

**BURNABY
TOWN CENTRE STANDARDS**

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September 2020



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FINAL PROJECT ACCEPTANCE

PROJECT: TOWN CENTRE STANDARDS

DATE: 2020 September 8th

The Burnaby Town Centre Standards document, dated September 2020, has considered and incorporated feedback from the Engineering Department, Parks Department and Planning Department. The standards may now be published and implemented.

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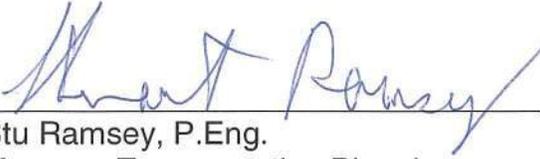
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1 Vision and Objectives

1.1 VISION

Four Distinct Town Centre Characters, One Coherent Vision

It is an exciting time for the City of Burnaby, as well as a most appropriate time to enhance the public realm to accommodate current populations and future projected populations that are being attracted to the City. A high-quality public realm is essential to achieving an attractive neighbourhood experienced at the human scale. It can encourage people to use sustainable transportation modes - walking, cycling, transit - by offering improved connections between places, and making those connections into memorable spaces themselves. It can nurture community by providing gathering spaces that are appealing and functional.

The public realm plays an important role in enhancing the quality of life in a community, which, in turn, can improve its desirability as a place to live, work, and play. To achieve these benefits, the Town Centre Standards outlines a comprehensive and strategic approach to how the public realm is developed, enhanced and maintained.

The intent of this document is to create a “kit of tools” for each of the four Town Centres by making them coherent yet unique and special at the same time. Although these guidelines are meant to provide a basis to create a cohesive streetscape throughout Burnaby, these landscape typologies have also been designed with the idea of flexibility in mind. As populations grow and demographics change, so do community needs and demands. Thus, the public realm should be designed for not only the City it is today, but the City it has the potential and vision to be in the future. As such, this document takes a fine-grained approach to the City’s four town centres that defines a high-level standard for each of the public realm design elements.

1.2 BACKGROUND

Enhancements to the quality of the Town Centre public realm provide an opportunity to advance a broad range of the City’s economic, social, and environmental goals. Accordingly, this report presents the public realm design standards that have arisen from Council’s adopted policies for Burnaby’s four Town Centres. A primary impetus for developing the design standards for the Town Centres was Council’s adoption of the Supplementary Community Benefit Bonus Density Policy in November 2010.

This policy calls for “additional community amenities to support and service residents and businesses within the Town Centres” with the goal of “enhancement of the livability of the City and its Town Centres.” The Town Centre public realm design standards arise from that direction. Council’s adoption of the Beresford Art Walk concept in 2010 provided a starting point for the design standards, the evolution of which has continued since that time.

The Burnaby Town Centre Standards will integrate pedestrian, cyclist, and transit elements to be used by City of Burnaby Staff, Developers, Design Engineers, and Property Owners to meet the community’s objectives for sustainable and resilient redevelopment of the public realm within each Town Centre. On 2015 January 14, Council instructed staff to develop and implement the new standards.

1.3 DESIGN PRINCIPLES



Photo 1: Lougheed Highway, Brentwood Town Centre



Photo 2: Beresford Street, Metrotown Town Centre



Photo 3: Telford Avenue, Metrotown Town Centre

The development of the Town Centre Standards for the Four Town Centres in Burnaby has been guided by a clear set of Design Principles. These will continue to provide a guiding framework for implementation of the standards over the years ahead.

1 Re-create the “living room”

Streets can be the “living room” of a community, where people can gather, socialize, and share urban living. The design standards seek to create streets as places for people.

2 Attractive

The public realm designs strive to be more appealing and interesting, thus encouraging people to use these spaces, and enhance the attractiveness of the surrounding community.

3 Build Complete Streets

They are streets on which travel feels safe and comfortable regardless of physical ability, gender, or choice of mode.

4 Emphasize Local Community

Neighbourhoods should emphasize and capitalize on their local community’s unique demographics, history, inspiration, and potential, with the goal of creating public spaces that promote people’s health, happiness, and well-being.

5 Enhance the Environment

The designs can improve the quality of water discharged into our streams and reduce the rate of runoff entering local streams. They improve air quality through the use of broad-canopy street trees and by promoting low-emission transportation.

6 Efficient Use of Space

Road allowance is one of the City’s most valuable assets, comprising 20% of Burnaby’s total area. As public space, it can be used to achieve multiple City goals. Public realm designs can provide for superior landscaping, a more natural treatment of rainwater, and more space for people while still accommodating vehicle travel.

1.4 SCOPE

The Burnaby Town Centre Standards provide the minimum standards to be used for design of road projects in Burnaby's Town Centres. This document is to be used in conjunction with documents listed in Section 1.5. Standard drawings and specifications contained in this report are developed to ensure consistency in design criteria, materials, layout and dimensions for each applicable location.

Burnaby has four Town Centres (refer to **Figure 1**):

1. Brentwood
2. Metrotown
3. Lougheed
4. Edmonds

Initial visions for these Town Centres began in 1971, followed by the adoption of individual town centre plans that built on earlier studies, with the Metrotown Town Centre Plan in 1977, the Edmonds Town Centre Plan in 1994, the Brentwood Town Centre Plan in 1996, and lastly the Lougheed Town Centre Plan in 1997. A new Metrotown Plan was adopted in 2017. In conjunction with the Official Community Plan in 1998 and relevant concepts derived from recent development plans and strategies, the Town Centre Standards document aims to consolidate and give shape to public realm objectives that include:

- Improving Safety, Access, Environment, and Aesthetics for all.
- Environmental, Social, and Economic Sustainability.
- Define Priorities and use Design Standards.
- Create Spaces that are Enjoyable and Safe for Intended Users as well as Others.
- Accessibility for all Ages and Abilities.

With recent redevelopment occurring within the Town Centre areas and significant redevelopment planned in the future, this document focuses on the consolidation of prior concepts, moving forward from lessons learned through early developments, and applying the latest innovative design practices to develop a unified set of design criteria.

1.5 OTHER RELEVANT DOCUMENTS

In addition to the documents cited in Section 1.4, other City policies and development regulations that are relevant and should be reviewed include:

- City of Burnaby Design Criteria Manual.
- City of Burnaby Supplemental Specification and Detail Drawings.
- Burnaby Transportation Plan, 2004.
- Economic Development Strategy, 2007.
- Beautification Strategy, 2007.
- Social Sustainability Strategy, 2011.
- Environmental Sustainability Strategy (ESS), 2016.
- Transportation Association of Canada (TAC) Design Documents.
- National Association of City Transportation Officials (NATCO) Design Documents.

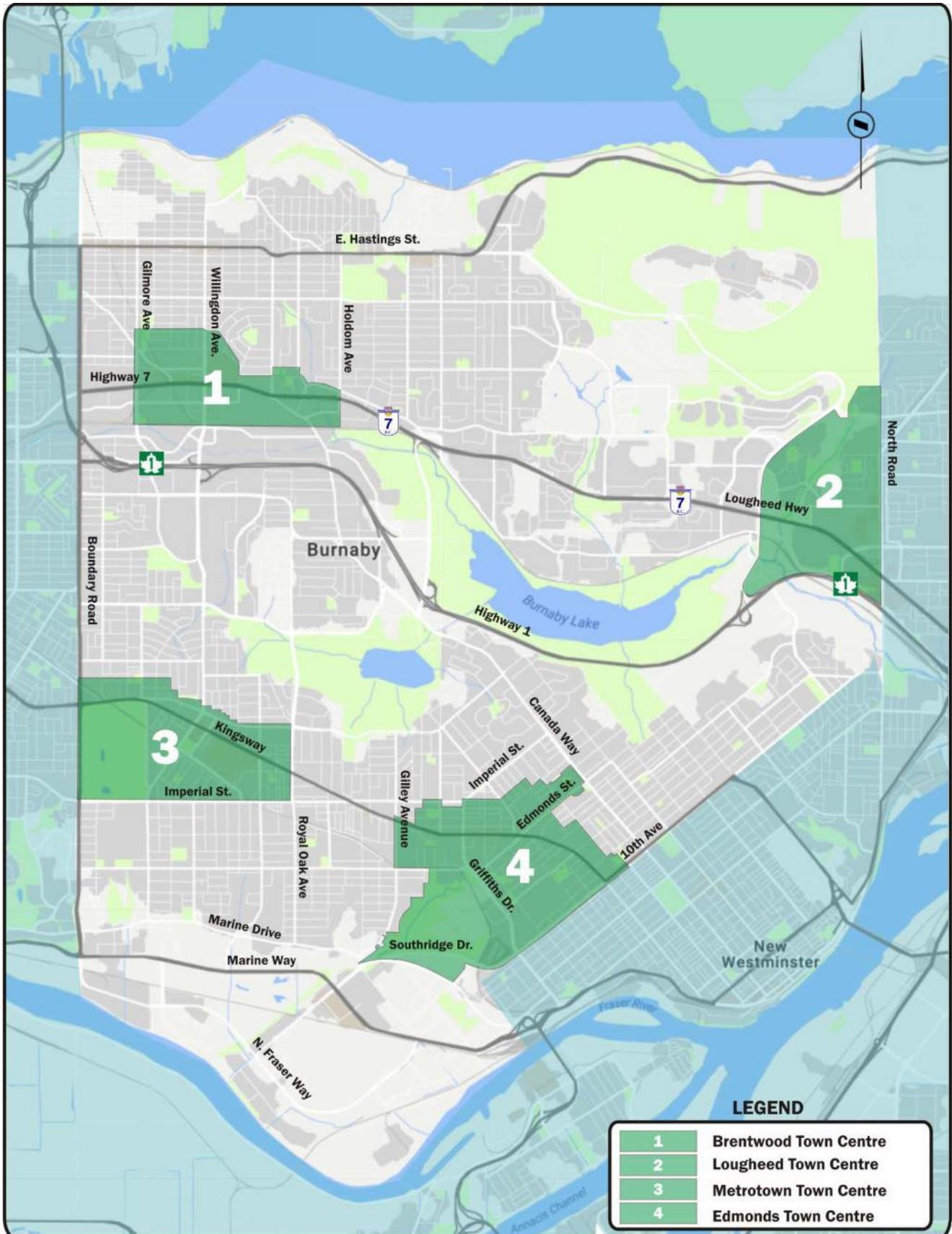


Figure 1 - Burnaby Town Centres

2 Town Centre Objectives

2.1 FOUR TOWN CENTRES

Burnaby has four Town Centres, including a Regional City Centre (Metrotown) and three Municipal Town Centres (Brentwood, Edmonds, and Lougheed). All four town centres are comprised of a mix of office, retail, supportive professional services, public and institutional land, and high-density housing opportunities. Each town centre will be building upon a common set of design principles and design guidelines, yet, each will strengthen its own identity through use of subtle variations such as unique hardscape colour palettes.

To better understand the specific character of each of these Town Centres, here is a summary of key feature and elements for each of them:

Metrotown

Metrotown is prominently located on the Kingsway Ridge in the southwest quadrant of Burnaby. The boundaries are generally defined by Boundary Road and Central Park to the west, Royal Oak Avenue to the east, Imperial Street to the south, and a varied northern boundary including Bond and Dover Streets. The Plan area totals 735 acres and is currently home to approximately 25,000 residents. To the north and south of the Plan area are established single-and two-family neighbourhoods. To the east is the Royal Oak Community Plan Area, and to the west is the City of Vancouver.

Metrotown is the geographic centre of the Metro Vancouver Region. As such, it has seen significant investment in regional-scale infrastructure and transportation, City-wide services and amenities, and offers superior connectivity to other major urban centres throughout the Region.

The area is also a transportation hub in that it is directly served by two SkyTrain stations (Patterson Station and Metrotown Station) and related bus routes and exchanges, with Metrotown Station being one of the most highly used stations in the network. The Royal Oak Station is located further southeast in close walking distance to the Metrotown area. In addition to Metrotown's many parks and open spaces, one of the area's main attractions is Central Park, which is both a city and regional destination for sport, cultural and leisure activities.

Metrotown is a premier centre of business, culture, and social activity. As a Regional City Centre, it serves not only the people who live in the community, but also people from all over Metro Vancouver and visitors alike.

Brentwood

Located in Burnaby's northwest quadrant, Brentwood is sited on a south facing slope in the heart of the Central Valley containing Still Creek and Burnaby Lake, which divide Burnaby north and south. The boundaries of the town centre are generally defined by the lane south of Gravelly / Ridgelawn and Broadway Street to the north; the Burlington Northern Santa Fe Railway to the south; Holdom Avenue to the east; and Gilmore Avenue to the west. The plan area totals 410 acres and is currently home to approximately 13,000 residents. With completion of the Brentwood Mall in 1961, Brentwood was the first of the town centres to emerge in Burnaby. To the north of the Plan Area is an established single-family area, to the south and west are general industrial districts and to the east is a business centre district.

The town centre straddles the Lougheed Highway, is bisected by Willingdon Avenue, and is just north of the Trans-Canada Highway, all regionally significant roads in the Major Road Network (MRN). The Millennium SkyTrain Line shares the Lougheed corridor and has three SkyTrain Stations located in the Town Centre: Gilmore Station, Brentwood Station and Holdom Station. When the Millennium line is completed to the west, Brentwood will be equidistant from the Coquitlam Town Centre to the east and UBC to the west.

Brentwood is defined by the 1996 Brentwood Town Centre Development Plan (Updated 2016). It is the designated Town Centre for the north-west sector and is intended to be a focus of higher-density and higher-intensity residential and commercial opportunities, public transit and supporting leisure facilities. With a significant amount of retail and office

space; proximity to BCIT, Burnaby General Hospital and several business parks; and easy access to transit and highway networks, it is a rapidly growing regional employment and retail destination.

Lougheed

Lougheed Town Centre, located in the northeast quadrant of the City, is one of four Town Centres in Burnaby. The boundaries are generally defined by Gagliardi Way to the west, North Road to the east, Trans-Canada Highway to the south, and Stoney Creek to the north. The Town Centre area totals 707 acres and is currently home to approximately 15,000 residents. The form and character of the Town Centre varies from single and two-family residential in Sullivan Heights, ground-oriented medium density residential west of Stoney Creek, medium and high density residential neighbourhoods south of Lougheed Highway, and major Town Centre commercial uses within the Lougheed Town Centre Core Area and along North Road, south of Lougheed Highway.

The Lougheed Town Centre Core Area is defined in the 1997 Lougheed Town Centre Plan as the 72 acre area bordered by North Road to the east, Lougheed Highway to the south, Bartlett Court to the west, and Cameron Street to the north, and includes existing properties near North Road and Cameron Street. The Lougheed Core Area is anticipated to transform, over time, into a vibrant, transit-connected, mixed-use area with diverse housing, employment, service, and recreation opportunities. This transformation will be supported by the significant investment in public transportation within the Lougheed Town Centre. The Millennium SkyTrain line, which opened in 2002, connects Lougheed Town Centre to Downtown Vancouver. The Evergreen Line, which opened in 2017, connects the Lougheed Town Centre Core Area with Port Moody and Coquitlam City Centre.

Edmonds

The Edmonds Town Centre is at the heart of the City's Southwestern quadrant. The southwest and southeast borders of the plan are defined at Marine Way, and to 10th Avenue. The northern, western and eastern borders go as far as Elwell Street, Gilley Street and Canada Way respectively. The Town Centre area measures approximately 950 acres with a population of approximately 23,750.

The Edmonds Town Centre is an important location in the history of Burnaby, housing the first City meetings in the Powerhouse of the Interurban line, as well as Burnaby's first City Hall. The current Community Plan was adopted by Council in 1994 and is centered around three nodes. The Primary core, centered on the intersection of Kingsway and Edmonds; the Station Core, oriented towards the Edmonds Skytrain station; and the future Southgate site, an excited redevelopment of a large-scale distribution facility for a master-planned community with residential and commercial uses centered around a new public park.

