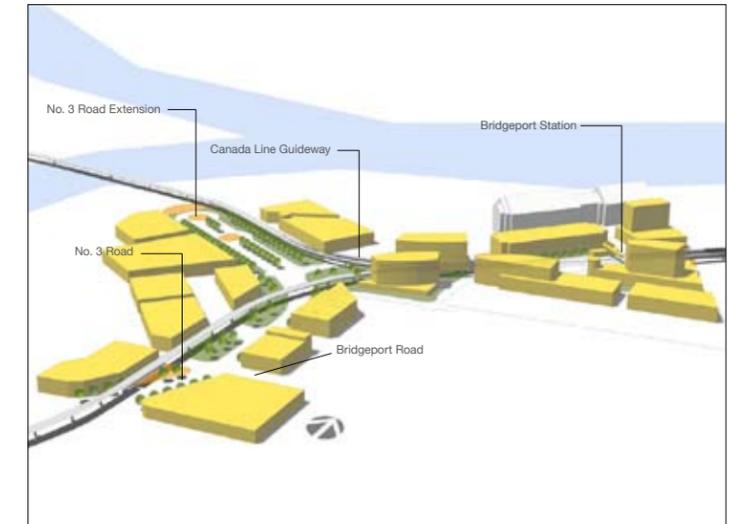
Site Plan

- Care will be taken to ensure that public open space has been incorporated so as to link the station area with the riverfront and new development.



Area Perspective

- Gateway North is envisioned as Richmond's Entertainment District, a 24-hour zone of restaurants, bars, hotels, casinos and, perhaps, an artists' precinct.
- May feature specialty retail, such as outdoor retail "showcase" centres, and business/office park buildings.
- A significant urban design feature of the Gateway North zone will be the extension of No. 3 Road to the water's edge.

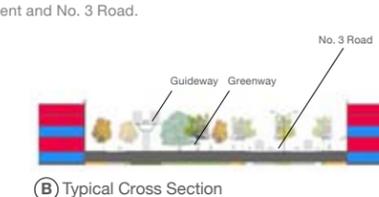
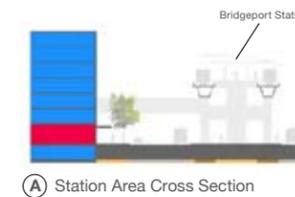


Bridgeport Station Area

- Gateway North is both a transfer station (from downtown Richmond to YVR) and a regional transit exchange.

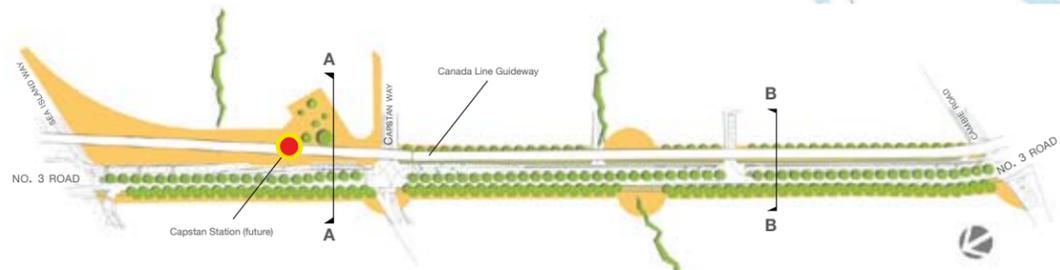
Typical Cross Section

- The Canada Line guideway is at its highest point within Richmond at this station as the airport portion "flies" over the downtown Richmond portion.
- As the guideway approaches Bridgeport Road, southbound, it creates a "greenway" between the alignment and No. 3 Road.



2 Zone 2: Gateway South

A purpose-built "Transit-Oriented Community" zone, with residential and retail services within a 5 to 10 minute walk of rapid transit.



Site Plan

- Gateway South has the opportunity to provide significant numbers of housing units within a "Complete Community" format, given its current degree of under-development.

Area Perspective

- Opportunity to be a Transit-Oriented Development (TOD) zone with mid to high-density housing.
- Availability of large tracts of vacant land, and low-scaled, under-developed land will allow for quality, community development where families can live comfortably with little need for a car.
- Street treatment will be an urban greenway – a meandering 'softscape' of trails and planting.



Capstan Station Area

- The Capstan Station will not be constructed for the opening of the Canada Line in late 2009. It is anticipated that it will be built beyond 2015.



(A) Station Area Cross Section

Typical Cross Section

- No. 3 Road narrows up through the Gateway South zone, expanding at the Capstan Transit Plaza.

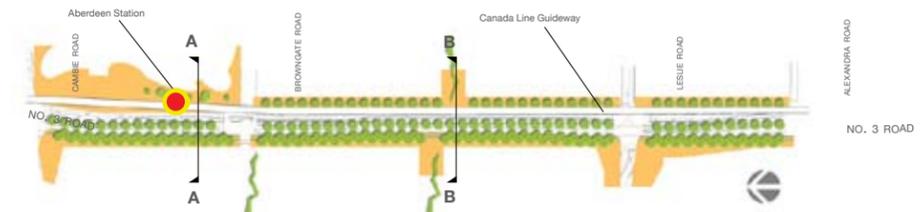


(B) Typical Cross Section

- Retail/Commercial
- Parking
- Residential

3 Zone 3: International District

An international zone of shopping, dining, arts and culture; a medium density mixed-use zone.



Site Plan

- Capitalizes upon the growing cosmopolitan flavour of area.
- Shortest distance from No. 3 Road to water's edge occurs at Cambie Road intersection.

Area Perspective

- An International District in Richmond to surpass that of Vancouver's traditional Chinatown.
- Consider a market of food and exotic bargains to be established under and adjacent to the Canada Line guideway.
- A vibrant, festive nightlife of lights and activity.
- An international zone of shopping, dining, arts and culture with office and business facilities to be included.
- Cambie Road being considered for development as a shared pedestrian/ auto link to water's edge, with viewing promontory to the Fraser River.



Aberdeen Station Area

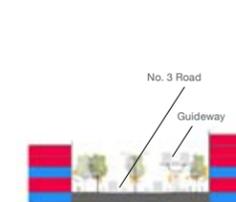
- Prospect to extend adjacent development westward to, and over, transit station, including exciting urban plaza and "under guideway" park.



(A) Station Area Cross Section

Typical Cross Section

- Potential to include vending kiosks under guideway in this portion of Canada Line.



(B) Typical Cross Section

- Retail/Commercial
- Parking

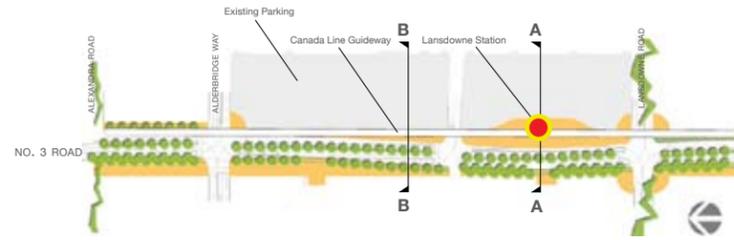
4 Zone 5: Downtown Core North

A distinct, medium to high-density mixed-use zone in a linear park-like setting.



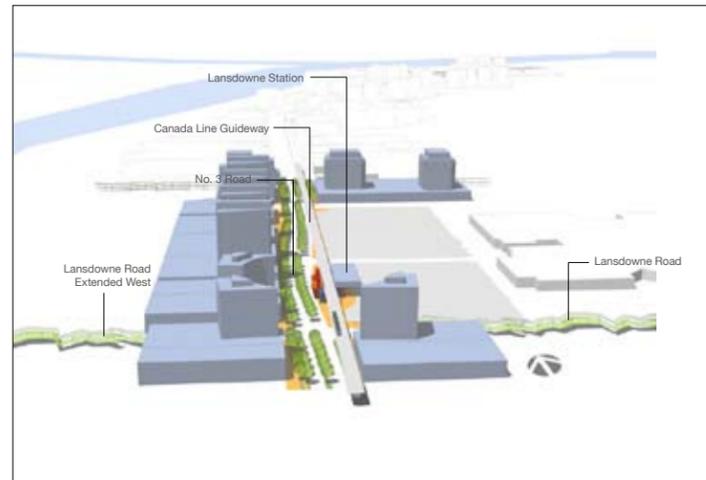
Site Plan

- Opportunity exists for development of primarily high-density, mixed-use towers.



Area Perspective

- No. 3 Road gently curves within this zone, breaking up the linearity of the street.
- Park Space to be developed in locations yet to be selected.
- Lansdowne Road extended westward to Olympic Oval, enhanced eastward through Garden City Lands, to become "Ceremonial Street" in downtown Richmond.
- No. 3 Road/Lansdowne Road intersection seen as a new, important crossroads of the city.
- Building uses predominantly mixed-use highrise towers on street-serving podiums.
- Possible Land Uses to be determined as a

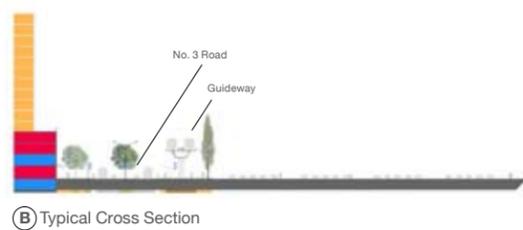
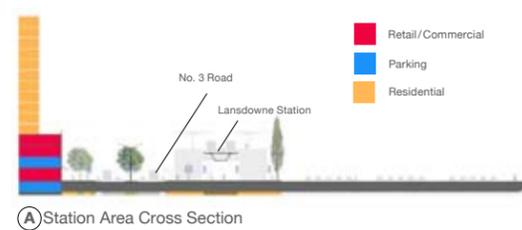


Lansdowne Station Area

- Through negotiations with Canada Line Rapid Transit Inc. (CLCO) the Lansdowne station has been moved closer to the No. 3 Road/Lansdowne Road crossing to reflect this intersection's importance as the new "Crossroads of the city."

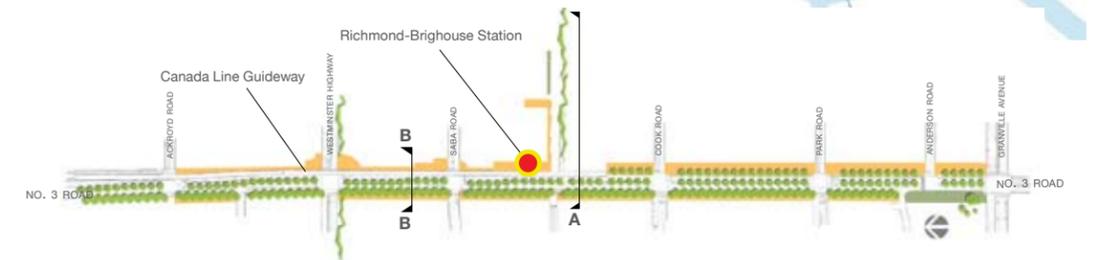
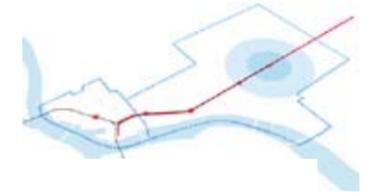
Typical Cross Section

- Due to the prior frontage road and the current Lansdowne Shopping Centre, this zone has the potential to provide the widest cross-section of open space within the downtown core.



5 Zone 5: Downtown Core South

A high-density, retail high street. A mixed-use zone with a maximum height of 45m (approx. 15 storeys).



Site Plan

- The Canada Line guideway terminates at the Richmond-Brighouse Station, just south of Saba Road. A tree-lined boulevard will eventually be constructed southward to Granville Avenue (across from Richmond City Hall) as buildings on the east side of No. 3 Road redevelop.

Area Perspective

- Downtown core with retail, office and institutional services in the form of a retail High Street.
- New buildings to the east of No. 3 Road will conform to a new 'build to' set back line to ensure the establishment of a new pedestrian promenade from the Richmond-Brighouse Station to Granville Avenue.
- Fronting properties on the west side of No. 3 Road (current Richmond Centre parking lots) encouraged to in-fill to the property line.
- Result is street-facing buildings on both sides of the street.



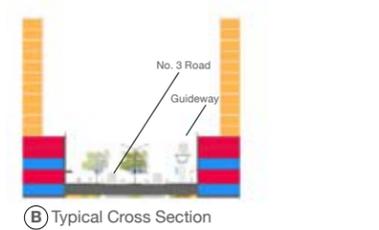
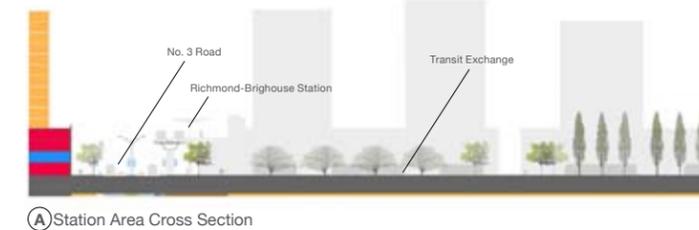
Richmond-Brighouse Station Area

- A transit exchange feeding local bus service to the Canada Line will be tied into this terminus station.



Typical Cross Section

- The Canada Line guideway shifts eastward, off of No. 3 Road in this, the final, character zone in Richmond's downtown.



Station Area Plans

In addition, the City of Richmond suggested preliminary, schematic development concepts for residual properties adjacent to the Bridgeport, Aberdeen, and Richmond-Brighthouse Transit Stations as well as the pinch point North of Alderbridge Way.



Bridgeport Station Area

Adjoining residual properties were modified in size to better accommodate the refined Bus Mall design and the illustration of the elevated guideway has been more fully resolved. The Bus Mall has undergone several revisions to improve on-site circulation and street access. The model area was also expanded to allow the illustration of surrounding streets and to study how they might be modified to better serve the station area.



Aberdeen Station Area

The Aberdeen station area study was undertaken to illustrate several development options for the site immediately to the east of the station and to illustrate a possible pedestrian bridge connection to the Radisson Hotel north of Cambie Road.



Richmond-Brighthouse Station Area

This scheme assumed a new bus mall connecting Buswell Street and No. 3 Road including high-density, mixed-use redevelopment of the site adjacent to the terminus station.



Placemaking Recommendations

Public Placemaking Guidelines

Two key components of defining what makes an exceptional place are the presence of public art and the definition of an outdoor room. A series of public realm plazas, squares, parks and boulevards that integrate public art will link areas along No. 3 Road. Six types of outdoor rooms were defined and each was strategically positioned along the corridor, as were opportunities for public art.

Ten Public Placemaking guidelines integrate the ideas of Outdoor Rooms, Public Art and the Streetscape Design. They also provide direction for the future development of the five Character Zones along No. 3 Road.

Typical Public Space Plan

- Major Transit Plaza
- Major Intersection
- Minor Pedestrian Plaza
- Integrated Public Art



Public Space Typologies



Ten Public Placemaking guidelines were defined for the No. 3 Road Corridor. These guidelines will help create places with a strong sense of community, as well as a setting for public activities and uses.

- 1 Promote a culture of walking** by ensuring continuous high quality sidewalks and amenities up and down No. 3 Road on both sides of the street. The sidewalk takes priority of expression at intersections, curbs and signals.
- 2 Promote a culture of cycling by incorporating high quality, continuous, raised cycle path amenities** on each side of No. 3 Road, preferably separating pedestrians, cyclists and vehicles.
- 3 Encourage retail uses at transit stations and within fronting development around transit stations to encourage pedestrian activity.**
- 4 Incorporate the principles of Crime Prevention Through Environmental Design (CPTED)** in the design of all public spaces on No. 3 Road.
- 5 Provide high quality street furnishings** and appointments that encourage pedestrians to perch and linger on the street that are coordinated, understated and timeless in design approach.
- 6 Provide canopies and shelters for sun and rain protection.**
- 7 Promote public art along the No. 3 Road Corridor**, both at and between transit stations.
- 8 Incorporate high quality paving materials and finishes** that serve to communicate intended uses, provide continuity and become more elaborate in civic plazas and public places along No. 3 Road.
- 9 Incorporate trees, shrubs, groundcovers, hanging baskets and other landscape materials** on both the boulevards and medians along No. 3 Road to enhance and beautify the streetscape environment.
- 10 Provide a simple, informative system of outdoor signage and wayfinding** to inform users on the street.



Zone 1: Gateway North



Zone 2: Gateway South



Zone 3: International District



Zone 4: Gateway North



Zone 5: Gateway South



Public Art

Public Art adds meaning and value to public spaces. In addition, it:

- ① Increases a sense of place and belonging.
- ② Provides a lasting cultural legacy.
- ③ Validates people's need to care about the place in which they live.

But the most cited reason for support is that public art inspires us. Inspired citizens are engaged citizens!

Below are some examples that serve to illustrate how public art might enhance transit stations, transit plazas, key intersections and new developments, as well as help define the Character Zones and district gateways along No. 3 Road.

"In the 1970's public art was about art in public places. Today, it is about the art of making places public." — Jack Mackie, public artist

Gates



Transit Stations will require gates to lock off 'on street' ticketing areas. Public art strategies can be used to enhance these gates, adding local interest and context within the mix.

Character Zones



Public art strategies can help define previously referenced Character Zones, each a half mile in length. For example, the International Zone could feature Asian themes on light standards and transit guideway piers.

'Green' Strategies



Public Art masquerading as urban, open greenspace can provide both visual relief to otherwise hardscape spaces – intricate green oases along the transit corridor.

Richmond History



Public art is a way to build upon the cultural history of communities such as Richmond. It can pay homage to First Nations, early settlers or our vanishing agrarian past.

Metaphoric Treatment



Otherwise utilitarian transit stations can be dressed up smartly by treating their ceilings, walls and floors in an artful manner.

Wall Treatment



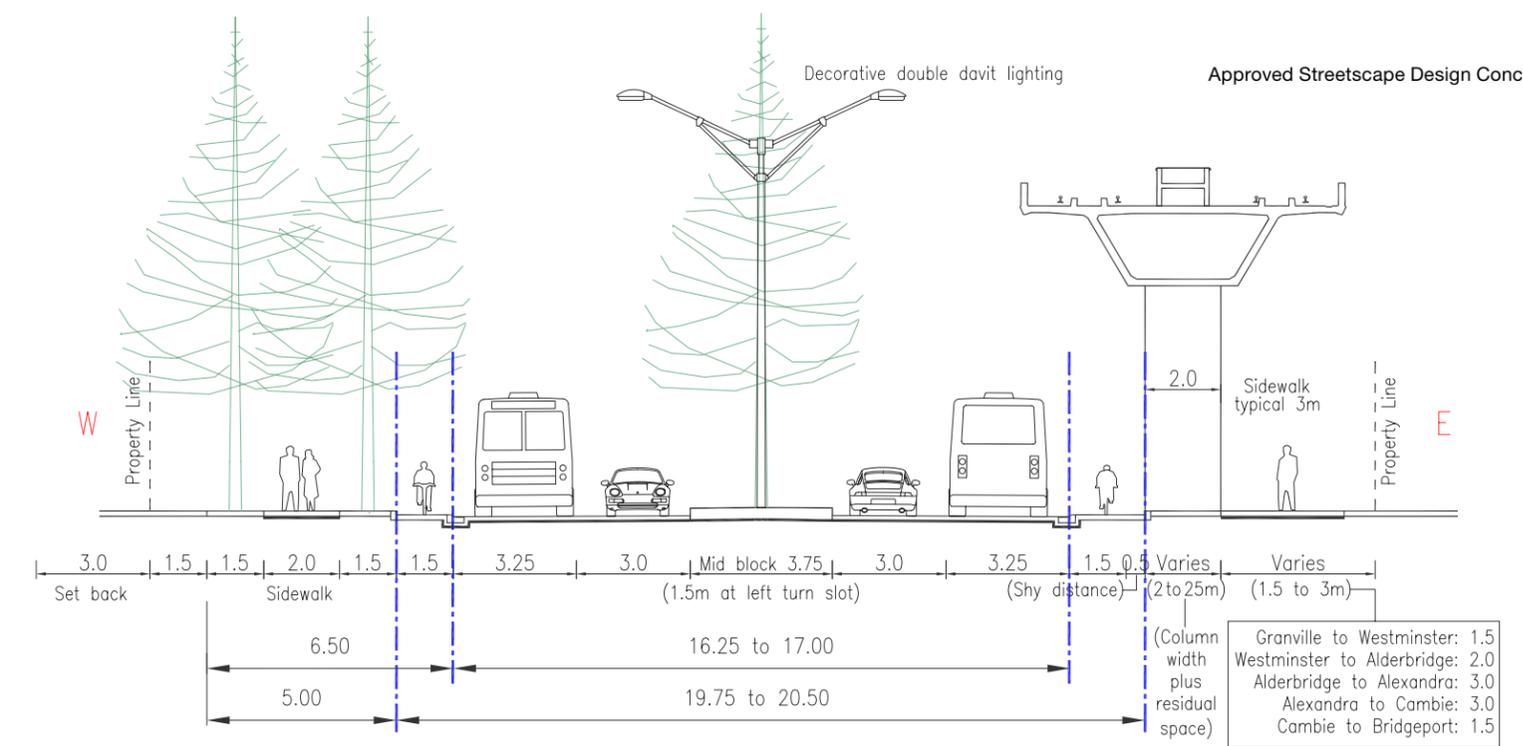
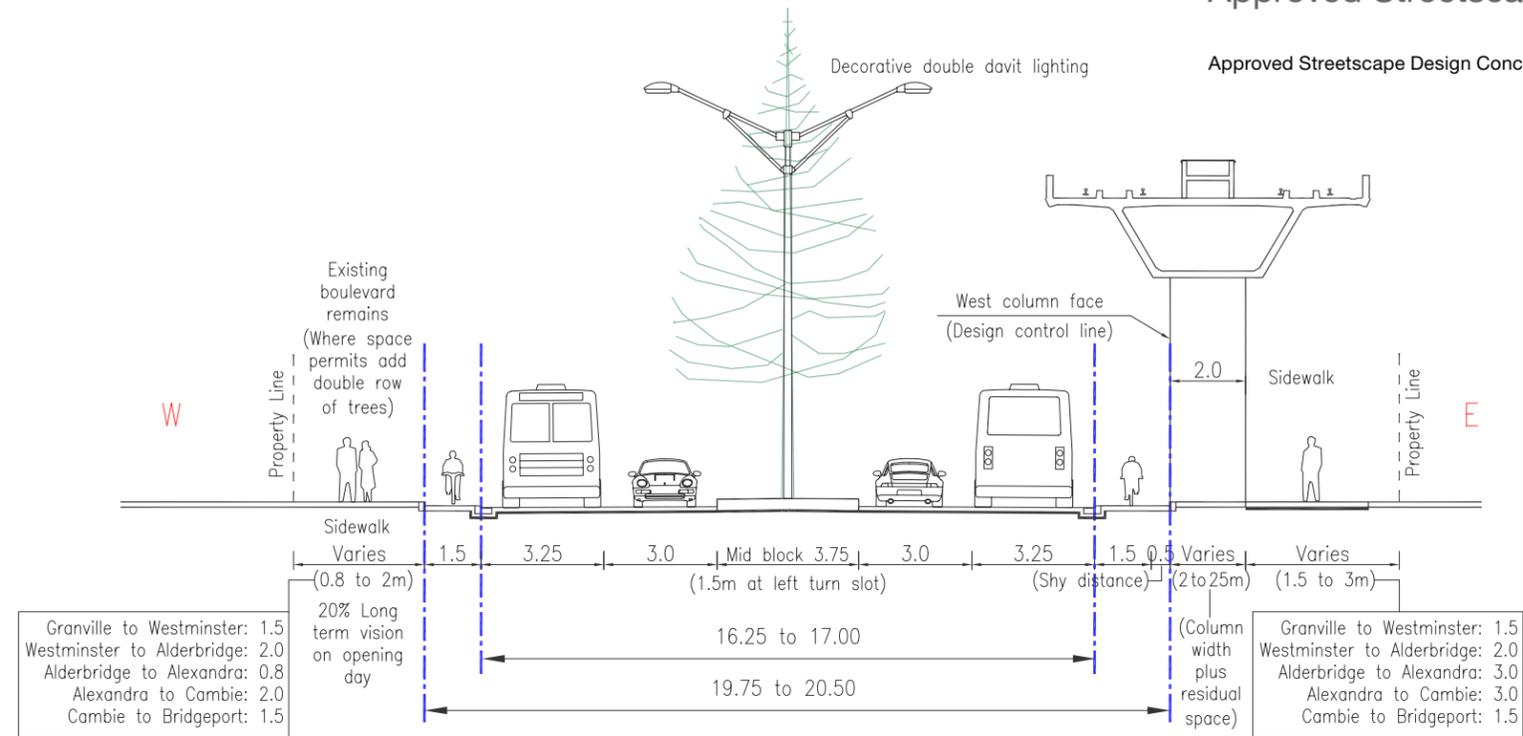
Walls of park-and-ride structures and other facilities can serve as a canvas for public art – art that, due to its size, can readily become community icons.

Wayfinding



Public art can serve as a unique way to add unity and coherence, using informational signage and wayfinding in an enhanced downtown pedestrian-friendly landscape.

Approved Streetscape Cross Sections



Section 2

Elements of Continuity

Rationale

Continuity vs. Distinction

There is a need to express system-wide elements required to strengthen the impact of the Canada Line Rapid Transit Inc. (CLCO) for the line's entire length of No. 3 Road from Granville Avenue, in the south, to Bridgeport Road, in the north. This expression is known as the 'Elements of Continuity'.

Elements of Continuity

There are a number of elements that serve to express the emergence of No. 3 Road as a 'Better Street' – to present to local residents and visitors, alike, that it is the preeminent street within the city's downtown. These items, for the most part, parallel the effort of the roadway design and deal with sidewalk/median/boulevard; intersection/crosswalk; street lighting/pedestrian lighting, etc. They are the elements that one would expect to find up-and-down No. 3 Road that contribute to the legibility of the streetscape design.

2

Elements of Continuity

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- 25 Paving Systems
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- 35 Medians
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- 42 Bike Storage
- 43 Newspaper Box Fences
- 44 Utility Surrounds
- 45 Planting
- 46 Guideway Greening
- 47 Wayfinding

Paving Systems

Road Section

Intent

To establish a new road section that acknowledges No. 3 Road as Richmond’s main street that is designed to create a culture of walking and cycling.

Guidelines

The road is created from largely Richmond’s standard urban road elements that include: cast-in-place concrete barrier curbs, cast-in-place concrete roll curbs, and asphalt roadway.

Precedents

- Geometric Design for Canadian Roads, TAC
- Portland, Eugene and Salem Oregon, Danish Road Directorate 2000

Implications & Assessment

Currently No. 3 Road is in transition from the 98 B-Line configuration to the Canada Line cross section. The proposed cross section will delete dedicated centre bus lanes, insert the Canada Line guideway and add bike lanes.

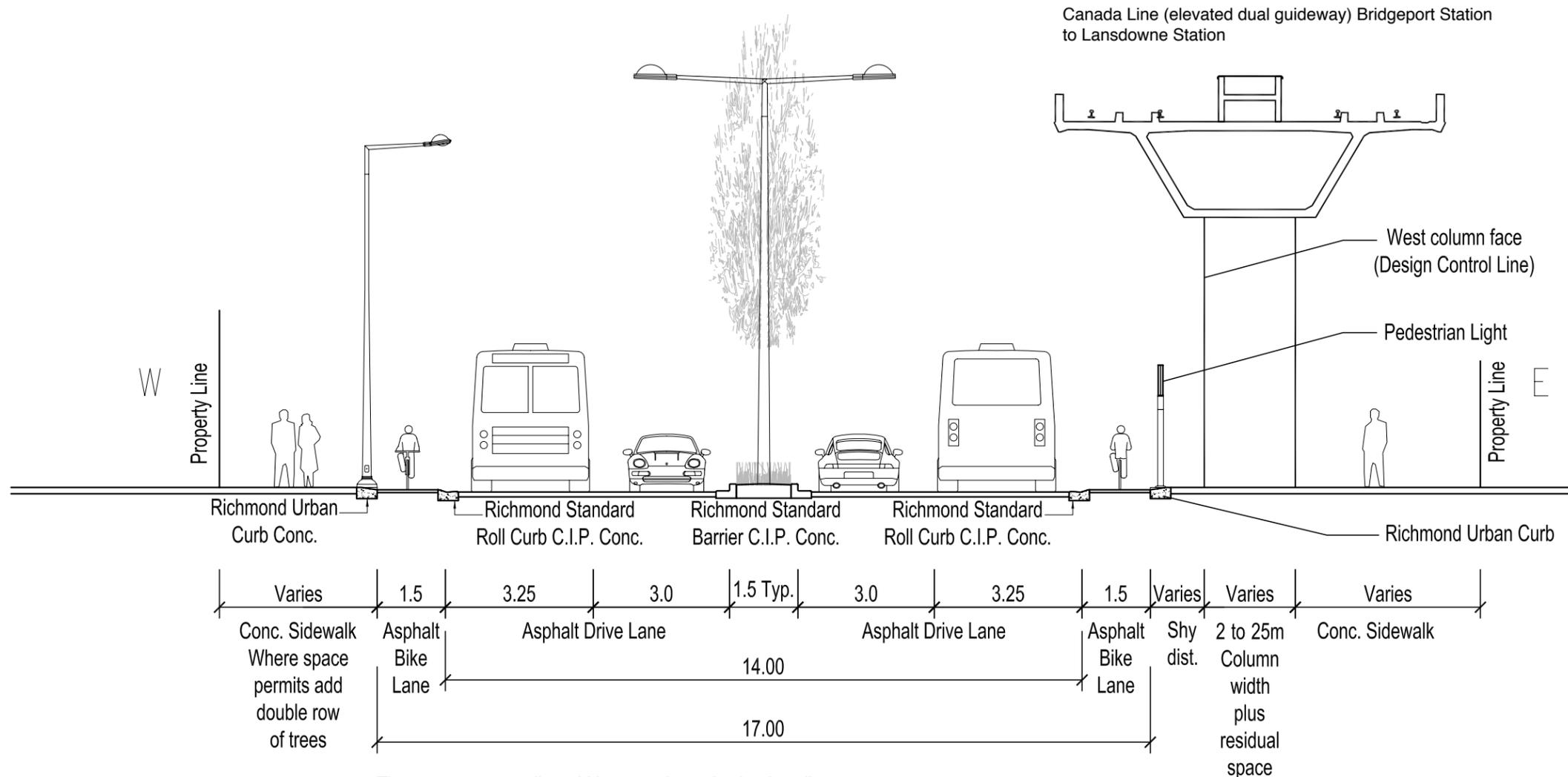
Recommendation

Build the new road section using the eastside curb as the control line. Where the road right-of-way is wide enough construct the ultimate alignment with all lanes including vehicle lanes, bike lanes and median. In conditions where the existing road right-of-way is not wide enough to accommodate the complete section, narrow the center median and do not construct the west side bike lane in favour of a continuous pedestrian sidewalk. The narrowed median does not allow enough shy distance for street lighting to be used – in these situations temporary west side street lighting is proposed. Additional features:

- Continuous grade separated bicycle lane
- Introduction of a custom cast-in-place concrete curb referred to as the Richmond Urban Curb
- Continuous median to provide refuge and make the road seem less intimidating for pedestrians

Location

Project-Wide



The 1.5m centre median width cannot be maintained at all intersections.

Centre medians will be less than 1.5m at:
 The intersection of No. 3 Road and: Cambie Road
 Midblock between: Cambie Road North
 Capstan Way North

Centre medians will be greater than 1.5m at:
 The intersection of No. 3 Road and: Leslie Road
 Midblock between: Browngate Road, and
 Sea Island Way
 Granville Avenue to Park Road
 Park Road to Cook Road
 Cook Road to Saba Road
 Ackroyd Road to Lansdowne Road
 Cambie Road and Capstan Way

Paving Systems ... continued

Bicycle Lane, Richmond Urban Curb & Sidewalk

Intent

The tiered bicycle lane and sidewalk provide increased separation between motor vehicles and cyclists and discourage motor vehicles from encroaching into the designated cycle lane. The roll curb at the street increases safety for cyclists and -allows cyclists to merge into traffic to overtake or make turns. Grade separation results in less debris on the bike lane since motor vehicles don't use it. This configuration elevates cyclists to make them more visible. The continuous designated lane decreases bicycle travel times, since they are not hindered by auto congestion.

The introduction of the Richmond Urban Curb creates an identifiable element of continuity that embodies the spirit behind the notion of creating a great street and a culture of walking.

Guidelines

The bicycle lane as a continuous expression provides a high level of comfort for users and demonstrates Richmond's commitment to encourage cycling.

Precedents

- Portland, Eugene and Salem Oregon, Danish Road Directorate 2000.

Implications & Assessment

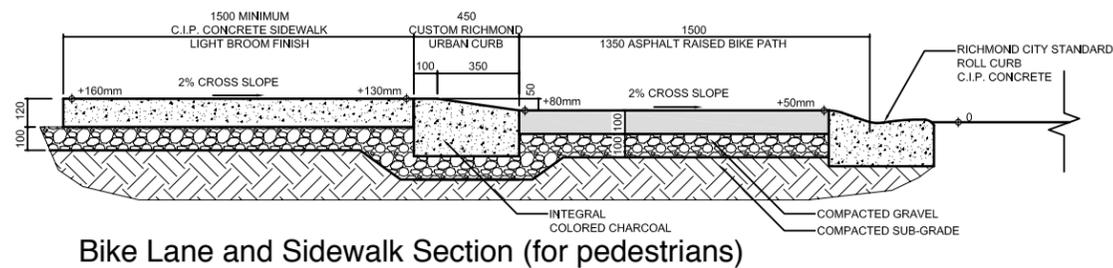
Snow clearing will require special attention.