The Edmonds Town Centre Plan strives to be a complete community with a diverse range of employment and housing opportunities as well as providing a substantial amount of park and open space.



Photo 4: Beresford Street, Metrotown Town Centre

2.2 STREETScape ZONES

The Town Centre Standards focus on the design within the public realm, which are streetscape zones between the vehicular zone & parking and the property line, or to the building face where buildings are setback (see **Figures 2 and 3**). Further explanation is provided on the following pages.



Figure 2 – Streetscape Zones Four-Lane and Six-Lane Streets

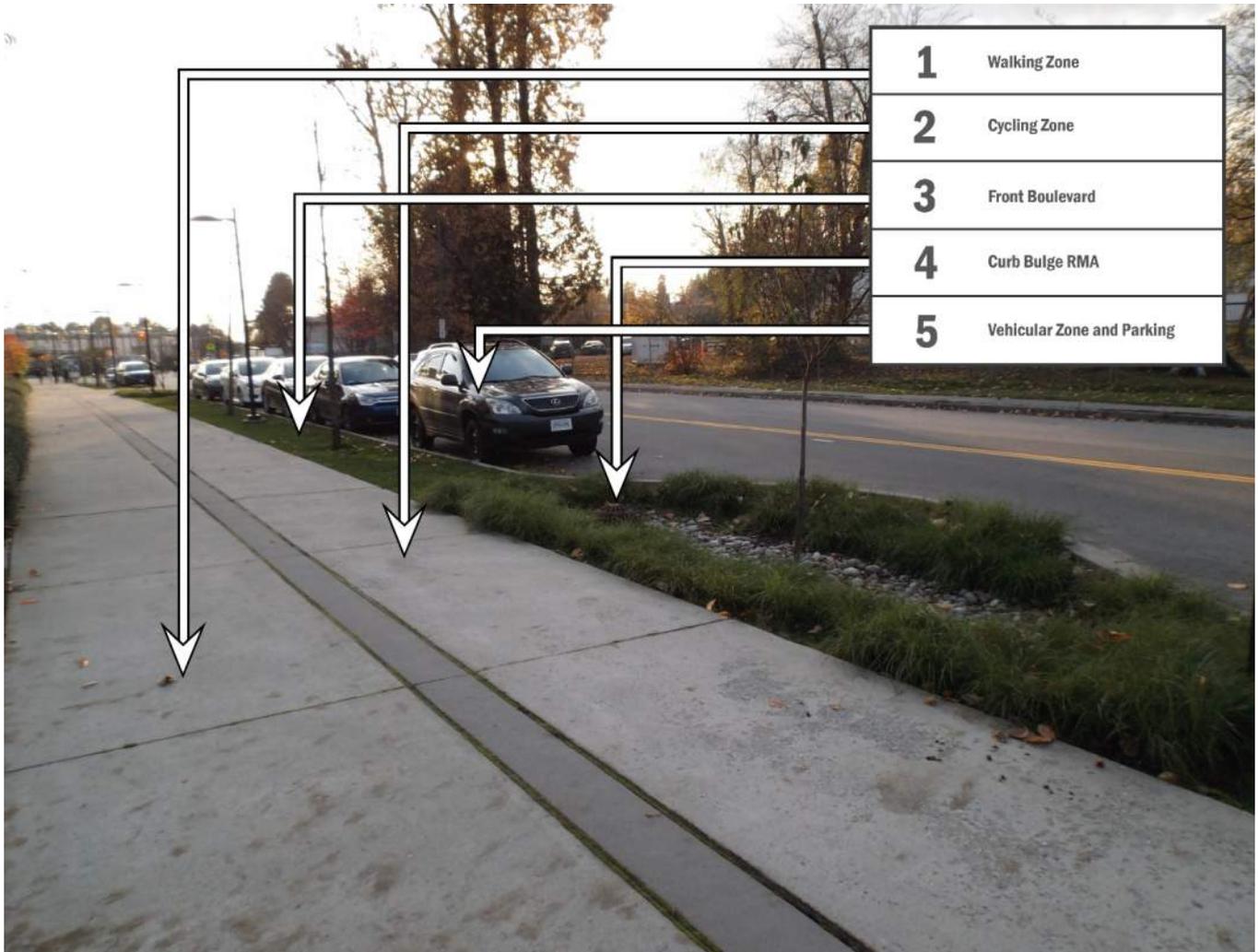


Figure 3 – Streetscape Zones Two-Lane Streets

2.2.1 BUILDING SETBACK ZONES

Buildings are typically set back from the public road allowance. At a street corner, chamfered building setback or additional setback is recommended to provide additional pedestrian space. The building setback zone remains as private property.

For residential developments, the building setback zone is typically used for landscaping. For commercial and mixed-use developments, this zone can also include plazas, outdoor displays, and seating. Bike racks are provided by developments and are typically located in the building setback zones.

The building setback zone also provides the location for access hatches for servicing underground foreign utilities, so as not to disrupt the function or attractiveness of the sidewalk and other elements of the public realm.



Photo 5: Beresford Street, Metrotown Town Centre

2.2.2 WALKING ZONE

A clear walking zone provides for pedestrian mobility. Specifically, sidewalk widths are increased on busier streets, where pedestrian activity is expected to be higher. Sidewalks are clear of obstructions (lamp poles, mailboxes, etc.) which are placed elsewhere in the public realm (as discussed subsequently). Sidewalk joints are sawcut rather than troweled. This creates a smoother surface, particularly for people using wheelchairs or other mobility devices. Dark Sky friendly pedestrian-oriented lights are provided to illuminate the walking zone.

At two-lane local and collector intersections, pedestrian/wheelchair ramps are aligned with directional scoring on shared ramps at common corners to accommodate the minimum safe vehicle turning movements/radii. Scoring on the shared ramps indicate the crosswalk direction for the benefit of people with visual impairments. The transition from walking zones to mixing areas and cycle tracks are noted with a unique scoring pattern and/or tactile strips comprised of clay pavers to notify pedestrians that they are leaving walking zones.

At intersections where one or more of the intersecting roadways is a four-lane or six-lane road, pedestrian/wheelchair ramps are aligned with each sidewalk (i.e., not a shared ramp for two perpendicular sidewalks), and also include scoring to indicate the crosswalk direction. Where feasible, the street crossing distance for pedestrians is minimized; however, crosswalk distances were often dictated by the roadway geometrics needed for meeting design vehicle turning radii.



Photo 6: Lougheed Highway, Brentwood Town Centre

2.2.3 CENTRE BOULEVARD

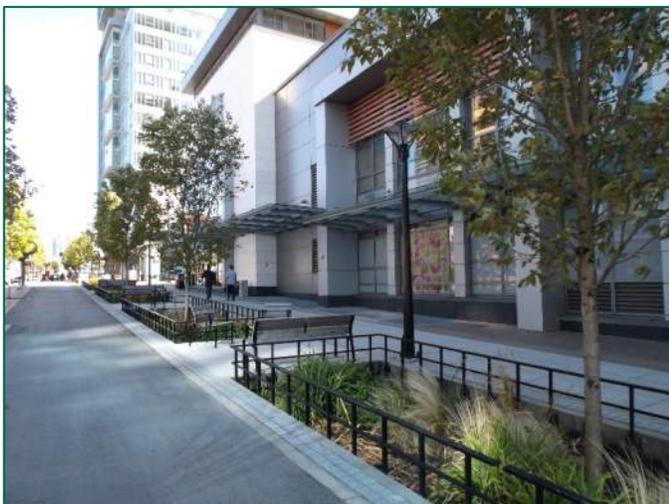


Photo 7: Lougheed Highway, Brentwood Town Centre

On four- and six-lane streets, the City provides a centre boulevard between the walking and cycling zones. The centre boulevard consists of the Linear Rainwater Management Amenity (RMA), which is a landscaping and stormwater management feature that follows a standardised City design.

The Linear RMAs are bordered by ornamental railings and inset pavers. These attractive features protect the landscaping and provide visual guidance to pedestrians and cyclists. Underground features support the health of the landscaping and protect the surrounding infrastructure. Examples include root barriers to prevent tree root damage, structural soils to promote tree growth, and overflow drainage control structures to convey heavy rain volumes to the storm sewer system.

The centre boulevard has connector walks strategically spaced apart to provide access between the buildings and the curb. The connector walks will be wide enough to accommodate street furniture, bicycle racks, wayfinding signage, pedestrian lighting poles, and public art where appropriate. The crossings will also provide corridors for underground utilities to service the buildings. There is no centre

boulevard on two-lane streets. The walking zone and cycling zone are adjacent to each other and separated by a tactile strip.



Photo 8: Ornamental Railings and Inset Pavers at Lougheed Highway, Brentwood Town Centre

2.2.4 CYCLING ZONE

The designs incorporate cycle tracks (bike paths), which are physically separated from traffic and pedestrians as shown in **Figure 2**. These provide a greater sense of comfort and safety for cyclists of all levels. Many cyclists ride for recreation, commuting to work, or errands, and the cycle tracks are designed to accommodate both slower, local trips within each Town Centre as well as faster paced commutes to destinations beyond the town centres. The separated cycle track can support cycling by those, such as children or infrequent cyclists, who are not comfortable in traffic, while providing ample room for more experienced cyclists to pass slower moving cyclists. The front boulevard provides space for opening of car doors and to minimize the conflict with cyclists. Bike racks are provided on private property and/or the centre boulevard.

Cycle tracks are marked with painted symbols (or torch-on where specified by the City) and signage where user conflict might occur, such as intersections. Painted symbols are located at cycle track entry and exit points at intersections, adjacent to mixing areas, and at intervals not exceeding 75 metres. With the exception of perimeter streets, cycle tracks are designed to accommodate one-way traffic. On four-lane and six-lane roadways, where the highest volume of cycle track users exists, directional arrows adjacent to the painted cycle symbol inform cyclists of the direction of cyclist traffic. On two-lane local and collector roadways, directional arrows are not specified, and it is anticipated that cyclists originating from

residences or businesses on two-lane roadways may move in opposing directions for short stretches before reaching a point to transition over to another cycle track moving in the direction of their destination.



Photo 9: Separated Cycle Track at Lougheed Highway, Brentwood Town Centre

2.2.5 FRONT BOULEVARD

The front boulevard provides a location for street lighting, parking meters, and street trees. The front boulevard typically has a surface of grass in residential areas and clay bricks in commercial/mixed-use areas, with street trees at regular intervals.

Four- and six-lane streets have trees in the front boulevard in addition to the trees in the centre boulevard. The front boulevard is as wide as the concrete frame around the tree grates.

On two-lane streets, the City provides a front boulevard with curb bulges. The curb bulges are Curb Bulge RMAs, which is a landscaping, traffic calming and stormwater management feature that follows a standardised City design. Where needed, curb bulges can be lengthened to also accommodate street furniture and fire hydrants.

At bus stops, the front boulevard is replaced with the passenger landing area. Trees and boulevard features are removed, and the cycling zone and walking zone are shifted to



Photo 10: Clay Brick Paver Boulevard

the property side to create generous space for a bus shelter, waste/recycling receptacles, and the increased pedestrian activity. Accessible bus stops are the standard for Town Centres.

2.2.6 VEHICULAR ZONE AND PARKING

The vehicular zone is used for vehicle travel. In addition, the outer lanes accommodate parking at off-peak times on six- and four-lane streets, and at all times on two-lane streets. On two-lane streets, the parking lanes are concrete for durability and to visually distinguish them from the travel lanes. In tandem with the curb bulges, this helps to visually narrow the street and encourage lower speeds. It also enhances safety in the same way as a painted line along the edge of a rural road, by giving visual guidance to drivers.

Buses typically stop in the outside travel lane on multi-lane streets. Bus bays (pull-outs) are used where buses are stopping for longer periods (such as layovers), on two-lane streets where they would block traffic, and in other locations where needed.

2.3 IMPLEMENTATION

The Burnaby Town Centre Standards will be implemented through development servicing requirements and the City's Capital Program. The City will develop an operations and maintenance program to provide a defined level of service for all public realm infrastructure.

Implementation of the Town Centre Standards will provide for City and community benefits in a number of areas, including:

- Increase quality of living and tourism through beautification of the public realm.
- Improve environments for community and social interactions.
- Promote healthy living and fitness with infrastructure for active transportation.
- Improve comfort and protection for pedestrians, and increased travel by sustainable mode.
- Minimise negative impact to waterways and fish habitat with stormwater management features.
- Reduce urgency for upsizing of storm sewers in response to climate change (more intense storms).

To provide sufficient space to implement the Town Centre Standards, the City may require land dedication from developers as part of the rezoning and subdivision requirements. There may be site-specific variations of the Town Centre Standards due to local conditions or constraints. Currently identified examples include:

- Town Centre Standards may not apply on streets that are designated to retain single-family residential development, reflecting the lower intensity of usage and low pace of redevelopment.
- Perimeter Street standards will be required around the borders of the Town Centres to tie into the existing forms of development as identified in Section 3.1.5. In instances of Town Centre borders, the applicable Town Centre standards will only apply on the Town Centre side of the street, with the cycle track widened to 3.0m for two-way travel. The other side of the street will use a traditional standard, with sidewalk or Urban Trail as applicable. The following streets will also have Perimeter Street standards applied because the Urban Trail is too far way from the street to be accessed from it:
 - Beresford Street - Gilley Avenue to Griffiths Avenue.
 - Central Boulevard - Patterson Avenue to Imperial Street.
 - Gilmore Avenue - Dawson Street to Halifax Street.
- Custom design standards will be applied for identified areas requiring a unique design due to local constraints or design requirements. Presently these streets include:
 - Beresford Street (Beresford Art Walk) - Willingdon Avenue to Dow Avenue.
 - Dawson Street - Gilmore Avenue to Willingdon Avenue.
 - Edmonds Street - Kingsway to Canada Way.

- One-Sided Street standards will be applied where street segments that parallel an Urban Trail will apply the Town Centre standards only to the side of the street opposite the Urban Trail side:
 - Beresford Street - Patterson Avenue to Willingdon Avenue.
 - Station Hill (where it parallels the BC Parkway).
 - Patterson Avenue - Kingsway to Imperial Street.
- The following street segments will have the Town Centre Standards extend beyond the Town Centre boundaries:
 - Kingsway - Royal Oak Avenue to Gilley Avenue (Linking the Metrotown and Edmonds Town Centres).
 - Lougheed Highway - Boundary Road to Gilmore Avenue.
 - The standard will be extended to the end of some blocks, where the Town Centre boundary is mid-block.
- Steeper slopes in excess of 5% may require an alternate approach to address multi-modal safety (e.g. switchback style design to reduce slope of user routes).

The application of the standard designs to specific Town Centre streets is mapped in **Figures 4 to 7**. The maps show the existing streets, but the Town Centre Standards also apply to proposed future streets. The maps show the connecting Urban Trails (multi-use paths) only for information purposes.

The application of the standards is based primarily on road classifications from the Burnaby Transportation Plan, with some exceptions:

- The Local Collector standard has been applied to key Local Residential streets: 16th Street, Alpha Avenue (north of Dawson Street), Bennett Street, Beresford Street (east of Gilley Avenue), Bonsor Street, Cameron Street (west of Beaverbrook Drive), Douglas Road (Lougheed Highway to Dawson Avenue), Gatineau Street, Humphries Street, McMurray Avenue, Maywood Street (Willingdon Avenue to Telford Avenue), Sussex Avenue (north of Kingsway), and Marlborough Avenue (Kingsway to Bennett Street).
- Imperial Street (Patterson Avenue to Royal Oak Avenue) and North Road (Cameron Street to Clarke Drive) will use the four-lane standard, and Willingdon Avenue (Lougheed Highway to Brentwood Mall north driveway) will use the six-lane standard
- The Town Centre standards will not apply to 10th Avenue or Southridge Drive.

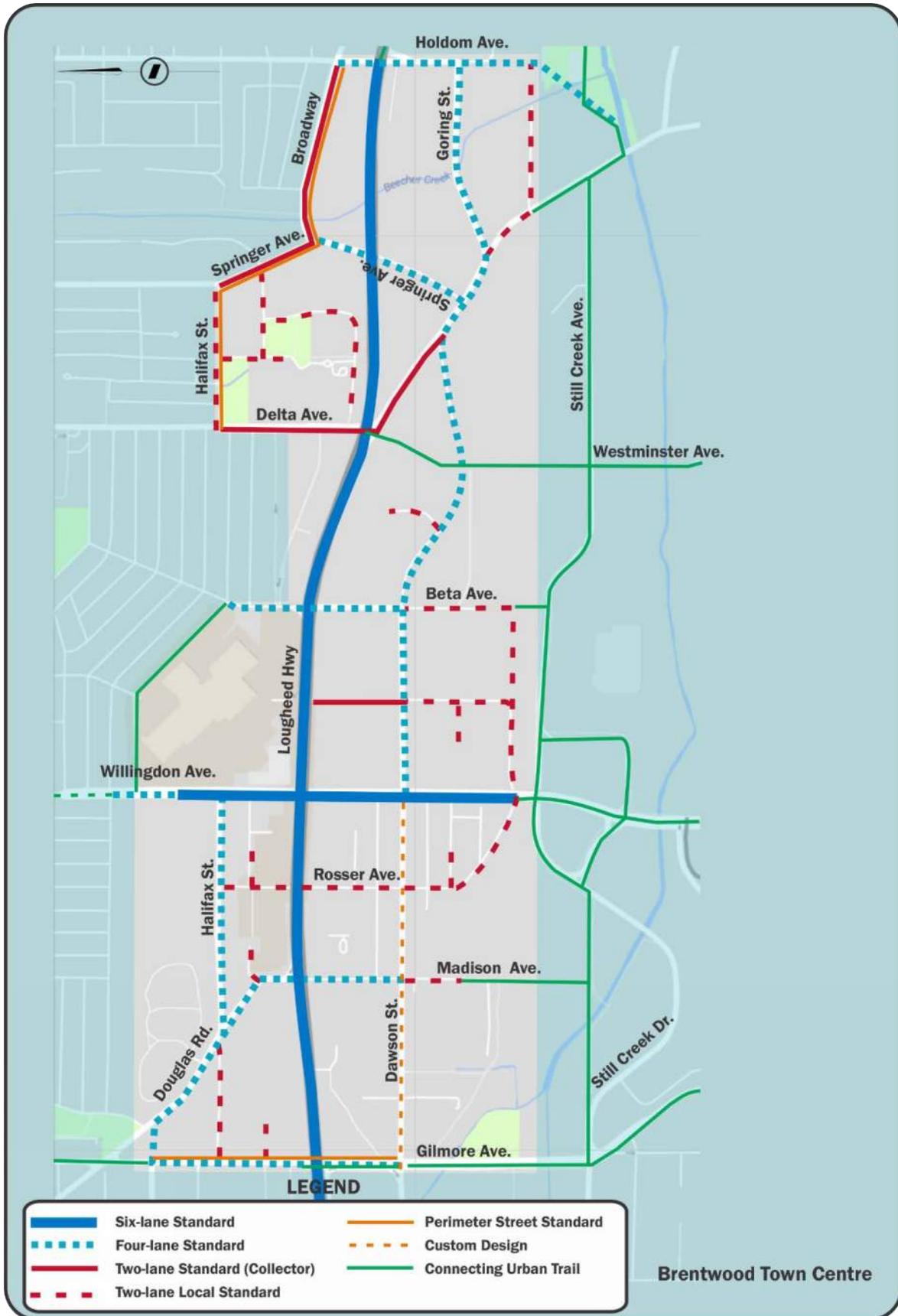


Figure 4 - Brentwood Town Centre Implementation Area



Figure 5 - Metrotown Town Centre Implementation Area

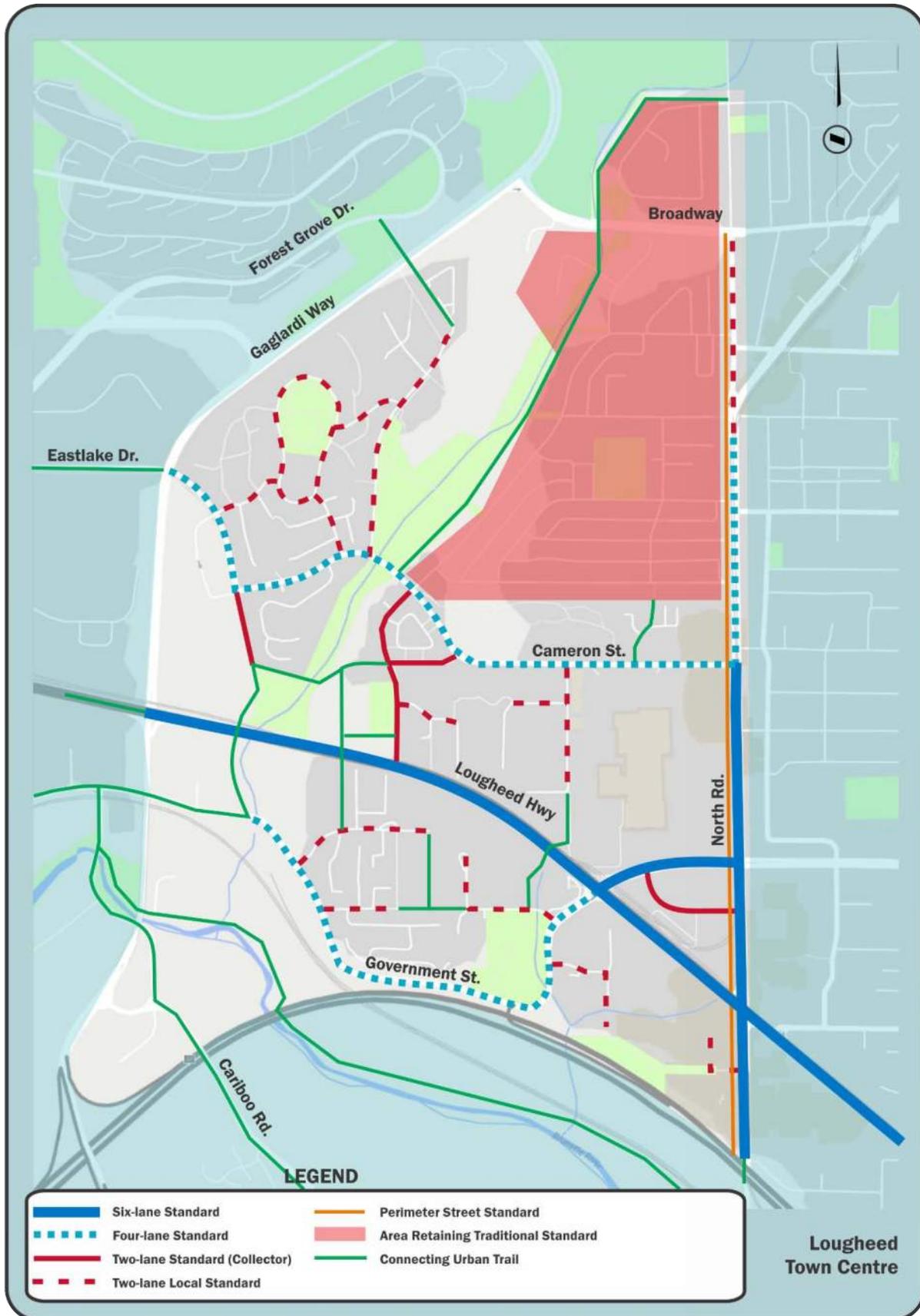


Figure 6 – Lougheed Town Centre Implementation Area

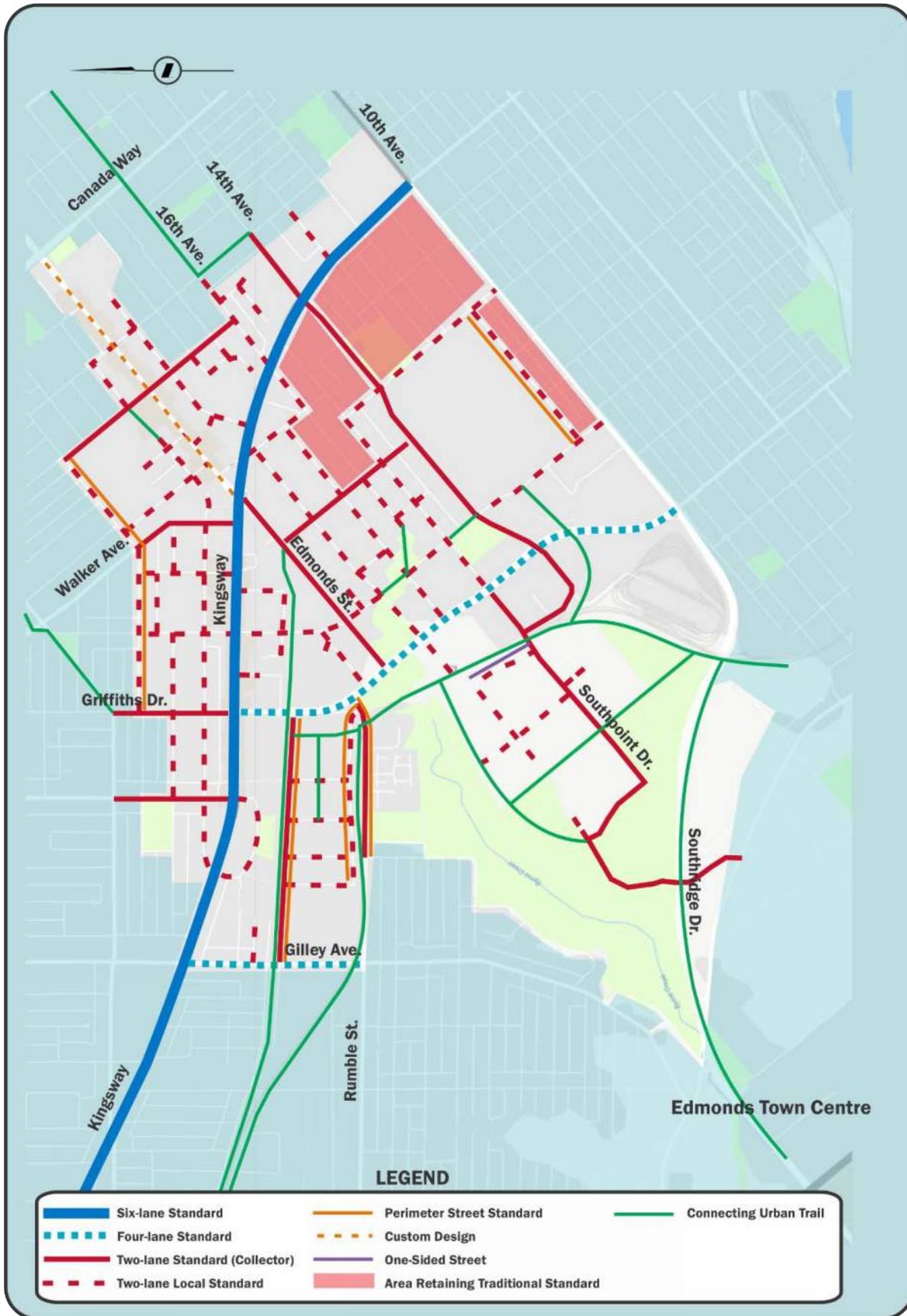


Figure 7 - Edmonds Town Centre Implementation Area

3 Town Centre Design Criteria

The Town Centre criteria described in this section will provide guidance to establish a high-quality design and consistent aesthetic to the Town Centres.

3.1 STREET TYPOLOGIES

Although the “Public Realm” focuses primarily on the zone between the building face and curb, this document also addresses the typologies that are street-wide. Based on the current and future street use, as well as population growth and density, these are key typologies that will form a complete street network in Burnaby Town Centres and beyond. The following are four (4) key and two (2) perimeter or custom street typologies that have been defined:

The distinct streetscape typologies have been designed with unique clay paver colours to create a unique aesthetic quality in each Town Centre. This toolkit should be used by planners and developers to guide them in creating a unified public landscape throughout Burnaby.

1. Typical Six-Lane Arterial.
2. Typical Four-Lane Arterial or Collector.
3. Typical Two-Lane Collector Street.
4. Typical Two-Lane Local Street.
5. Perimeter Street.
6. Custom Street.



Photo 11: Lougheed Highway, Brentwood Town Centre

3.1.1 TYPICAL SIX-LANE ARTERIAL STREET

The typical dimensions of a six-lane arterial street are shown in **Figure 8**. A detailed schematic for a six-lane arterial street is included in **BBY-TC-010** in the Town Centre Standard Drawings included in **Appendix A**.

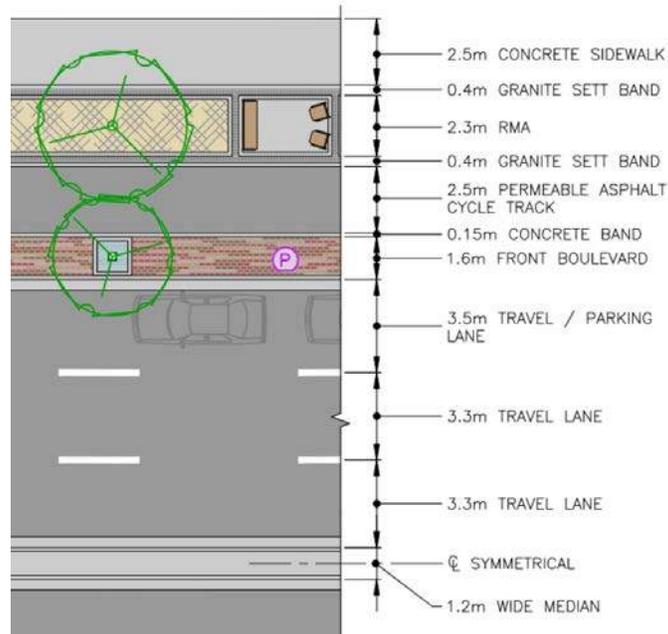


Figure 8 - Typical Six-Lane Arterial Street Section

3.1.2 TYPICAL FOUR-LANE COLLECTOR AND ARTERIAL STREET

The typical dimensions of a four-lane arterial or collector street are shown in **Figure 9**. A detailed schematic for a four-lane collector and arterial street is included in **BBY-TC-006** in the Town Centre Standard Drawings included in **Appendix A**.

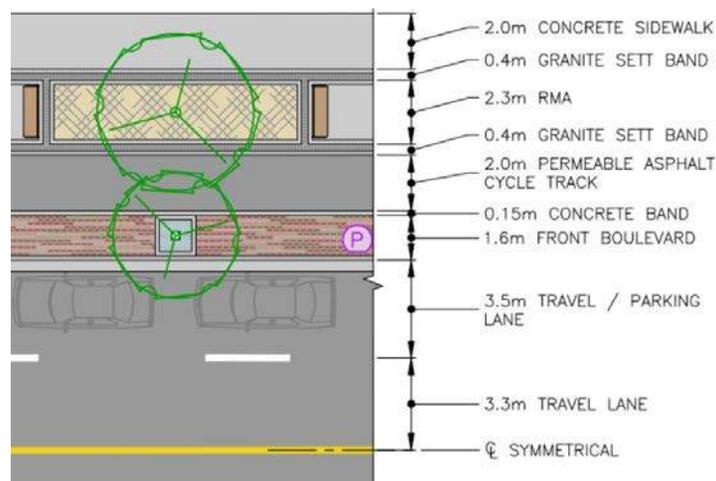


Figure 9 - Typical Four-Lane Collector and Arterial Street Section

3.1.3 TYPICAL TWO-LANE COLLECTOR STREET

The typical dimensions for the two-lane collector street are shown in **Figure 10**. A detailed schematic for a two-lane collector is included in **BBY-TC-004** in the Town Centre Standard Drawings included in **Appendix A**.