Recommendation

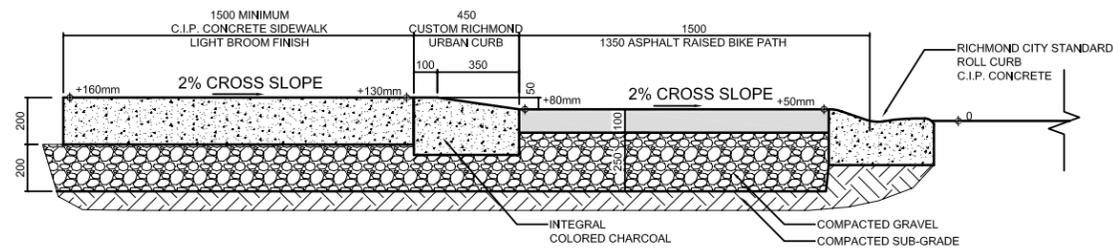
Bicycles higher than cars and pedestrians higher than bicycles.

Location

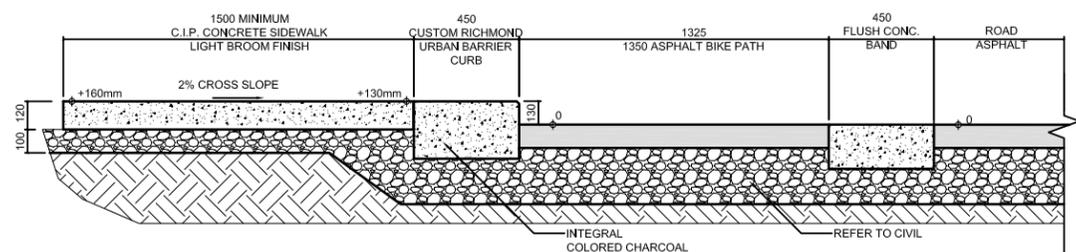
Ultimately east and west sides. This phase only the east side and portions of west side can be constructed without purchasing west side property. (Typically from Granville Avenue to Alderbridge Way)



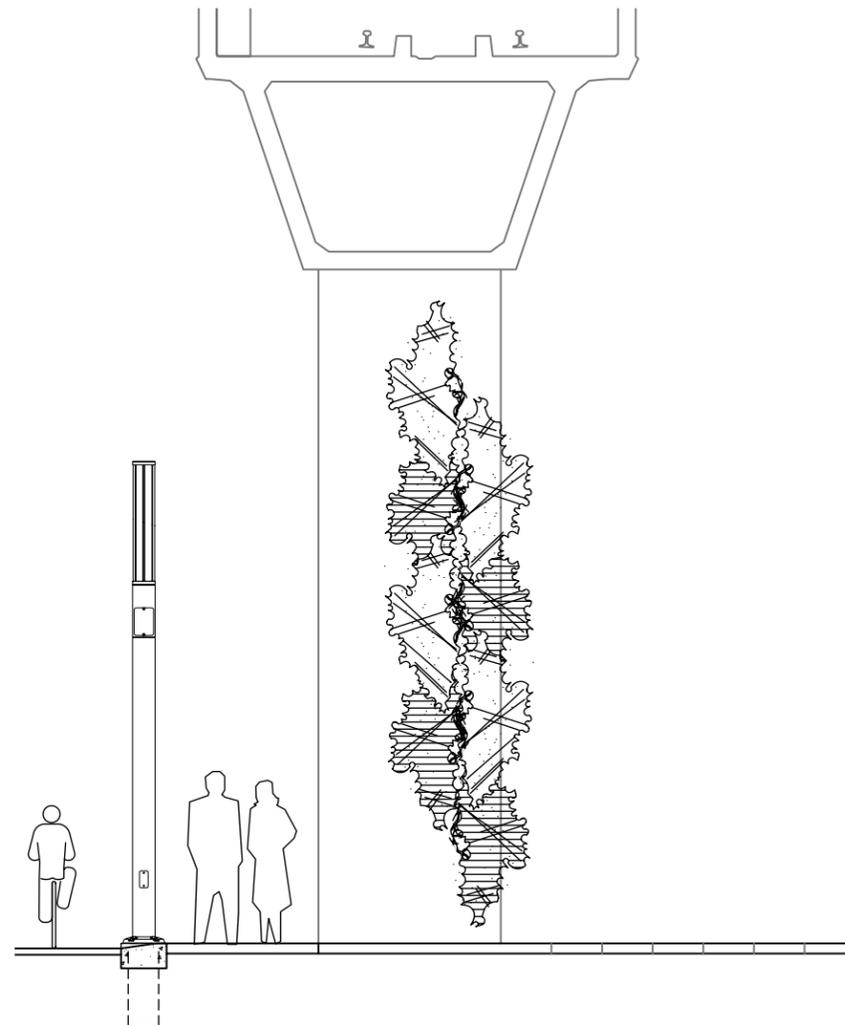
Bike Lane and Sidewalk Section (for pedestrians)



Bike Lane and Sidewalk Section (at driveways)

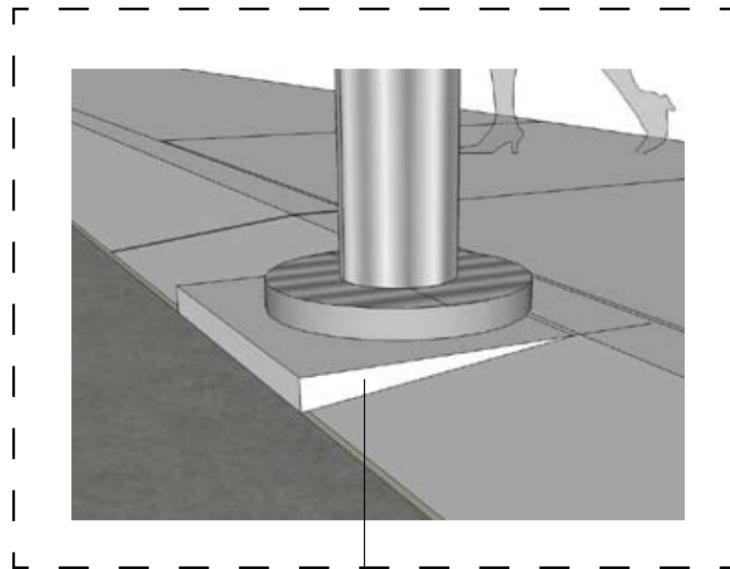


Bike Lane and Sidewalk Section (at bus stop)

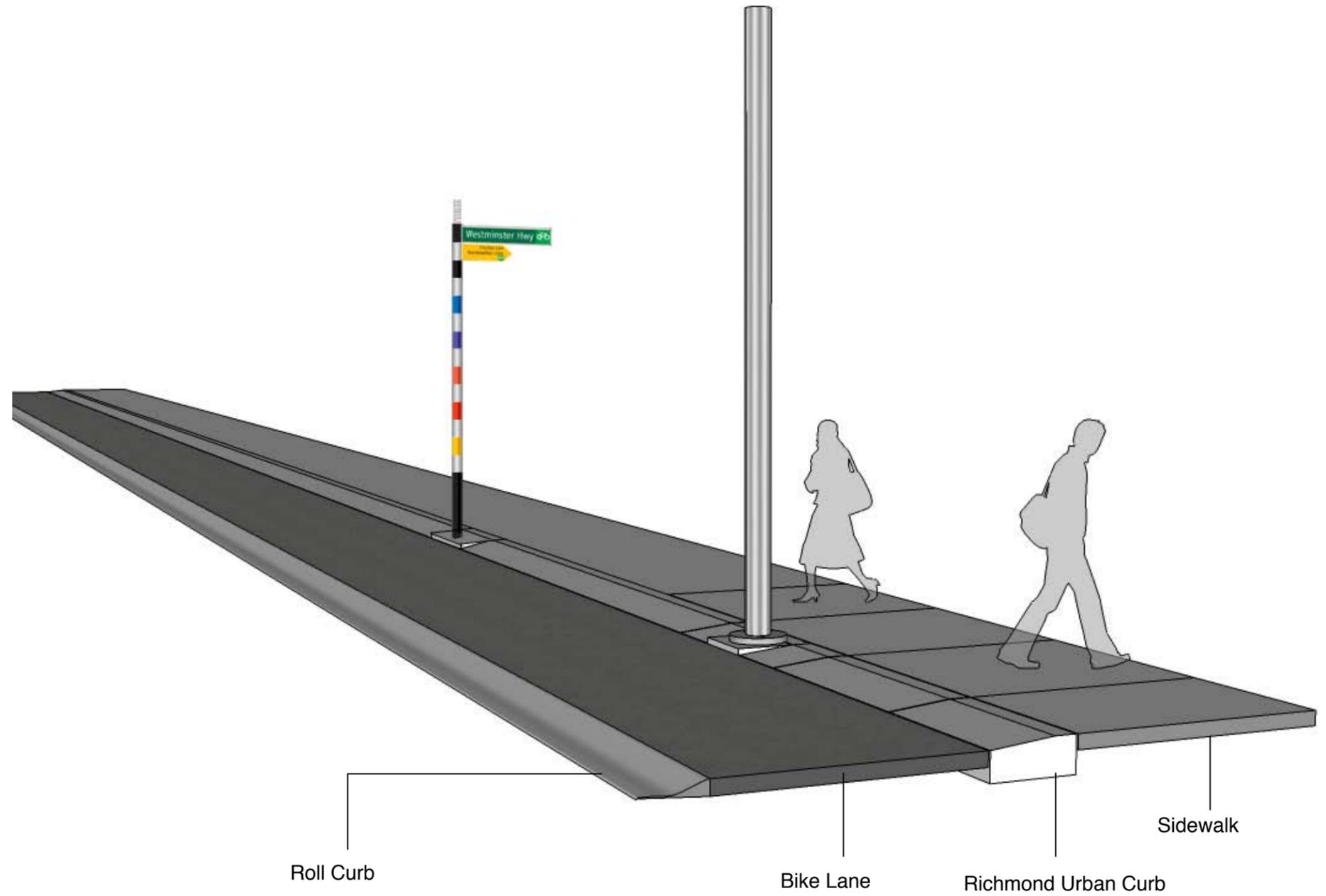


Pedestrian Lighting at Richmond Urban Curb

Paving Systems ... continued



Level concrete base element

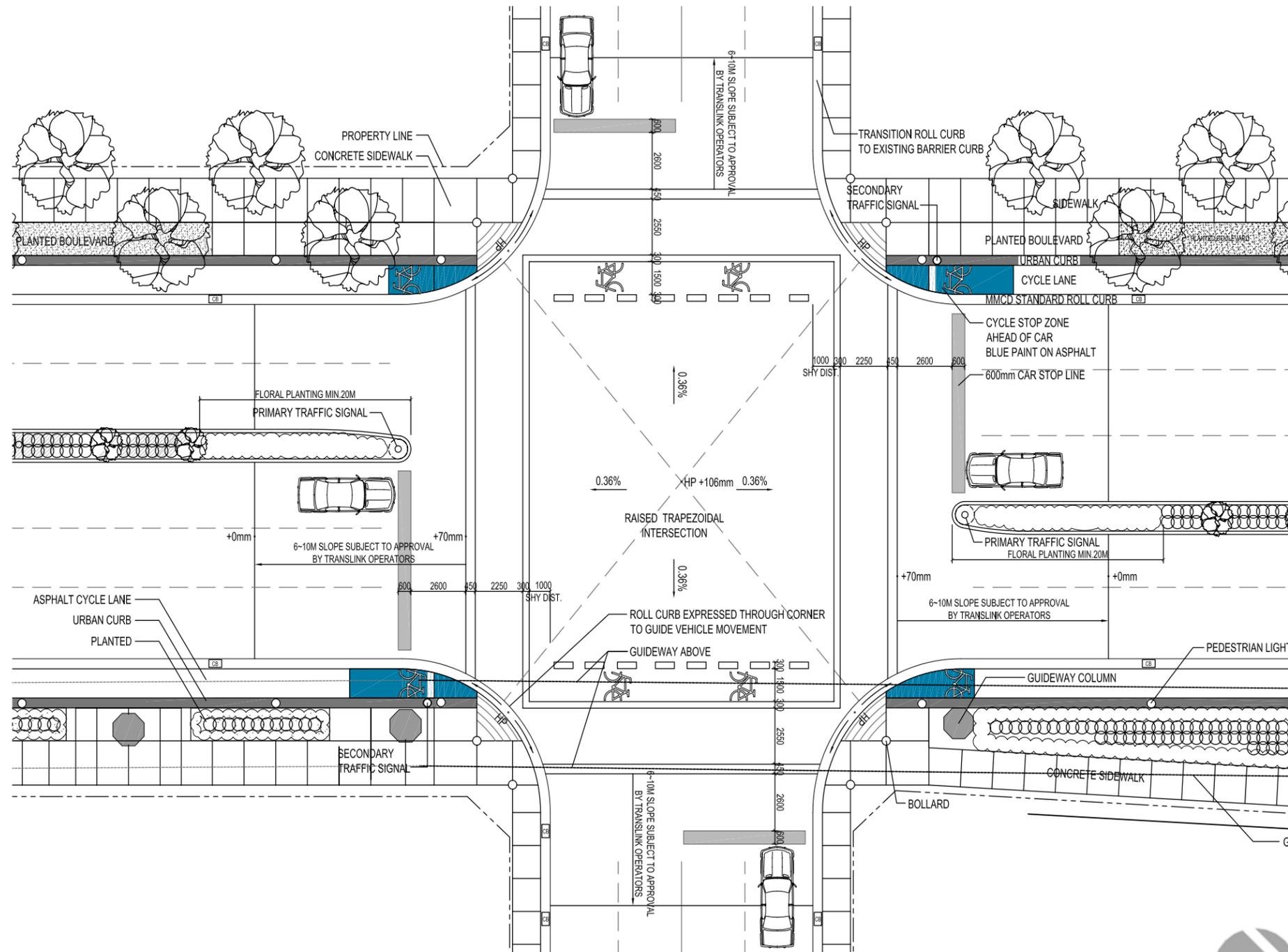


Roll Curb

Bike Lane

Richmond Urban Curb

Sidewalk



Raised Intersection

Intent

To continue the expression of the pedestrian realm across vehicular intersections by elevating the intersection to the level of a typical sidewalk. The raised intersections make a street that is more conducive to pedestrian comfort.

Guidelines

The raised intersections are used throughout the 3 kilometer length of this street restoration and becomes an integral part of the rhythm and patterning of the public realm.

Precedents

- Geometric Design for Canadian Roads – TAC

Implications & Assessment

- The raised intersection, combined with the 10m ramp leading to it, does not alter the current road design speed
- The raised intersection design can accommodate large vehicles re: vertical deflection





Raised Intersection ... continued

Recommendation

Introduce a raised intersection with integrated pedestrian and bicycle crossing provision at all significant intersections along the project corridor. The raised intersections are constructed of asphalt paving. The pedestrian crosswalk is marked with thermoplast glass beaded paint reflective solid striping. The bicycle lane is marked with thermoplast glass beaded paint reflective dashed striping.

Cyclists stop bar at intersections is ahead of that of motor vehicles to make drivers aware of the presence of cyclists and to allow cyclist to get out in front when the light changes. Again this is part of an over-arching strategy of elevating the rights of cyclists. The designated cycle lane is marked with a section of blue paint on the near and far side of each intersection to communicate this as a special cyclist zone. Blue is a colour that is used internationally on bicycle facilities.

Vehicle wheel paths are marked around corners with a flush concrete band that connects intersecting gutter pans to No. 3 Road roll curbs.

Location

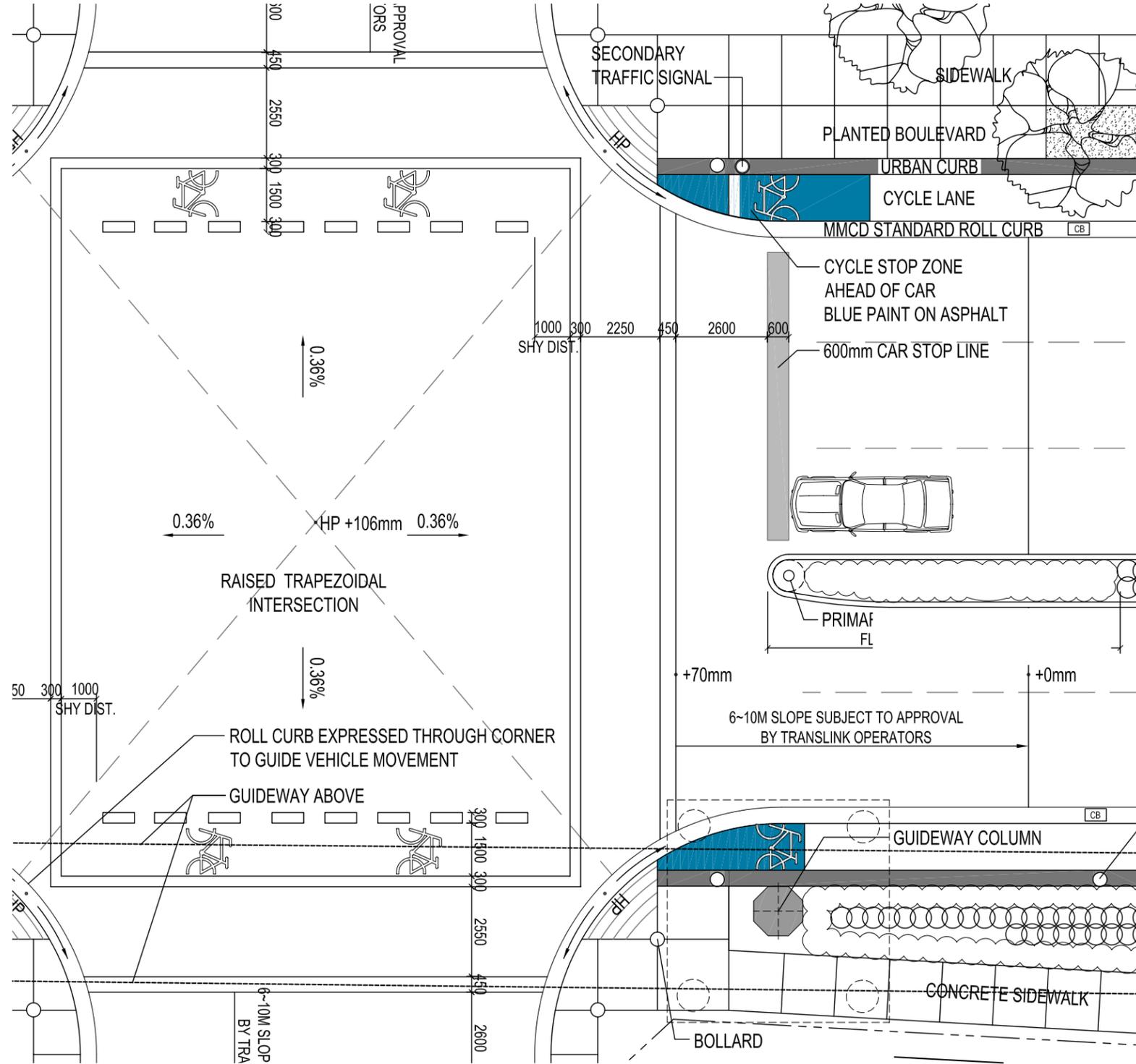
Raised Intersections

- Park Road
- Cook Road
- Saba Road
- Westminster Hwy
- Ackroyd Road
- Lansdowne Road
- Lansdowne Entry
- Alderbridge Road
- Leslie Road
- Browngate Road
- Cambie Road
- Capstan Way

Not Raised

- Granville Ave
- Bridgeport Way
- Sea Island Way





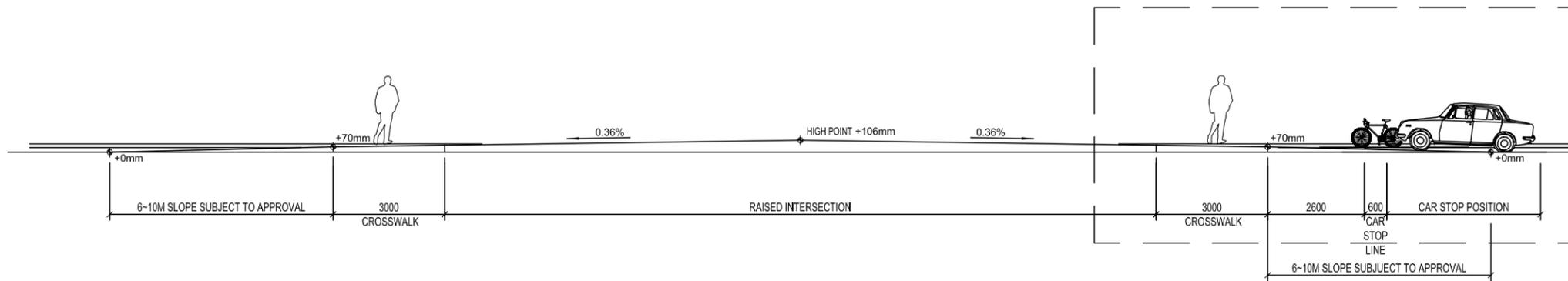
Raised Intersection ...continued

Cars/Bicycles/Pedestrians



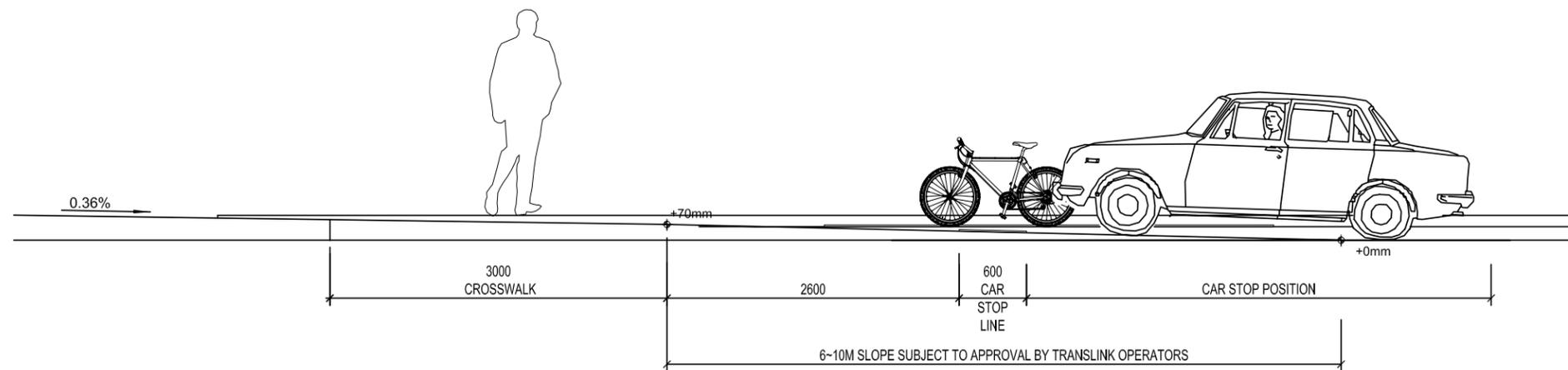
Raised Intersection ... continued

Cars/Bicycles/Pedestrians



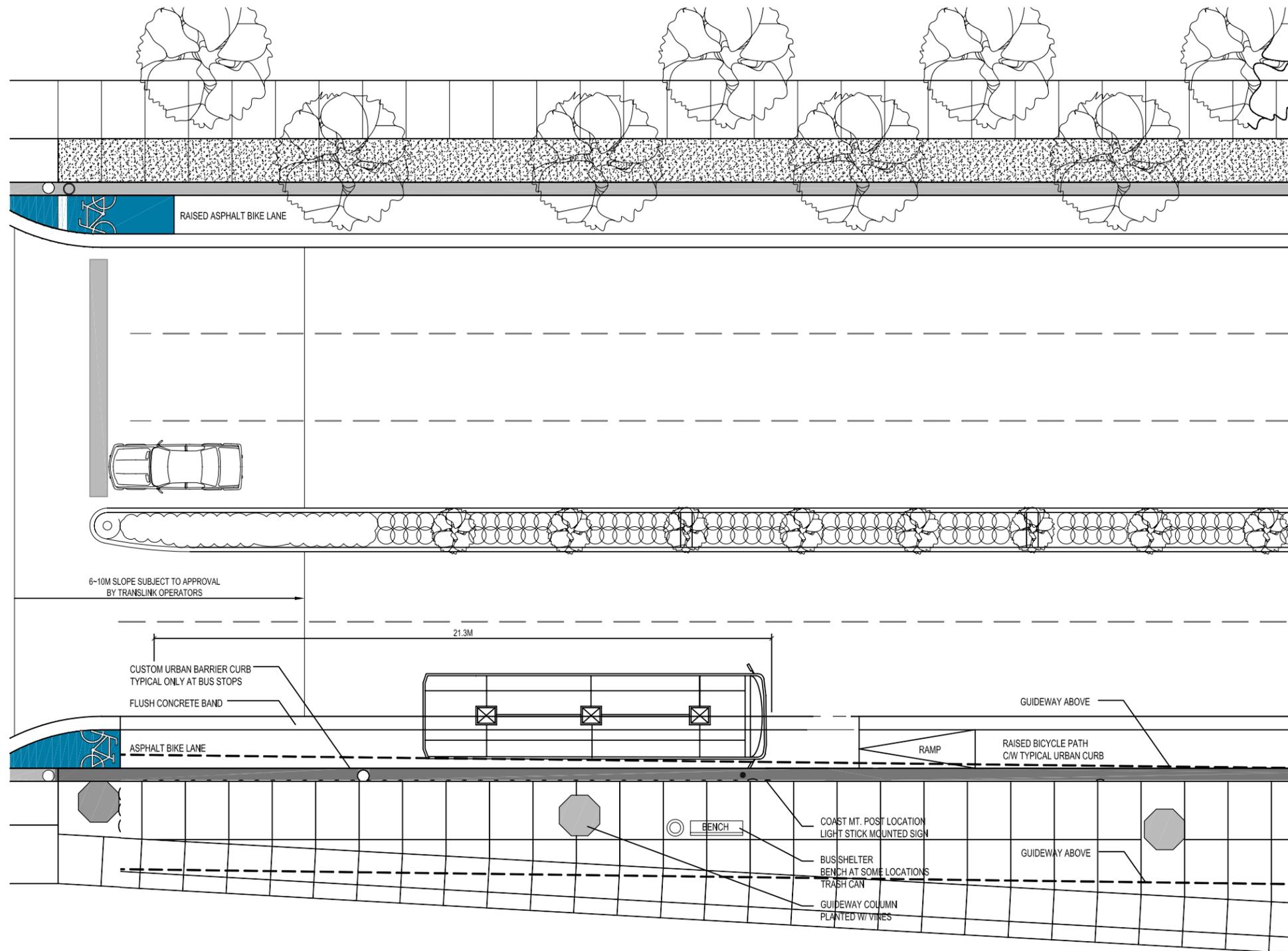
Section A: Raised Intersection Section Typical

- Vertical exaggerated 2 times
- Sinusoidal profile as per T.A.C. Standards



Section B: Ramp @ Intersection

- Vertical exaggerated 2 times



Bus Stops

Typical North Side

Intent

Bus riders will be able to disembark directly onto the grade separated pedestrian sidewalk.

Guidelines

The use of consistent bus shelters, benches, trash cans, and bus stop posts are part of the family of street furnishings.

Precedents

Typical Greater Vancouver condition.

Implications and Assessment

There is a potential conflict between transit buses and cyclists given that No. 3 Road is separated from the sidewalk by the cycle lane.

Recommendation

The raised bicycle path does not begin until past the bus stop beyond the intersection. This enables buses to maintain the same level as the roadway while forces cyclists to stop until transit riders have exited the bus.

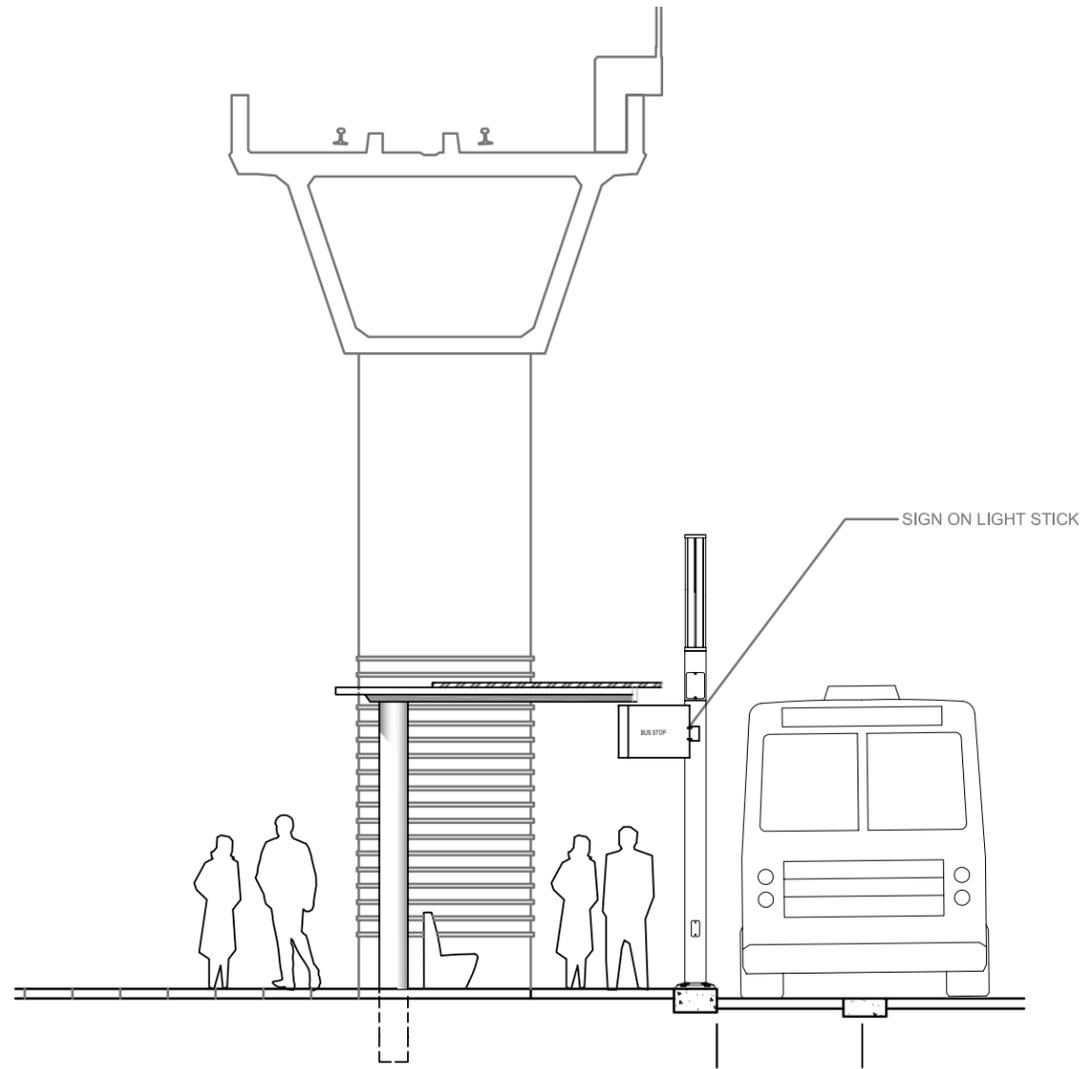
Location

Bus Stops are treated the same throughout the length of the project. Typically located at the through intersection location (far side). The exception to this rule occurs at station plazas.