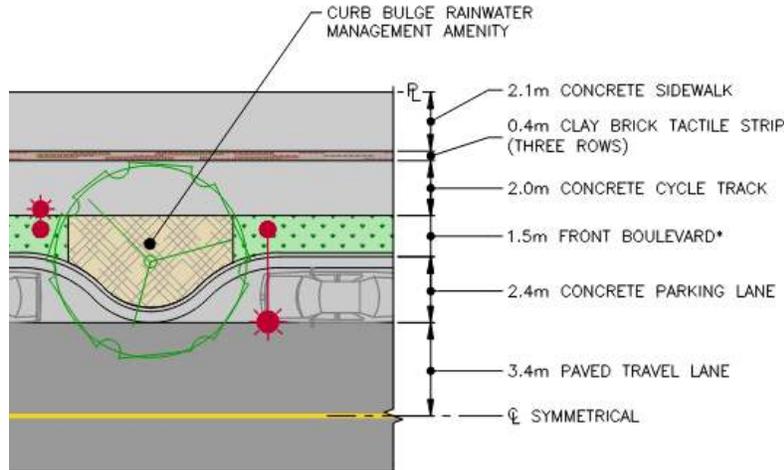


Figure 10 - Typical Two-Lane Collector Street Section

3.1.4 TYPICAL TWO-LANE LOCAL STREET

The typical dimensions of a two-lane local street are shown in **Figure 11**. A detailed schematic for a two-lane local street is included in **BBY-TC-001** in the Town Centre Standard Drawings included in **Appendix A**.

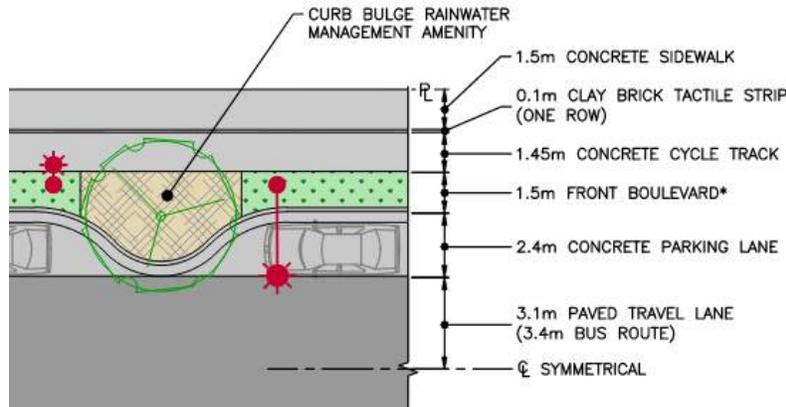


Figure 11 - Typical Two-Lane Local Street Section

3.1.5 PERIMETER STREET

The perimeter street design applies to streets where Town Centre Standards are not applied to both sides of the street, typically streets at the edge of a Town Centre or adjacent to special land use such as the SkyTrain guideway. On the “primary” side of the street, the Town Centre Standard applies, with the only exception being that a wider two-way cycle track is provided. The other side of the road will use the City’s default sidewalk or urban trail section or an enhanced pedestrian area which could include a buffer zone, furnishing zone, pedestrian through zone, and/or frontage zone, depending on the adjacent land use and as reviewed by the City on a case-by-case basis. The typical dimensions of a six-lane perimeter street are shown in **Figure 12**. The four-lane perimeter street would have one less travel lane (3.3m) and no centre median (0.6m, half of the median width). A detailed schematic for four-lane and six-lane perimeter streets are included in **BBY-TC-008** in the Town Centre Standard Drawings included in **Appendix A**.

The perimeter street standard will be utilised for the following road segments:

Metrotown Town Centre

- Imperial Street (north side), Patterson Avenue to Royal Oak Avenue.
- Boundary Road (east side), Kingsway to Thurston Street.
- Royal Oak Avenue (west side), Imperial Street to Grange Street.
- Grange Street / Dover Street (south side), Sussex Avenue to Royal Oak Avenue.
- Central Boulevard (north side), Patterson Avenue to Imperial Street.

Brentwood Town Centre

- Gilmore Avenue (east side), Dawson Street to 1st Avenue.
- Halifax Street (south side), Delta Avenue to Springer Avenue.
- Springer Avenue (west side), Halifax Street to Broadway.
- Broadway (south side), Springer Avenue to Holdom Avenue.

Lougheed Town Centre

- North Road (west side), Broadway to Delestre Avenue (Coquitlam).

Edmonds Town Centre

- Rumble Street (south side), Hedley Avenue to Griffiths Drive.
- Prenter Street (north side), Conway Avenue to Rumble Street.
- Elwell Street (south side), Griffiths Avenue to Humphries Avenue.
- 11th Avenue (north side), 18th Street to 15th Street.
- 15th Street (west side), Stride Avenue to 10th Avenue.
- Beresford Street (south side), Gilley Avenue to Griffiths Drive.

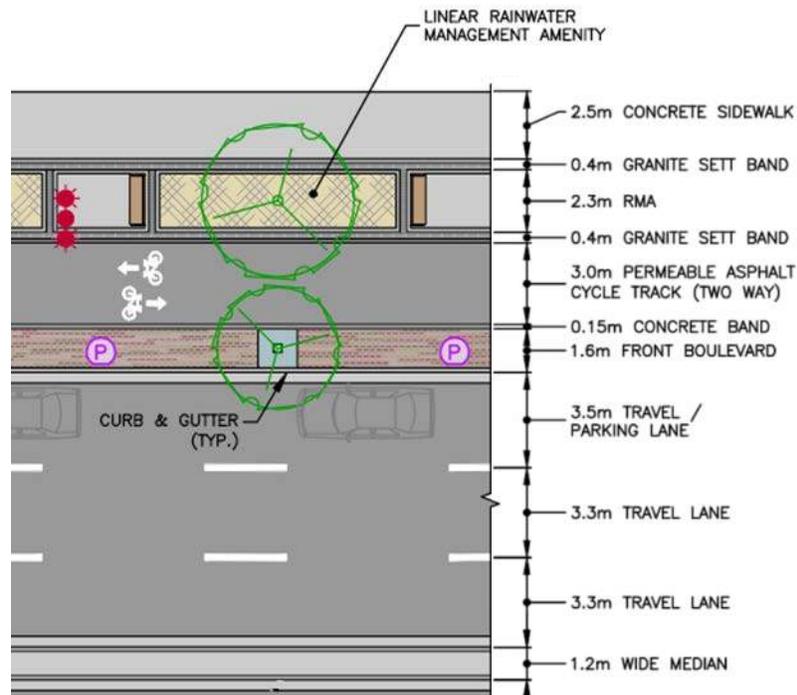


Figure 12 - Typical Six-Lane Perimeter Street Section

3.1.6 CUSTOM STREET

Custom street design applies to streets with insufficient road allowance to construct typical Town Centre street cross-sections. The City will prescribe a cross-section for these streets on a site by site basis, incorporating various features from the typical Town Centre street. Custom Street designs apply to Beresford Street between Willingdon Avenue and Dow Avenue (Metrotown), Edmonds Street between Kingsway and Canada Way (Edmonds), and Dawson Street between Gilmore Avenue and Willingdon Avenue (Brentwood).

3.2 TRANSPORTATION DESIGN CONSIDERATIONS

The following section outlines the design parameters and discussions regarding the development of the engineering standard detail drawings included with this document. The full width of street areas described below, from back of sidewalk to back of sidewalk, is typically included within the City's public road allowance. In certain circumstances where existing road allowances are insufficient, such as the addition of a left turn lane or a centre median, the City may request and require private property owners to dedicate additional land to the City.

3.2.1 ROAD GEOMETRY

The intent of the road geometry specifications is to provide roadway designs that are usable and accessible to all modes of traffic including pedestrians, cyclist, vehicles, and transit. The tables below present the standard geometry to be utilised within the Town Centres for each of the various road types. The standard roadway drawing for each roadway classification is shown in the typical sections included in **Appendix A**.

Two-Lane Local Road

Table 3-1 – Two-Lane Local Road Geometry Specifications

	LOCAL	LOCAL (BUS ROUTE)
Standard ROW	20.1m	20.7m
Sidewalk	1.5m	1.5m
Clay Brick Tactile Strip	0.1m	0.1m
Cycle Track	1.45m	1.45m
Front Boulevard	1.5m	1.5m
Parking Lane	2.4m	2.4m
Travel Lane	3.1m	3.4m

Two-Lane Collector Road

Table 3-2 – Two-Lane Collector Road Geometry Specifications

	COLLECTOR
Standard ROW	23.6m
Sidewalk	2.1m
Clay Brick Tactile Strip	0.4m
Cycle Track	2.0m
Front Boulevard	1.5m
Parking Lane	2.4m
Travel Lane	3.4m



Figure 13 – Two-Lane Collector Street Visualisation

Four-Lane Collector and Arterial Road

Table 3-3 – Four-Lane Collector and Arterial Road Geometry Specifications

	FOUR-LANE COLLECTOR / ARTERIAL
Standard ROW	31.3m
Sidewalk	2.0m
RMA and Bands	3.1m
Cycle Track and Conc. Band	2.15m
Front Boulevard	1.6m
Travel / Parking Lane	3.5m
Travel Lane	3.3m
Left Turn Lanes (where needed)	3.1m (not included in standard ROW width above)

Six-Lane Arterial Road

Table 3-4 – Six-Lane Arterial Road Geometry Specifications

	SIX-LANE ARTERIAL
Standard ROW	41.1m
Sidewalk	2.5m
RMA and Bands	3.1m
Cycle Track and Conc. Band	2.65m
Front Boulevard	1.6m
Centre Median	1.2m
Travel / Parking Lane	3.5m
Travel Lane	3.3m
Left Turn Lanes (where needed)	3.1m (not included in standard ROW width above)

Key Considerations

The following considerations summarise some key elements used to derive the values in the tables above as well as clarify additional geometry considerations.

- Two-lane local streets with existing or proposed bus routes to increase travel lane width by 0.3 metres to have curb-to-curb dimension of 11.6 metres, 0.6 metres greater than the standard street design as indicated in Table 3-1.
- RMA and curb bulge designs on two-lane roadways are designed to provide the acceptable radius for street sweeper maneuvering, 4.0 metre inside radius and 2.5 metre outside radius.

- Parking meter locations shall be centered between parking spaces. In the case where lighting poles conflict with parking meter locations, lighting poles shall be shifted upstream (relative to vehicular movement) of the parking meters.
- Street trees within the front boulevard and the centre boulevard (RMA) shall be aligned with each other, providing open site lines to the sidewalk and building frontages.
- Left-turn lanes are typically not provided on two-lane local streets. For two-lane collectors, they are typically provided within the same right of way width by banning parking (and eliminating curb bulges near the intersection). On four- and six-lane streets, additional right of way width (road dedication from adjoining lands) is required for left-turn lanes. The standard drawings in **Appendix A** reflect additional right of way for left turn lanes on all roadways.
- Where needed to restrict turning movements, a 1.2m centre median may be added to four- and six-lane streets. This requires additional right of way (road dedication from adjoining lands).

3.2.2 INTERSECTION GEOMETRY

Intersection geometry for the various street types has been evaluated using geometric design principles derived from both the City's design criteria and preferences as well as TAC geometric design guidelines. Special consideration was given to pedestrian, cyclist, and design vehicle movements and how each of the respective intersection users interact during simultaneous and opposing traffic movements. General considerations for intersection design involving similar roadway classifications are described below. Intersections where different roadways of varying classifications come together often address the unique requirement (e.g. design vehicle) for the respective roadway classification, generally aligning with the guidance below with any differences indicated in the intersection arrangements in **Appendix A**.

A list of the design vehicles and corresponding traffic movement guidance that shape the intersection design is summarised below. All roadways should permit the turning radius of firetrucks, using the full width of the street.

Two-Lane Local Intersection Geometry and Turning Movements

- Design Vehicle: MSU.
- MSU shall be able to make turns without crossing centre lines (note that two-lane local streets have no painted centre line and use of the full street width is acceptable).

Two-Lane Collector Intersection Geometry and Turning Movements

- Design Vehicle: B-12.
- B-12 shall be able to make turns without crossing centre lines.

Four-Lane Collector and Arterial Intersection Geometry and Turning Movements

- Design Vehicle: HSU.
- HSU and WB-20 shall be able to make turns without crossing centre lines.
- Right turning vehicles shall permit appropriate space for concurrent right-turning cyclists.

Six-Lane Arterial Intersection Geometry and Turning Movements

- Design Vehicle: HSU.
- HSU and WB-20 shall be able to make turns without crossing centre lines.
- Right turning vehicles shall permit appropriate space for concurrent right-turning cyclists.

In order to achieve a better fit for the desired design vehicle turning movements at intersections of two-lane roadways (Local, Collector, Tee) while keeping the distances between crosswalk letdowns as short as possible, compound curves have been specified. Particulars of the typical compound curves used for the standardised intersection arrangements are included in the respective standard drawings in **Appendix A**. On intersections including four-lane and six-lane roadways, customised boulevard tapers have also been designed to accommodate minimum turning requirements for design vehicles with boulevard taper details provided on each respective and applicable intersection drawing.

Intersection arrangements as well as mid-block crossings require the use of signage to provide direction and warnings to vehicles, cyclist, and pedestrians movements. The type of signage and specific locations for signage has been indicated in the respective drawings included in **Appendix A**.

3.2.3 TRANSIT ACCESSIBILITY AND STOPS

Transit stops will be designed with the mindset of “Cyclist/Vehicles entering a Pedestrian Environment” and not “Pedestrians entering a Cyclist/Vehicle Environment”, giving pedestrians priority when loading and unloading from transit.

- White crossing bars signal to cyclists that they are approaching a pedestrian area and will guide pedestrians to cross the cycle track in specified locations. Troweled tactile lines adjacent to the bus shelter will guide visually impaired users towards the loading point at the front of the bus.
- Transit design details are included in the standard drawings in **Appendix A**. Transit stop geometry references the City of Burnaby standard bus shelter and TransLink’s Transit Infrastructure Design Guidelines.
- Two-lane collector streets with existing or planned bus routes should incorporate 3.0 metre concrete apron (adjacent to the travel lane) and are typically situated in far side configuration. The bus apron and passenger area will require additional right of way as shown in **BBY-TC-023** in **Appendix A**.
- Bus stops should incorporate a passenger area adjacent to shelters to permit free passage of pedestrians around passenger queues.



Photo 12: Boundary Road, Brentwood Town Centre

3.2.4 DRIVEWAYS

Driveway designs, to the extent possible, should keep the approach apron within the front boulevard. The driveway apron should not extend into the cycle track or sidewalk, eliminating dips in grade for cyclists and pedestrians. Driveway widths are shown with typical widths of 6.0 to 9.0 metres but will vary based on the needs of the landowner. Driveway geometry is detailed in the standard driveway detail drawings included in **Appendix A**. Driveways typically include a 25 to 40 mm lip at the curb line which will alter the driveway slopes indicated in the standard driveway detail drawings.

Objects that fully obstruct driveway visibility will be restricted to a maximum height of 1.0 metre within the clear zone to maintain permissible sight lines for pedestrians and vehicles approaching the driveway/sidewalk interface. Minimum clear zone areas around driveways are shown on **BBY-TC-022**. Objects that are partially open and limit visibility within the clear zone will be reviewed on a case-by-case basis and approved by the City and Engineer.

3.2.5 SIDEWALKS

One of the most discerning elements of the public realm is sidewalks. Through the use of different materials, widths, and connections to other public realm features, sidewalk designs will aim to provide a safe route for pedestrians to access the built-in spaces for gathering within the Town Centre areas.

- Sidewalk widths vary by road cross-section as specified in typical street sections included in **Appendix A**.
- Sidewalks should be widened by 0.5 metres where high pedestrian volumes are anticipated such as around school zones, nursing homes and hospitals, or areas of higher density commercial developments.