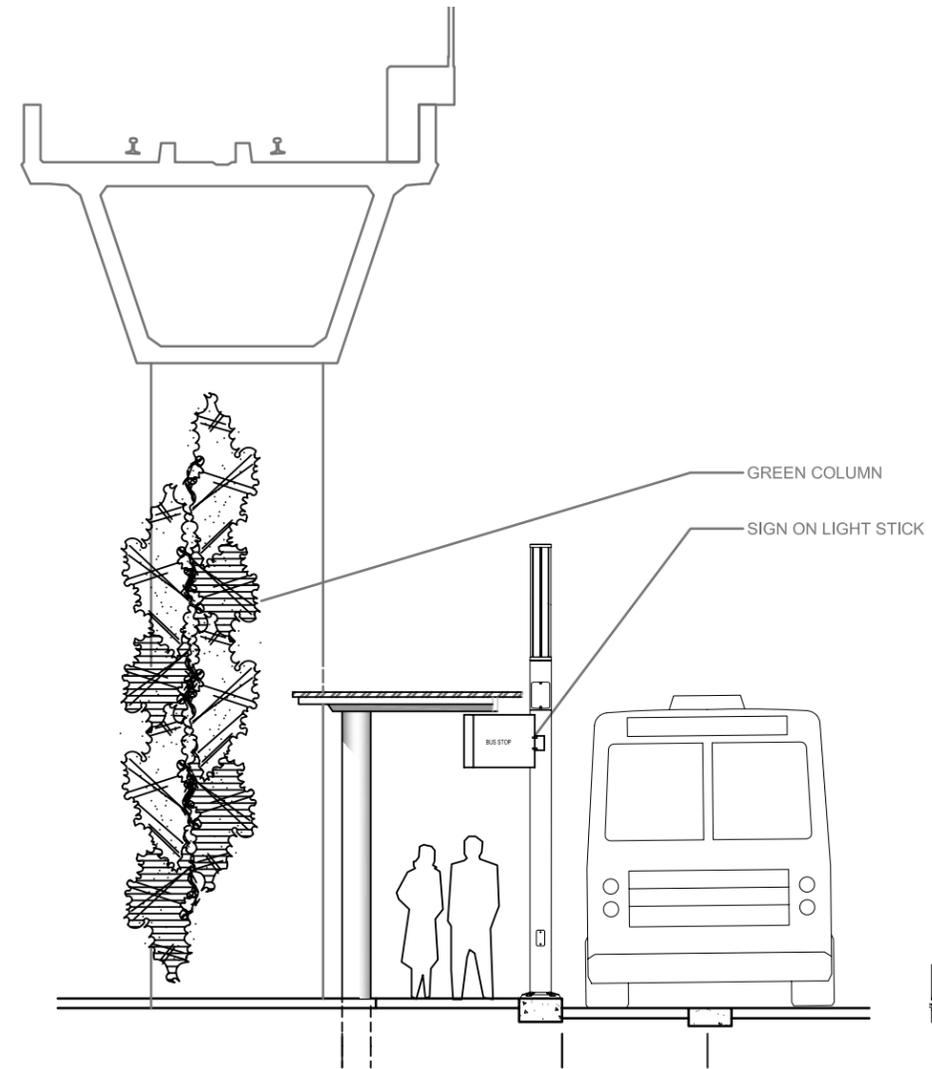


Bus Stops... continued

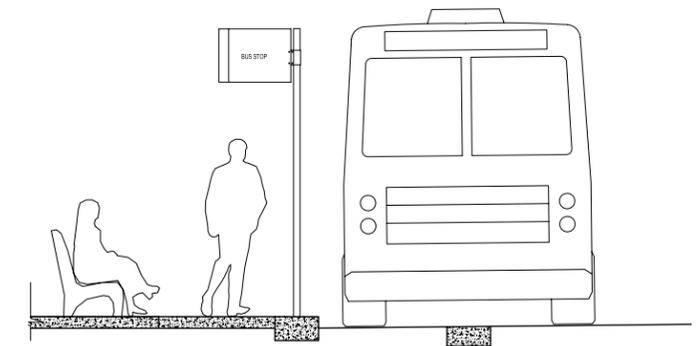
Bus Stop Section



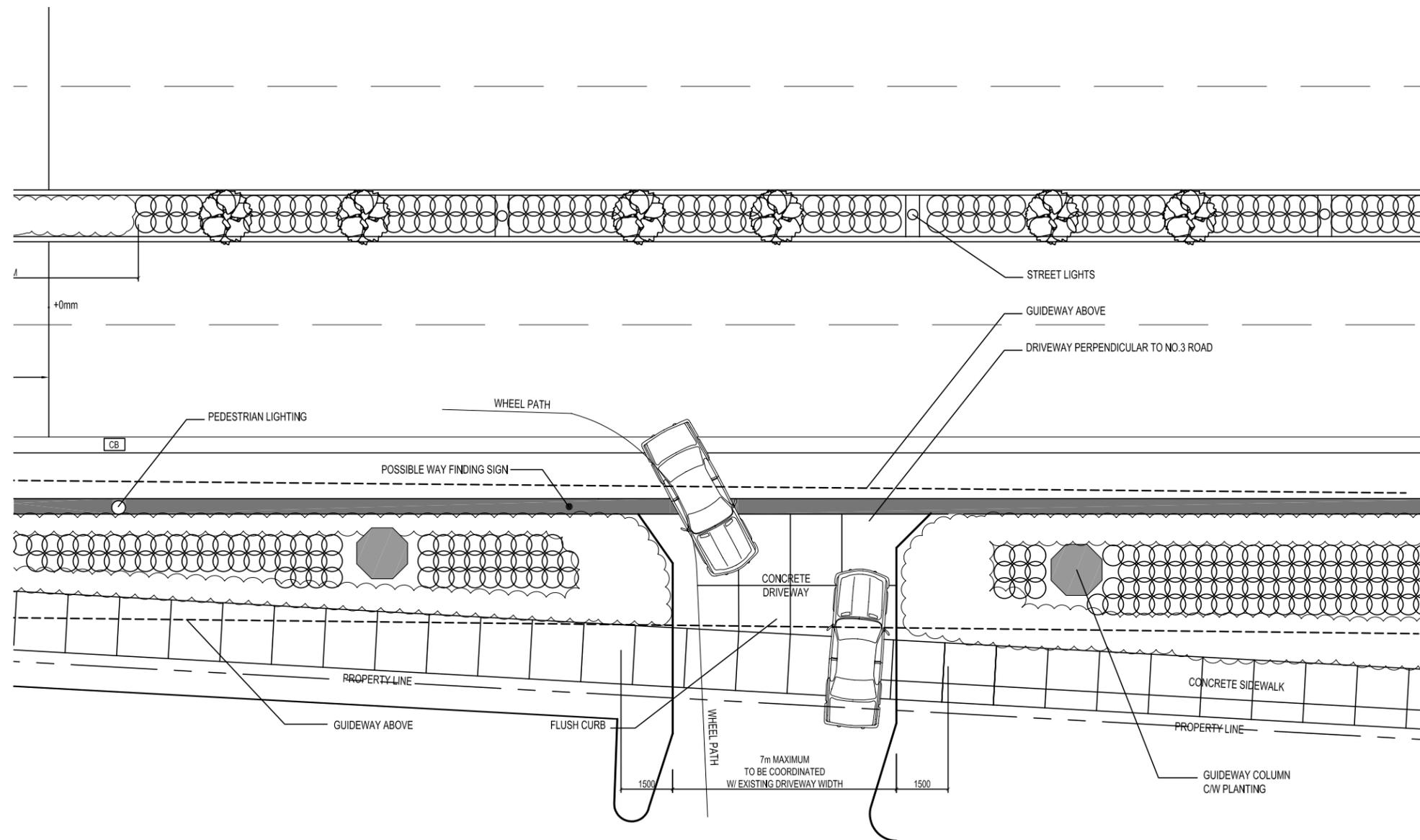
Bus Shelter Under Guideway



Bus Shelter Adjacent to Guideway



Bus Shelter Open Air



Driveway Curb Cuts

Intent

To continue the expression of the pedestrian realm across vehicular driveways by elevating the driveways to the level of a typical sidewalk. The driveways should read as part of the boulevard paving system so that cars feel they are crossing a pedestrian realm. This should help calm traffic and make a street that is more conducive to pedestrian comfort.

Guidelines

The reduction of driveways onto No. 3 Road adds significantly to the impact and effectiveness of the move towards a more urban streetscape. Reduction of driveways will increase pedestrian and cyclist comfort and safety by decreasing potential conflict areas.

Precedents

Any commercial storefront street (Main Street in Vancouver) or North American urban condition where typical service access is from the rear.

Implications & Assessment

There are currently a significant number of driveways that provide access to businesses along No. 3 Road. The number, locations and widths of these accesses are not consistent with the creation of an urban condition.

Recommendation

Where possible driveway accesses should be consolidated, narrowed or eliminated. A consistent design approach should be applied to areas of the design that is being constructed to the final design condition. As such time the re-working of individual site access should strive to limit the number of driveways along No. 3 Road.

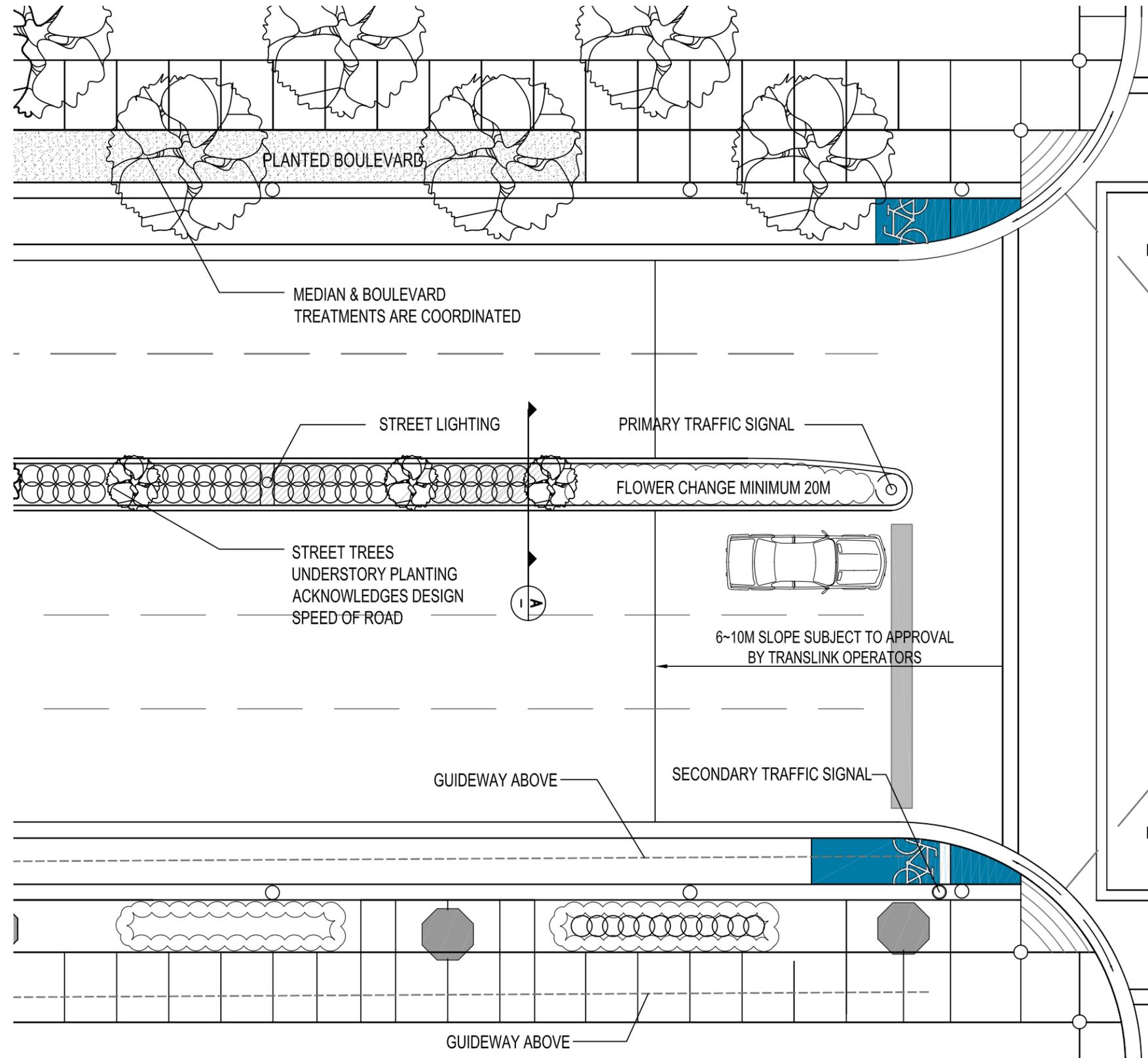
Where curb cuts occur:

- The driveway is to be constructed from concrete;
- The sidewalk and bicycle path are expressed across the driveway;
- There are no curb returns at street gutter; and,
- Driveways are built perpendicular to No. 3 Road.

Location

Driveway connection occur on both the west and east sides of the road. The east side driveways are typically longer given that they cross under the width of the guideway to access private property. Portions of the final condition will not occur until redevelopment takes place.





Medians

Plan

Intent

Roadway medians are continuous to provide refuge and make the road seem less intimidating for pedestrians. An irrigated median planting of street trees under-planted with bold swaths of ornamental grass further humanizes the street.

Light poles and utilities in the median have a paved base so they are separated from planting to allow for a clean look that facilitates maintenance.

Street trees and median lighting are arranged in a rational pattern to contribute not only to technical requirements but also to the rhythm of the street. Median plantings will benefit from continuous planting trenches – not discrete planting pockets.

Guidelines

The consistent treatment of the median is critical to having No. 3 Road having a unified character.

Precedents

Richmond's redevelopment for the 99 B-Line used similar approaches to elevate the importance of the median and incorporate it into the urban design strategy.

Implications & Assessment

Improved Streetscape character, roadway legibility and pedestrian experience.

Recommendation

Continuous medians and complete with tree and ground covering planting where there is 1500mm or greater widths.

Location

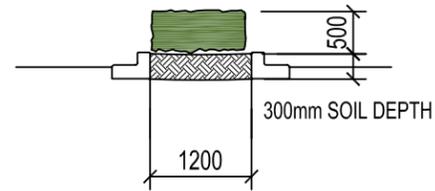
Medians that are not wide enough for planting include (refer to Urban Design Plan):

- Browngate Road to Cambie Road
- Cambie to Radisson North
- Yaohan Entrance to Future Capstan Station

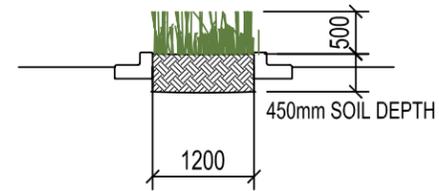


Medians ... continued

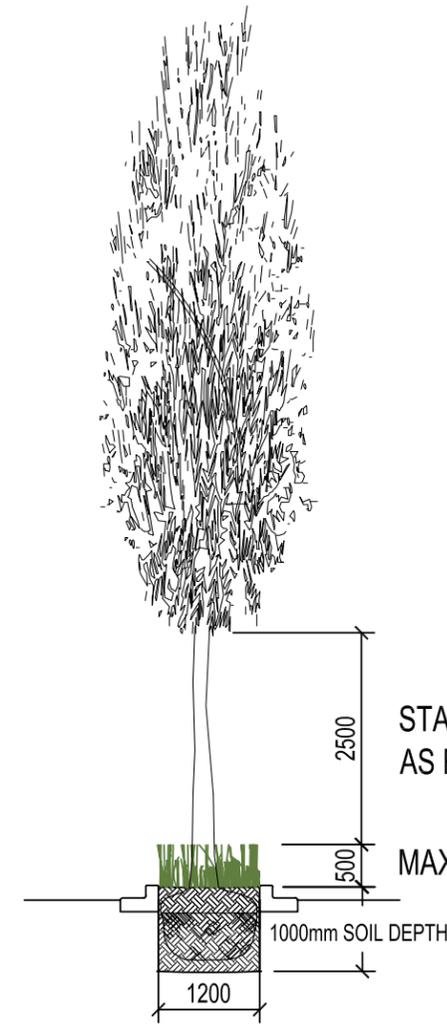
Section



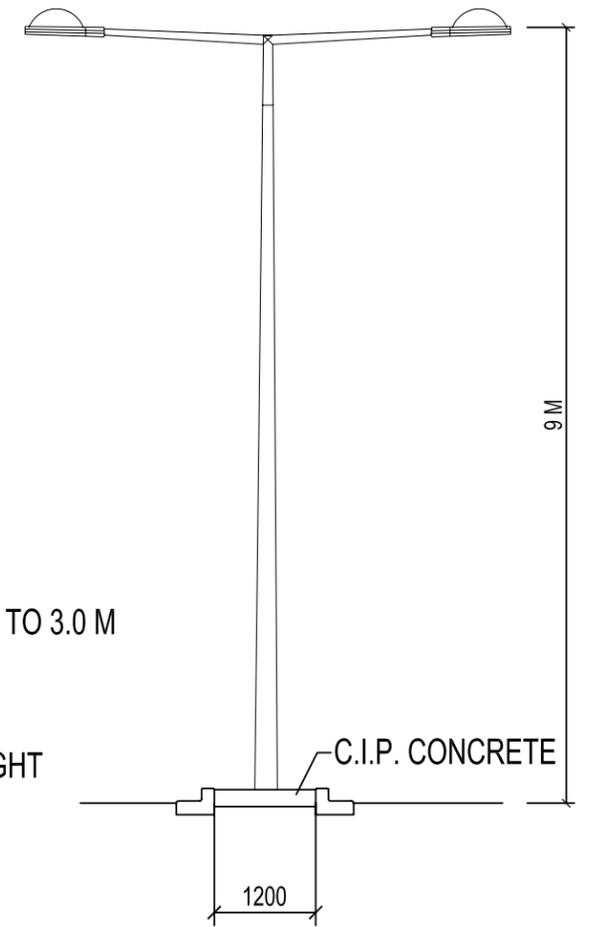
Median with Groundcover



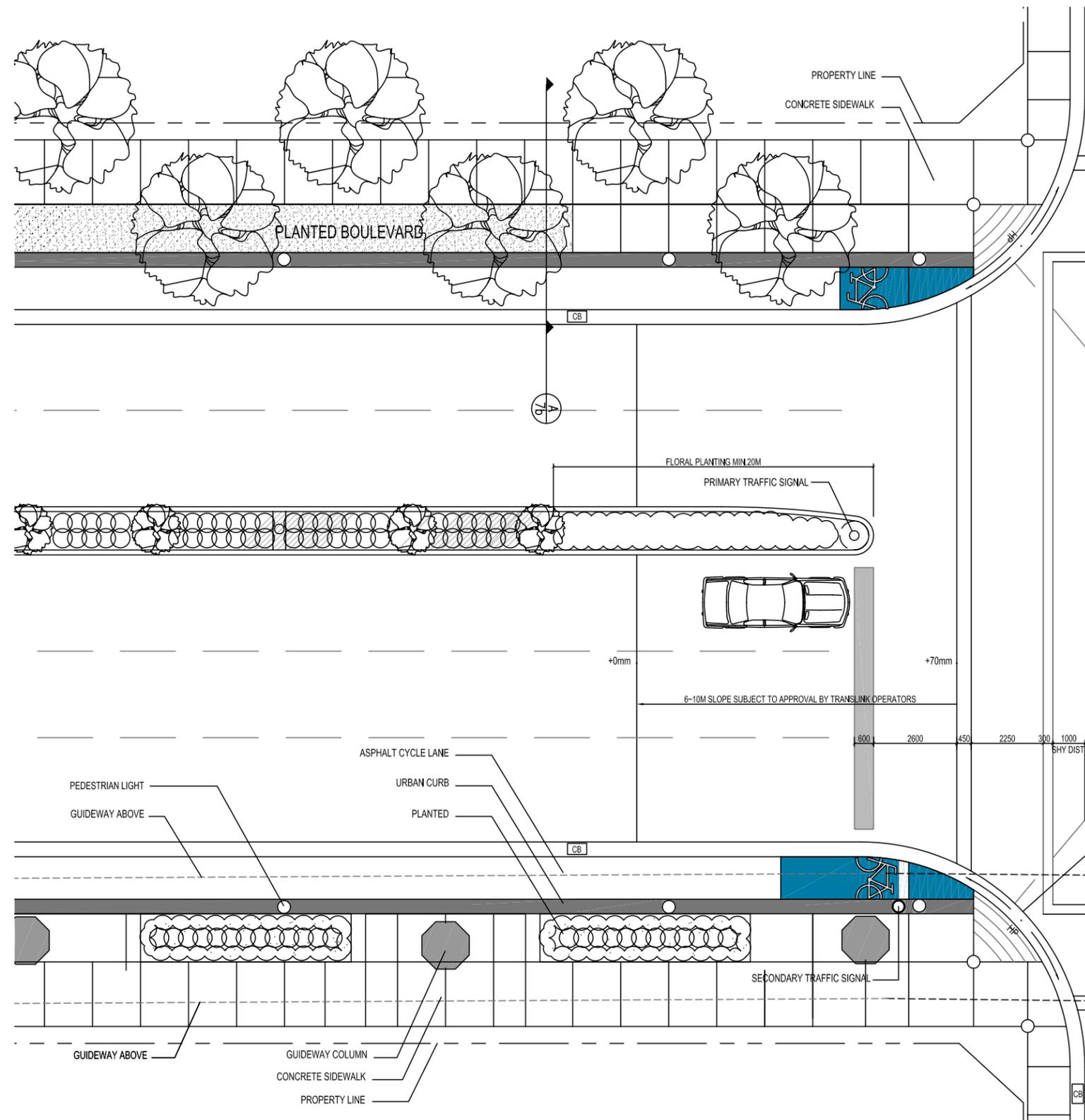
Median with Grasses or Shrubs



Median with Tree



Median with Light



Boulevards

Intent

The boulevards provide a safe, comfortable and enjoyable passage for pedestrians. The boulevards should have a strong interaction with storefronts. The boulevard provides the most significant opportunity to amenitize the public realm.

Guidelines

A clearly organized streetscape that is developed at right angles to the orientation of the street is part of the well-organized system of public spaces along the corridor. Hardscapes, plantings, furnishings and appointments respond consistently through the length of No. 3 Road along the boulevard. This allows the boulevards to read as a unifying element. Special places along No. 3 Road's boulevards, such as plazas, will introduce surprises and unique treatments including paving, furnishing and appointments.

Precedents

City of Richmond

Implications & Assessment

Improved streetscape character, roadway legibility and pedestrian experience.

Recommendation

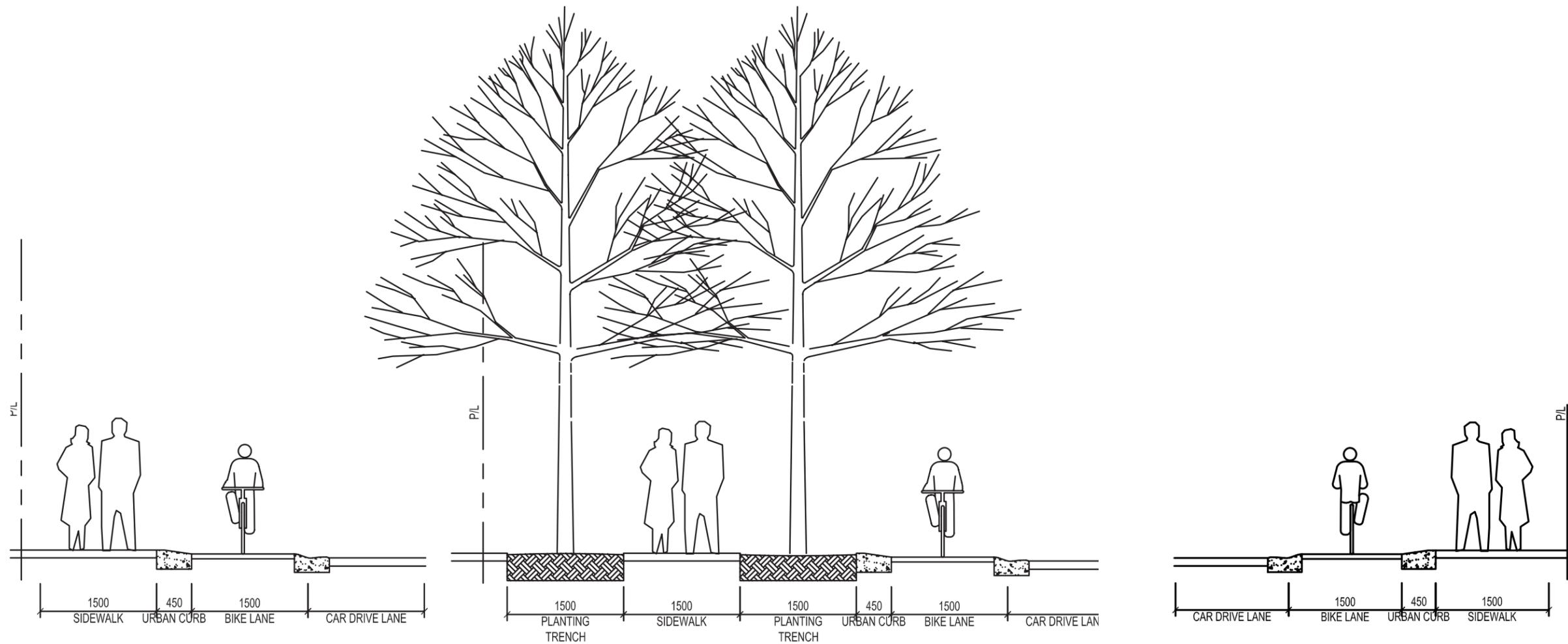
- Sidewalks are built close to property lines and storefronts.
- Sidewalks are organized orthogonally – ie. curved sidewalks are not proposed.
- There are no curb returns at street gutters.
- The treatments, plantings, furnishings and appointments in the boulevards on both sides of the road and in the median are coordinated.
- Plants are used in a bold sculptural way.
- Businesses should be encouraged to provide sidewalk seating, dining and activity to animate and take ownership of the street.

Location

System-wide east side. West side south of Cambie Road.



Boulevards ... continued



Typical Boulevard (west)

Boulevard with Two Rows of Trees

Typical Boulevard (east)



Existing Lumece Domus Street Lighting



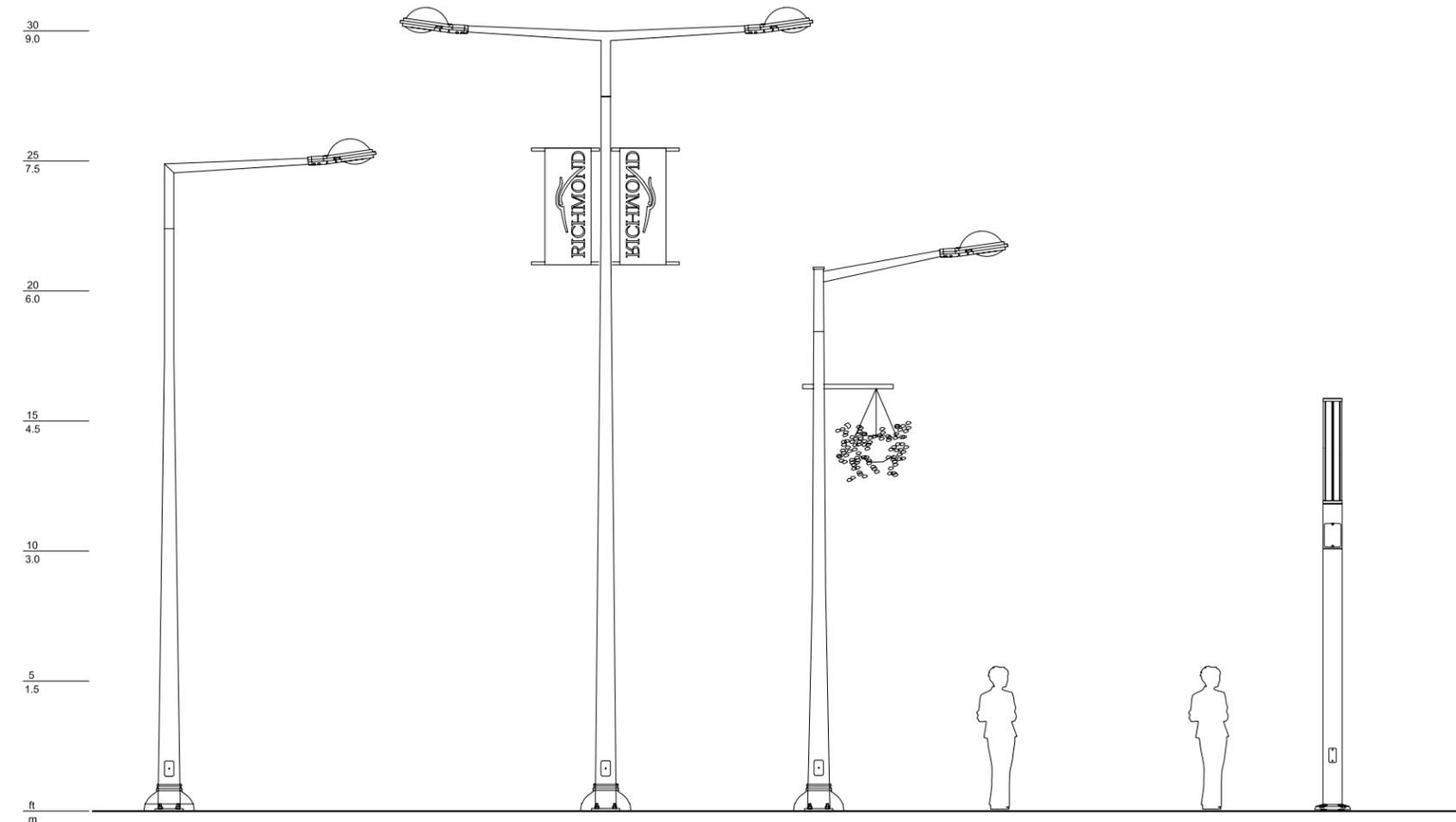
Existing Lumece Domus Street Lighting



Existing Domus with different luminere street lighting



Lumece Oval Light Stick



Proposed Median Street Lighting and West Sides pedestrian Lumece Citea “CTS-ATR-CO-1A

Proposed Hanging Basket Banner Arm Attachment

Pedestrian Lighting East Side Lumece Light Column Oval

Lighting Systems

Street & Pedestrian

Intent

To introduce a new, consistent and coordinated system of pole mounted street and pedestrian lighting along the entire corridor that maintains current levels of light enjoyed on No. 3 Road.

Guidelines

The proposed system of street lighting and pedestrian lighting introduces a unifying element that is simple, sophisticated and in keeping with contemporary design precedent in Richmond.

Precedents

- West Georgia, Vancouver BC

Implications & Assessment

There are currently at least three existing styles of street, pedestrian systems being used along No. 3 Road. These include Lumece Domus (blue colour), Lumece Domus (black colour), galvanized cobra head fixtures, and aluminum cobra head fixtures. There are also a number of post-top area fixtures used along the corridor.

In order to create a unifying and memorable user experience on No. 3 Road it is important to use a consistent system of simple, high quality street lights, pedestrian lights and traffic signals. With the proposed reconfiguring of the road, the location of light poles will change to meet acceptable lighting levels. The existing light poles and fixtures will all be removed during construction. In order for the current poles and fixtures to be reused they will need to be refurbished and retrofitted due to their age. Additionally a second davit arm would have to be attached so they could be used in the center median for which they are not outfitted.

Based on our research the re-use of the existing street and pedestrian lighting will be more costly than buying a new system. This cost analysis takes into consideration the re-selling of the current stock through a lighting supplier.

Recommendation

Replace all existing street lighting and pedestrian lighting for the length of the project.

Location

- Double davit street lighting on all center medians.
- Light stick pedestrian lighting on the east side.
- Single davit street lighting for possible use on the west side if required.



Existing: No. 3 Road at Cambie



Existing Traffic Signal and Cobra Head Lighting No. 3 Road at Westminster Highway



Existing Horizontal arms are bulky and detract from the appeal of the street



Proposed less obtrusive Traffic Signals



Lighting Systems ... continued

Traffic Signals

Intent

To introduce a unified state-of-the-art system of traffic signals.

Guidelines

The traffic signals and the poles should be part of the family of street lighting and should speak to the overall character and quality.

Precedents

none

Implications & Assessment

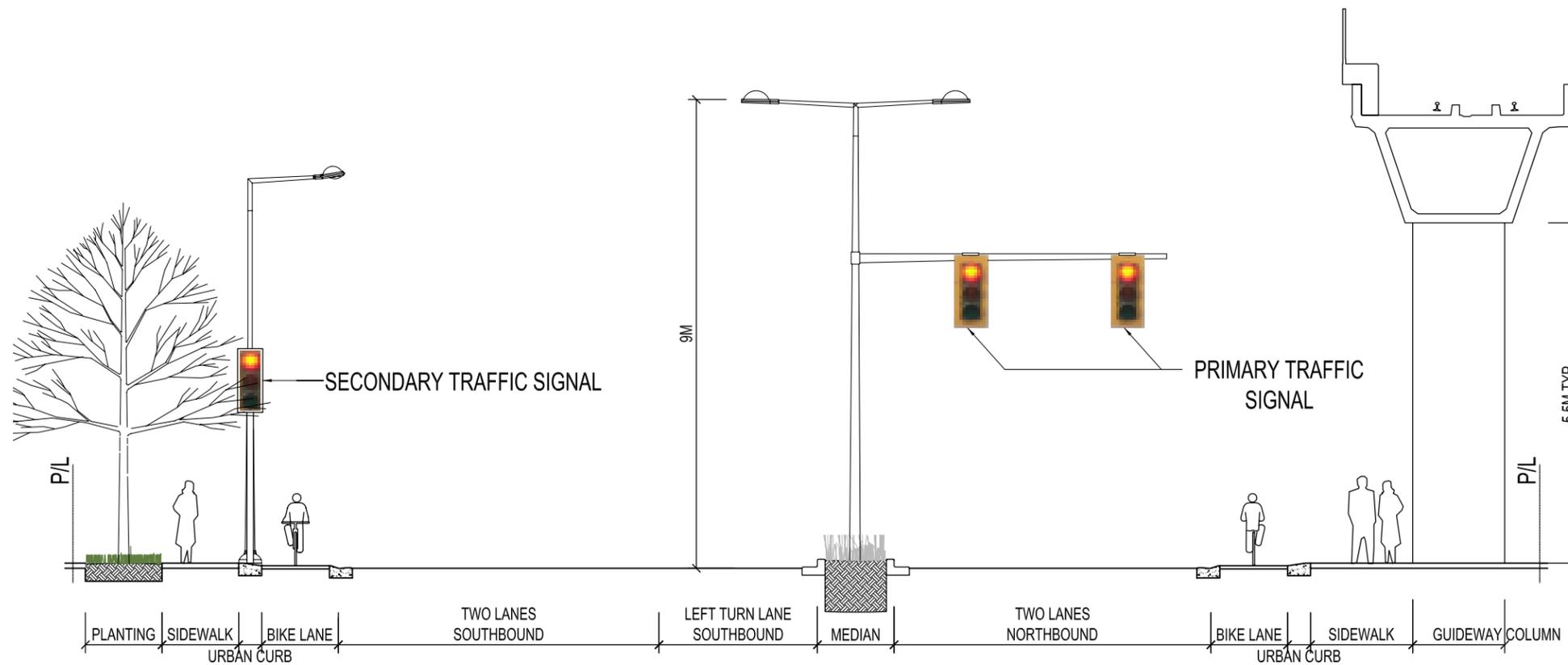
While traffic signals are not part of this Preliminary Design contract, their pole type and location need to be considered as the street will best be served if their design is coordinated with that of the lighting system.