3.2.6 SIDEWALK AND CYCLE TRACK MIXING AREAS

Intersections of two-lane roadways and mid-block crossings require pedestrians and cyclists to use a common let down situated within a mixing area. The mixing area is intended for pedestrians to access the common let down for street crossings and similarly for cyclists to access the letdowns for street crossings or to make a right turn onto the cross-street at intersections. These areas will be visually distinguished using a unique diamond scoring pattern that establishes a boundary where pedestrians and cyclists alike will have to maneuver and share space to make the desired movements around the intersection and mid-block crossings. Mixing areas are included in **BBY-TC-003** and **BBY-TC-013** through **BBY-TC-016** in Appendix A.

3.3 CYCLE TRACK CONSIDERATIONS

Cycle tracks will be designed to facilitate efficient and safe circulation of cyclist traffic in the Town Centres. This section identifies key design elements affecting cyclist safety and provide guidance on cycle lane arrangements at intersections and transit stops.

3.3.1 CYCLE TRACKS ON STEEP SLOPES

There are several areas within the City of Burnaby where roadway slopes exceed 5%. Cyclists can build up speed making it difficult to stop or stay in control. This also creates a hazard for pedestrians crossing the cycle track to get to parked cars.

- In areas where grades exceed 5%, cycle tracks may need to incorporate speed reduction measures as recommended by the Engineer and approved by the City. Acceptable speed reduction measures could include a winding alignment and should exclude the use of speed bumps and/or barriers that might increase the risk of accidents.
- Key areas within the Town Centres where roadway grades exceed 5% are included below:
 - **Metrotown: Patterson** from Grange to Sardis.
 - **Brentwood: Gilmore** from First to Lougheed, **Halifax** from proposed Carleton to Gilmore, proposed **Carleton** from Halifax to Lougheed, **Douglas/Madison** from Halifax to Lougheed, **Madison** from Lougheed to Dawson, **Willingdon** from Skyline to Juneau, **Alpha** from Lougheed to Alaska, **Beta** from Brentlawn to Sumas, **Delta** from Brentlawn to Lougheed, **Halifax** from Delta to Springer, **Springer** from Halifax to Lougheed, **Woodway, Ridgelawn** from Bellwood to Springer, and **Bellwood** from Ridgelawn to Anola.
 - **Lougheed: Centaurus Drive** from Centaurus Circle to Eastlake, **Centaurus Drive** from Centaurus Circle to Beaverbrook, **Government** south of Halston, **Government** from Cardston to Highway 1, **Horne, Halston, Cardston, Austin** from North to Lougheed, **North** from Cameron to Lougheed, **Morrey** from Sullivan to Cameron, **Bartlett**, proposed **Cross Creek** from North to Grand Promenade, and anticipating other streets on the Lougheed Mall site.
 - **Edmonds: Southpoint** from Sandborne to Southwynde, **Byrnepark** from Southwynde to Marine.

3.3.2 CYCLIST ACCOMMODATIONS AT INTERSECTIONS

The City will incorporate features within intersections to protect and guide cyclist movements safely through the intersection. These features encourage cyclists to be more aware of their interaction with the vehicular zone. Additionally, it is important to include visual cues and signage to warn vehicles that cross cyclist zones. The turning movements of cyclists has been factored into the intersection design and vehicle turning movements on four-lane and six-lane intersections.

Separated Cycle Tracks

- Separated cycle tracks create a physical and visual barrier between the cycle lane and vehicular zone, discouraging vehicles from making early right turn movements through the cycle track.

- The front boulevards at departing and receiving points of the intersection will guide both cyclists and vehicles to their respective travel lanes.

Bike Boxes

- Bike boxes create a space for cyclists to queue while waiting at traffic lights and are located between the pedestrian crosswalk and the path of cyclists that are going straight through the intersection as shown in **BBY-TC-017 to -021** in **Appendix A**.
- The boxes will be marked with green paint and cyclist markings to be highly visible to cyclist, pedestrians, and vehicles.
- The boxes are situated closer to the intersection than the vehicle stop bar which gives vehicles a clear view of the queued cyclist in front of them.
- These provide for safer left turn movements and allows cyclists to avoid turning left through crossing traffic in an intersection.
- Bike boxes will not be located at all intersections where four-lane or six-lane roadways intersect with other roadways. The Town Centre intersection designs have reserved space for bike boxes and bike boxes locations will be determined by the City in the future, if desired.



Photo 13: Lougheed Highway, Brentwood Town Centre

3.3.3 ADDITIONAL CONSIDERATIONS

- Cycle lane signage and/or symbols shall meet the minimum spacing standards per TAC and not exceed 75m spacing.
- White torch-on cycle lane markings are the preferred cycle track marking and should be placed at the beginning/end of each block, mid-block, and at locations where pedestrian cross-traffic is anticipated to be high or frequent, e.g. high-rise building entrances.
- Cycle lane markings should be a minimum of 1.0m in width (dimension perpendicular to approaching cyclist) for cyclist and pedestrian visibility. Cycle symbol dimensions are shown on Standard Drawing **BBY-TC-012**.
- Cyclist push button poles for traffic signal changes should be positioned for cyclist accessibility at any intersection that is signalized.



Photo 14: Lougheed Highway, Brentwood Town Centre

3.4 UTILITY CONSIDERATIONS

In general, utility corridors within the Town Centres are already established, requiring a case-by-case review to evaluate potential utility impacts generated by other Town Centre directives. This section includes general guidance on the management of existing and proposed utilities, distinctions for public and private utilities, and minimum setback requirements. Typical utility locations are shown in the standard drawings included in **Appendix A**.

3.4.1 UTILITY ALIGNMENTS

Utility improvements will be coordinated with prescribed alignments to be consistent with public realm design goals and minimize disturbance to specialized surface treatments. Utilities shall conform to the City's minimum requirements detailed in the Design Criteria Manual. Preferred utility corridors and areas where utilities are not permitted are shown in the roadway cross-sections provided in **Appendix A**.

Municipal Linear Infrastructure

Existing infrastructure: generally, relocate outside of inaccessible areas including RMAs and street trees.

Proposed Infrastructure: to be located within curb-to-curb area and outside of special pavements (e.g. scored mixing areas, where possible) or sidewalk treatments.

Private Infrastructure

Private utilities are to be placed in an approved location, generally relocating the utility outside of inaccessible areas such as RMAs and street trees.

Service Connections

All utilities (parallel to the roadway) and service connections should be positioned at least 1.5m from all RMAs as shown in various cross-section in **Appendix A**. A larger setback may be required based on the size and depth of the utility. Setback requirements should be assessed on a case-by-case basis with consultation from service providers where applicable. On

four- and six-lane streets, service connections can be located beneath the RMA connector walks as shown in **BBY-TC-028** in **Appendix A**.

3.5 RAINWATER MANAGEMENT AMENITY DESIGN CONSIDERATIONS

The City of Burnaby requires the establishment of a rainwater management strategy to manage the rainwater runoff from the City road right-of-way fronting new and redevelopment projects located within the Town Centres. Rainwater management criteria have been developed in the City's Design Criteria Manual as the primary mechanism to regulate post-construction runoff. Use of sustainable and green water quantity and quality control methods is encouraged by the City and is an important technique to achieve these goals.

RMAs will be integrated into the design of the streetscape, providing an effective approach to rainwater management and enhancing the visual landscape to compliment other sustainable practices. RMAs will collect and convey rainwater runoff from the street corridor and will be designed to comply with the City's level of service requirements imposed on the roadway drainage. The placement of these features should work in harmony with pedestrian and cyclist zones and offer opportunities to transition between the two zones on four-lane and six-lane roadway configurations.

RMAs will be designed to meet the minimum requirements of Metro Vancouver's design water quality event and referencing the City's supplemental Rainwater Management Amenity design specifications for Town Centres (separate document, refer to Section 3.5.1).

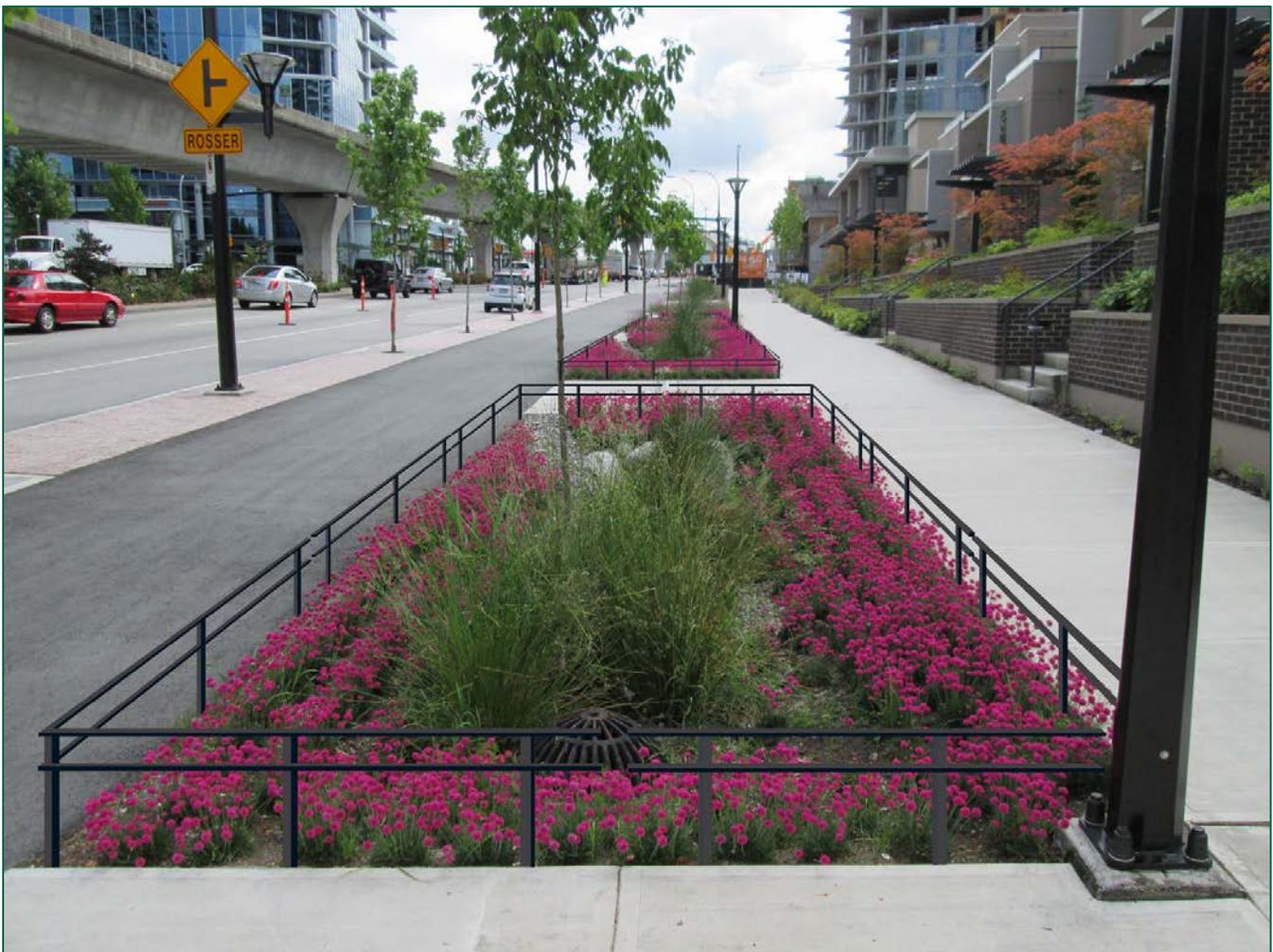


Photo 15: Rainwater Management Amenity at Lougheed Highway, Brentwood Town Centre

3.5.1 DESIGN SPECIFICATIONS

The City has developed Rainwater Management Amenity design specifications to provide effective rainwater treatment and ensure that plants and trees can mature in a healthy condition. From a rainwater management perspective, the key design considerations for RMAs include infiltration capacity, the surface area of engineered soil/filter media, and the ability to store, convey, and treat runoff from 90% of the annual rainfall events. Referencing historical rainfall within the area, 90% of the annual rainfall events within the City of Burnaby are equivalent to storm events equal to or more frequent than the 6-month, 24-hour design storm event which correlates to events with a rainfall depth of 47mm or less. Preliminary design for all RMAs should follow the City's Preliminary Design Report Requirements for Rainwater Management Amenities provided in **Appendix C**.

Infiltration of runoff is an important and natural hydrological process that recharges groundwater and reduces the amount of surface runoff. Within the Town Centres, infiltration opportunities are limited by several factors including subsurface hydrogeological conditions and the presence of utility corridors and underground structures. RMA design in the Town Centres should consider the following with respect to infiltration of rainwater:

- RMAs designs shall achieve the best possible infiltration given the in-situ soil conditions. No specific infiltration targets, whether in terms of flow or volume of runoff, will be required. In all cases except where infiltration capacity is field verified by the Engineer to be capable of infiltrating runoff from 90% of the annual rainfall events, RMAs should be designed to filter runoff through the engineered soil layer and discharge the treated runoff through a subsurface underdrain to a storm sewer outfall. The allowable release rate from the underdrain/facility for the target water quality rainfall event should not exceed a rate greater than 0.25 liters/second per hectare of contributing impervious drainage area.
- All RMAs should specify an unlined and open bottom to facilitate infiltration opportunities. Decisions to require an impermeable liner or barrier will be at the discretion of the City.

The relationship between the surface area of the RMA engineered soil and the amount of impervious drainage area is key to controlling pollutant loading over the filter medium. Directing larger amounts of impervious drainage area to the RMAs results in more frequent and intensive maintenance and can limit the water quality and conveyance functions of the RMAs. RMAs should adhere to the following surface area guidelines:

- RMAs will be designed to load and disperse runoff over the surface of the engineered soil. Catch basins with sumps and overflows and/or sediment forebays shall be incorporated to isolate incoming debris and aid in reducing maintenance needs of the RMA.
- Contributing drainage area requirements will vary based on the roadway classification and respective configuration of single or multiple RMAs connected in series. **Table 3-5** shows the ratio of maximum impervious drainage area to the RMA surface area for different roadway and land use classifications.

Table 3-5 – Maximum Ratio of Impervious Drainage Area to RMA Surface Area

ROADWAY/LAND USE CLASSIFICATION	MAXIMUM RATIO OF IMPERVIOUS DRAINAGE AREA TO RMA SURFACE AREA
Major/Minor Roadways and Sidewalks	15:1
Residential / Collector Roadways and Sidewalks	30:1
Sidewalk and Boulevard Areas, No Roadway	50:1

The storage volume within the RMA cells allows runoff to be stored both during the filtering process and while runoff is infiltrated or released slowly to the storm sewer outfall. RMAs are designed to capture and treat 90% of annual rainfall events as well as manage or bypass rainfall events up to the 10-year design storm event for the selected drainage catchment areas routed to the RMAs. The overflow control structure situated within the RMAs must be raised above the

surface of the RMA to force rainwater to filter through the engineered soil mix and be collected by the subsurface underdrain from which it is routed to a storm sewer outfall.

- A static or dynamic storage volume determination must demonstrate that the RMAs contain adequate storage volume to treat the 6-month, 24-hour design storm event without bypassing runoff. Placement of curb cuts and catch basins to divert roadway runoff into the RMAs shall be determined by the designer to control the amount of runoff entering the RMA such that the runoff from the catchment area can be fully infiltrated through the engineered soil mix.
- A maximum of 300 mm of temporary ponding above the RMA surface is permitted during the 6-month, 24-hour design storm event before a high capacity overflow or bypass feature must be activated.
- RMAs are intended to completely drain within a 24-hour period (after a single design storm event) to maintain vegetative health and collect/convey runoff from subsequent or consecutive rainfall events.

The presence of existing and future utilities within the vicinity of RMAs can limit maintenance access or function of the utilities and RMAs. With respect to utilities adjacent to RMAs, the following should be considered:

- RMAs and future utility corridors should be designed such that there is a minimum setback of 1.5 metres on either side of utilities that does not encroach into the RMAs or the acceptable trench width based on the depth of the utility and third-party setback requirements. Refer to Section 3.4 for utility setback guidance.
- Where existing utilities are permitted to pass through a proposed rain garden design (evaluated on a case-by-case basis), a utility sleeve will be required to prevent stormwater contamination or damage to the utility.