Recommendation

Traffic signals should be updated to be consistent with the upgrade of lighting, including poles and fixtures.

Location

- Granville Avenue
- Park Road
- Cook Road
- Richmond-Brighthouse Station
- Saba Road
- Westminster Hwy
- Ackroyd Road
- Lansdowne Road
- Lansdowne Entry
- Alderbridge Road
- Alexandra Road
- Leslie Road
- Browngate Road
- Cambie Road
- Yoahan South
- Yoahan North
- Capstan Way
- Sea Island Way



note: design of traffic signals by others



No. 3 Road BRT Custom Furnishings



No. 3 Road BRT Bollards

Streetscape Furniture

Intent

To provide a coordinated system of street furniture including benches, trash cans, bollards, and fence elements.

Guidelines

A family of furnishings and appointments is an important way of unifying the character of the streetscape.

Precedents

No. 3 Road 98 B-Line Design Response

Implications & Assessment

The use of bollards will provide a strong indication of where it is safe to stand and wait to cross the street. Bollards are an appropriate level of separation in the absence of a standard barrier curb with let downs at intersection corners.

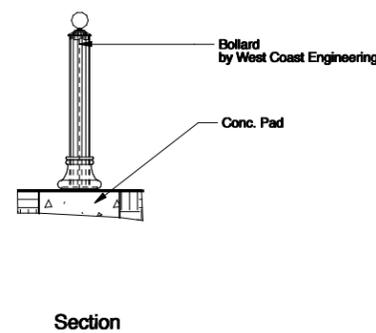
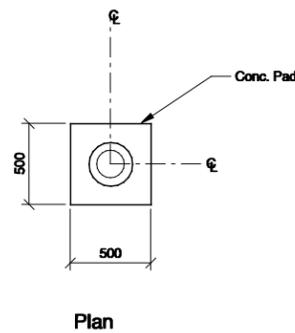
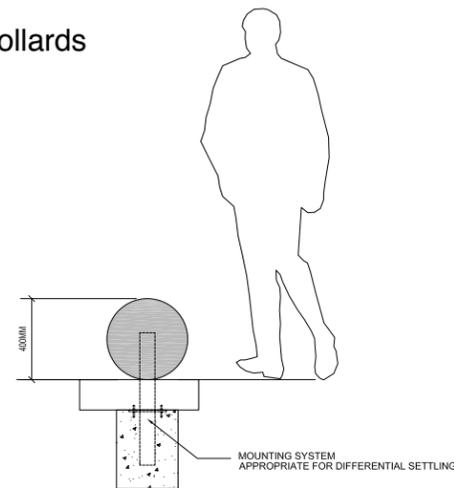
Recommendation

Excluding the transit plazas, it is recommended that a coordinated, stock catalog system of streetscape furnishing and appointments be specified, costed and purchased.

Location

No. 3 Road Corridor, east and west side

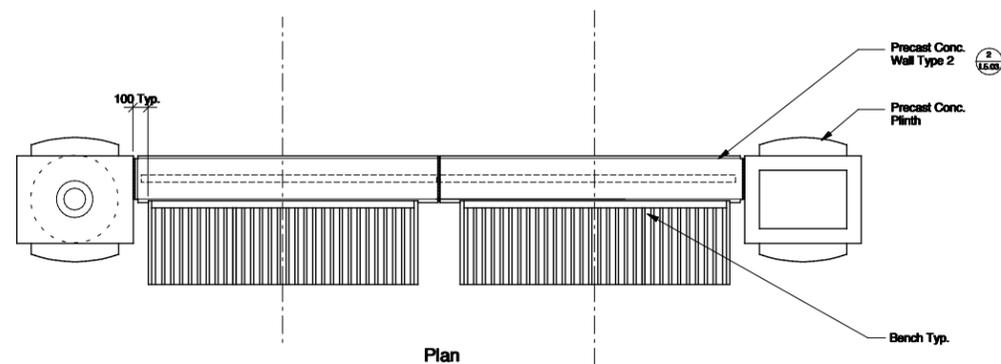
Bollards



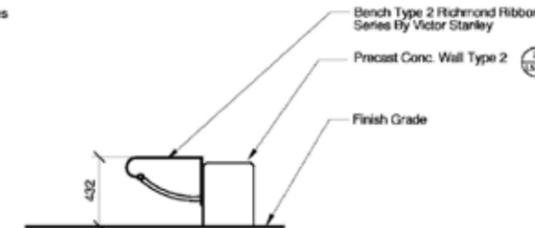
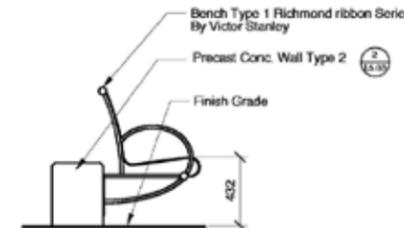
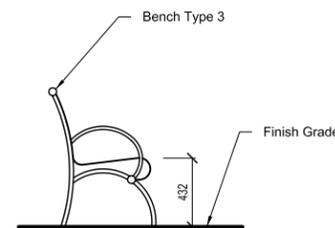
custom bollards should be investigated at station plaza locations

cast iron bollards will be used at intersections

Benches



Note: Align Centreline of Bench with Centreline of Wall Unit





Precedent: Bicycle Racks in Toronto, Ontario



Bike Storage

Intent

To encourage people to ride their bicycles more frequently by making it easy, safe, secure and enjoyable.

Guidelines

The provision of bike storage throughout Richmond’s urban core will reinforce the city’s commitment to bicycle use and contribute to the culture of walking and riding bikes.

Precedents

Copenhagen Denmark, San Francisco BART, Toronto Ontario

Implications & Assessment

When bicycle racks are not provided people may lock their bikes to post or other street furniture that may be undesirable. Designated bicycle storage will part of a system of high quality responses to getting people to enjoy getting out of their cars and using their bikes more.

Bike racks must allow for attachment to the bike frame, not just the front wheel for reasons of stability.

Recommendation

Provide bicycle racks at station plazas and at regular intervals along No. 3 Road.

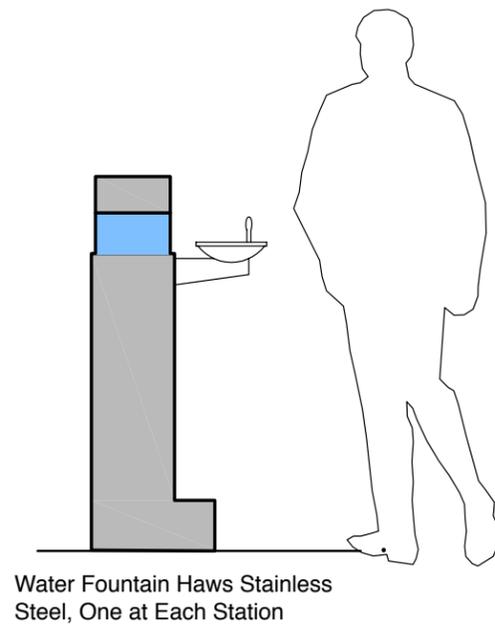
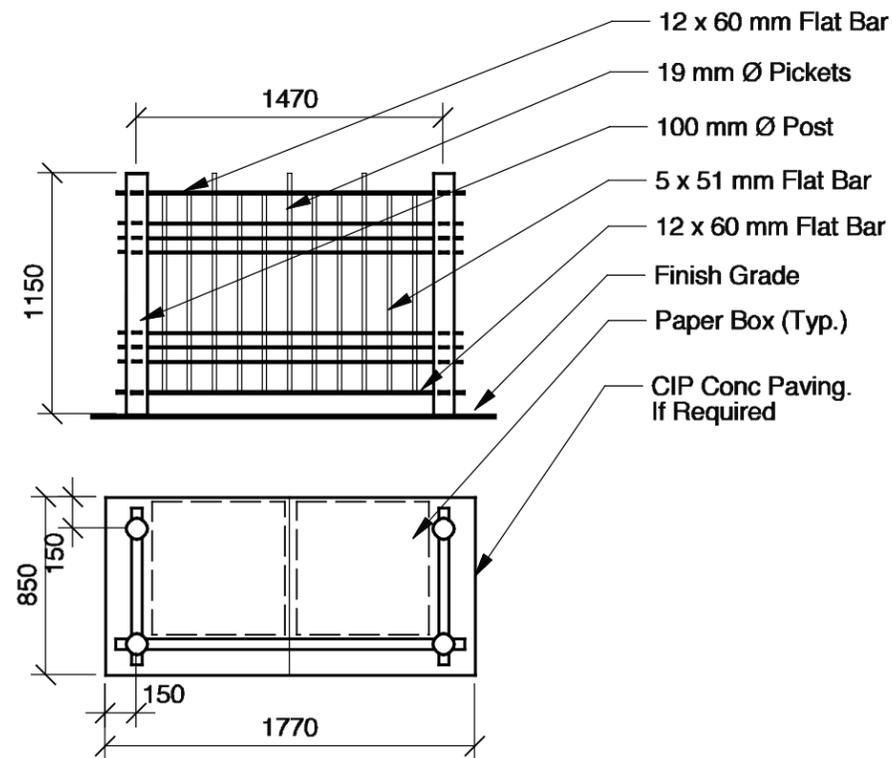
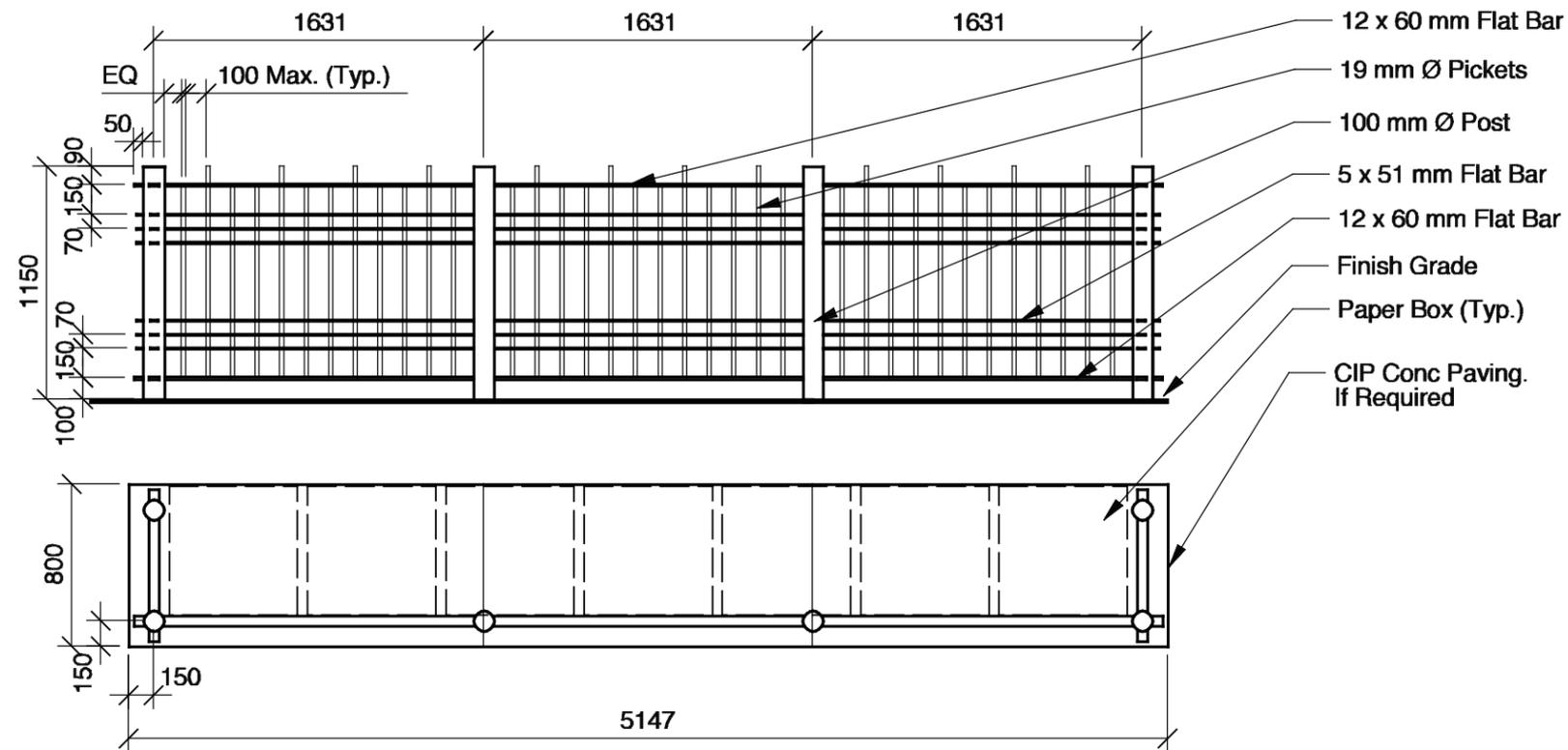
Location

Bike storage will be provide close to key destinations including shopping or cultural. The storage areas will be easily seen from the street and adjacent uses, be well light and not placed in conflict with pedestrians or motor vehicles. Canada Line will also be providing secure bike boxes at the stations including:

- Richmond-Brighthouse Station 20 Lockers;
- Lansdowne Station 10 Lockers;
- Aberdeen Station 10 Lockers.



Bicycle Storage boxes by Canada Line at Stations



Newspaper Box Fences/Other

Intent

To provide a method to contain and screen the proliferation of newspaper vending boxes along the sidewalk.

Guidelines

Newspaper box fences should mirror the family of Streetscape Furniture in design, material and colour.

Precedent

Unknown

Implications & Assessment

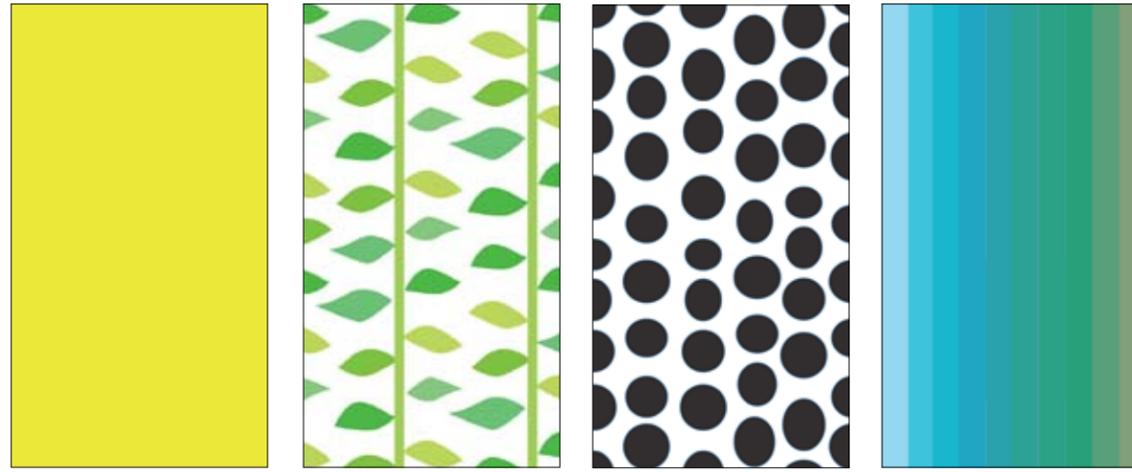
Newspaper distributors will be required to register size and placement of vending boxes with the City of Richmond.

Recommendation

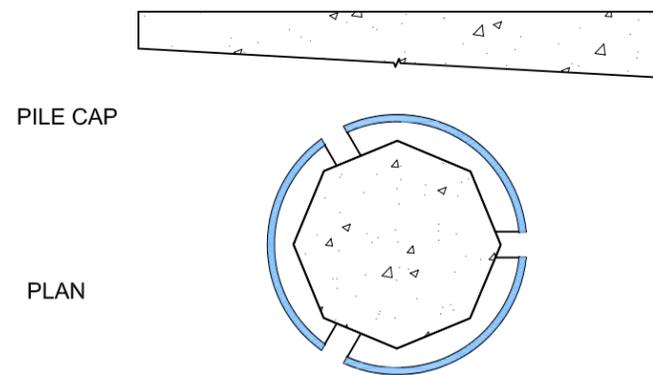
Consideration should be given to allowing newspaper vending boxes at transit plazas, only.

Location

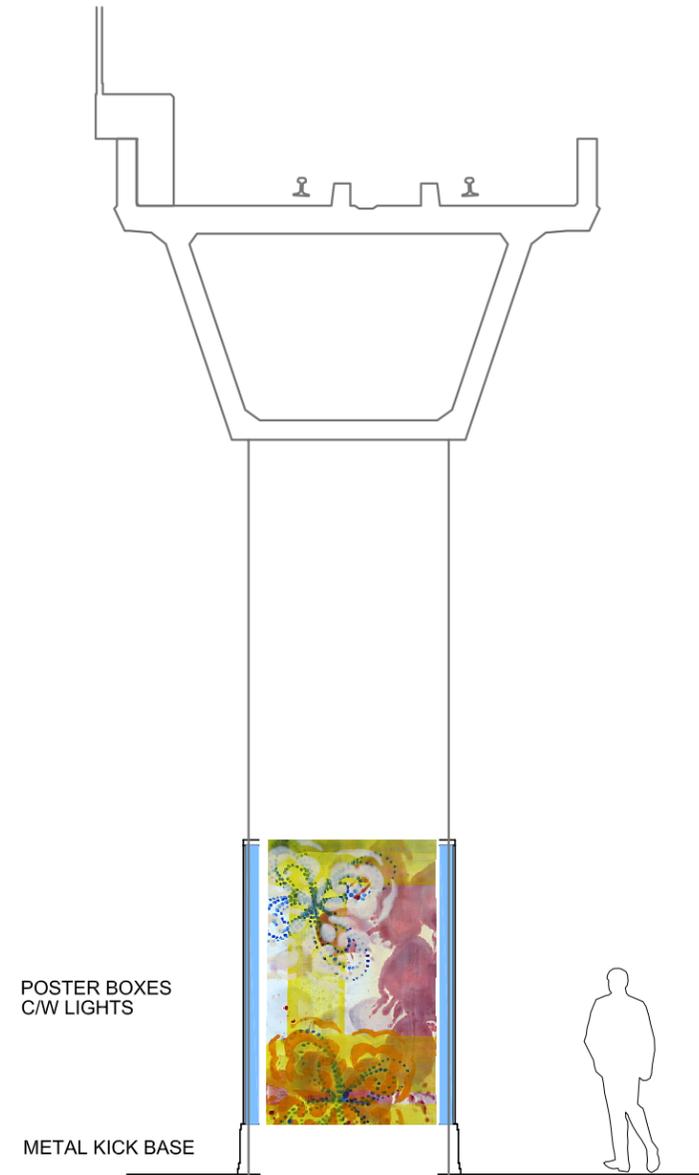
Along both east and west side of No. 3 Road, as required.



bold colours and patterns used to contrast and compliment the surroundings



ART POSTER BOX



Utility Surrounds

Intent

To provide a high quality and entertaining treatment around guideway columns that feature utility service – gas, power and water

To provide a high quality and entertaining treatment around guideway columns that feature utility service – gas, power and water.

Similar treatment is proposed for pad-mounted transformers, SAC cabinets and other utility boxes.

Guidelines

Utility surrounds should reflect a “sense of celebration”.

Precedents

- LAX Column Surrounds

Implications & Assessment

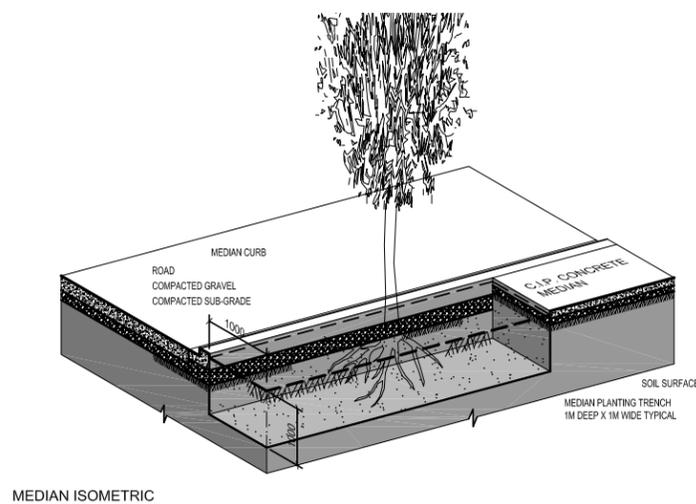
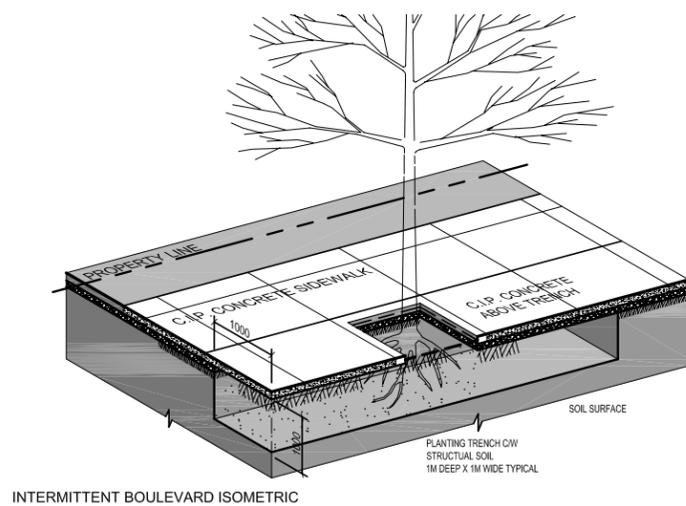
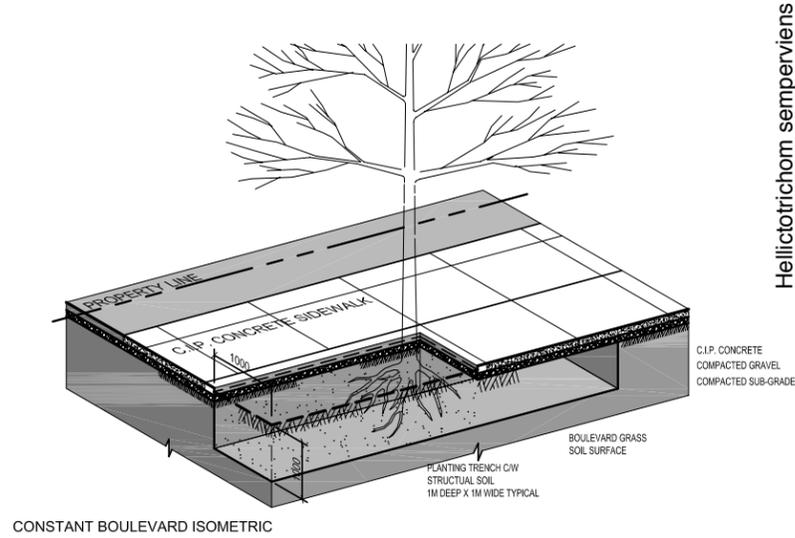
The provision of servicing in a fully integrated way will add a level of complexity and usefulness to the project spaces. This adds value and flexibility to the design.

Recommendation

On two columns at each station full servicing is proposed. This includes potable water, sewer, electricity, gas and communications. Develop a utility surround to accommodate the hook ups at the base of designated columns. The remainder of the column is to provide space for a light art poster box.

Location

Guideway columns directly north and south of each transit station.



Helictotrichom sempervirens



Pennisetum alopecuroides



Miscanthus sinensis



Buxus microphyllum



Annual Flower Changes



Zelkova



TREES IN BOULEVARD
 Form: Large Spreading Canopy Standardized to 3.0 meters
 Texture: Fine to Coarse
 Foliage: Deciduous
 Fall: Colour
 Spacing: 9m
 Preferred Species: Acer, Fraxinus, Liquidambar styraciflua, Platanus, Quercus, Zelkova



TREES IN PLAZAS
 Form: Small Spring Flowering
 Texture: Fine
 Foliage: Deciduous
 Fall: Colour
 Preferred Species: Prunus, Zelkova



TREES IN MEDIAN
 Form: Fastigate & Spreading Canopy Standardized to 3.0 meters
 Texture: Fine to Coarse
 Foliage: Deciduous
 Fall: Colour
 Spacing: 6 to 7m
 Preferred Species: Acer, Quercus, Populus tremula 'Erecta'

Planting

Intent

Trees are used as elements to organize outdoor spaces, as a continuation of Richmond's vernacular landscape types including hedgerows, windbreaks, allees, and orchards.

Guidelines

Plant trees the length of the corridor to provide a unifying element. Plant rows of trees on the east side boulevard to create a balancing element for the guideway. Use shrubs and ornamental grass as bold landscape elements.

Precedents

- City of Vancouver, Tacoma Washington

Implications & Assessment

The planting of an urban forest is a city objective. It is important to replace all the trees that have been removed during construction of the Canada Line project.

Recommendation

- Planting is used in bold patterns.
- Median trees will be planted as a single species by one-block minimums.
- Median intersection treatment will include significant annual planting zones.
- Boulevard trees will be planted in single species by one-block minimums.
- Median and boulevard tree species may vary within each block.
- Planting will be considerate of waterwise and low maintenance concepts.
- All planting will be irrigate.
- Planting designs respect CPTED guidelines.

Location

System wide



Guideway Greening

Street & Pedestrian Lighting

Intent

The concrete guideway columns every 35 meters along the east side of No. 3 Road represents a significant opportunity to introduce greening.

Guidelines

The greening of the guideway columns will grow into a beautiful vertical garden that will celebrate a variety of vines and give a distinct character to the streetscape.

Precedents

- Zurich's MFO Park, green walls on parking structures

Implications & Assessment

Psychologically the greening of the columns will allow them to become a soft pleasing backdrop to the street edge and a positive vertical garden. The development of green columns will minimize the visual impact of the guideway columns. Leaving the columns unplanted will represent a missed opportunity.

Recommendation

All guideway columns be surrounded with a self-supporting metal trellis structure and planted with irrigated vines including:

SELF-CLINGING CLIMBERS

- Parthenocissis tricuspidata/Boston Ivy
- Hedra helix/Ivy
- Hydrangea petiolaris/Climbing Hydrangea
- Schizophragma hydrangeoides

TWINGING CLIMBERS

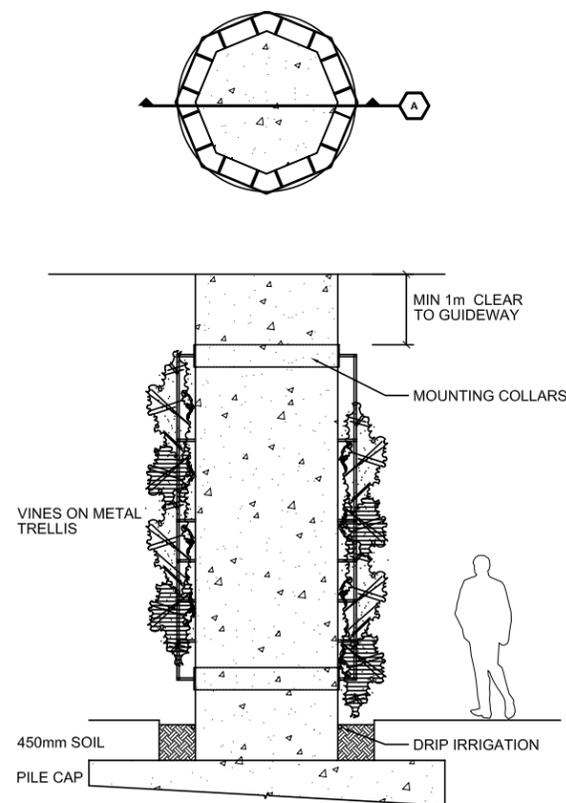
- Wisteria chinensis/Wisteria

TENDRIL & LEAF-TWINGING CLIMBERS

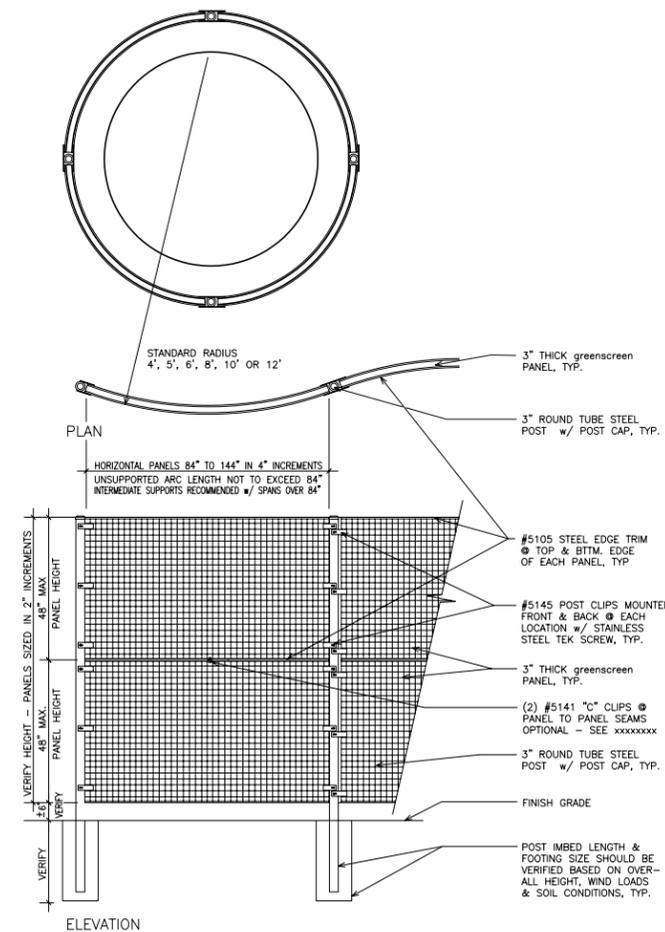
- Clematis species

Location

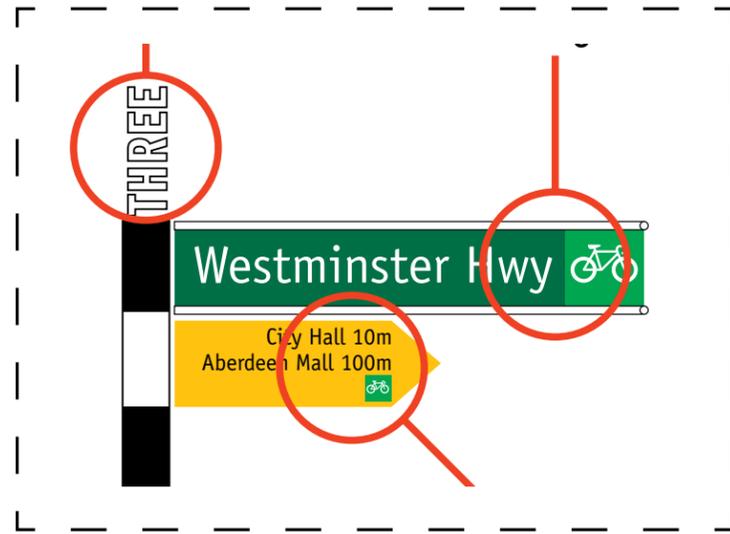
82 guideway columns as part of a system wide statement.



Greening Columns with Vines



Freestanding Curved Green Screen



Precedent

Wayfinding

Intent

Street wayfinding is to be closely modeled on existing, standard street sign.

Guidelines

A coordinated system of street signage/wayfinding will need to be developed with the City of Richmond Department of Transportation, Streets Division

Precedents

Recreation Complex and street signage, West Vancouver BC

Design Response

Blades display the street name in a contemporary and legible way, with the use of pictograms where applicable. Blades are attached to existing utility poles or dedicated 70mm dia. Steel posts by means of 'Band-it' or similar. Utility poles or dedicated poles are 'banded' in theme stripes representing the five Character Zones.

Secondary blades, yellow in colour, point to adjacent or nearby civic facilities. The distance to venues is indicated. The number "3" appears as finals on poles as a number or text.

This wayfinding signage system could be expanded to encompass "third party" commercial signage if deemed appropriate in detailed design.

Implications & Assessment

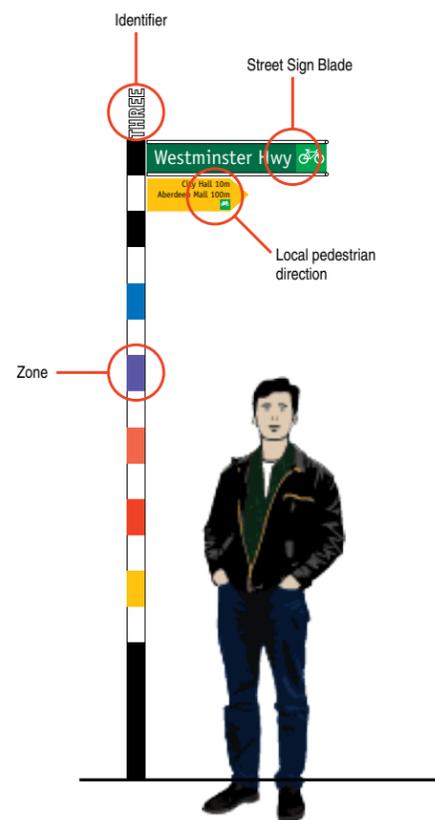
A colourful and artful signage wayfinding program will add immediate "branding" presence to No. 3 Road upon installation. Program will require detailed coordination with various City departments.