3.5.2 STORMWATER MANAGEMENT DESIGN CONSIDERATIONS

Stormwater management design criteria within the Town Centres will comply with the City of Burnaby's Design Criteria Manual.

- All stormwater runoff should be directed to storm sewer infrastructure including Rainwater Management Amenities where applicable. Areas where infiltration and groundwater table recharge would be applicable or preferred by the City will be determined on a case-by-case basis.
- Storm sewers will continue to be designed per the methods and criteria specified in the City's Design Criteria Manual with no consideration for potential flow reductions associated with RMAs.

3.5.3 RAINWATER MANAGEMENT AMENITIES DESIGN

Linear RMA and Curb Bulge RMA design guidance has been compiled in the standard drawing and details provided in **Appendix A**. This includes mechanisms to route rainwater into the RMAs, RMA cross-sections, hydraulic connectivity details (below RMA connector walks) of linear RMAs, and details on the overflow/outlet control structures.

3.6 STREET LIGHTING DESIGN CONSIDERATIONS

Lighting plays a major role in defining the character, scale, and the sense of safety associated with the streetscape in the city, as well enhancing the overall atmosphere. The Town Centres shall reference the City's standard poles for both pedestrian and street lighting.

Town Centre lighting generally refers to the lighting of traffic, pedestrian and cyclist routes within a designated urban area. Town Centre lighting should provide the appropriate scale, type and level of lighting for roadway for pedestrian, cyclist and vehicle routes.

3.6.1 PEDESTRIAN ACTIVITY

Town Centres generally have high nighttime pedestrian activity. It is important that pedestrians see and can be seen; therefore, both horizontal and vertical illuminance calculations are required for design. The recommended minimum horizontal and vertical illuminances for pedestrian areas are documented in IESNA RP-8.

Horizontal and vertical illumination calculations should also be undertaken for crosswalk illumination. Pole positioning shall also be considered when designing crosswalk illumination.

3.6.2 SECURITY

Security lighting should also be considered when designing town centre lighting. Security lighting should achieve the following; (from IES G-1-03)

- Provide a clear view of an area from a distance and enable anyone moving in or immediately around an area to be easily seen.
- Deny potential hiding spaces adjacent to frequently traveled foot routes.
- Permit facial identification at distances of at least 9 m and create the perception of being identifiable.
- Deter crime against persons or property.
- Enhance the public's feeling of comfort in accessing spaces and increase night-time pedestrian traffic.

3.6.3 CODES, RULES, STANDARDS AND PERMITS

Town Centre lighting systems are to be designed in general conformance with the following:

Codes

- Canadian Electrical Code, latest edition, and bulletins issued by Electrical Safety Branch of the Province of British Columbia.

Rules

- Workers' Compensation Board (WorkSafeBC).
- Canadian Standards Association.
- Utility companies.
- Regulations issued by municipal, provincial and federal authorities.

Standards

- City of Burnaby Design Criteria Manual.
- MMCD Specifications and Standard Detailed Drawings plus City of Burnaby Supplementary Specifications and Drawings.
- ANSI/IES Standard RP-8, American National Standard for Roadway Lighting.
- IES-DG-5 Recommended Lighting for Walkways and Class 1 Bikeways.
- TAC - Guide for the Design of Roadway Lighting.
- AASHTO – Standard Specification for Structural Supports for Highway Signs, Luminaires and Traffic Signals.
- CAN/CSA 22.3 No. 7 Underground Systems.
- CAN 3 – CSA 22.3 No. 1 Overhead Systems.

Permits

- Electrical Permits are required in accordance with the BC Safety Authority and the City Building Department Electrical Inspections, as applicable.

3.6.4 ROADWAY AND PEDESTRIAN CONFLICT CLASSIFICATIONS

Roadway classifications for lighting purposes are in accordance with ANSI/IES RP-8. The following four basic classifications are covered by these guidelines. Highway classifications such as freeway and expressways are excluded.

- **Major:** Serves a continuous route primarily for inter-community through traffic, includes arterial roadways.
- **Collector:** Performs the dual function for traffic of land access and movement between local roads, includes collector roadways.
- **Local:** Provides direct land access and is not intended to carry through traffic.
- **Walkways and Bikeways:** Adjacent to or independent from roadways.

The basic classifications are further divided according to the levels of vehicle/pedestrian interaction as follows:

- **High (H):** Commercial areas such as those adjacent to shopping centres, hotels, and central business districts. For Walkways and Bikeways this classification is further divided as follows:
 - **P:** Pedestrians and bicycles only.
 - **S:** Sidewalk adjacent to roadway.
- **Medium (M):** High density multi-family residential and local commercial, industrial and public areas.
- **Low (L):** Medium density multi-family, single family and rural residential areas. For Walkways and Bikeways this classification is further divided as follows:
 - **MDR:** Medium density residential.
 - **LDR:** Low density residential.
 - **SR:** Semi-rural or rural.

3.6.5 LIGHT SOURCES

The lighting source for Town Centre lighting shall be Light Emitting Diode (LED) as approved by the Engineer. The pre-approved lighting sources for the Burnaby Town Centre are listed below – alternate products may be submitted for approval by the Engineer.

Liveable Cities (LED Roadway Lighting Ltd) Luminaire

- NXT-48M-5-7-2ES-6-GY-3-UL-X-2H.
- NXT-48M-5-7-3LB-5-GY-3-UL-X-2H.
- NXT-72M-5-7-2ES-7-GY-3-UL-X-2H.
- NXT-72M-5-7-3LB-6-GY-3-UL-X-2H.

Pedestrian Luminaire

- Lumec 35W 4K 32LED flat glass Capella Model.

3.6.6 INTERSECTION LIGHTING

Increased lighting levels are required at intersections. Refer to **Table 3-6** for details.

Table 3-6 – Intersection Lighting Design Criteria

ILLUMINANCE CRITERIA – CLASS R3 ROAD SURFACE				
FUNCTIONAL CLASSIFICATION	AVERAGE MAINTAINED ILLUMINATION AT PAVEMENT BY PEDESTRIAN AREA CLASSIFICATION (LUX)			UNIFORMITY E_{avg}/E_{min}
	High	Medium	Low	
Major / Major	34	26	18	3:1
Major / Collector	29	22	15	3:1
Major / Local	26	20	13	3:1
Collector / Collector	24	18	12	4:1
Collector / Local	21	16	10	4:1
Local / Local	18	14	8	6:1

3.6.7 POLES

Poles are to be davit type unless otherwise directed or approved by the Engineer. Davit pole heights are to be 7.5 metres, 9.0 metres, 11.0 metres, or 13.5 metres. Davit poles shall be two-piece poles, with separate vertical shaft and luminaire arm.

Post-top poles, where approved by the Engineer, are to be 6.0 metres or 7.5 metres high. Post-top poles may be suitable for roadways not exceeding 11 metres in width. Pedestrian Scale pole or Decorative Pedestrian Steel pole (Lumec Model No. SPR4D-15-BKTX or approved equivalent).

The standard colour for streetlights and signal poles is black painted powder coating, shade specification BK50-XP63 (XP Carbon Black). Pedestrian lighting poles shall use black lighting fixtures.

Where applicable, pole details are to be in accordance with MMCD Standard Detail Drawings and as follows:

- Octagonal, tapered, unpainted, galvanized steel.
- Where poles are to be painted, the powder coating is to be used.
- Davits to be 2.5 metres with 60 mm diam. X 180 mm tenon.
- Pole shafts and davits are to be separate with bolted flange connections.
- Poles to have 100 mm x 175 hand hole with cover plate and backing bar.

Poles are to be located at the outer edges, or in special circumstances, in the median of the roadway. Acceptable location patterns include staggered, opposite and one side arrangements, depending on the roadway classification and system design details. The standard drawings in **Appendix A** only reflect a staggered configuration. Suitable pole arrangements are typically as followings:

- **Staggered:**
 - Local Roads.
 - Collector Roads.
 - Arterial Roads (Four- and Six-Lane Roads).
- **Opposite:**
 - Arterial Roads (Six-Lane Roads).

Maintain clearances from features and utilities as follows:

- **1.5 metres:** Pole to curb return or driveway let-down.
- **3.0 metres:** Overhead electrical lines. Dimension varies with the voltage; refer to power company for details.

Standard pole offsets for roadways with barrier curbs or other forms of protection of poles from vehicle traffic are as follows:

ROAD CONFIGURATION	POLE CENTRE TO CURB FACE OFFSET
Width 14m or more and sidewalk adjoining curb	0.5m
Width 11m or less and sidewalk adjoining curb	2.0m
Sidewalk separated from curb	1.5m

In most cases within the Town Centre areas, sidewalk is separated from the curb and not possible to maintain 1.5m between the pole centre and curb face. As per the approval of the City and the Engineer, frangible pole bases should be used where minimum offsets are not achieved.

3.7 ACCESSIBILITY

In addition to the accessibility features that are inherently designed into the streetscape zones, the use of urban braille systems provide barrier-free and accessible walking areas that are advantageous for all users with particular benefits for the visually impaired, elderly and those requiring mobility aids (e.g. wheelchairs or strollers). The urban braille system incorporates features such as street names embedded into sidewalks at intersections or the use of surface finishes with different textures to indicate the presence of driveways, bus stops and roadway crossings.

The extent of the urban braille system to be included within the Town Centre Standards is currently under review and the standard drawings have allocated space to serve as placeholders for urban braille features to be included in future developments.

4 Streetscape Components

Streetscapes are a projection of the community's image, provide the definition of the interconnected transportation networks, and enrich public areas for residents and visitors alike. Burnaby is continuing to grow in population, development, and jobs, with numerous residential, commercial and recreational projects under construction or in the planning stages. What makes Burnaby especially unique, however, is that its heart of the City is in fact fourfold. Divided in four quadrants, each part has its own centre core that allows communities and the public to gather, work, live, and play.



4.1 PAVING MATERIALS

Paving patterns and materials can be used as an effective design tool for enhancing the pedestrian experience. It can be used as a means to communicate changes in the overall character of the neighbourhood and emphasize points of interest or gathering spaces. For example, a certain paving style can be used to distinguish areas such as the “living rooms” along sidewalks, and another paving style can be used to unify the entire length of a corridor or block. The pattern, colour, and texture of a paving material are all factors to consider in order to achieve the most site-appropriate design outcome. These sidewalk paving treatments can utilize the following various materials:



Photo 16: Telford Avenue, Metrotown Town Centre



Photo 17: Beresford Street, Metrotown Town Centre

1

Concrete

CIP concrete sidewalk on grade. Broom finish to COB standards with saw cut pattern. Control joint and expansion joint spacing to be per MMCD specifications using California Retool. Also used for parking spaces and cycle tracks on two-lane roadways as well as bus pads (as determined by the City).

2

Asphalt

Used for road surfaces with the exception of parking areas on two-lane roadways.

3

Granite Setts

Hewn or cropped salt and pepper granite setts for warning strip; 100mm x 100mm x 75mm thick; locally sourced. Used along border of RMAs and RMA connector walks.

4

Clay Brick Paving

Used in front boulevard on four-lane and six-lane roadways. 100mm x 200 mm x 57 mm thick; colour variations and setting pattern of clay brick pavers described in Section 4.2. Also used in tactile strips that separate cycle tracks and sidewalks on two-lane roadways.

5

Concrete Band

Applies to concrete bands separating front boulevard from cycle track on four-lane and six-lane roadways as well as perimeter bands/walls around the perimeter of RMAs. Broom finish, expansion joints.

6

Permeable Asphalt

Used for Cycle Tracks on four- and six-lane roadways.

Property line transitions within sidewalk zones should consider the use of grading, transitioning materials, and the addition of drains to alleviate drainage issues that occur at this interface.

4.2 VARIATIONS BETWEEN TOWN CENTRES

Although the over-arching vision, values and goals for the City of Burnaby apply to all the Town Centres, four distinct variations of the streetscape style of each area have been proposed. One of the most pivotal aspects of streetscape enhancement are the components that come together to create a unified family of parts that celebrate each area's unique identity. Together, these pieces help develop a distinctive and unified language of streetscape elements that can be implemented incrementally to strengthen and renew the character of each City Centre. A distinction between the four different Town Centres is made by choice of colour palette. The clay brick pavers used in the front boulevard of four-lane and six-lane roadways as well as the tactile strips on two-lane roadways will feature colours that are unique to each town centre. Specific clay brick colours for the respective town centres are included in **Table 4-1** below.

Table 4-1 – Clay Brick Paver Colour Palettes by Town Centre

TOWN CENTRE	BRICK COLOURS
Brentwood	#41 Caribbean, #42 Cinnamon, #44 Mahogany
Edmonds	#50 Ivory, #52 Majestic, #53 Cimmerean, #54 Chocolate
Lougheed	#34 Mulberry, #56 Desert Grey, #50 Ivory, #52 Majestic
Metrotown	#52 Majestic, #53 Cimmerean, #54 Chocolate

Clay brick pavers shall be sourced from Whiteacre Greer or an approved equivalent. Using the colour variations above, the clay bricks shall be laid in a half running bond pattern with random continuous linear bands of four to nine bricks of each colour. Adjacent linear bands should have no more than a two-brick overlap of the same colour.

4.3 LANDSCAPE FURNISHINGS

Street furniture acts as the most significant “amenity” for pedestrians. Benches, recycling bins, and other furniture elements should be chosen based upon their compatibility with the design of the context, as well as their durability and availability for future replacement. These elements should be located within high use gathering areas of the neighbourhood as well as spread throughout the public realm to give pedestrians the freedom to stop or gather as they choose. The placement of street furniture should not obstruct pedestrian flow and adhere to applicable accessibility guidelines. Landscape furnishings should be coated with anti-graffiti finishes when possible and deter unintentional uses such as skateboarding or rollerblading.

1

Chairs & Benches

Outdoor chairs are important components of an urban landscape because they help to draw people outdoors by providing practical gathering places for socializing, eating, or resting.

Accessibility is a main factor to consider in both material choice and placement of benches. For example, throughout long pathways and streets benches should be strategically placed with sufficient regularity to accommodate demographics such as the elderly who may need resting spots more frequently.

2

Railings

Railings and other buffer treatments are intended to define spaces as well as provide protection for pedestrians and cyclists.

3

Tree Grates

The spacing of grate openings should be no more than one-quarter inch to minimize litter collection and tripping hazards. The proposed tree grate for use in each of the four quadrants should also be large enough to maximize the planting and rooting area for street trees to promote good plant health.

4

Trash / Recycling

Multi-purpose trash receptacles are proposed to accommodate trash collection while providing the potential for recycling of paper, drink cans and bottles. Receptacles should be mechanically fastened to the concrete paving.



Photo 18: Benches, Brentwood Town Centre



Photo 19: Beresford Street, Metrotown Town Centre

5

Soil

Access to adequate soil volume for street trees and vegetation can be challenging in an urban setting, competing with the structural features required to support the surrounding hardscape areas. In a streetscape context there are two main solutions to improve the volume of growing medium provided:

- The use of soil cells under paved areas adjoining tree pits
- The use of structural soil under paved areas adjoining tree pits

Typical tree pit detailing utilizing soil cells and structural soil are provided. Soil cells provide the most growing medium within a given volume but carry the highest construction costs. Structural soil is a cheaper and simpler solution but only provides approximately 30% growing medium by volume of structural soil installed. The remaining 70% is rock. The standard drawings in Appendix A show a strategic blend of structural soil and soil cells to achieve sufficient soil volumes while maintaining the structural integrity of the surrounding hardscape infrastructure.



Photo 20: Kingsway, Station Square, Metrotown Town Centre



Photo 21: Telford Avenue, Metrotown Town Centre

4.4 PLANTING PALETTE

The Burnaby Town Centre Standards makes planting recommendations for new development plans in order to help create a more cohesive public landscape. It is recommended that developers consider a balance of native and non-native plants as much as the design allows. Besides offering year-round beauty, native plant species are generally more insect- and disease-resistant than other plants. Native plants can however spread and establish more easily in these controlled spaces which can create additional maintenance effort in the future.

4.4.1 PLANTING PALETTE

New tree planting is proposed to achieve the following urban design objectives:

- Achieve regularly spaced street trees along all streets to provide visual and environmental benefits.
- Select tree types that are suited to their location, such as solar aspect, adjacent awnings, and in consideration of existing tree species on street of development.
- Select plants from the City of Burnaby Planting Palette in **Appendix B**.
- Select narrow trees or trees with high canopies to allow clear views of stores' signage.

Planting in the public realm is a critical component of a well-functioning urban landscape and plays a vital role in the health of not only individuals, but also neighbourhoods as a whole. Trees, shrubs, grass, and other vegetation affect air quality through influencing pollutant deposition and dispersion; promote a greater sense of safety and adjustment; facilitate more use of neighbourhood commons spaces; add elements of natural habitat back into urban areas; and help reduce crime and incivilities. The City has created a planting palette for the Town Centre areas of approved and desirable plant species for trees, shrubs, and ground cover. The planting palette provides information on exposure, mature size, and applicable locations within the Town Centres where these species can be planted.

New street trees should conform to the following standard:

- Minimum 7 cm caliper.
- Conforming to BCLNTA and CSLA Standards.
- Uniform in shape and form and of the highest quality.
- Spaced 13 metres on centre on four- and six-lane roadways.
- Spaced 20 metres on centre on two-lane roadways, consistent with curb bulge spacing.

Selection and approval of street trees will be by the City of Burnaby staff. Refer to the Landscape Planting Palette Table included within **Appendix B**.

4.4.2 VOLUMES

The performance and long-term survival of urban trees are heavily dependent upon an adequate provision of growing medium. This is particularly true for street plantings that grow in harsh urban environments with little maintenance. For street trees, conventional tree planting pits provide insufficient growing medium for the long-term healthy development of medium to large street trees. Insufficient growing medium reduces the long-term supply of nutrients, water and oxygen. Current research shows that urban trees require between 28-34 cubic metres of growing medium to develop to a size of 40-50 cm caliper, diameter at breast height (DBH). A conventional 1.2m x 1.2m tree pit provides approximately 2 cubic metres.

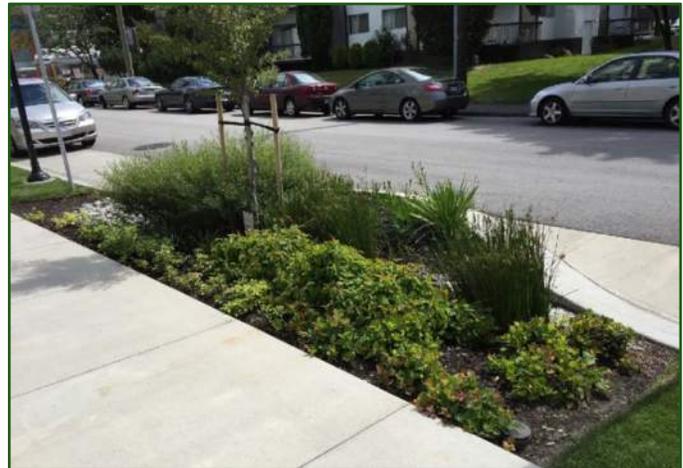


Photo 22: Silver Avenue, Metrotown Town Centre

Within the Town Centre areas, street trees shall have a minimum of 30 cubic metres of growing medium volume. In situations where two or more trees are placed in series, then the minimum growing medium volume decreases to 15 cubic metres per tree.

4.4.3 SOIL COMPOSITION

This section contains details on the specifications for the growing medium composition and structural growing medium composition. The growing medium composition shall conform to the specifications shown in **Table 4-2** and the structural growing medium composition shall conform to the specifications in **Table 4-3**.

The growing medium composition conforms to the Canadian Landscape Standard 2H High Traffic Lawn and 2P Planting Areas specifications.

Table 4-2 – Growing Medium Composition Specification

PARTICLE SIZE CLASS AND PROPERTIES	% Dry Weight of Total Growing Medium
	IMPORTED GROWING MEDIUM PLANTING AREAS
Acidity (pH)	4.5 – 6.5
Salinity (E.C) Maximum Saturation Extract Conductivity	3.0 millimhos / cm at 25 degrees C
All Gravel (2mm to 40mm)	0 – 5%
Coarse Gravel (19mm to 40mm)	0 – 1%
Sand (larger than 0.05mm and smaller than 2mm)	50 – 80%
Silt (larger than 0.002mm and smaller than 0.05mm)	10 – 20%
Clay (smaller than 0.002mm)	0 – 15%
	% DRY WEIGHT OF GROWING MEDIUM EXCLUDING GRAVEL
Fines - Maximum Clay and Silt Combined	25%
Organic Content (OM)	10 – 20%
Carbon Nitrogen Ratio (C/N)	Maximum 40:1

Table 4-3 – Structural Growing Medium Composition Specification

PARTICLE SIZE CLASS AND PROPERTIES	% DRY WEIGHT – 'GROWING MEDIUM' COMPOSITION
Acidity (pH)	5.5 – 6.5
Salinity (E.C) Maximum Saturation Extract Conductivity	3.0 millimhos / cm at 25 degrees C
Sand (Larger than 0.05mm and smaller than 2mm)	65 – 70%
Silt (larger than 0.002mm and smaller than 0.05mm)	5 – 15%
Clay (smaller than 0.002mm)	5 – 10%
Fines: Maximum Clay and Silt Combined	15%
Organic Content (OM)	10 – 15%
Carbon Nitrogen Ratio (C/N)	Maximum 33:1

Micronutrient content for soil mixtures shall confirm to the specifications shown in **Table 4-4**.

Table 4-4 – Micronutrient Specifications for All Growing Mediums

Total Nitrogen (N)	0.2 – 0.5%
Available Phosphorus (P)	20 – 500ppm
Available Potassium (K)	50 – 1000ppm
Available Sodium (Na)(SAR)	(SAR) not to exceed 8.0

4.4.4 IRRIGATION

Irrigation systems should be kept for the first two years to facilitate growth of plants and trees. Once vegetation has been sufficiently stabilized, irrigation systems should remain in place, but disconnected. Hand watering is an optional alternative and hose bibs may be required for smaller areas.

Development to provide water source through a permanent irrigation system that conform to IIABC standards. Head to head coverage is required. Hose bibs required as needed to operate irrigation system. Irrigation to be designed by a certified irrigation designer.



Photo 23: Telford Avenue, Metrotown Town Centre

5 Operations and Maintenance

The Town Centre Standards introduce a significant amount of hardscape, landscape, and public realm features and require detailed operations and maintenance planning to ensure these new elements retain their function and aesthetic well into the future. Each section below provides inspection and maintenance items and recommended frequencies for inspection and/or maintenance activities. These are intended to serve as general guidelines, and some of the frequencies will be fine-tuned after initial observations support amending the specified intervals. Initial and long-term inspection and maintenance responsibilities shall be discussed with the City and deviations to this protocol will be reviewed on a case-by-case basis by the City.

5.1 HARDSCAPE TREATMENTS

Hardscape treatments include the surface elements between the back of curb and the outside edge (adjoining property line, edge of right-of-way) of sidewalks. Each of these elements are critical for maintaining the function of pedestrian and cyclist movements as well as key aesthetic elements of the Town Centres.

Table 5-1: Routine Maintenance Activities for Hardscape Treatments

MAINTENANCE TASK	FREQUENCY	NOTES/COMMENTS
Inspections	Quarterly	The majority of the hardscape inspections can be consolidated into the Sidewalk Inspection Program that already exists. The Sidewalk Inspection Program should be redefined to include the new hardscape elements introduced with the Town Centre Standards. Hardscape treatment inspections will be visual inspections to identify deficiencies, surface failures, uneven settling, poor drainage (e.g. ponded water) or excessive debris accumulations (e.g. organics, snow).
Sidewalk	Quarterly	Review sidewalks using Sidewalk Inspection Program protocol. Pay particular attention to sidewalk's interface with other hardscape features that are included in Town Centre areas. Inspect sidewalks for surface cracks/deterioration, debris accumulation, and proper drainage. Repair and or replace sections of sidewalk as per City's current protocols.
Permeable Asphalt	Quarterly for first year, then Semi-annually	If standing water remains on surface for more than 30 minutes following a rainfall event, then cleaning of the permeable asphalt is recommended. A vacuum sweeper should be used to remove sediment and organic debris on the surface. The vacuum sweeper can be fitted with water jets to enhance the cleaning or alternatively power washing can be used on areas with repetitive or significant surface clogging. At a minimum, the surface should be vacuumed in the fall to cleanup dead leaves and in the spring after the last snowfall event. Repair damaged surfaces as needed. Small repairs (less than 15% of the total surface area) can be made using standard asphalt and as approved by the appropriate City personnel. The University of New Hampshire Stormwater Center (UNHSC) has a checklist for inspection and maintenance of porous pavements that can be adopted and modified to fit the City's maintenance protocols.
Boulevard Pavers	Quarterly	Replace damaged or chipped pavers as needed. In the event of low spots forming, remove and re-bed the pavers within a 300mm perimeter of the edge of the low spot. Add sub-base material as needed to level the pavers. If repetitive low spots form, a more detailed review of the subsurface should be conducted and organized by the appropriate City staff.
Boulevard Tree Grates	Quarterly	Check grates for uneven settling or uplift. Grates protruding above the surface should be inspected to evaluate if any subsurface modifications can be made to bring the grate flush with adjacent pavements. If small uplifts occur, additional material of the adjacent surface can be placed to create a smooth transition between at the grate interface. Portions of the tree grate can be removed over time as the tree trunk expands to prevent damage to the tree and the boulevard. Weed and prune vegetation growing around the base of the street tree.
Rumble Strips	Quarterly	Replace and/or repair clay pavers and granite sett band as needed. Uneven settlement or uplift can be addressed through addition/removal of subbase material to create a flush surface. Replace damaged or chipped pavers/granite blocks as needed.
Leaf Litter/Organics	Semi-annually	Vacuum sweepers and manual removal (e.g. sidewalk brushing) should be used to remove accumulated leaf litter / and organics in the roadway gutter, boulevard, cycle track, RMA connector areas, and sidewalks. At a minimum this should be done after leaves fall in the fall season and in the spring following the last snowfall and period of consistent/regular rainfall events.

MAINTENANCE TASK	FREQUENCY	NOTES/COMMENTS
Snow Removal	As Needed	Remove snow from sidewalk and cycle track surfaces. In areas where parking is permitted on 4 and 6-lane roadways, the boulevard should be cleared to allow users to get from their vehicle to the adjacent building. Snow removal should not be directed to the RMAs as this could damage vegetation and lead to clogging of the top layer of the engineered soil mix.

5.2 ELECTRICAL

Inspection and maintenance of electrical components is required to ensure proper lightning is maintained throughout the Town Centres, a critical component to the safety of all users. Maintenance activities for electrical components will ensure proper performance, address outages, and manage the light pole aesthetics.

Table 5-2: Routine Maintenance Activities for Electrical

MAINTENANCE TASK	FREQUENCY	NOTES/COMMENTS
Inspections	Every 2 Months	Inspections should be performed at night to identify lighting outages and damaged/missing lighting components.
Performance Check	Annual	Performance checks should be conducted to confirm proper function of the lighting components including but not limited to debris accumulation, circuit breakers, inspect for insect/animal damage, identify graffiti, vegetation overgrowth management, and structural integrity. Replacements, modifications, and repairs should be documented.
Light Fixtures/Bulbs	As Needed	Replace as needed. Clean fixtures and covers to maintain quality of lighting. Replacements of fixtures/bulbs should be documented.
Wiring/Switchboard	As Needed	Replace or maintain wiring as needed. Deficiencies should be noted during inspections or performance checks.
Light Poles	As Needed	Restore pole finish from damage/graffiti. Replace as needed.

5.3 STREET FURNITURE

Street furniture inspection and maintenance procedures are geared toward managing general up-keep of Town Centre infrastructure that supports the spaces where pedestrians gather or wait for transportation to other areas of the City. The most frequent activity for these features will be checking for damage or wear-and-tear that limits the functionality of the respective feature or poses a safety risk to users.

Table 5-3: Routine Maintenance Activities for Street Furniture

MAINTENANCE TASK	FREQUENCY	NOTES/COMMENTS
Inspections	Monthly	Inspections should occur on a monthly basis and can be done during sidewalk inspections conducted as part.
General Up-Keep	Periodically, As Needed	Periodic light maintenance is more effective than occasional heavy-duty maintenance/cleaning. Identify minor damages early and address damages that could migrate into future failures, check stability of fixtures, wipe down or wash surface with mild soap and water solution. Up-keep schedule to be based monthly observation during the first year after installation.
Benches and Chairs	Monthly	Inspect benches, chairs, and tables for damaged joints, damaged seats or back supports, wobbly railing or supports, loose or missing hardware, protruding fasteners, and other cracked or damaged components. Clean with a damp cloth or soft brush using a mild soap or water solution and always wipe dry with a soft cloth.
Bicycle Racks	Monthly	Inspect racks for damage or structural failures that could lead to potential safety hazards. Exposed metals surfaces should be sealed/painted to prevent corrosion/rust. The structural integrity of rack and mounting hardware should be assessed manually, and any loose racks should be secured/tightened or replaced if compromised.
Signage	Monthly	Inspect wayfinding signage and markings for damage or structural failures that could lead to potential safety hazards. The structural integrity of signage poles and mounting hardware should be assessed manually, and any loose signage should be secured/tightened or replaced if compromised.

MAINTENANCE TASK	FREQUENCY	NOTES/COMMENTS
Transit Shelters	Monthly	Inspect shelter and benches for damaged joints, wobbly supports, loose or missing hardware, protruding fasteners, graffiti, and other cracked or damaged components. Clean with a damp cloth or soft brush using a mild soap or water solution and always wipe dry with a soft cloth.
Trash Receptacles	As Needed (and as part of Sidewalk Inspections)	Functionality and housing of the trash receptacles should be assessed regularly by waste collection crews. Secondary inspections, focusing more on the structural integrity of the receptacle housing and mounting hardware, should be performed as part of sidewalk inspections.
Bollards	Semi-annual	Inspect bollards for damage. Replace if damage creates sharp or protruding edges that could injure pedestrians/cyclist or damage vehicles.

5.4 RAINWATER MANAGEMENT AMENITIES AND LANDSCAPING TREATMENTS

Landscaping features, which include the City’s Rainwater Management Amenities, are an important aesthetic feature that create a harmony between urban and parkland elements. These features are critical to the “living room” setting of the Town Centres and encourage pedestrians to use the collective spaces while providing a natural divide between sidewalks, cycle tracks, and gathering areas. Inspection and maintenance activities are focused around assessing the health of the vegetation, controlling (e.g. pruning) vegetation growth, and ensuring proper function of the Rainwater Management Amenities.