Recommendation

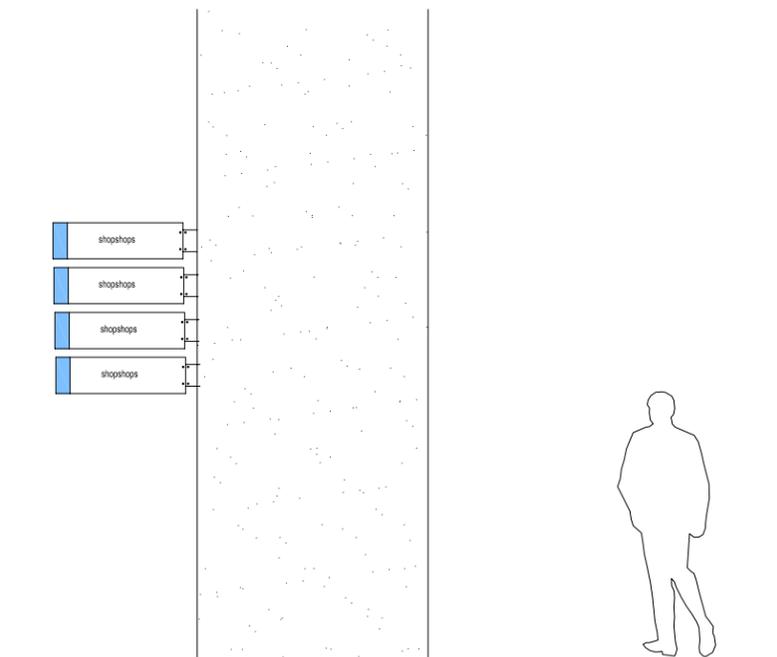
Street wayfinding program of primary and secondary blade identification should be carried through in detailed design.

Location

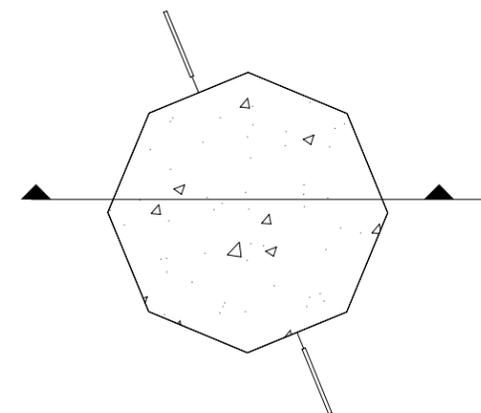
At all street intersections within No. 3 Road corridor; transit plazas; points-of-interest.



'Themed' standard



Section



Plan

Section 3

Elements of Distinction

Rationale

Continuity vs. Distinction

There is also a desire to express those design elements that contribute to the definition of individual transit plazas and their surroundings within separate 'Character Zones' as 'Elements of Distinction'. Combined, they serve to complete the picture of a mature rapid transit system within an emerging urban downtown core.

Elements of Distinction

The Study Area currently has three transit stations that will be operational when the Canada Line is opened in late 2009. They are Aberdeen Station, Lansdowne Station and Richmond-Brighouse.

A fourth station within the downtown core is anticipated at Capstan Way but not on the immediate construction schedule.

Each of the three transit stations will have transit plazas associated with their development. In the 'Short Term' the transit plazas will be the immediately surrounding area of public ownership – the lands between the station and adjacent property lines. In the 'Long Term' these transit plazas will be expanded. Each will vary in size and complexity, to the extent that properties can be brought into play through 'opportunity' (site redevelopment), 'edge conditions' (fronting buildings) and 'program' (Vancouver 2010 Winter Games, for example).

'Elements of Distinction' include specific treatments surrounding transit stations, efforts to introduce public art and other urban design enhancements that will serve to bolster efforts at developing 'Character Zones' within the No. 3 Road corridor.

3

Aberdeen Station

Short Term: Plaza Design

The plaza development will reflect an active hard-surfaced outdoor space serving both a transit station and active retail interests.

Aberdeen Station is located within the designated “International” District, meant to capitalize on the growing cosmopolitan flavour of downtown Richmond. It is hoped that this district will develop as a “high energy” retail precinct.

The Aberdeen Transit Plaza is defined by No. 3 Road to the west, Cambie Road to the north, Browngate Road to the south the anticipated building face of the Aberdeen Mall to the east.

This is the only transit mall of the three that will likely see a portion of the ‘long term’ vision for the mall developed in the ‘short term’. The resultant plaza development will reflect an active hard-surfaced outdoor space serving both a transit station and active retail interests.

Aberdeen Plaza will benefit from joint-development with the expansion plans for Aberdeen Mall. This will potentially feature a ‘Times Square-like’ atmosphere, complete with large screen, outdoor video monitors sheltered by an overhead building projecting from the mall westward, covering a portion of the transit guideway. The transit plaza will be designed to encourage commercial activity in a market-like atmosphere. It will feature the development of one or more freestanding retail kiosk under the guideway.

Design Intent

‘International Plaza’ – a high-quality, richly-detailed, public plaza focused on the transit station

Plaza Design Features

- Transit plaza oriented to the north and the No. 3 Road intersection with Cambie Road
- Strong pedestrian connection across the Cambie and No. 3 Road intersection to the Fraser River
- Raised bike lane along the curb vehicle lane on the west side of the station
- High quality retail/commercial development under the guideway in close proximity to the station
- Fixed and portable retail kiosks located within the transit plaza
- Large format display showcases in the transit plaza and under the elevated guideway
- Curvilinear plaza design in response to the curved facade of the Aberdeen Mall
- Bold use of neon lighting consistent with the atmosphere of the ‘International District’
- High quality development sponsored, transit plaza fit and finish treatment
- Raised planters/water features incorporated in the plaza design
- Public art in conjunction with the guideway columns through the transit plaza

Implications

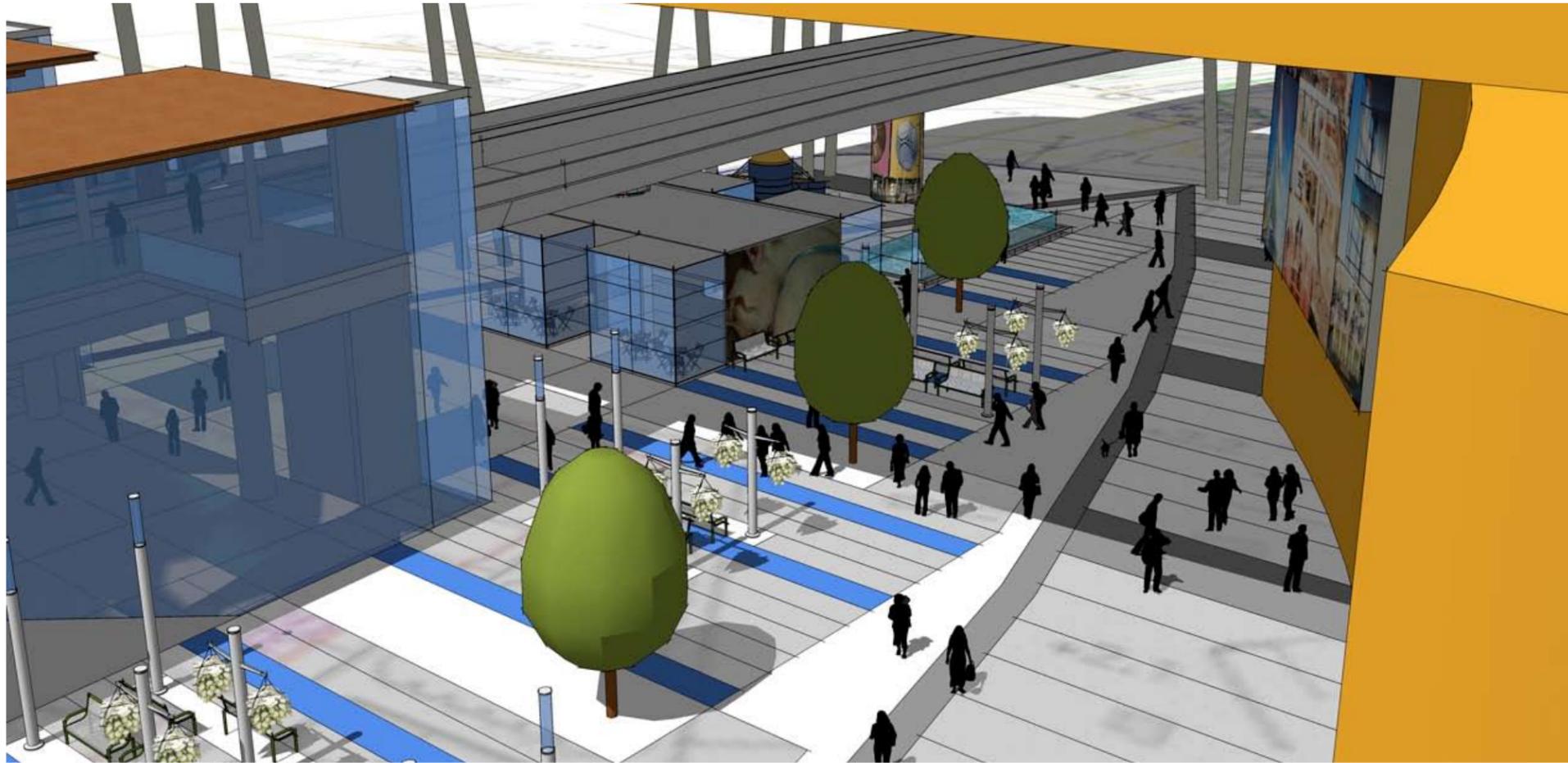
Joint-venture development opportunity with Aberdeen Mall (Fairchild Developments) will provide for the potential for higher quality of plaza materials. Aberdeen Mall expansion will create illusion that transit station and “fronting buildings” are combined.



Station Area Looking Northeast

Site Plan





Looking North



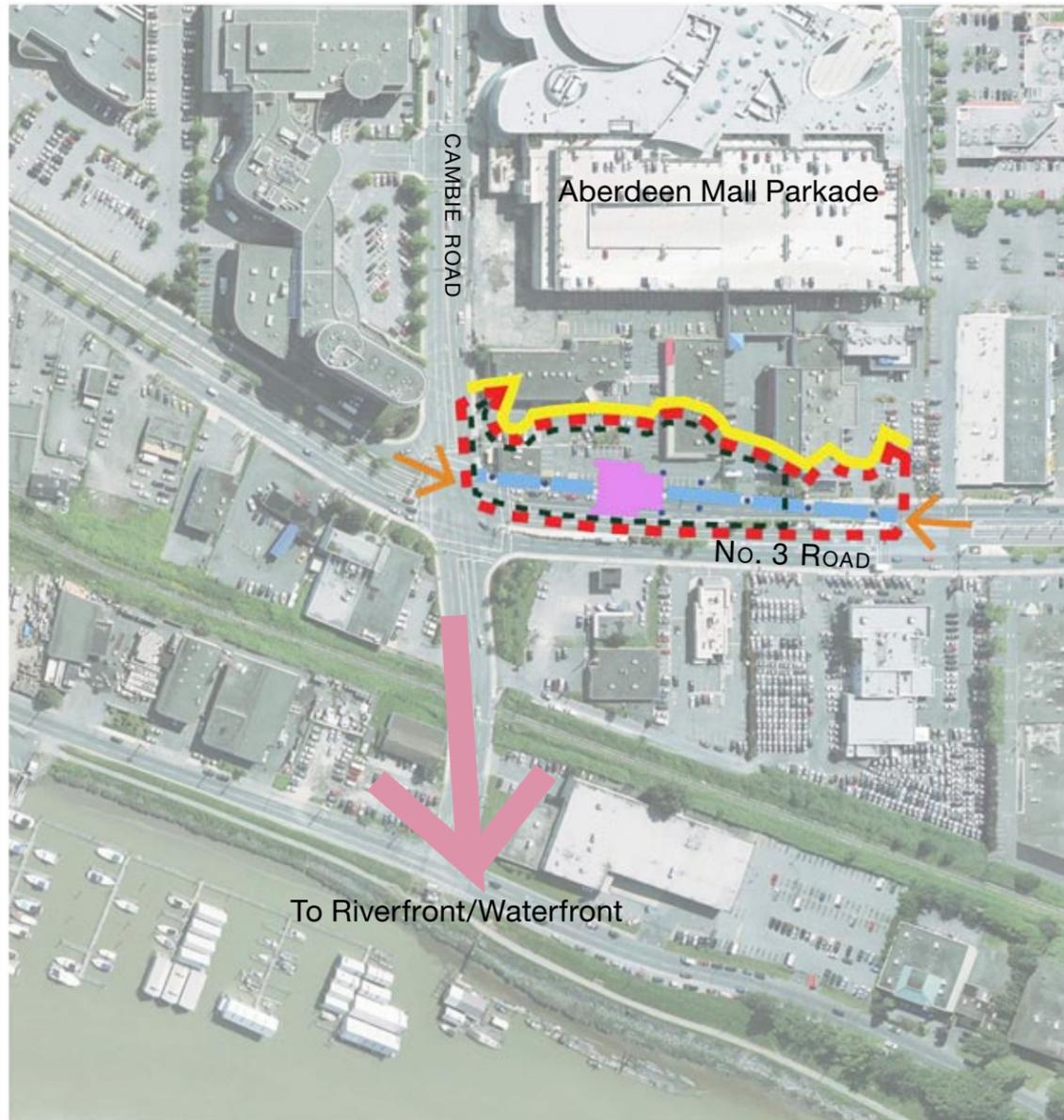
Looking Northwest



Looking Southeast

Long Term: Additional Improvements

To complete the picture of the block-long transit plaza, it should extend for 1 Block from the corner of No. 3 Road to Browngate, developing an active outdoor plaza of commerce and entertainment.



- Fronting Building Line
- Long-Term Plaza Boundary
- Short-Term Plaza Boundary
- Guideway Columns
- Activity Zone
- Station



Vision Statement

- ‘International District’ – a retail corridor celebrating Richmond’s ethnic diversity
- Highly integrated retail development with the transit station and elevated guideway

Major Precinct Components

- Aberdeen Mall expansion built around the transit station and over the elevated guideway
- Focal point of the ‘International District’ character zone
- Strong pedestrian connection the to Fraser River Middle Arm along Cambie Road
- Relocation of River Road into the CPR right-of-way
- Creation of a retail/commercial node at the Cambie Road end on the Fraser River
- Development of a large pedestrian pier at the termination of Cambie Road
- Potential for a ‘floating pedestrian bridge’ across the Fraser River Middle Arm
- Enhanced pedestrian amenities and restricted vehicle access along the edge of the Fraser River
- Incorporation of major public amenities yet to be determined in conjunction with the Aberdeen Mall expansion
- Illuminated building facade wall for the Aberdeen Mall extension along No. 3 Road
- Interactive special effects night lighting of the elevated guideway

Implications

- Mechanism to permit commercial activity within the road right-of-way around the station



Station Area Looking Northeast

Lansdowne Station

Short Term: Station Plaza

This space has the advantage of being enveloped by the mature stand of Pin Oak trees from Alderbridge Way back towards the site's centre.

Lansdowne Station is located within the designated "Downtown Core North" District. This precinct will build upon the notion that the Lansdowne/No. 3 Road intersection becomes the new "ceremonial route" and center of gravity for downtown Richmond. It builds further upon to designation

within the CCAP of the 10-acre parking lot fronting Lansdowne Centre becoming the major "central" park within the City. The transit plaza is further distinguished by the fact that it is two blocks in length and, therefore, serves as a major hard-surfaced plaza within Richmond's city centre.

The immediate concept for the Lansdowne Transit Plaza is to treat the public space fronting No. 3 Road from Lansdowne Road in the south, to Alderbridge Way in the north, eastward to the Lansdowne Mall property line. This space has the advantage, as well, of being enveloped by the mature stand of Pin Oak trees from Alderbridge Way back towards the site's centre.

Given its central location within Richmond's downtown core, it is suggested that this linear plaza be hard-surfaced to accommodate a variety of activities – sitting down for a coffee, hosting a Sunday afternoon art sale, or simply sitting outside to 'see and be seen'.

Design Intent

Cross-road anchor for Richmond's 'Great Ceremonial Plaza' and the central focus of public outdoor life in Richmond

Plaza Design Features

- Emphasis on 'hard landscape' plaza improvements rather than 'soft landscape' plantings treatments

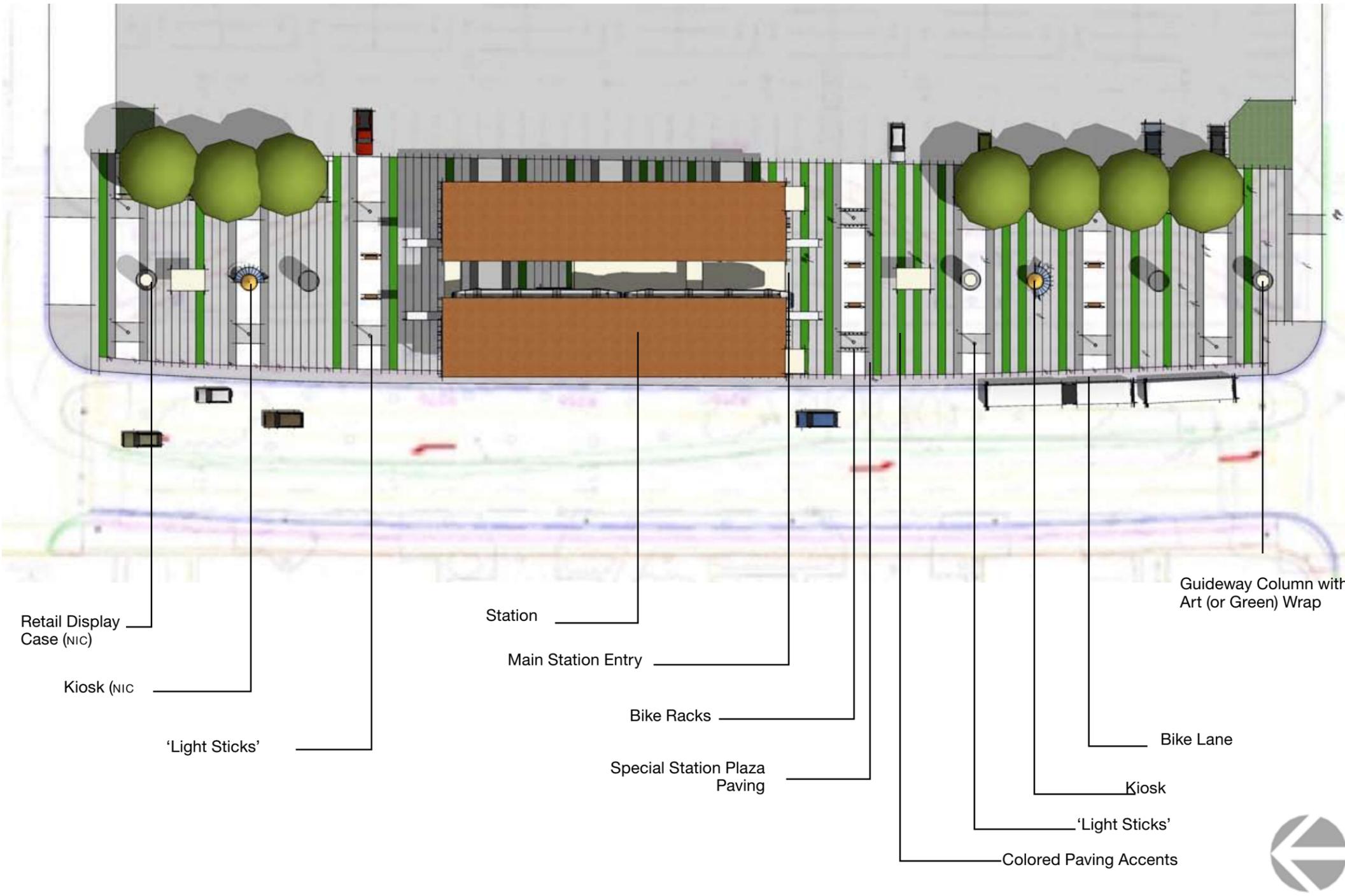
- Bold use of colour and paving materials on ground plane extending to the guideway columns
- Orientation of the station entry to the Lansdowne Road intersection
- Plaza grade extending south across Lansdowne Road expanding the station plaza zone
- Gradual transition of the boulevard grade up to the station entrance
- Raised bike lane along the curb vehicle lane on the west side of the station
- Locations for fixed and portable retail kiosks near the transit station entry
- Allowance for a purpose built stand alone retail/commercial use in close proximity to the transit station
- Performance Area or Outdoor Stage in a central location between Lansdowne Road and Alderbridge Way
- Overhead canopy system under the guideway to attach special effects light as well as audio and video equipment
- Terraced seating along the existing row of large Pin Oaks that parallel the elevated guideway
- Arcaded pedestrian access to the Lansdowne Mall parking lot and shopping centre
- Enhanced pedestrian and cycling amenities such as seating, lighting, bike storage will allow transit users to wait in comfort
- Lots of seating for people to perch and linger in the plaza will contribute to a safe pedestrian environment
- Where opportunities permit such as on guideway columns public art will contribute to the pedestrian experience

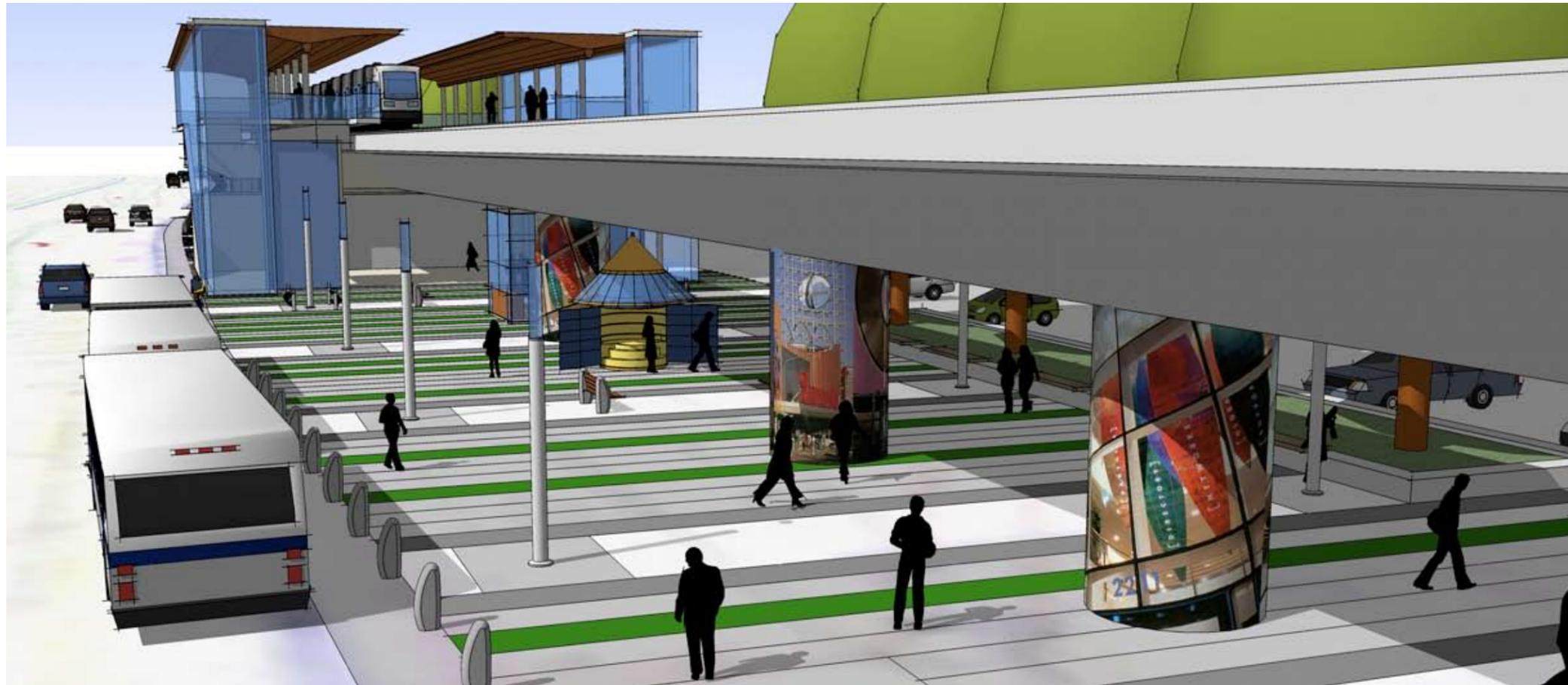
Implications

Major public open space opportunity represented by the expensive, existing parking lot at Lansdowne Mall on No. 3 Road. It is important to work with Lansdowne Mall to realize both short and long term opportunities



Site Plan





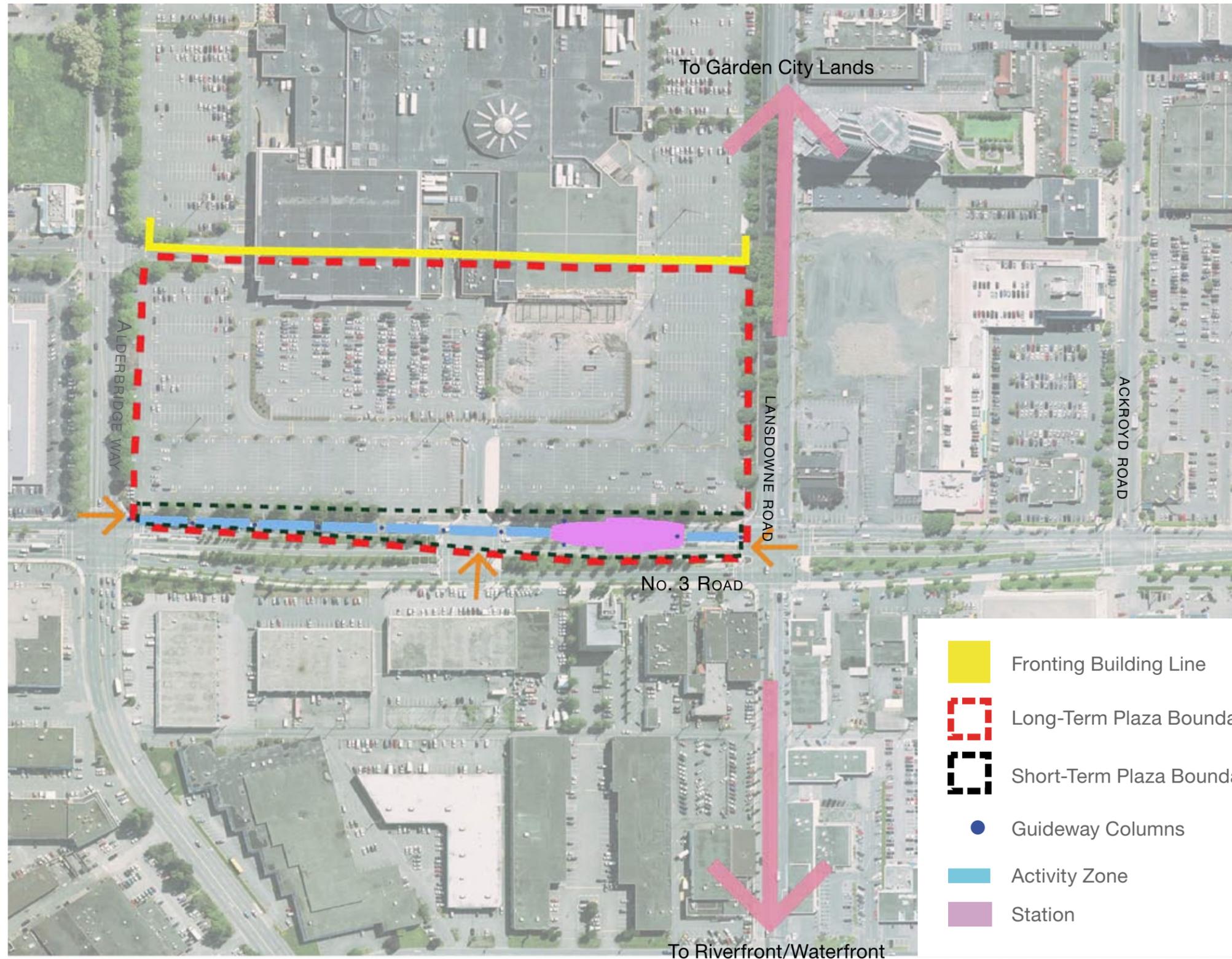
Looking North



Looking North



Looking South



Long Term: Station Precinct

In the long term the City of Richmond has identified in its City Centre Area Plan Update (pending) that the 10-acre parking lot on the eastern edge of the transit plaza be designated as the major, downtown park space.

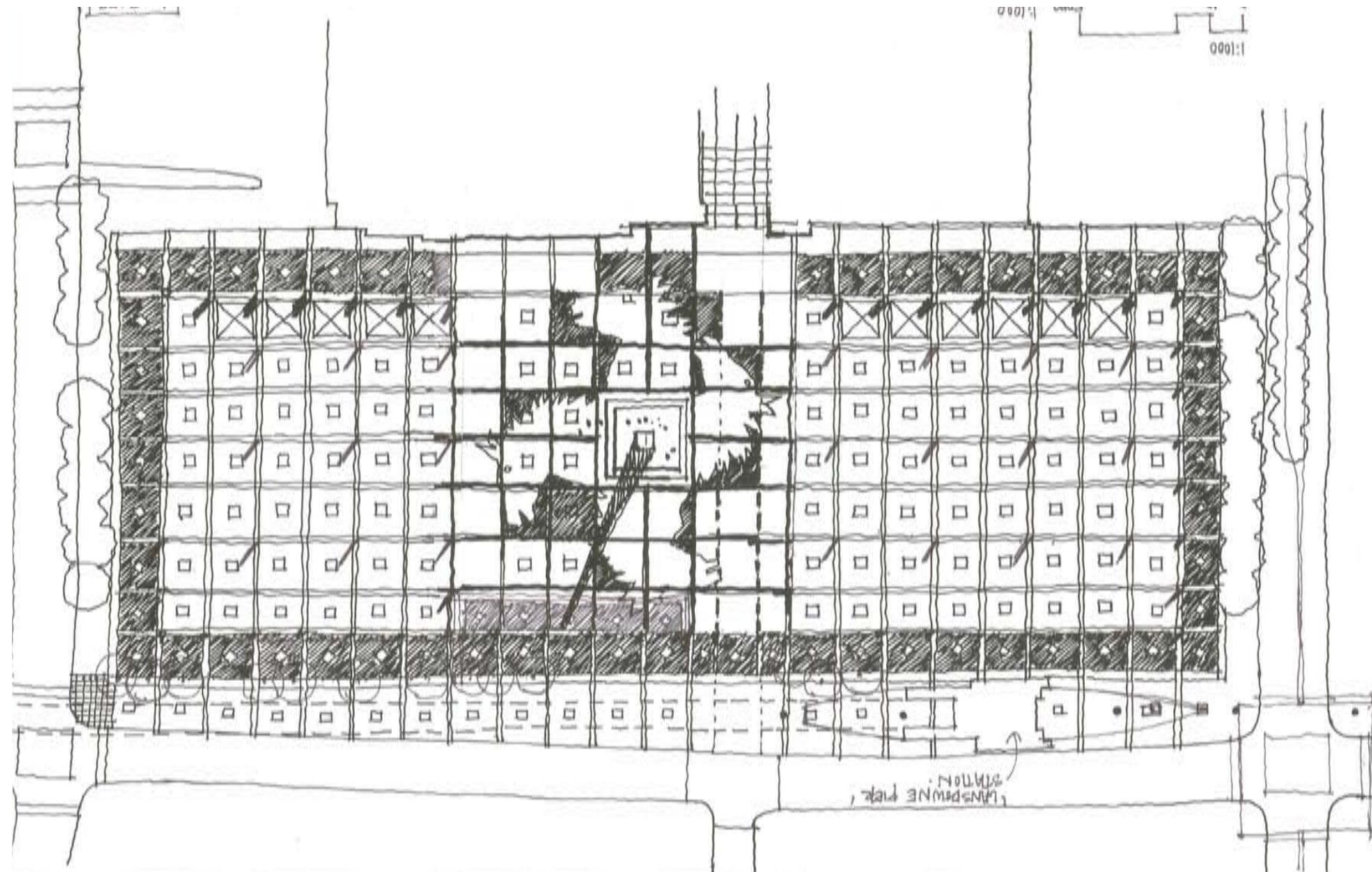
It is anticipated that the ‘centre of gravity’ for downtown will shift to the No. 3 Road/Lansdowne intersection and this expanded transit plaza will become the major public gathering space within the City of Richmond. Given that the Richmond Olympic Oval will be a ‘secure’ site during the Vancouver 2010 Winter Olympic Games, it is suggested that this expanded transit plaza be host for the largest of the anticipated ‘live’ sites for ‘community celebration’ during the games.

Vision Statement

- Richmond’s ‘Great Ceremonial Place’ and the future ‘cross roads’ of civic celebration in Richmond
- Consistent with City Centre Plan Update open space assumption regarding Lansdowne Mall redevelopment
- 10 acre public open space fronting No. 3 Road to serve as a focus of major outdoor celebrations in the City Centre



Station Area Looking North



Long Term schematic design option
(not for construction)

Major Precinct Components

- Lansdowne Road as the City Centre Ceremonial or Parade Route linking the Garden City Lands and the Olympic Oval
- Potential for a temporary Olympic 'Live Site' in the Lansdowne Mall parking lot
- Opportunity for large format screen and a direct video link with venue sites during the Olympics
- Bold pavement marking overlay to acknowledge parking lot function but permit temporary, major event pedestrian use
- Light Masts in parking lot to anchor a wire grid ceiling with 'Tivoli Lights' and 'Programmable Light Fixtures'
- Great Flag Pole/Ceremonial Christmas Tree as principal focal element
- Market Umbrellas or large open fabric tensile structure creates major retail opportunities at civic celebrations
- Potential for a community scale 'Block Party' during the Olympics by the partial closure of Lansdowne or No. 3 Road
- Design approach that relies primarily on flexible outdoor civic programming versus static landscape improvements
- Builds on public open space design theory of 20% design and 80% program with opportunity for '10 Great Things to Do'
- Eventual redevelopment of the Lansdowne Mall could create an Olympic Legacy public open space

Implications

Significance of the Lansdowne Road and No. 3 Road intersection as the future 'heart of the city'

Richmond-Brighthouse Station

Short Term: Station Plaza

The Richmond-Brighthouse station is the terminus station for the Canada Line and retains the potential to be the most fully integrated with “fronting buildings” adjacent.

Richmond-Brighthouse Station is located within the designated “Downtown Core South” District. This precinct contains the Civic Centre as well as major office towers and is seen as the traditional downtown core of the City. The Richmond-Brighthouse transit plaza has a small footprint, but establishes important connections, both to the transit exchange (eastward to Buswell) and to Richmond City Hall (southward to Granville). Accordingly, the transit plaza is linear in shape and consists of three distinct elements: 1) the fronting sidewalk west of the transit station, 2) an enlarged plaza south of the station that serves as the entry to the transit mall, and 3) a gesture south of the transit plaza to establish a long term desire to construct a wide outdoor pedestrian boulevard from the Richmond-Brighthouse station to southward to Richmond City Hall.

It is anticipated that this boulevard will be defined by a) a double row of deciduous trees, b) a weather-protected trellis or c) a combination of both.

Design Intent

Richmond’s ‘Grand Transit Plaza’ punctuating the terminus of the Canada Line

Plaza Design Features

- Station entry oriented south to recognize important pedestrian connections
- Broad pedestrian plaza extending across the west end of the bus mall to give pedestrians priority on the boulevard

- Wide pedestrian corridor extending east from the station along the bus mall features a sunny, southern orientation
- Overhead canopy provides weather protection and improvement pedestrian comfort at this local transit exchange
- Residential and/or office development above the transit station add ‘eyes on the street’
- High density development at the station with pedestrian addresses on the street and plaza contributes to safety
- Surrounding restaurants and cafes will increase pedestrian traffic in off peak transit periods and further enhance safety
- Fronting retail/commercial land uses at grade will be encouraged to spill out onto the street to claim the pedestrian realm
- Raised bike lane along the curb vehicle lane on the west side of the station
- Enhanced pedestrian and cycling amenities such as seating, lighting, bike storage will allow transit users to wait in comfort
- Lots of seating for people to perch and linger in the plaza will contribute to a safe pedestrian environment
- Other pedestrian amenities such as retail kiosks offering convenience goods will cater to extended wait times for commuters
- Where opportunities permit such as on guideway columns public art will contribute to the pedestrian experience

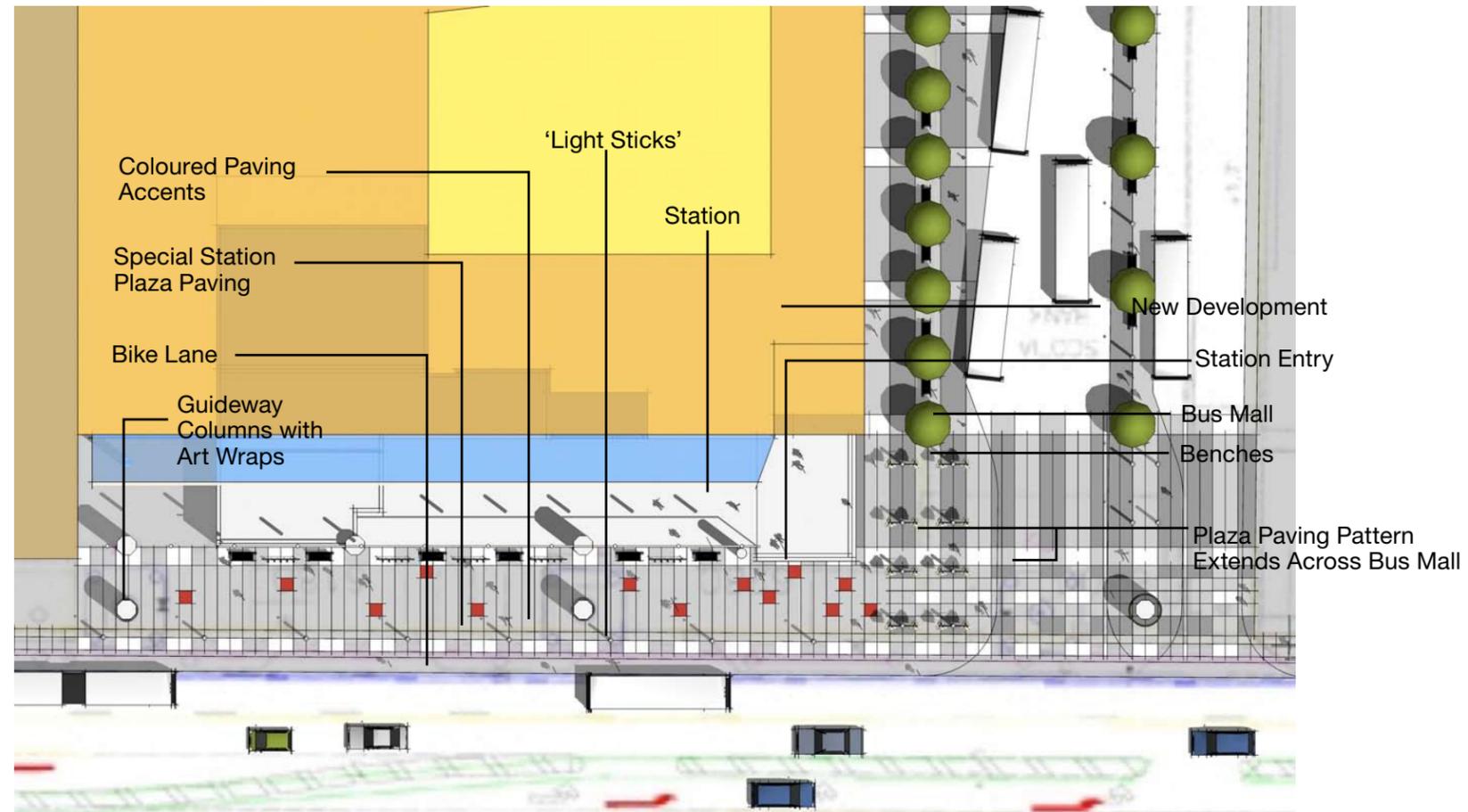
Implications

- Benefits of the ‘bus mall’ over ‘bus loop’ approach
- Contributions of associated Transit-Oriented Development in close proximity to the station
- Importance of coordinating construction delivery of associated development with the opening of the Canada Line



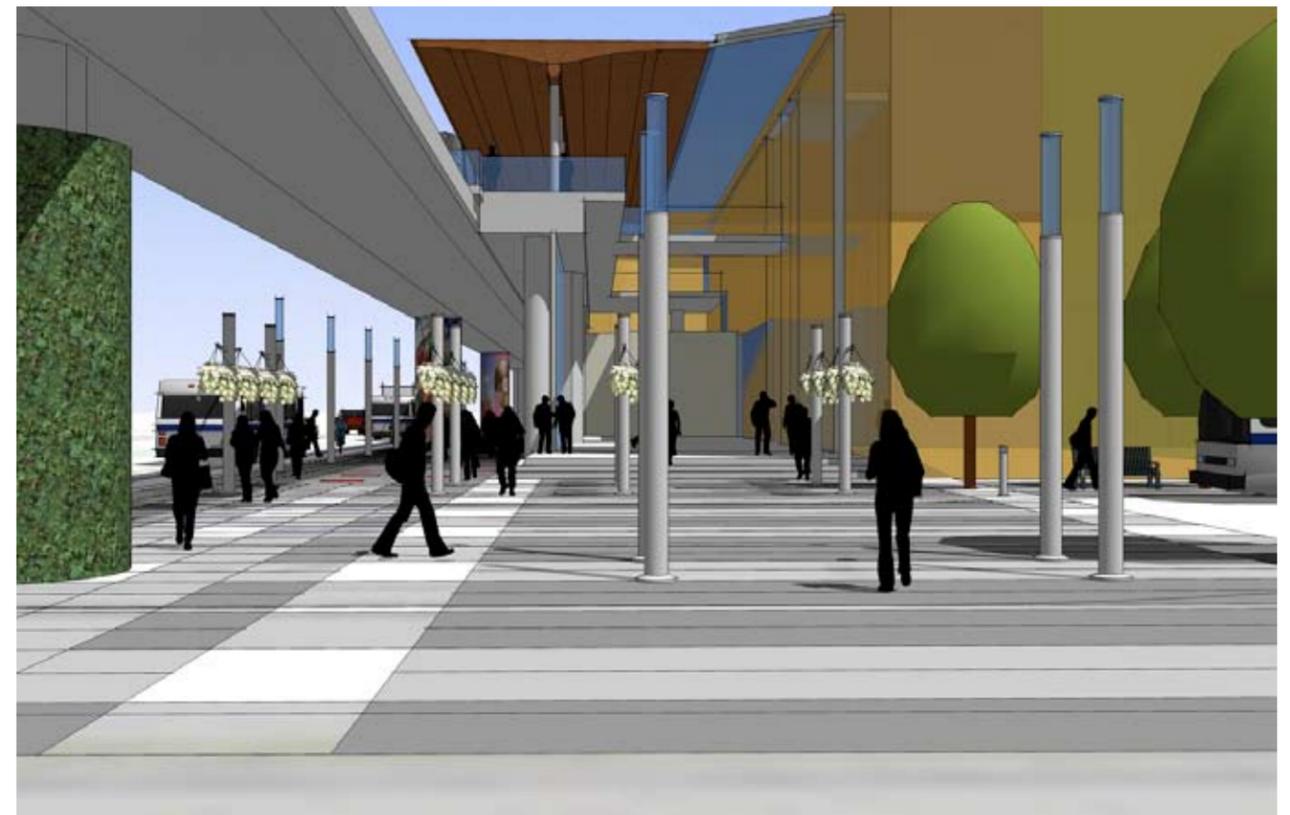
Station Area Looking Northeast

Site Plan

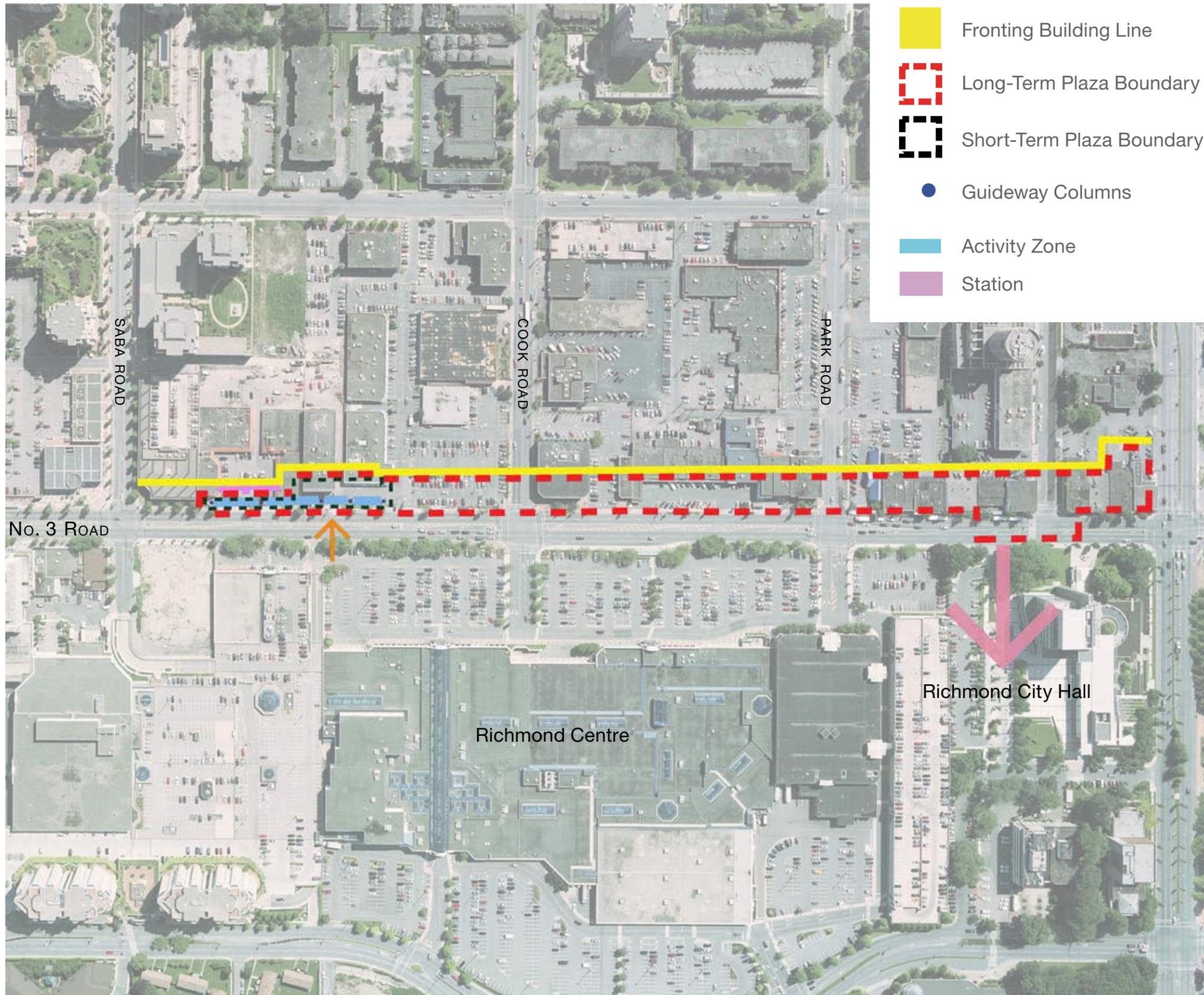




Looking South



Looking North



- Fronting Building Line
- Long-Term Plaza Boundary
- Short-Term Plaza Boundary
- Guideway Columns
- Activity Zone
- Station

Long Term: Station Precinct

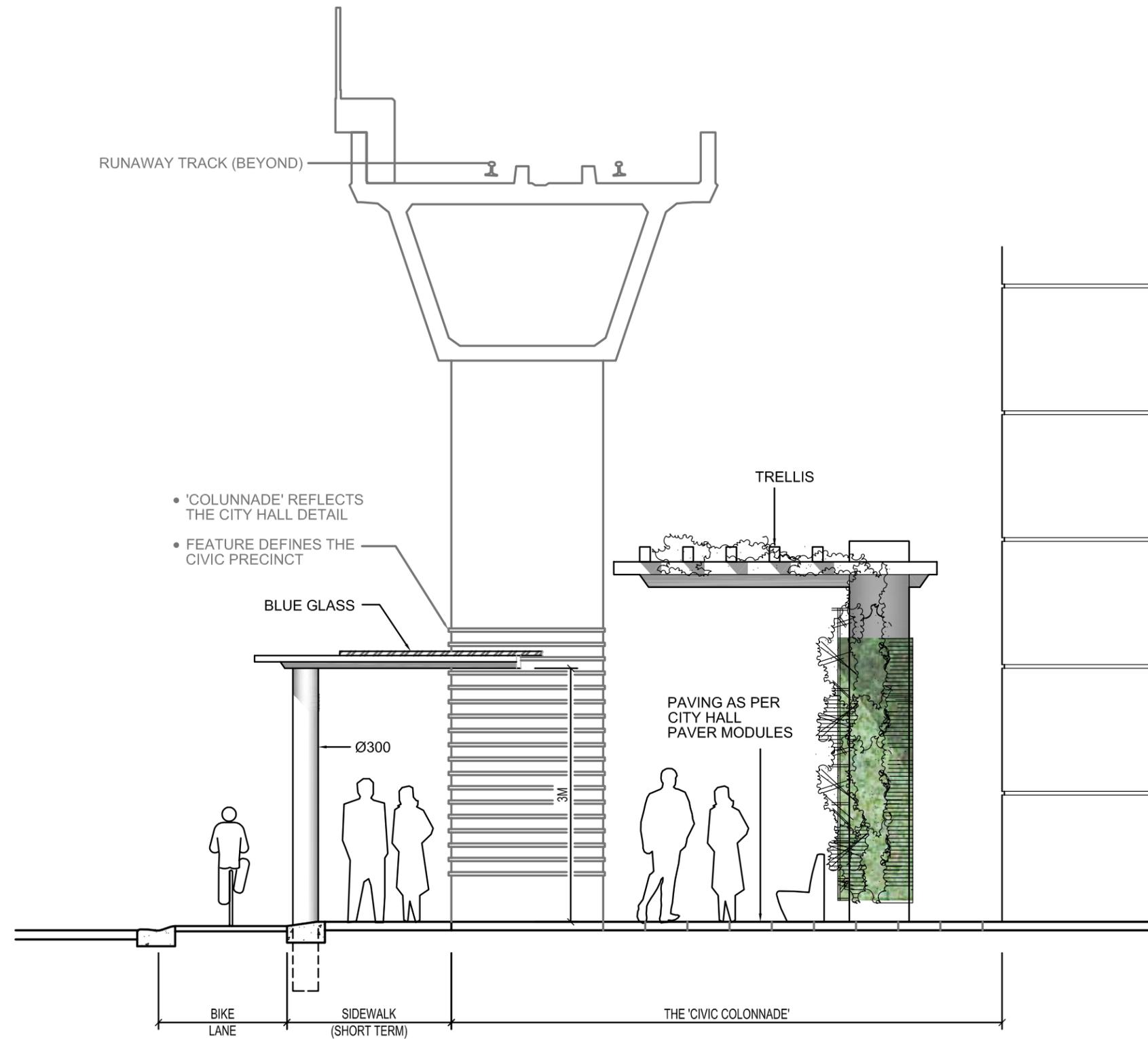
As development opportunities occur on the east side of No. 3 Road from Richmond-Brighthouse transit exchange, southbound to Granville Avenue, it is anticipated that the current sidewalk will be widened to create a broad pedestrian mall linking the transit station and City Hall.

Thus, this transit plaza will take on the expression of a linear walkway, a convenient and engaging way to 'window shop' on one's journey to and from the City Hall precinct.

Vision Statement

Broad pedestrian promenade linking the Transit Station with Richmond City Hall and the Civic Precinct





Richmond Civic Colonnade

Major Precinct Components

Landmark building on residual property adjoining/adjacent to terminus transit station

Purpose built Transit-Oriented Development (TOD) feature high density, mixed land-at terminus station

East-west bus mall perpendicular to No. 3 Road south of the transit station

Broad pedestrian promenade on the east side of No. 3 Road extending south to Richmond City Hall and the Civic Precinct

Overhead canopy system linking the transit plaza and the civic precinct

Major fronting building redevelopment along both the east & west side of No. 3 Road

Retail 'High Street' pre-eminent exclusive shopping street, distinctive, modern architecture, high quality materials, etc.

New east-west road between Buswell Street & No. 3 Road immediately south of the bus/transit mall

Pedestrian connection across No. 3 Road at City Hall linking to the east-west 'Civic Precinct Pedestrian Street'

No. 3 Road 'Gateway' at Granville Street utilizing major water element on both sides of No. 3 Road at Granville Ave

Implications

Wider building setbacks on the east side of the street

East side fronting redevelopment will contribute to the creation of a pedestrian enhanced boulevard treatment

West side fronting redevelopment will bring the retail development closer to the street creating a continuous street wall

Creation of shorter, more walk able city blocks along this section of No. 3 Road

Roadway realignment to accommodate the bike lane will result in the additional street trees relocation

Section 4

Engineering Design

Roadway Design

This report makes recommendations for the No. 3 Road Restoration Project resulting from the present east side construction of the Canada Line Rapid Transit System and according to the Richmond City Council “Approved Streetscape Concept Design” between Bridgeport Road and Granville Avenue.

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Introduction 1

1.0 Introduction

This Engineering Report makes recommendations for the No.3 Road Restoration Project resulting from the present construction of the Canada Line Rapid Transit System and according to the Richmond City Council "Approved Streetscape Concept Design" between Bridgeport Road and Granville Avenue.

The Canada Line Project consists of an elevated rapid transit system generally along the east side of the No. 3 Road extending south to Saba Road. In the short term there will be 3 elevated transit stations along this section of No. 3 Road including:

1. Aberdeen Station at the south east corner of Cambie Road
2. Lansdowne Station at the north east corner of Lansdowne Road
3. Richmond Brighthouse Station, the south terminus, at the south east corner of the Saba Road

In the long term, there will be a future Capstan Station located at the north east corner of Capstan Way.

The approved conceptual design for No.3 Road includes a Short Term and a Long Term vision for the reconstruction as west side development takes place, as is illustrated on the "Option C" Short Term and Long Term typical cross sections provided in **Section 12.1** of this report. This design will focus on the Short Term concept development within the existing road right-of-way with due consideration to the Long Term concept. The streetscape design will integrate with existing conditions, accesses and adjacent properties along No.3 Road.

Some of the special features and components of the project include:

- Tiered bike lanes along both sides of No.3 Road where right-of-way permits (east side complete, west side incomplete).
- Double davit arm street lighting in the centre median where width permits (by others).
- Pedestrian lighting located in the boulevard/plaza areas as required (by others).
- Station plazas, intersection plaza areas and mid-block plazas to be built where right-of-way permits.
- Mixture of deciduous and coniferous street trees in the centre medians and at random boulevard locations.

Previous design history from the 98B Line Project completed on No.3 Road in 1998-1999 was used along with very limited design and construction information from Canada Line Rapid Transit Inc (CLCO) to develop this preliminary design. Several design assumptions were made in consultation with the City of Richmond with respect to design and construction details including but not limited to:

- Utilize as much of the existing west side curb and gutter north of Alderbridge Way as possible in developing the Short Term concept.
- Match existing longitudinal asphalt pavement surfaces with new roadside and median curb and gutters to minimize impacts on adjacent properties and to preserve existing road pavements where feasible.
- Horizontal alignment developed parallel and adjacent to CLCO columns where feasible with approximately a 0.5m shy distance from east edge of bike path to CLCO column faces.
- Maintain existing No. 3 Road lane widths and left turn storage lengths, where possible. The exception is the southbound to eastbound movement at Anderson Road, which will be closed by the continuous median. The City of Richmond should coordinate this closure with Coast Mountain Bus. A second exception is the southbound left-turn movement Alderbridge Way.
- Minimize extra right-of-way requirements.
- Construct east side of roadway to Long Term cross section requirements where possible.
- Reduce intersection curb return radii to a minimum (ie. 7m) in order to improve pedestrian mobility and safety.
- All intersections are to be raised (except Granville Avenue, Sea Island Way, and Bridgeport Road) with an appropriate transition slope length (i.e. minimum 10m).
- A Pedestrian Crossing will be provided at Anderson Road.
- Assumed "Before Construction Condition" of the No. 3 Road site: all the existing sidewalks, asphalt pavement, and east and west side curb and gutter will be left in place by CLCO; whereas all of the raised medians will have been removed and paved by CLCO.

For engineering design and estimating purposes the No.3 Road Project has been divided into 4 Sections:

- Section I – Granville Avenue to Westminster Highway (length 825m)
- Section II – Westminster Highway to Alderbridge Way (length 795m)
- Section III – Alderbridge Way to Cambie Road (length 810m)
- Section IV – Cambie Road to Bridgeport Road (length 950m)

(Total length 3,380m)

Existing Conditions **2**

2.0 Existing Conditions

2.1 Roadway

No. 3 Road was upgraded in 2000 to 4 lane roadway with 2 exclusive centre bus lanes between medians north of Westminster Highway which have since been decommissioned by CLCO. As a part of the CLCO construction project some of the medians have been removed and paved to shift the 4 lanes of general purpose traffic to the west side of the road to facilitate the east side Rapid Transit construction.

The existing pavement is generally in good condition with much of it having been reconstructed in 2000 along with the recent CLCO utility and pavement infilling work. The existing roadside curbs and gutters and sidewalks remain in place with some east side pavement and centre median removals by CLCO.

The existing drainage system is sufficient to accommodate new construction with some minor catchbasin adjustments, relocations, and replacements to suit the new curb lines and plaza areas.

Base plan information was established using recent additional west side McElhanney survey information and east side CLCO design information. New utilities relocation work and ongoing removals work by CLCO has resulted in significant ongoing changes to the roadway section.

2.2 Vegetation

Most of the boulevard trees that have been planted by the City in tree pockets adjacent to the roadside curb have been or will be removed by others in advance of construction.

Several private frontage hedges and planters exist along No.3 Road that will be preserved where feasible and enhanced where required in coordination with streetscape work being completed under this contract.

The mature trees adjacent to the City Hall at the south end of the project will be protected and preserved during construction of the new west side sidewalk.

Design Criteria **3**

3.0 Design Criteria

The Design Criteria for No.3 Road has been developed in accordance with the City of Richmond's "Approved Streetscape Concept" and right-of-way and infrastructure constraints. For the most part it is to the previously approved design standard that was constructed in 2000 for the 98B Line Project that was constructed in coordination with the City of Richmond and TransLink.

The approved Option C Streetscape Concept replaces the standard roadside barrier curb and gutter with a rollover curb and gutter separating the tiered bike lane from the vehicle lane and a special flush "Richmond Urban Curb" separating the bike lane from the sidewalk/boulevard area.

The classification of No.3 Road is Urban Collector/Arterial Divided, with Design Speed of 50 km/h. For design criteria details, please refer to **Section 12.2** "Sign Off List for Road Design Criteria (Feb 8, 2007)".

As was previously established in the initial stages of the Streetscape Concept Study, one of the key objectives of this project was to enhance the pedestrian and cyclist realm along the roadway, while at the same time maintaining the functionality of No. 3 Road. One of the design features introduced to achieve this objective was the Raised Intersection concept similar to that suggested in "Canadian Guide to Neighbourhood Traffic Calming (TAC/ITE)". As noted in the Guide special care is required in the design of Raised Intersections to verify that intersection ramps operate safely at the posted speed (in this case 50 km/h design speed), that positive drainage is maintained, and that textured crosswalk materials improve visual and tactile identification of the crossing. To achieve the aforesaid, we have proposed several changes to the TAC detail:

- The approaching/departing ramps will be extended to a 10m length, with an elevation change of 65mm. This effectively provides a gradual ramp slope of 0.65%, which will produce a minimal longitudinal grade change.
- A linear slope is proposed instead of a typically sinusoidal slope on the approaching/departing ramps.
- The solid white reflective warning triangles on the approaching ramps will not be required.
- No special warning sign will be required.
- For details, refer to the Raised Intersection 1 in **Section 1.0**.

Traffic analysis was not a part of this assignment; however, the following items were incorporated into the design as directed by the City of Richmond:

- Existing left-hand turn storage lengths were maintained with the exception of southbound lefts at Alderbridge Road which have been deleted due to present west side property constraints.
- 'U' turns will no longer be permitted due to the narrower road width and insufficient U-turning radii.
- Median construction south of Westminster Highway will impact some existing driveway movements and side street accesses (i.e. Anderson Road).

The design vehicle templates that were applied to No.3 Road intersections are:

- Right Turn Vehicle: MSUTAC or WB-19TAC (As per **Section 12.2**)
- Simultaneous Left Turn Vehicles: MSUTAC (As per **Section 12.2**)
- Single Left Turn Vehicle: WB-19TAC (As per **Section 12.2**)

Proposed Road Alignment **4**

4.0 Proposed Road Alignment, Profile and Cross Section

4.1 Road Alignment

The proposed road alignment runs generally between the proposed east side Canada Line guideway columns and the existing west side curb and gutter, balancing through the pinch points created by the Lansdowne Station, Aberdeen Station, future Capstan Station, and 2 guideway sections north of Alderbridge and north of Cambie Road. The alignment is mainly controlled by the Canada Line alignment and stations on the east side. The principles used to establish the alignment are:

- To provide 0.50m (minimum 0.30m at pinch points) shy line offset distance from edge of the east side bike lane to structures (e.g. Canada Line columns or stations);
- To minimize reconstruction of the existing west side curb and gutter north of Alderbridge Way.

Section I (Granville Avenue to Westminster Highway) – This section is comprised of 2 tangent sections with minimal deflection, and there are no curves. The PI is at the Cook Road intersection (Station 104+10).

Section II (Westminster Highway to Alderbridge Way) – There are 4 curves to allow the road meandering along the guideway and around the Lansdowne Station.

- At the north west corner of Firbridge Way, the space is limited by a large BC Hydro Transformer, so the bike lane is shifted to the west of the transformer, and a barrier curb and gutter is used along this section.
- Across from the Lansdowne Station on the west side, the pavement intrudes into the existing boulevard, so there is a short section of new pavement structure required.

Section III (Alderbridge Way to Cambie Road) – There are 3 PI's and 2 curves.

- At the north west corner of Alderbridge Way, No.3 Road is being widened into the Sport Mart property. The resulting issues (e.g. property acquisition, new sidewalk, new

pavement, utility relocations, etc) are being dealt with by the Canada Line construction.

- North of the Sport Mart up to Cambie Road, the proposed alignment can be constructed without impacting the west side existing curb and gutter. This provides the possibility of cost savings if the City decides not to replace the existing west side sidewalks with new ones until future redevelopment takes place.

Section IV (Cambie Road to Bridgeport Road) – There are 4 curves required to accommodate the future Capstan Station and the Canada Line column R090 which is located in the median immediately north of Sea Island Way.

- There are 2 short sections (totalling 220m long) of west side existing curb and gutter impacted that will be reconstructed to the west.

4.2 Profile

The proposed gutter profiles will be established to generally follow the existing pavement grades as much as possible while maintaining smooth transitions and positive drainage. It has been assumed that no continuous pavement milling and overlay will be required under this contract.

Some minor sags and crests in the road surface may require milling or overlaying to facilitate drainage and pavement match lines. These will be detailed as a part of the Detailed Design.

4.3 Cross Section

The proposed cross section will generally match the existing asphalt road surface wherever possible.

Side street tie-ins will be developed based on intersection curb return tie-ins, overlays, and drainage requirements. The raised centre medians will vary in width from 0.6m at the narrowest to between 1.5m and 4.6m to accommodate a 3.1m wide left-turn lane.

Bus stops will be located within the combined width of the curb side travel lane and the bike lane asphalt pavement structure. The 1.5m bike lane will be modified at bus stop locations to accommodate passenger drop-offs. Discussions are presently underway between the City of Richmond and Coast Mountain Bus. The proposed bus stop locations are listed in **Section 12.3**.

Pavement Strategy 5

5.0 Pavement Strategy

The existing paved road surface elevation is being maintained where possible along No. 3 Road in order to match elevations of adjacent buildings and utility structures as well as to preserve west side curbs and gutters that are designated to be retained.

Neither geotechnical nor pavement condition investigations have been undertaken on this assignment. The existing pavement thickness and granular base structure will be used in areas of nominal widening and in any areas that may require localized repair.

It is intended to neatly saw cut, excavate, and repave a 300mm wide pavement slot adjacent to new sections of extruded curb and gutter for both the median barrier curbs and the new roadside rollover curbs to facilitate extruded curb and gutter installations.

Storm Sewer & Drainage Works 6

6.0 Storm Sewer and Drainage Works

The existing storm sewer system and catchbasin leads will be utilized to service the new catchbasin locations and adjustments. It is understood that the existing surface drainage system will be left in place by CLCO and removed under this contract.

- Section I
The existing storm sewer runs under the east side existing sidewalk. There will be 17 new catchbasins, of which 9 will need new leads to connect to the existing storm sewer and 1 needs to connect to an existing manhole. 16 existing catchbasins will need adjustment on their top elevations, and 1 needs to be relocated.
- Section II
There is an existing concrete box culvert on the east side of the road, and 2 storm sewers on the west side. The box culvert has been diverted between Firbridge and Ackroyd, and at the Lansdowne Station location, by CLCO. There will be 10 new catchbasins, of which 7 will need new leads to connect to the existing storm sewer and 3 need to connect to the box culvert. 5 existing catchbasins will require adjustment on their top elevations, and 10 need to be relocated.
- Section III
The existing concrete box culvert runs throughout this section on the east side. The box culvert has been diverted at the Aberdeen Station location, by CLCO. There will be 19 new catchbasins, of which 2 will need new leads to connect to the existing storm sewer and 8 need to connect to the box culvert. 3 existing catchbasins will need adjustment on their top elevations, and 1 needs to be relocated.
- Section IV
There are 2 existing storm sewer mains running in parallel through this section. There will be 13 new catchbasins, of which 9 will need new leads to connect to the existing storm sewers and 2 need to break into and connect new leads to existing manholes. 8 existing catchbasins will need adjustment to their top elevations, and 4 need to be relocated.

There will also be minor manhole adjustments in each section.

Best Management Practices:

No. 3 Road is characterized by a large percentage of impervious surfaces over top of poorly draining soils (silt, sand, and clay) with a high water table (0m to 1m geodetic). The following is an overview of the appropriate stormwater management strategies.

- Infiltration: There are very limited opportunities for infiltration due to the poorly drained soils and a high water table. At best, we could direct some of the adjacent impervious surfaces into the limited landscaped areas. This would provide some infiltration, biofiltration, and even some evapotranspiration of the runoff. Anything beyond the limited capacity of these landscaped areas will simply spill over into the regular drainage system.
- Detention: The City's oversized storm sewers already act as large detention tanks upstream of their pump stations. Additional detention storage may assist their pumps slightly (probably imperceptibly), but would provide no environmental benefit to the receiving waters (the Fraser River). Therefore, we don't recommend this option.
- Treatment: There is some potential for improving upon the normal practices regarding stormwater quality. Trapping hoods on CB's, "stormceptors", or oil/silt separators may be feasible. The limited use of the landscaped areas as noted above can provide some biofiltration. The road does not provide enough room to entertain any larger treatment schemes such as wetlands. Any larger scale schemes would have to be provided away from No.3 Road.
- Retention and reuse: This is not advisable without treatment due to the poor quality of urban runoff in this area, and the treatment options are limited as noted above. Therefore, we don't recommend considering this further.

Based on the above analysis, the recommendations are:

- Utilize the City's storm system as a detention system to moderate flows through the pump stations and into the Fraser River;
- Direct drainage into landscaped areas, where feasible, for biofiltration and some infiltration;
- Use trapping hoods on CB's and consider using "stormceptors", oil/silt separators, or similar mechanical treatment type devices.

Other Utilities 7

7.0 Other Utilities

7.1 Water

The existing watermains are generally clear of the reconstruction works with only a few potential conflict locations.

- In Section I, the existing watermain is located mainly in the east side curb lane and west side through lane, which will not be impacted by the work.
- In Section II, there will be 60m of existing watermain located under the proposed median around the Ackroyd intersection.
- In Section III, there will be 40m of existing watermain located under the proposed median north of Alexandra, 225m north of Leslie, and 20m south of Cambie.
- In Section IV, there will be 40m of existing watermain located under the proposed median north of Sea Island Way.

There is a possible conflict with proposed double davit street lighting depending on the depths of the watermains in these areas. Test holes will be recommended to confirm depths and review potential shallow base options for the street lighting poles.

The works related to the watermain items include adjusting existing water valve boxes / service boxes, relocating existing fire hydrants (provisional), and supply and install irrigation service connections for median and boulevard trees plus street light baskets and water services (provisional).

7.2 Sanitary

The existing mains and services are not impacted by this project. The works related to the sanitary items include minor manhole adjustments and potential clean out relocations.

7.3 Terasen Gas

The west side gas distribution line should not be impacted by the work. Minor valve and service box adjustments are all that will be required. The contact person at Terasen Gas is Neil Hourihane.

7.4 BC Hydro

BC Hydro's underground distribution system is located predominantly on the east side of No. 3 Road beneath the proposed inside northbound lane from Granville Avenue to Cambie Road. On the west side of No. 3 Road between Cambie Road and Sea Island Way, there are wood poles jointly owned by BC Hydro and Telus. Based on the currently available information, no major conflicts have been identified except for a newly relocated transformer by CLCO. From the Canada Line's utility relocation design drawing, it seems that this transformer sits right on the proposed east side rollover curb near the Alderbridge Way intersection. This situation is to the contrary of what we have learned from BC Hydro's Gerry Gerwin. According to an email from Mr. Gerwin (October 6, 2006), "All (BC Hydro) facilities on No. 3 Road between Westminster Highway and Cambie Road were located to compliment Richmond proposed future street landscape design". It is unlikely that this transformer's new location will conflict with the proposed rollover curb. Therefore, the Class C Cost Estimate did not take into account the relocation cost of this transformer from its current new location. However, the above information needs to be reconfirmed when the AutoCAD drawing (Drawing No. 016899-1241-41DD-R1-5058, Revision 1, 2006-08-10) is available. (Currently, the City of Richmond is unable to provide this drawing.)

The southbound bike lane just north of Firbridge Way has been shifted to the west to protect the existing above ground transformer.

Sidewalks will be constructed to match the elevation of BC Hydro vaults and chambers, many of which are presently located in walkways.

7.5 Telus

Most of the west side underground Telus lines are located below the southbound travel lanes and will not be impacted by the work. From Alexandra Road to Cambie Road, there are underground Telus lines under the existing east sidewalk, and there will be minor adjustments on manholes. Telus does not have any plans to relocate or remove the poles on the west side of No. 3 Road between Cambie Road and Sea Island Way. As mentioned in Section 7.4, the poles are jointly owned by BC Hydro and Telus. Based on the current design for No. 3 Road, there is unlikely a requirement to relocate the poles in the short term. Relocation may be necessary in the long term when the City of Richmond decides to implement the Long Term Visions for No. 3 Road.

According to a meeting with Telus engineering staff (Brad Keen and Tom Stefanek), the major impact to Telus will be on a SAC cabinet located in the north side median of the Lansdowne Road intersection. This SAC cabinet will have to be relocated to the east or west side sidewalk area. Another SAC cabinet located on the south side median of the Browngate Road intersection will be maintained and protected by the median curb and possible bollard posts. Telus maintenance access details are under discussion.

Minor adjustments to manhole frame and cover elevations will be required in areas of pavement widening and intersection paving.

7.6 Shaw Cable

According to the contact with Shaw Cable's planning staff (Bill Lo), there are 2 Shaw pedestal boxes and 1 turtle box that will be affected on No. 3 Road:

- In front of the Sport Mart property (just across from Alexandra Road), there is a Shaw pedestal box right at the back of the existing sidewalk. This location is on the proposed barrier curb. The City of Richmond has confirmed that this box will be relocated by CLCO. Therefore, the Class C Cost Estimate does not include the related cost.
- Across from Ackroyd Road on the west side of No. 3 Road (address: #5811 No. 3 Road), there is a Shaw pedestal box next to a Telus SAC cabinet. They are both located at the back of the existing sidewalk, but will be in the proposed wide sidewalk plaza area. For this pedestal box, the cost will involve civil engineering cost (above \$10,000) and possible fiber. According to Shaw planning staff, if fiber is involved, the relocation can be quite expensive. The relocation cost for the Telus SAC cabinet will be above \$150,000. Since the location of these 2 boxes is not severely obstructive to the designed functions of No. 3 Road, we suggest that they not be relocated, and that the City of Richmond consider protective solutions for pedestrians to avoid possible damage and liability claims.
- At the north median of the Lansdowne Road intersection and next to the Telus SAC cabinet, there is a Shaw turtle box. This turtle box needs to be relocated. The relocation fee includes equipment cost (\$5,000/each) and civil work cost based on the distance from the current Telus manhole it is using (\$300/m). Assuming 16m relocation distance, the cost is approximately \$10,000 to \$15,000.
- As mentioned in the previous 2 sections, there are wood poles jointly owned by BC Hydro and Telus on the west side of No. 3 Road between Cambie Road and Sea Island Way. Currently, Shaw is renting space from them. Based on the current

design for No. 3 Road, there is unlikely a requirement to relocate the poles in the short term. Therefore, there is no impact on Shaw in this area.

Proposed Sidewalks & Medians **8**

8.0 Proposed Sidewalks & Medians

A variable width sidewalk/plaza area is proposed to integrate the new streetscape with the adjacent commercial developments, civil plazas, and transit stations. In the wider sidewalk areas, a variable crossfall between 1% and 2% along with a possible dished cross section where necessary is proposed.

A continuous raised, landscaped median is proposed with left turn bays at major intersections.

Curbside Bus Stops have been located in coordination with Coast Mountain Bus requirements along No. 3 Road. Recessed bus bay are not required due to constrained right-of-way and the City's approved Streetscape Concept Design. For bus stop locations, refer to **Section 12.3**.

Traffic Signals and Street Lights **9**

9.0 Traffic Signals and Street Lights

9.1 Traffic Signals

Traffic signal works are not part of this assignment, and will be coordinated between CLCO and the City of Richmond.

Although traffic signal work was outside of the scope of this contract, IBI Group completed some analysis on the feasibility of eliminating the southbound left turn bays along No.3 Road at Capstan Road and at Alderbridge Way, if the traffic could be satisfactorily accommodated by way of either protected permissive or split-phase operation. The analysis indicated that the intersection of Capstan Road and No.3 Road could operate at near satisfactory levels without a left turn bay, but that at Alderbridge Way operations would fail without a left turn bay/phase due to PM peak demands. The City of Richmond confirmed that this issue will be dealt with internally.

9.2 Street Lights

Although originally not a part of this assignment, good urban street lighting design will be developed with double davit arm median lighting where space permits. When sufficient space for street lighting is not available in the narrower median, curb side lighting will be provided.

Construction Staging 10

10.0 Construction Staging

No. 3 Road is a major corridor in Richmond. The majority of the 2000 construction on No. 3 Road was completed as night works. The construction of this design will most likely have to be completed during off-peak night time hours and it is anticipated that single side widening will have to be completed to minimize traffic disruptions.

The traffic management strategies should include:

- A minimum of one lane northbound and one lane southbound should be maintained throughout all construction activity. Left and right turn restrictions may be in effect, and U-turns should not be permitted along No. 3 Road in the working area.
- Pedestrian and vehicle access to businesses in the construction area should be maintained throughout construction, although temporary inconvenience may occur while crews are working in an immediate area. Businesses in the construction area remain open and accessible.
- The work may require some bus stops to be shifted temporarily along No. 3 Road during construction.
- Crews should endeavour to minimize disruption to businesses and residents in the area.

Cost Estimates 11

11.0 Cost Estimates

The assumptions for the Preliminary Class C Cost Estimate (Civil Works) are:

- Preserve west side southbound curb and gutter and lanes north of Leslie.
- Preserve most of paved road structure south of Westminster.
- It is assumed that the before construction condition of No.3 Road is as follows: all the existing sidewalks, asphalt pavement, and east side curb & gutter will be left in place by CLCO; all the raised medians will be removed by CLCO.
- Within the scope of this project, all existing sidewalks will be replaced with new concrete sidewalks.
- All intersections are to be raised (except at Granville Avenue, Sea Island Way, and Bridgeport Road).

The Engineering component has been incorporated with the Urban component to provide a Class C Cost Estimate as provided in Appendix 3 of this report.

Supporting and Reference Materials **12**

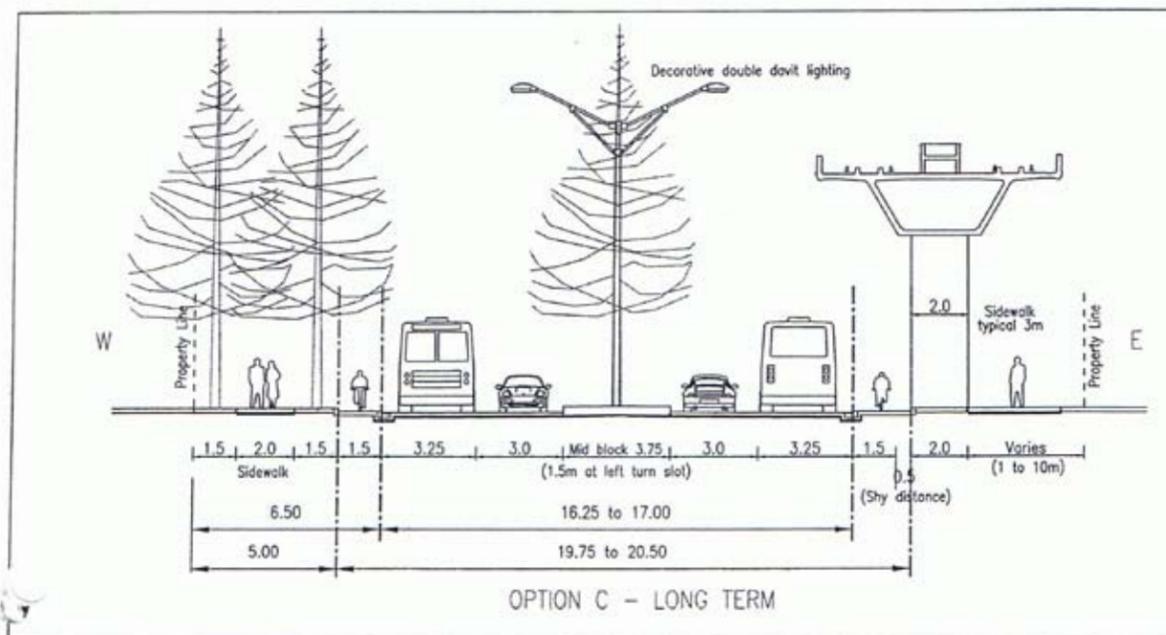
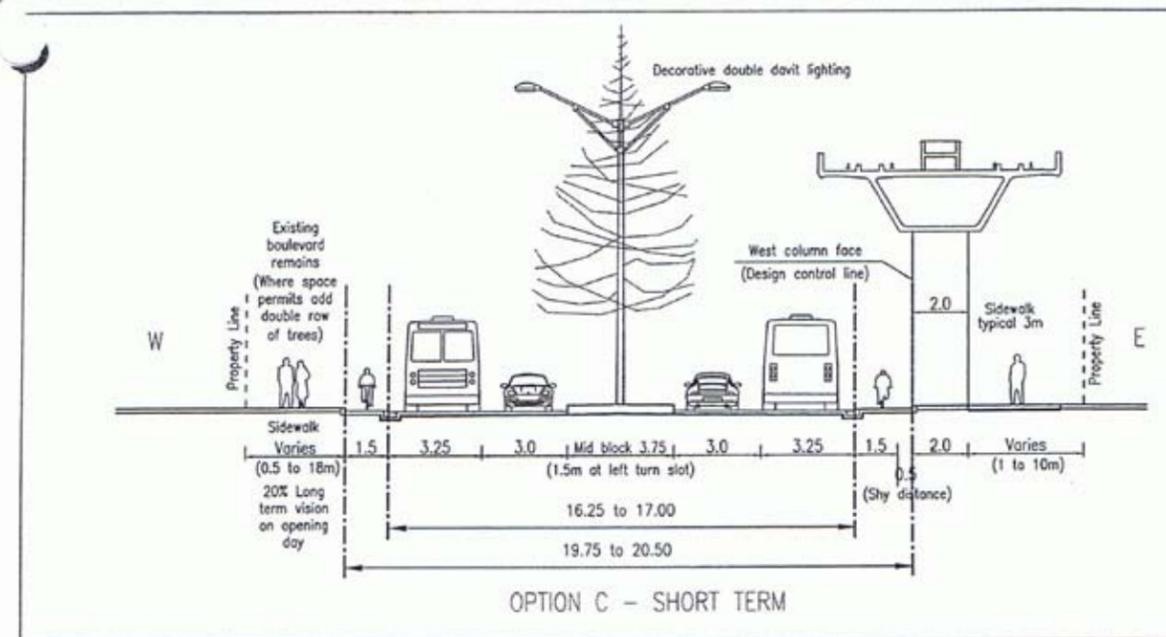
Preliminary Design for No.3 Road Restoration Project
January 2007

19



12.1 City of Richmond No.3 Road Cross-section – Option C

31-May-2006



12.2

TV1500TVA (Revised on February 8, 2007)

**City of Richmond
No. 3 Road Restoration
SIGN OFF LIST FOR ROAD DESIGN CRITERIA**

- 1. Road Classification: Urban Collector/Arterial Divided 50 km/h
- 2. Cross Section:

Lane Widths	Richmond Requirements
Inside Lane:	3.00 m
Curb Lane / Bus Lane:	3.25 m
Left Turn Lane:	3.1 m (with raised median) 3.3 m (without raised median)
Raised Median Nose:	0.6 to 1.5 m
Bike Lane:	1.50 m
Sidewalks:	1.50 m (where ROW permits)

- 3. Shy line offset distance from edge of the bike lane to structures (e.g. Canada Line columns or stations): 0.45m to 0.5m
- 4. Intersection Layout:
 - a) Roadside Rollover Curb Return Radii: 7m (As per Table 1)
 - b) Cross Walk: 3 m
 - c) Right Turn Vehicle: MSUTAC or WB-19TAC (As per Table 2)
 - d) "Simultaneous" Left Turn Design Vehicles: MSUTAC (As per Table 2)
 - e) "Single" Left Turn Vehicle: WB-19TAC
 - f) U-Turns will no longer be permitted.
- 5. Left Turn Storage: Not to exceed existing storage lengths
- 6. Driveways: Right-in/Right-out only
- 7. Stopping Sight Distance: 65 m for 50 km/h (TAC)
- 8. Minimum Longitudinal Gutter Grade 0.36% (±) (Richmond)
- 9. Driveway Width: Maximum 15m depending on land use (TAC)
- 10. Raise Intersections to enhance pedestrian/cyclist equity.

12.2

TV1500TVA (Revised on February 8, 2007)

- 11. Lane Taper Geometry: 30:1 for intersection transition lane shifts (Exception: 20:1 at Sea Island Way)
- 12. Richmond Urban Curb: The City of Richmond is proposing a modified urban low face curb section, of which the City's Design Specifications do not contemplate.
- 13. Lane Widths: The City of Richmond is proposing a reduced arterial pavement and associated 5 lane section from the desirable width of 18.9m at intersections to 15.6m plus median widths.

Attachment:

- (1) Table 1 "Intersection Curb Return Radius Summary"
- (2) Table 2 "Intersection Movement Constraints, and Simultaneous Left Turns"
- (3) City of Richmond No.3 Road Cross-section – Option C

Approved By:

CITY OF RICHMOND

Date

12.2

**City of Richmond – No. 3 Road Restoration
TABLE 1 Intersection Curb Return Radius Summary**

TV1500TVA
24-Nov-2006

Street Name		Curb Return Radii (m)				Notes
		SW Corner	NE Corner	SE Corner	NW Corner	
Granville Avenue	Existing	N/A	7-8	N/A	9	Note 1 Note 2
	Proposed	N/A	6	N/A	7	
Anderson Road	Existing	N/A	7.5	7	N/A	
	Proposed	N/A	7	7	N/A	
Park Road	Existing	9	8-9	8-9	9	
	Proposed	7	7	7	7	
Cook Road	Existing	9	9	9	8-9	
	Proposed	7	7	7	7	
Saba Road	Existing	5-6	8-9	8-9	5-6	
	Proposed	7	7	7	7	
Westminster Highway	Existing	5-6	6-7	7	9	
	Proposed	7	7	7	7	
Firbridge Way	Existing	9	N/A	N/A	9	
	Proposed	7	N/A	N/A	7	
Ackroyd Road	Existing	3	7	7	3	
	Proposed	7	7	7	7	
Lansdowne Road	Existing	9	15	9	9	
	Proposed	7	7(note 3)	7	7	
Lansdowne Mall Access	Existing	7	9	9	7	
	Proposed	7	7	7	7	
Alderbridge Way	Existing	9	15	15	14	
	Proposed	7	7(note 3)	7(note 3)	10	
Alexandra Road	Existing	N/A	9	9	N/A	
	Proposed	N/A	7	7	N/A	
Leslie Road	Existing	9	9	9	15	
	Proposed	9(existing)	7	7	15(existing)	
Browngate Road	Existing	N/A	N/A	N/A	N/A	
	Proposed	N/A	7	7	N/A	
Cambie Road	Existing	15	12.5-16.25	9	15	
	Proposed	15(existing)	16.25	10	15(existing)	
Yaohan Access	Existing	N/A	9	9	N/A	
	Proposed	N/A	10	10	N/A	
ABC Country Right in/out	Existing	N/A	9	9	N/A	
	Proposed	N/A	9-10	9-10	N/A	
Capstan Way	Existing	9-10	12	9	9-10	
	Proposed	9-10(existing)	7(note 3)	7	9-10(existing)	
Sea Island Way	Existing	16	15	50	30	
	Proposed	16(existing)	13	50	7	

Notes:

- No.3 Road Preliminary Design incorporated Richmond's reduced curb return radii (7m) to suit pedestrian/cyclist friendly cross section from the urban design concept.
- Tactile curb return apron to be located between curb return and offset bollards to provide additional space for truck tracking turning movements (i.e. WB-19TAC).
- Curb return radii significantly reduced assuming the right-turning vehicle may maneuver and track onto adjacent travel lanes and/or curb return apron.

12.2

**City of Richmond – No. 3 Road Restoration
TABLE 2 Intersection Movement Constraints, and Simultaneous Left Turns**

TV1500TVA
24-Nov-2006

Street Name	Vehicle Type	Right Turn (Note 1)				Simultaneous Left Turns	
		From Side Street EB (SW Corner)	From Side Street WB (NE Corner)	From No. 3 RD NB (SE Corner)	From No. 3 RD SB (NW Corner)	Opposing MSUTAC (Note 3) N-S Direction	E-W Direction
Westminster Highway	Passenger Car	Yes	Yes	Yes	Yes	Yes	Yes
	MSUTAC	Yes (note 2)	Yes (note 2)	Yes (note 2)	Yes (note 2)		
	WB-19TAC	No	No	No	No		
Ackroyd Road	Passenger Car	Yes	Yes	Yes	Yes	Yes	Yes
	MSUTAC	Yes (note 2)	Yes (note 2)	Yes (note 2)	Yes (note 2)		
	WB-19TAC	No	No	No	No		
Lansdowne Road	Passenger Car	Yes	Yes	Yes	Yes	Yes	Yes
	MSUTAC	Yes (note 2)	Yes (note 2)	Yes (note 2)	Yes (note 2)		
	WB-19TAC	No	Yes (note 2)	No	No		
Lansdowne Mall Access	Passenger Car	Yes	Yes	Yes	Yes	Yes	Yes
	MSUTAC	Yes (note 2)	Yes (note 2)	Yes (note 2)	Yes (note 2)		
	WB-19TAC	No	No	No	No		
Alderbridge Way	Passenger Car	Yes	Yes	Yes	Yes	Yes	Yes
	MSUTAC	Yes (note 2)	Yes (note 2)	Yes (note 2)	Yes (note 2)		
	WB-19TAC	No	Yes (note 2)	No	Yes (note 2)		
Alexandra Road	Passenger Car	N/A	Yes	Yes	N/A	N/A	N/A
	MSUTAC	N/A	Yes (note 2)	Yes (note 2)	N/A		
	WB-19TAC	N/A	No	No	N/A		
Leslie Road	Passenger Car	Yes	Yes	Yes	Yes	Yes	Yes
	MSUTAC	Yes (note 2)	Yes (note 2)	Yes (note 2)	Yes (note 2)		
	WB-19TAC	No	No	No	No		
Browngate Road	Passenger Car	Yes	Yes	Yes	Yes	Yes	Yes (Future)
	MSUTAC	Yes (note 2)	Yes (note 2)	Yes (note 2)	Yes (note 2)		
	WB-19TAC	No	No	No	No		
Cambie Road	Passenger Car	Yes	Yes	Yes	Yes	Yes	Yes
	MSUTAC	Yes (note 2)	Yes (note 2)	Yes (note 2)	Yes (note 2)		
	WB-19TAC	Yes (note 2)	Yes (note 2)	Yes (note 2)	Yes (note 2)		
Yaohan Access	Passenger Car	N/A	Yes	Yes	N/A	N/A	N/A
	MSUTAC	N/A	Yes (note 2)	Yes (note 2)	N/A		
	WB-19TAC	N/A	No	No	N/A		
ABC Country Right in/out	Passenger Car	N/A	Yes	Yes	N/A	N/A	N/A
	MSUTAC	N/A	Yes (note 2)	Yes (note 2)	N/A		
	WB-19TAC	N/A	No	No	N/A		
Capstan Way	Passenger Car	Yes	Yes	Yes	Yes	Yes	Yes
	MSUTAC	Yes (note 2)	Yes (note 2)	Yes (note 2)	Yes (note 2)		
	WB-19TAC	No	No	No	Yes (note 2)		
Sea Island Way	Passenger Car	Yes	Yes	Yes	N/A	N/A	Yes
	MSUTAC	Yes (note 2)	Yes (note 2)	Yes (note 2)	N/A		
	WB-19TAC	Yes (note 2)	Yes (note 2)	Yes	N/A		

Notes:

- The City's required 3.0 m fast lane and 3.25 m curb lane on No. 3 Road will only permit right turns from side street up to MSUTAC type vehicles at most intersections.
- WB-19TAC and MSUTAC type vehicles' right turns assume that vehicle turning template occupies more than one travel lane in the travel direction.
- The current design supports simultaneous left turns at signalized intersections in both the north/south and the east/west directions with opposing MSUTAC type vehicles. However, certain median bull noses will require modifications which will be finalized in the 100% design submission.
- MSUTAC is a standard design vehicle from TAC (1999), equivalent to SU9 from TAC (1984); WB-19TAC is a standard design vehicle from TAC (1999), equivalent to WB-17 from TAC (1984).

12.3

Future Permanent Bus Stop Locations on No. 3 Road						
Stop #	Dir	On Street	Position	At Location	Bus Approach	Typical ID Locations (Note 2)
<hr/>						
1	NB	No. 3 Rd	farside	Anderson Road	Thru	24m farside of Crosswalk
2	NB	No. 3 Rd	farside	Cook Road (Bay 5)	Thru	24m farside of Crosswalk
3	NB	No. 3 Rd	farside	Brighthouse Station Access Road (Brighthouse Station - Position 1)	Potential RT Bus	32m farside of Crosswalk
4	NB	No. 3 Rd	nearside	Saba Road - (Brighthouse Station - Position 2)	Potential RT Bus	32m farside of Crosswalk
5	NB	No. 3 Rd	farside	Saba Road	Thru	24m farside of Crosswalk
6	NB	No. 3 Rd	farside	Ackroyd Road	Thru	24m farside of Crosswalk
7	NB	No. 3 Rd	farside	Lansdowne Road	Potential RT Bus	32m farside of Crosswalk
8	NB	No. 3 Rd	farside	Access Road to Lansdowne Mall	Thru	24m farside of Crosswalk
9	NB	No. 3 Rd	farside	Alderbridge Way	Potential RT Bus	32m farside of Crosswalk
10	NB	No. 3 Rd	farside	Leslie Road	Thru	24m farside of Crosswalk
11	NB	No. 3 Rd	midblock	4200blk (far-side Browngate Road)	Thru	24m farside of Crosswalk
12	NB	No. 3 Rd	farside	Yohan Access Road (future bus stop)	Thru	24m farside of Crosswalk
13	NB	No. 3 Rd	farside	Capstan Way	Thru	24m farside of Crosswalk
<hr/>						
1	SB	No. 3 Rd	farside	Capstan Way	Potential LT Bus	32m farside of Crosswalk
2	SB	No. 3 Rd	farside	Yohan Access Road (future bus stop)	Thru	24m farside of Crosswalk
3	SB	No. 3 Rd	farside	Cambie Road	Potential LT Bus	32m farside of Crosswalk
4	SB	No. 3 Rd	midblock	4200blk (at Richmond Acura)	Thru	24m farside of Crosswalk
5	SB	No. 3 Rd	farside	Leslie Road	Thru	24m farside of Crosswalk
6	SB	No. 3 Rd	farside	Alderbridge Way	Potential LT Bus	32m farside of Crosswalk
7	SB	No. 3 Rd	farside	Lansdowne Road (Position 2)	Potential LT Bus	32m farside of Crosswalk
8	SB	No. 3 Rd	farside	Ackroyd Road	Thru	24m farside of Crosswalk
9	SB	No. 3 Rd	farside	Westminster Hwy	Potential LT Bus	32m farside of Crosswalk
10	SB	No. 3 Rd	farside	Saba Road	Potential LT Bus	32m farside of Crosswalk
11	SB	No. 3 Rd	farside	Cook Road (Bay 1)	Thru	24m farside of Crosswalk
12	SB	No. 3 Rd	nearside	Granville Avenue	Thru	24m farside of Crosswalk
<hr/>						
Notes:						
1 All new and upgraded bus stops should be capable of handling an articulated fleet so as to have the flexibility to use articulated buses in the future. The detail design of all bus stops to be reviewed by CMBC.						
2 In order to accommodate left and right turning articulated bus, the bus stop ID sign must be located at minimum 32 meters farside of cross walk. For straight through approach stops, the ID sign should be located minimum 24 meters farside of crosswalk.						
3 The departure taper farside of the bus stop is an additional 6 m of level bike lane (taper ratio 4:1). The entrance taper ratio of 6:1 should be used for mid-block bus stops.						
4 Each bus stop should be designed to accommodate all types of buses including regular 40' articulated 60' and community shuttle 28' thus avoid door conflict with trees and street furniture. For doorway clearance refer to the attached Transit Infrastructure Design Guidelines, Chapter 3 - Table 3.2.						
5 The total width of the adjacent travel lane and bike lane at a bus stop cannot exceed 4.8 m to discourage vehicles to pass a stopped bus. The proposed combined width of 4.75m (3.25m slow lane and 1.5 bike lane) is acceptable at bus stops. If a shallow bay is considered, minimum of 5.8 m should be provided to allow vehicles to pass a stopped bus; in this case, cyclists who wish to pass a stopped bus would have to merge with passing vehicles.						
6 All bus stops should be wheelchair accessible. This requires minimum width at the bus stops to be 2.75m from the face of curb to any obstruction.						
7 At Skytrain Stations, bus stop locations should be adjusted to suit the Skytrain entrances.						

Section 5

Items Outside of Contract Scope

Supplemental Streetscape Improvement Program

The long-term vision for not only for No. 3 Road, but for Richmond's City Centre is ambitious. Throughout the course of the prior planning studies pertaining to No. 3 a far reaching series of urban design features have been discussed, all aimed at making No. 3 Road a more varied, richly textured streetscape.

Due to cost and policy constraints, some elements deemed necessary to the street's ultimate success have been eliminated from the No. 3 Road Restoration program.

However, not wishing to loose sight of these elements they are included in this section in the hope that they will be reintroduced to Richmond's urban fabric at a later date.

5



Night Markets



Stepped Flower Stand



Flexibility Provided for a Range of Uses



Storefront Window



Kiosks

Intent

Vending opportunities at transit stations and other key locations along and under the guideway provide the potential to occupy what would otherwise be unused residual space. Kiosks will provide business opportunities while encourage more street life.

Guidelines

The provision to purchase consumer goods and services along/under the guideway will make it more appealing for pedestrian, cyclists, commuters and shoppers. Transit riders will get into the routine of stopping for a newspaper and morning coffee before they catch the train. On Sunday, kiosks and sidewalk art sales will draw pedestrians to No. 3 Road.

Precedents

- Bangkok Thailand overhead transit system

Design Response

The No. 3 Road Restoration contract provides for utility services – power, gas and water to be provided at the first guideway column on either side of each transit stations. A coordinated “family” of sales kiosks should be considered.

Implications & Assessment

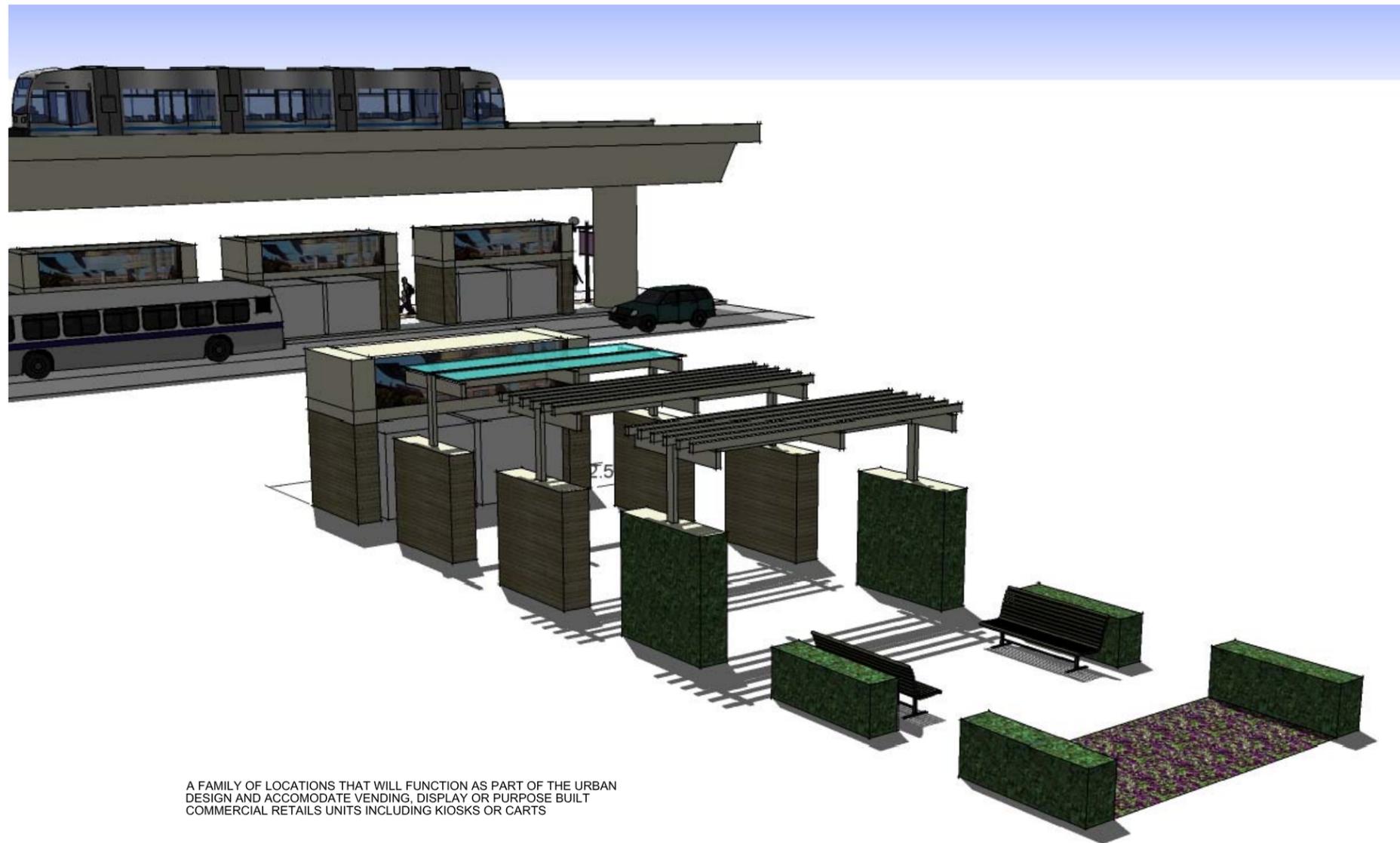
Failure to capitalize on a robust kiosk program will detract from the goal of making No. 3 Road pedestrian-friendly. Another advantage of the program is improving the safety of the environment by creating more “eyes on the street”.

Recommendation

It is suggested that the City of Richmond develop a “third party” vending program that adds character and variety to the streetscape.

Location

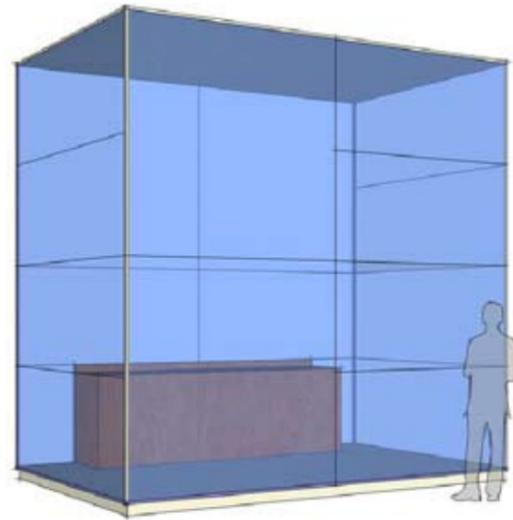
At transit station plazas



A FAMILY OF LOCATIONS THAT WILL FUNCTION AS PART OF THE URBAN DESIGN AND ACCOMMODATE VENDING, DISPLAY OR PURPOSE BUILT COMMERCIAL RETAILS UNITS INCLUDING KIOSKS OR CARTS

Kiosks ...continued

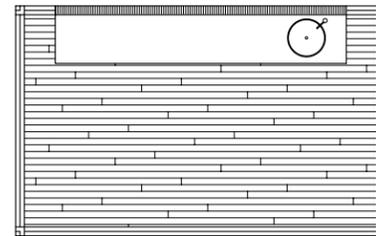
In addition to the design of a “family of kiosks”, one-off designs add variety and colour to the streetscape.



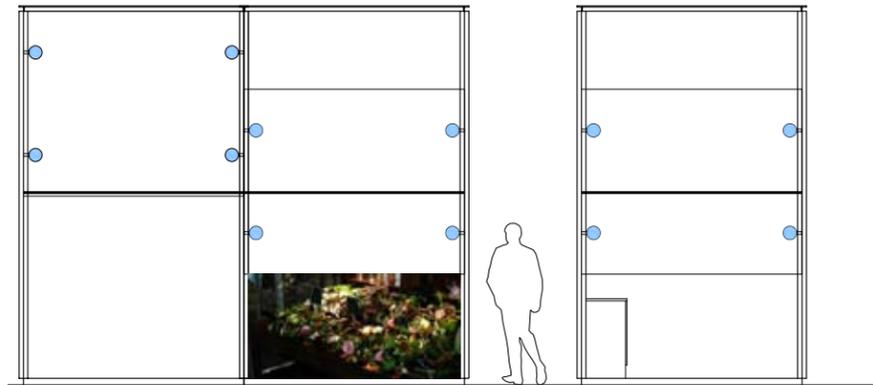
GLASS KIOSK
Kiosk for flowers. It has four large doors: two front and two side doors with guillotine openings. The only opaque part is behind the counter, where there is a work station and sink. At night the kiosk is a glowing glass box of flowers.

Steel sections powder coated and varnished. The wall and roof glass are laminated c/w wiremesh. Floor formed by stainless steel hollow sections. At the top of the front wall structure are two roll-up awnings with the name of the vendor. Halogen lighting.

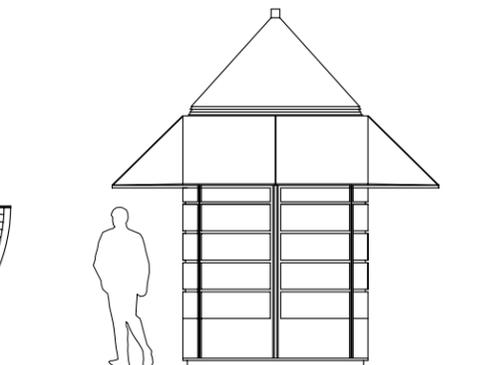
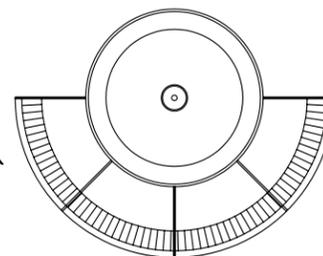
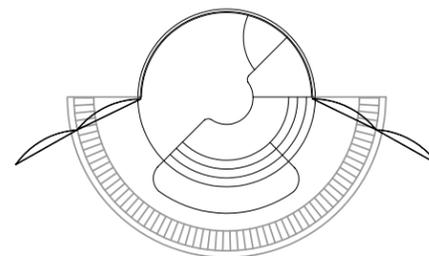
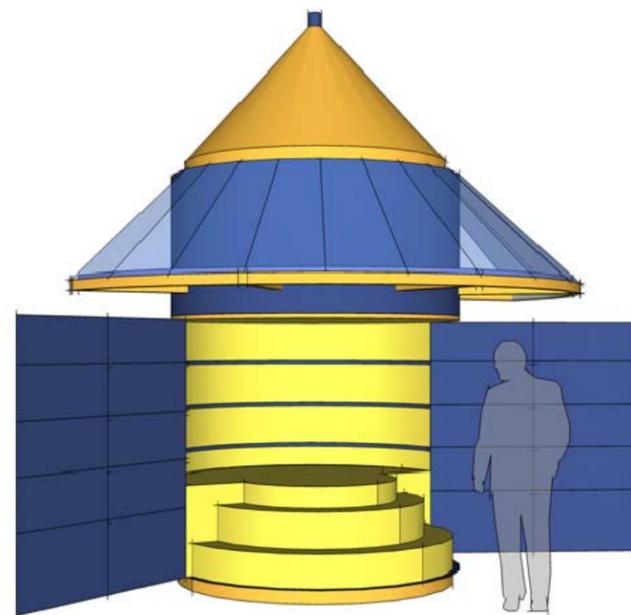
DIMENSIONS	
WIDTH	4200MM
DEPTH	2650MM
TOTAL EXTERIOR HEIGHT	4200MM
ROOF HEIGHT	2100MM



SHOWCASE - GLASS C/W LIGHT BOXES



FLOWERS @ NIGHT



CONICAL KIOSK

Guideway Art

Intent

The City of Richmond's Public Art program is maturing and with it the prospect of new funding opportunities are being explored. Transit systems across North America are increasingly being seen as logical candidates to contain robust public art programs.

Guidelines

Every effort should be made to encourage the artful treatment of the Canada Line system throughout Richmond's City Centre – both its guideway and residual pieces. Opportunities include:

- Artful treatment of guideway and columns
- Placement of public art under/adjacent guideway
- Illumination to guideway, i.e. gobo/graphic spotlighting from adjacent "fronting buildings", streetlights
- Illumination from guideway, i.e. spotlighting mounted onto columns

Precedents

- Toronto subway system; Chicago Ohare Airport; Bellevue WA downtown

Implications & Assessment

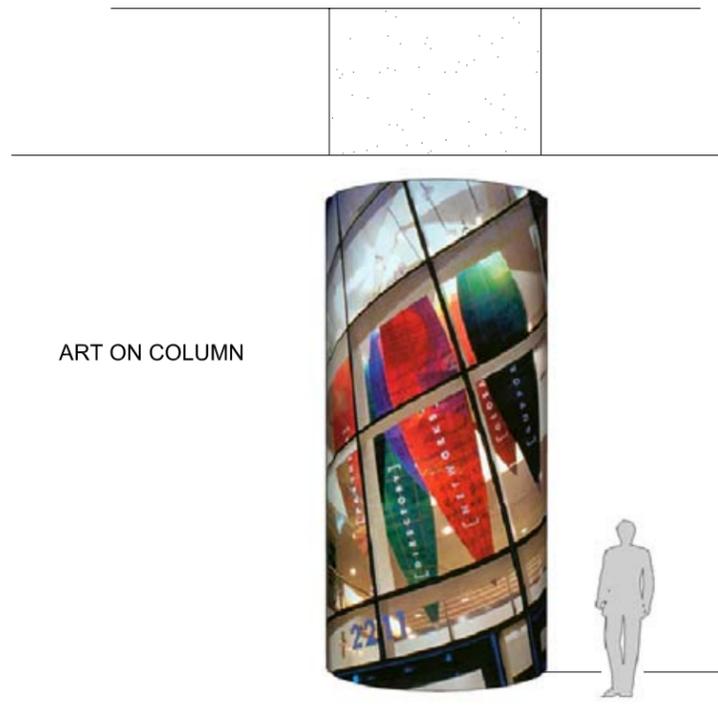
Public art within the No. 3 corridor will go a long way in adding to the quality and enjoyment of Richmond's downtown.

Recommendation

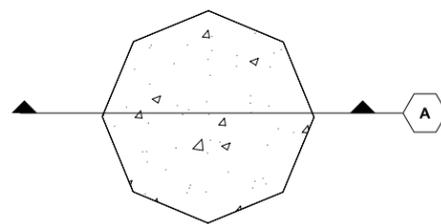
The City of Richmond should encourage a major component of its Public Art program to focus on No. 3 Road to ensure the provision of major installations to concur both with the commissioning of Canada Line service (fall 2009) and the Vancouver 2010 Winter Olympics (sprint 2010).

Location

Each of the contemplated Character Zones should be party to equivalent, but varying, public art programs.



SECTION A



PLAN

Art Around the Columns



Guideway Showcase for Art

Intent

Guideway columns at station plazas represent an opportunity to celebrate the talent of local artists or to advertise community events.

Guidelines

Each station will be a more active, brighter light node along the corridor and the treatment of columns should change to reflect this. Green columns give way at stations to the colour and light of artwork.

Precedents

Third Street Promenade, Santa Monica CA

Implications & Assessment

Potential third-party revenue generator

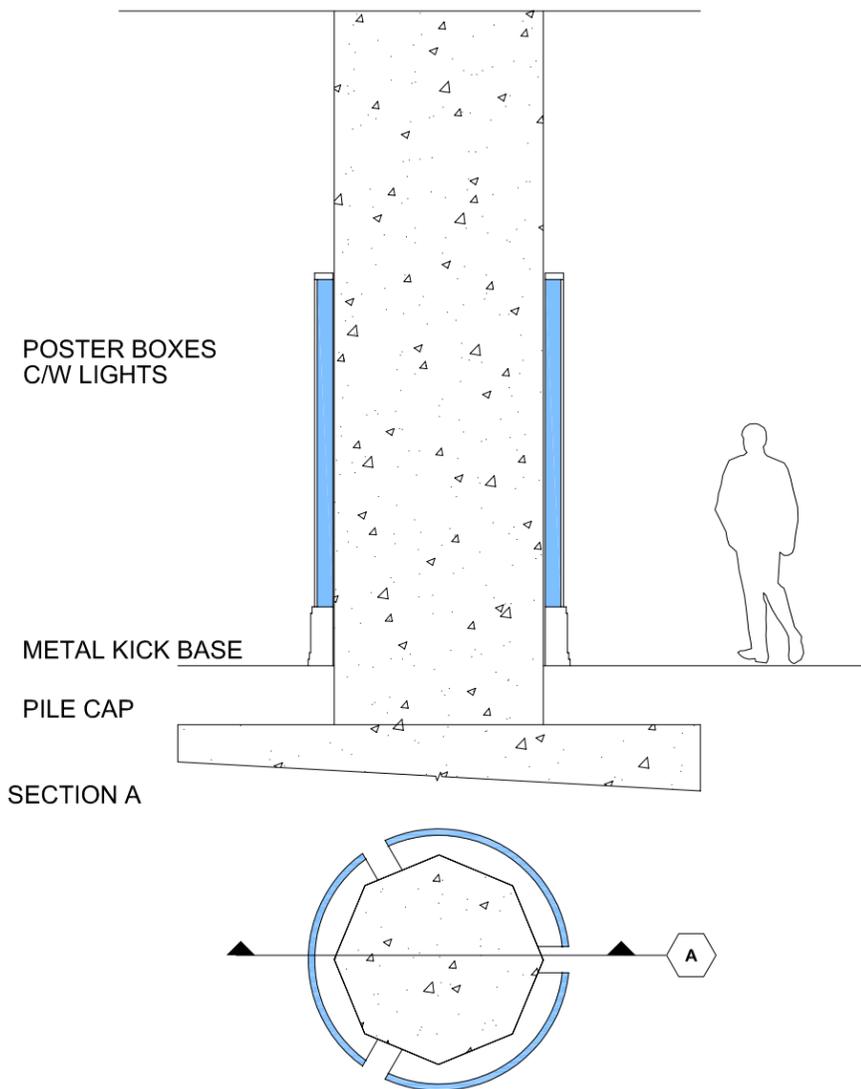
Recommendation

The City of Richmond should encourage a major component of its Public Art program to focus on No. 3 Road to ensure the provision of major installations to concur both with the commissioning of Canada Line service (fall 2009) and the Vancouver 2010 Winter Olympics (spring 2010).

Location

Each of the contemplated Character Zones should be party to equivalent, but varying, public art programs.

GUIDEWAY ABOVE



PLAN

Showcase for Art





Plaza Furniture and Appointments

Intent

Plazas will be developed as special places along the corridor and in keeping will have furnishing and appointments that differ from the standards used system wide.

Guidelines

Plazas provide focal points or nodes along the corridor and represent locations where the systematic approach to furnishing and appointments may differ.

Precedents

Third Street Promenade, Santa Monica CA

Implications & Assessment

The cost of designing and building plazas will be higher in keeping with the importance they have as focal points within the public realm.

Recommendation

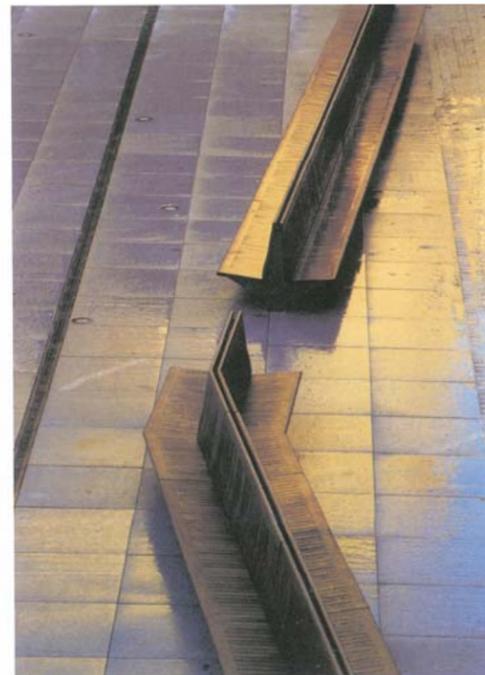
Plazas should be designed to relate to the elements of the streetscape but be distinct. Plaza designs should investigate more extravagant paving treatments, custom seating and be inclusive of programs including public art in keeping with the character of the adjacent urban and civic influences.

Location

Richmond-Brighthouse Station

Lansdowne Station

Aberdeen Station



Simple wood and cast iron bench

High backed benches (Barcelona)



Commercial Signage

Intent

Assist in the resolution of existing commercial signage along the east side of No. 3 Road that will be impacted by construction of the Canada Line guideway.

Guidelines

New signs require a sign permit issued by the City of Richmond for a nominal fee. Deviations from the sign bylaw require a Development Variance Permit (DVP). The City wishes to facilitate the process while ensuring that new signage results in high quality urban design responses.

Precedents

To the writer's knowledge no other transit system within North America has solved the issue of commercial signage on transit guideways satisfactorily.

Design Response

Adjacent retail tenants could be identified along the guideway, in a series of 'posters'. While the headers are uniform in dimension (i.e. 1200 x 600mm), the display will be the responsibility of each tenant. Environmental Elements – double-faced, non-illuminate 'Bus Shelter' inserts, 1200 x 1800mm, could include public service/public art posters, etc.

Implications & Assessment

The cost of designing and building plazas will be higher in keeping with the importance they have as focal points within the public realm.

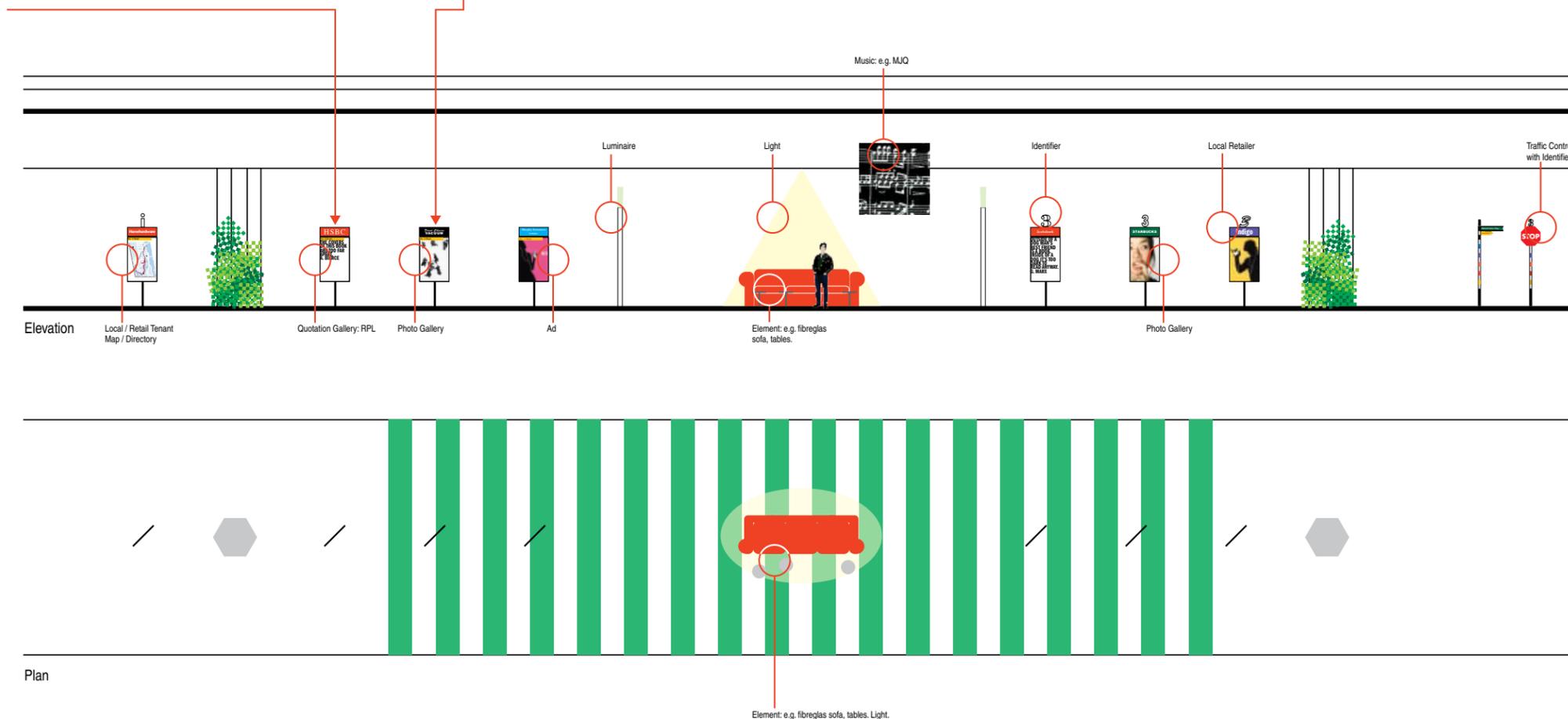
Recommendation

The City of Richmond should engage in a study that achieves the following objectives:

- Review of Current City of Richmond Sign By-Law;
- Field Review, building upon CLCO's folio;
- "Signage Precedents" review;
- Signage Concepts Design Development;
- 3-D Modeling of Signage Concepts re: No. 3 Road, Guideway & "Fronting Buildings";
- Suggested Policy Changes in Sign-By Law to accommodate No. 3 Road Signage Recommendations

Location

Entire No. 3 Road corridor



Schematic design option only
(not for construction)

Design Treatments

High Quality vs. Highest Quality Urban Design

When the No. 3 Road Restoration: Preliminary Design program was initially presented to Richmond senior staff a TAG meeting in October 2006, the consultant team was asked to suggest

program additions beyond the base ‘high quality’ development program that might be pursued in order to achieve the highest quality of Urban Design.

	Base Plan –High Quality	Streetscape Design Improvements –Highest Quality
 <p>Station Plaza Design (Elements of Distinction)</p>	High quality, functional transit plaza design incorporating mainly poured in place concrete surface paving treatments with simple but well coordinated streetscape furnishings and special plaza features.	Highest quality, bold transit plaza design incorporating lavish use of most precious paving treatments with elaborate, well coordinated streetscape furnishings and sophisticated special plaza features. Suggested Allowance: \$6 million
 <p>Street Design (Elements of Continuity)</p>	Utilitarian paving materials consisting primarily of asphalt and concrete with sturdy, practical streetscape furnishings and appointments (benches, etc.)	Visually effective integration of highest quality paving materials including judicious use of granite, unique and elegant streetscape furnishings and appointments. Suggested Allowance: \$3 million
 <p>Street Lighting (Existing vs New System)</p>	Adapting/reusing the existing lights with various design standards and different colour schemes results in a fragmented roadway lighting system thus a new high-quality coordinated system is preferred.	A new, more elaborate decorative lighting system that unifies the street, allows for innovative lighting specific to current needs and will supplement special effect lighting. Suggested Allowance: \$1 million
 <p>Special Effect Lighting (Guideway & Columns)</p>	No special effect lighting of the guideway and columns other than pedestrian lights.	Employ a variety of leading edge special effect night lighting including laser lighting, programmable light fixtures, gobo lights, sharp cut-off and LED light technologies. Suggested Allowance: \$6 million

	Base Plan – High Quality	Streetscape Design Improvements – Highest Quality
 <p>Kiosk Program (East Boulevard)</p>	<p>No Allowance.</p>	<p>A concentrated kiosk program for No. 3 Road will not only add convenience and enjoyment to the pedestrian experience but serve to assign new, and positive uses, to residual spaces adjacent the guideway.</p> <p>Suggested Allowance: \$1 million</p>
 <p>Signage Program (East Boulevard)</p>	<p>No Allowance.</p>	<p>The elevated guideway will obscure the current street frontage signage on commercial businesses along the east side of No. 3 Road. A coordinated system regarding both business and public information should be implanted in concert with CLCO</p> <p>Suggested Allowance: \$1 million</p>
 <p>Landscape Treatments (Boulevard & Medians)</p>	<p>Small to medium sized plant material at the time of planting including trees with a calliper size ranging between 5 to 7.5 cm (2" to 3").</p>	<p>Medium to large sized plant material at the time of planting including trees with a calliper size ranging between 10 to 15 cm (4" to 6").</p> <p>Suggested Allowance: \$1 million</p>
 <p>Municipal Public Art (Plus Signage & Wayfinding)</p>	<p>No allowance for public art and a basic system of signage and wayfinding.</p>	<p>Significant allowance for public art carefully orchestrated to complement streetscape improvement and a simple, sophisticated system of signage and wayfinding.</p> <p>Suggested Allowance: \$3 million</p>

Appendix 3

Class “C” Cost Estimate

Introduction

The estimate presented in this report provides a realistic assessment of the direct and indirect construction costs for the proposed infrastructure work as outlined in the documents prepared by IBI Group. The estimate for the civil work as prepared by Delcan and as such BTY does not warrant its accuracy of the quantities.

The estimate blends the general requirements & fees into the individual unit rates. It also allows a 10% design contingency for the urban design works, a 20% design contingency for the infrastructure & civil works, and a 10% construction contingency.

The estimated costs contained in this report are based on “Class C” architectural drawings and not detailed design or tender documents. The estimate provides a reasonable cost envelope within which the project design can be developed. Further estimates based on more detailed information may, however, vary from this baseline.

A1

PROJECT: No.3 Road Restoration, Richmond, BC Date: January 31, 2007
 Class C Estimate #1 (Rev. 6)

Construction Cost Summary by Packages						
Element	Section 1 Granville to Westminster \$	Section 2 Westminster to Alderbridge \$	Section 3 Alderbridge to Cambie \$	Section 4 Cambie to Bridgeport \$	Current Estimate \$	%
1 Infrastructure (Works by Utility Co.)	18,900	172,800	14,000	8,400	214,100	1.2%
1.1 BC Hydro	2,500	4,000	2,500	0	9,000	
1.2 Telus	13,000	158,000	8,500	6,000	185,500	
1.3 Terasen Gas	1,400	800	1,000	400	3,600	
1.4 SHAW Cable	2,000	10,000	2,000	2,000	16,000	
2 Civil	2,010,500	2,878,600	2,280,800	2,007,900	9,177,800	51.4%
2.1 Road Surface	699,400	892,300	682,500	796,600	3,070,800	
2.2 Concrete Items	863,900	1,525,900	1,169,000	773,300	4,332,100	
2.3 Storm Sewer	90,500	71,700	96,700	89,000	347,900	
2.4 Sanitary Sewer	2,200	1,800	1,600	1,800	7,400	
2.5 Watermain Items	28,200	35,200	16,300	13,600	93,300	
2.6 Pavement Marking & Signing	174,000	174,000	171,500	168,600	688,100	
2.7 Misc. Items	152,300	177,700	143,200	165,000	638,200	
3 Urban Design	2,393,300	2,094,900	2,112,400	1,856,500	8,457,100	47.4%
3.1 Hard Surfaces	0	0	0	0	0	
3.2 Street Furniture	558,000	677,000	527,000	246,500	2,008,500	
3.3 Soft Landscaping	477,300	442,400	405,000	682,500	2,007,200	
3.4 Lighting	758,000	495,500	700,400	567,500	2,521,400	
3.5 Traffic Signals	600,000	480,000	480,000	360,000	1,920,000	
NET CONSTRUCTION COST	4,422,700	5,146,300	4,407,200	3,872,800	17,849,000	
NET CONSTRUCTION COST	4,422,700	5,146,300	4,407,200	3,872,800	17,849,000	
4 General Requirements & Fees	0	0	0	0	0	0.0%
4.1 General Requirements	included	included	included	included	included	
4.2 Fees	included	included	included	included	included	
NET CONSTRUCTION COST ⁽¹⁾	4,422,700	5,146,300	4,407,200	3,872,800	17,849,000	100.0%
5 Contingencies	1,152,000	1,416,400	1,177,900	1,035,200	4,781,500	
5.1 Design Allowance (10% / 20%) ⁽²⁾	645,200	819,800	670,200	589,000	2,724,200	
5.3 Construction Allowance (10%)	506,800	596,600	507,700	446,200	2,057,300	
SUBTOTAL CONST. COST (2007 1st QTR DOLLARS)	\$5,574,700	\$6,562,700	\$5,585,100	\$4,908,000	\$22,630,500	
Payable Goods and Services Tax					0	
TOTAL CONST. COST (2007 1st QTR DOLLARS)	\$5,574,700	\$6,562,700	\$5,585,100	\$4,908,000	\$22,630,500	
Escalation Allowance (5% per annum) ⁽³⁾	342,100	402,700	342,700	301,200	1,388,700	
TOTAL CONSTRUCTION COST	\$5,916,800	\$6,965,400	\$5,927,800	\$5,209,200	\$24,019,200	

(1) The cost estimate includes the following separate price items:

- Bicycle Path Items \$817,000
- Eastside Median Barrier Curb & Gutter Items \$362,700

(2) 10% to urban design, 20% to infrastructure & civil

(3) Based on 5% per annum for 14 months (April 2008: mid-point construction)

Appendix 1

A Culture of Walking

A2



The Copenhagen Report: A Culture of Walking



City of Richmond No. 3 Road Corridor Streetscape Study

IBI Group with Don Wuori Design | James KM Cheng Architects Inc. | Ward Consulting Group | and GEHL Architects

Pedestrianization

“All cities that I know have very good traffic departments and perfect statistics about cars. They know how many go east and how many go west. They know how many parking spots there are and how they’re used ... Every time there is a planning process, the cars are very visible and somebody looks after them. **I know of no city in the world that has a department of pedestrians and public life.”**

— Jan Gehl. ‘People-Powered Urban Design’. New Urban News. July/August 2005

The Challenge

The Challenge:
Create/promote a culture of walking and cycling – one that is based upon equity and dignity.



Equity — equal opportunity for pedestrians and cyclists that is currently given to motorists;
Dignity — provision of a pedestrian environment that is both legible (wayfinding) and well appointed (quality of materials/design).

GEHL Architects

Jan Gehl, and his firm GEHL Architects of Copenhagen, Denmark, is part of the consulting team on the Richmond No. 3 Road Steetscape Corridor Study.

Their expertise will help set in place the fundamentals to develop what their firm calls a ‘culture of walking’ within downtown Richmond.



Sidewalks



1. Sidewalks

Continuous, high quality side-walks up and down No. 3 Road, on both sides of the street. The sidewalk takes ‘priority of expression’ at inter-sections, curbs and signals;

Cycle Paths



2. Cycle Paths

Continuous, raised cycle paths on each side of No. 3 Road; preferably separating pedestrians from vehicles;

Street Facing Retail



3. Street Facing Retail

Wherever economically viable, the inclusion of street-facing retail facilities to encourage pedestrian activity including window shopping;

On Street Parking



4. On-Street Parking

Short term on-street parking wherever possible, as a positive signal to the importance of street front retail and to serve as a buffer between pedestrians and vehicles;

Pedestrian Linkages



5. Pedestrian Linkages

Convenient linkages to transit stations and bus stops, including 'kiss-n-ride' drop-off;

Curb Cuts



6. Curb Cuts

Elimination/minimization of curb cuts up and down No. 3 Road;

Outdoor Rooms



7. Outdoor Rooms

Public realm urban plazas, boulevards and linear parks, including street trees and greenery along the length of No. 3 Road; adhere to principles of CPTED;

Seating



8. Seating

Places to sit at plazas, parks and outdoor restaurants – to rest, see and be seen, soak up the sun;

Street Hardware



9. Street Hardware

A coordinated, understated and timeless approach to outdoor furniture, including street lighting/ c/w banner arms, seating, bollards, recycling bins and information kiosks.

Public Art



10. Public Art

Promote public art within the No. 3 Corridor, both at and between transit stations; consider a strategy of 'artful' transit stations;

Wayfinding



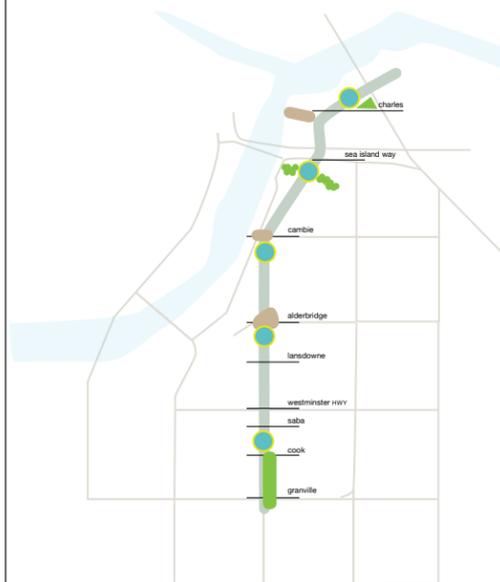
11. Wayfinding

A simple, informative system of outdoor signage to inform pedestrians up and down No. 3 Road and beyond.

Station Locations



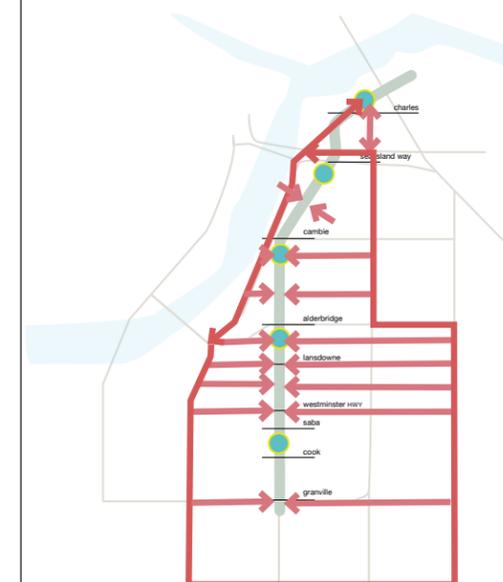
Outdoor Rooms



Buildings at Street



Perimeter Access



Appendix 3

Final Urban Design Drawings

A3

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INSERT FINAL URBAN DESIGN
DRAWINGS (2 FOLDED SHEETS)

Appendix 4

Final Engineering Design Drawings

A4

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**INSERT FINAL Engineering DESIGN
DRAWINGS (2 FOLDED SHEETS)**

IBI Group is a multi-disciplinary consulting organization offering services in four areas of practice:

Urban Land, Facilities, Transportation and Systems.

We provide services from offices located strategically across the United States, Canada, Europe, the Middle East and Asia. For more information please visit www.ibigroup.com

For additional information regarding Transit-Oriented Development please contact:



IBI Group Vancouver
Suite 700—1285 West Pender Street
Vancouver, BC V6E 4B1
tel. 604.683.8797 fax. 604.683.0492
email. hvahidi@ibigroup.com

IBI Group Richmond
Suite 130—7360 Westminster Highway
Richmond, BC V6X 1A1
tel. 604.232.1100 fax. 604.232.1177
email. gandrishak@ibigroup.com