Table 5-4: Routine Maintenance Activities Rainwater Management Amenities and Landscaping

MAINTENANCE TASK	FREQUENCY	NOTES/COMMENTS
Inspections	1-2 months and/or after 6 month, 24-hour storm event for first year; then Semi-annual	Inspections of newly constructed RMAs should be conducted every 1-2 months and following storm events larger than a 6-month, 24-hour storm event (≥ 47 mm rainfall in a single event). After observing and recording first year’s performance and maintenance needs, a customized inspection schedule can be created with a minimum inspection frequency occurring twice per year. Maintenance vehicles used for or to aid in maintenance should be positioned at the curb adjacent to the RMA. Lane closure permits are required for maintenance vehicles and any specialized access for vehicles (e.g. parking on the cycle track or sidewalk) should be requested and approved by the appropriate City staff as part of the lane closure permit process.
Watering/Irrigation	First 2 Years	Vegetation to be established via irrigation system installed at the time of construction. Irrigation to occur for full length of two-year maintenance period from development water source. Irrigation drip line should be permanently in place with connection to City water supply, alternative methods to be approved by the City on a case-by-case basis.
Fertilization	Once at Installation	Application rate of fertilizer to be specified by manufacturer. Fertilizer should be a slow release fertilizer, granular or pellets, consisting of water-soluble Nitrogen (20%), Phosphorous (10%), and Potassium (10%).
Pruning	1-2 Times per Year	Remove only dead, dying, or broken branches. Do not prune for shape. Plantings should be compact, spaced properly, and not included hedges.
Mulching	Annually	Apply composted black bark mulch, uniform dark colour range. Reapply/replace as needed, frequency of mulching can be extended per City’s direction.
Mulch Removal	Every 2-3 Years	Excess mulch and fines generated from mulch degradation can lead to decreases in the soil infiltration rate and reduces rainwater storage volume above the surface of the engineered soil.
Railings	Monthly (Can be performed as part of Street Furniture and Sidewalk Inspections)	Inspect railing for damage or structural failures that could lead to potential safety hazards. Exposed metals surfaces should be sealed/painted to prevent corrosion/rust. The structural integrity of railing fixtures and mounting hardware should be assessed manually, and any loose railings should be secured/tightened or replaced if compromised.
General Up-Keep	Periodically, As Needed	Weeding, Trash Removal, and the removal and replacement of dead plants. Up-keep schedule to be based monthly observation during the first year after installation. Generally, up-keep will be more regular during the growing season (bi-weekly) and less regular during the winter months (monthly).
Underdrain/Overflow Structure Flushing	Semi-Annual for First Year, then Annual	Underdrain cleanout to be visually inspected semi-annually for sediment accumulation. Prior to flushing the underdrain, remove the cap on the PVC Tee contained within the overflow structure to allow debris to exit the underdrain pipe and accumulate within the sump of the overflow structure. When the sump of the overflow structure is filled to 50% of its capacity (i.e. there is less than 375mm of separation between the invert of the outlet pipe and the top of sediment elevation of the sump), the overflow structure shall be

MAINTENANCE TASK	FREQUENCY	NOTES/COMMENTS
		restored to its original capacity using a Hydrovac Truck. Sediment and material extracted from sump shall be disposed of as per applicable environmental regulations.
Replacement of Engineered Soil Mix	As Needed	In areas where rainwater ponds for longer than 24-48 hours, remove and replace top 300 mm of engineered soil below the ponded area and for a perimeter of 300mm around the ponded area. Soil will also be replaced if erosion losses occur.
Outlet Control Structure	Annually	Inspect and remove any blockages of outlet control orifice, trapping hood, and drain lead discharging to downstream storm sewer mains.
Flow Connection Pipes (Linear RMA Only)	Semi-Annual	Inspect flow connection pipes between linear RMA features and remove any blockages or accumulated debris. Flush pipes as needed to maintain intended connectivity between RMAs. Inspect debris screen for clogs or blockages and maintain the open areas of the screen. Replace debris screen that are missing, damaged, or can't be restored to their intended shape/function.
Soil Cells	As Needed	Soil cells are designed and constructed such that routine maintenance is not required. However, visual inspections should be performed to confirm sustained performance of soil cells by means of evaluating surface features that would be influenced by soil cells in poor condition. The structural integrity of RMA connector walks (e.g. cracking, settlement) and no loss or settlement of material around the perimeter of RMA connector walks are can be indicators of soil cell performance over time. Detailed geotechnical assessments should be conducted in the event of poorly performing soil cells which could be influenced by a multitude of design or in situ conditions.
Plantings	Semi-Annual	Plantings are intended to survive fluctuating climates including wet periods in the fall and winter and dry periods through the summer. Plant survival should be assessed during initial 2-year maintenance period and for 1 year following. Plants that die or show poor performance should be reviewed by a qualified Landscape Architect to assess if plant species are being correctly identified to adapt to the function of the RMA.
Street Trees	Semi-Annual	Trees should be regularly pruned to prevent branches from obstructing sight lines at roadway crossings/intersections or lighting.

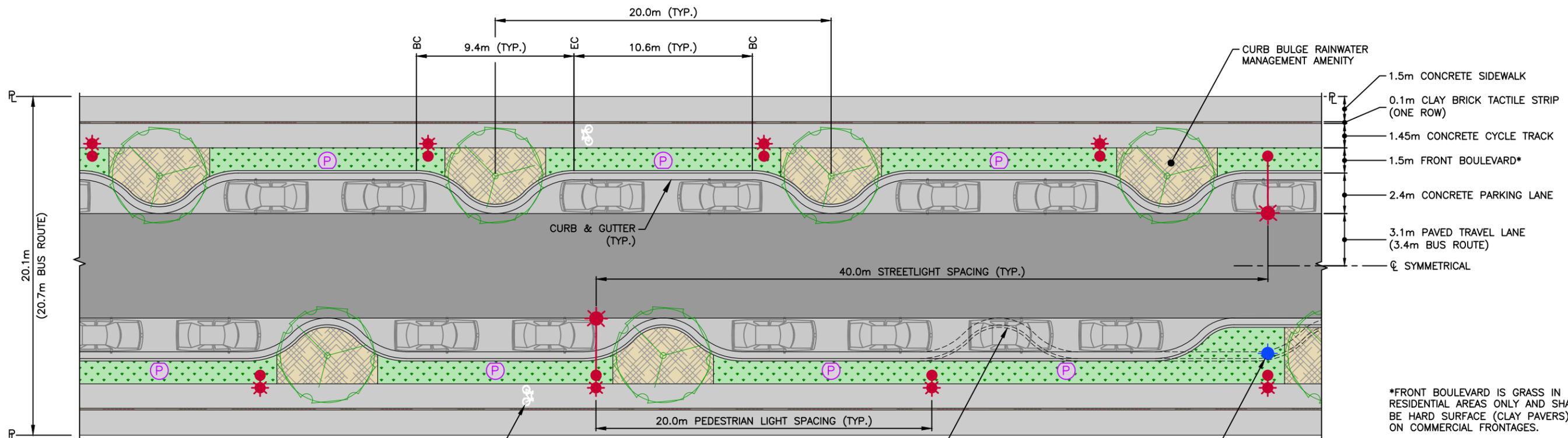
Appendix A

Town Centre Standard Drawings



TOWN CENTRE STANDARDS

TC-001	TWO-LANE LOCAL STREET TYPICAL PLAN
TC-002	TWO-LANE LOCAL STREET TYPICAL SECTION
TC-003	TWO LANE LOCAL STREET MID-BLOCK CROSSWALK
TC-004	TWO-LANE COLLECTOR STREET TYPICAL PLAN
TC-005	TWO-LANE COLLECTOR STREET TYPICAL SECTION
TC-006	FOUR-LANE COLLECTOR & ARTERIAL STREET TYPICAL PLAN
TC-007	FOUR-LANE COLLECTOR & ARTERIAL STREET TYPICAL SECTION
TC-008	PERIMETER STREET TYPICAL PLAN
TC-009	PERIMETER STREET TYPICAL SECTION
TC-010	SIX-LANE ARTERIAL STREET TYPICAL PLAN
TC-011	SIX-LANE ARTERIAL STREET TYPICAL SECTION
TC-012	FOUR AND SIX LANE DETAILS
TC-013	TWO-LANE LOCAL INTERSECTION TYPICAL PLAN
TC-014	TWO-LANE COLLECTOR INTERSECTION TYPICAL PLAN
TC-015	TWO-LANE LOCAL x TWO-LANE COLLECTOR INTERSECTION TYPICAL PLAN
TC-016	TWO-LANE LOCAL TO COLLECTOR TEE INTERSECTION TYPICAL PLAN
TC-017	FOUR-LANE INTERSECTION TYPICAL PLAN
TC-018	FOUR-LANE x TWO-LANE COLLECTOR INTERSECTION TYPICAL PLAN
TC-019	SIX-LANE x TWO-LANE COLLECTOR INTERSECTION TYPICAL PLAN
TC-020	SIX-LANE x FOUR-LANE INTERSECTION TYPICAL PLAN
TC-021	SIX-LANE x SIX-LANE INTERSECTION TYPICAL PLAN
TC-022	TYPICAL DRIVEWAY OR LANEWAY LETDOWN DETAILS
TC-023	TWO-LANE FAR SIDE BUS BAY ARRANGEMENT TYPICAL PLAN
TC-024	FOUR-LANE COLLECTOR-ARTERIAL BUS BAY ARRANGEMENT
TC-025	CURB BULGE RAINWATER MANAGEMENT AMENITY
TC-026	LINEAR RAINWATER MANAGEMENT AMENITY DETAILS
TC-027	LINEAR RAINWATER MANAGEMENT AMENITY PLAN VIEW
TC-028	LINEAR RAINWATER MANAGEMENT AMENITY CONNECTOR WALK DETAILS
TC-029	RMA NOTES & RMA OVERFLOW/CONTROL STRUCTURE DETAIL
TC-030	BICYCLE FRIENDLY CURB & CATCH BASIN
TC-031	STREET LIGHTING DETAILS



*FRONT BOULEVARD IS GRASS IN RESIDENTIAL AREAS ONLY AND SHALL BE HARD SURFACE (CLAY PAVERS) ON COMMERCIAL FRONTAGES.

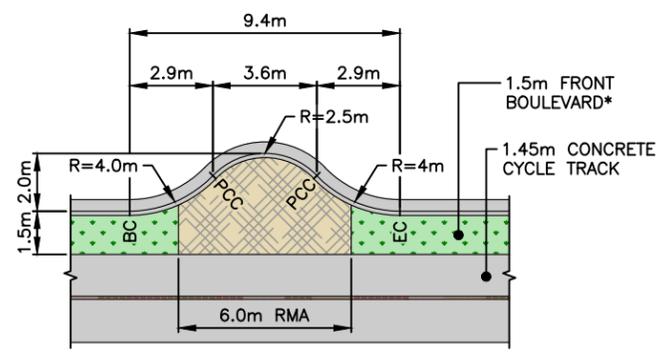
NOTES:

- CURB BULGES TO BE LOCATED 20m MIN. ON CENTRE (TYPICAL) OR AS DIRECTED BY THE CITY. OFF-SET CURB BULGES BY 1/2 SPACING ON OPPOSITE SIDES OF THE STREET OR AS DIRECTED BY THE CITY.
- A MINIMUM OF 2 PARKING STALLS SHALL BE PROVIDED BETWEEN CURB BULGES.
- SPACING OF CURB BULGES SHALL BE ASSESSED ON A STREET BY STREET BASIS, TAKING INTO ACCOUNT FULL BUILD-OUT OF THE BLOCK WITH CONSIDERATION FOR FUTURE INTERSECTION ARRANGEMENTS, DRIVEWAYS, FIRE HYDRANTS, AND BUS STOPS. WHERE POSSIBLE, FIRE HYDRANTS SHOULD BE LOCATED AT INTERSECTIONS OR DRIVEWAYS TO MINIMIZE IMPACTS ON STREET PARKING.
- STREET LIGHTING TO BE PROVIDED AT 40m ON CENTRE BASED ON COMBINED SPACING OF STREET LIGHTS ON BOTH SIDES OF THE STREET OR AS REQUIRED TO PROVIDE MINIMUM LIGHTING LEVELS AS OUTLINED IN THE CITY OF BURNABY DESIGN CRITERIA MANUAL (SEE NOTE 12).
- PEDESTRIAN LIGHTING TO BE PROVIDED AT 20m ON CENTRE ON BOTH SIDES OF THE STREET OR AS REQUIRED TO PROVIDE MINIMUM LIGHTING LEVELS AS OUTLINED IN THE CITY OF BURNABY DESIGN CRITERIA MANUAL (SEE NOTE 12).
- LEFT-TURN LANES SHALL BE PROVIDED WHERE DIRECTED BY THE CITY. LEFT-TURN LANES SHALL TYPICALLY BE ACCOMMODATED WITHIN THE ROAD RIGHT OF WAY BY LOCAL PARKING RESTRICTIONS. WHERE THIS IS NOT POSSIBLE, ADDITIONAL RIGHTS OF WAY WILL BE REQUIRED.
- BICYCLE SYMBOLS TO BE ADDED AT ENTRY TO CYCLE TRACK, MID BLOCK AND AT APPROACH TO INTERSECTIONS. ADDITIONAL BICYCLE SYMBOLS SHALL BE ADDED TO MAINTAIN A MAXIMUM DISTANCE BETWEEN SYMBOLS OF 75m.
- PARKING LANE TO BE SAWCUT AT DEPTHS AND INTERVALS PER MMCD SPECIFICATIONS.
- CURB AND GUTTER TO BE WIDE BASE CONCRETE BARRIER CURB AS PER MMCD C5.
- PARKING REGULATION SIGNS SHALL BE PLACED AS PER CITY REQUIREMENTS. WHERE SIGN LOCATIONS CONFLICT WITH OTHER FEATURES, LOCATION OF THE SIGN AND RESPECTIVE FEATURES SHALL BE REVIEWED AND APPROVED BY THE CITY.

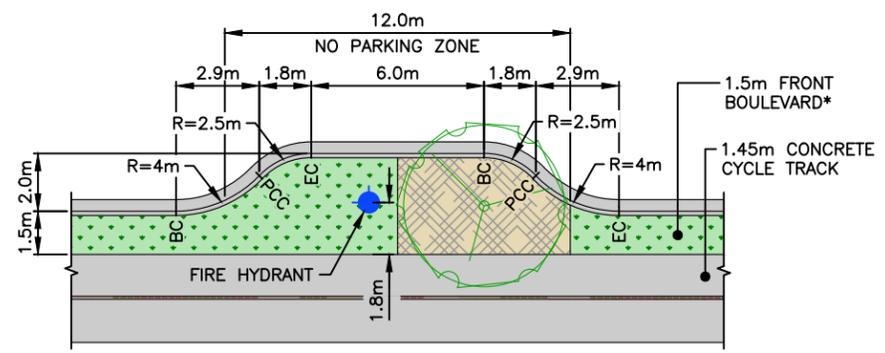
PAINTED (WHITE) BICYCLE SYMBOL (SEE BBY-TC-012 FOR DETAIL). MINIMUM ONE MID-BLOCK (SEE NOTE 7)

LOCATION OF CURB BULGES IF FIRE HYDRANT NOT PRESENT

FIRE HYDRANT AT CURB BULGE (SEE DETAIL)



TYPICAL CURB BULGE DETAIL



FIRE HYDRANT AT CURB BULGE DETAIL

LEGEND:

- 7.5m DAVIT STREET LIGHT
- 4.57m PEDESTRIAN LIGHT
- PARKING METER
- FIRE HYDRANT
- CATCH BASIN
- SIGN
- TACTILE STRIP
- CONCRETE
- ASPHALT
- GRASS BOULEVARD
- RAINWATER MANAGEMENT AMENITY (RMA)

- STREET LIGHTING POLES AND PARKING METER POLES SHALL MAINTAIN A MINIMUM 0.5m SEPARATION FROM CENTRELINE OF EACH RESPECTIVE POLE.
- FEATURES SUCH AS LIGHT POLES AND PARKING METERS SITUATED WITHIN THE FRONT BOULEVARD MAY REQUIRE A CONCRETE PAD EXTENDING OUTSIDE THE FOOTPRINT OF THE BASE. IN CASES WHERE THE FRONT BOULEVARD IS COMPRISED OF CLAY BRICK PAVERS, THE CONCRETE PAD SHALL BE SIZED AT OR BEYOND MINIMUM REQUIREMENTS TO MINIMIZE CUTTING CLAY PAVERS AROUND THE PADS.
- POLE SPACING AND CONFIGURATION SHOWN ON THE DRAWINGS IS FOR REFERENCE ONLY. ROADWAY AND PEDESTRIAN LIGHTS ARE TO BE DESIGNED ON A SITE BY SITE BASIS. DESIGN SHOULD BE COMPLETED BY A QUALIFIED ROADWAY LIGHTING DESIGNER IN ACCORDANCE WITH THE CITY OF BURNABY DESIGN CRITERIA MANUAL.

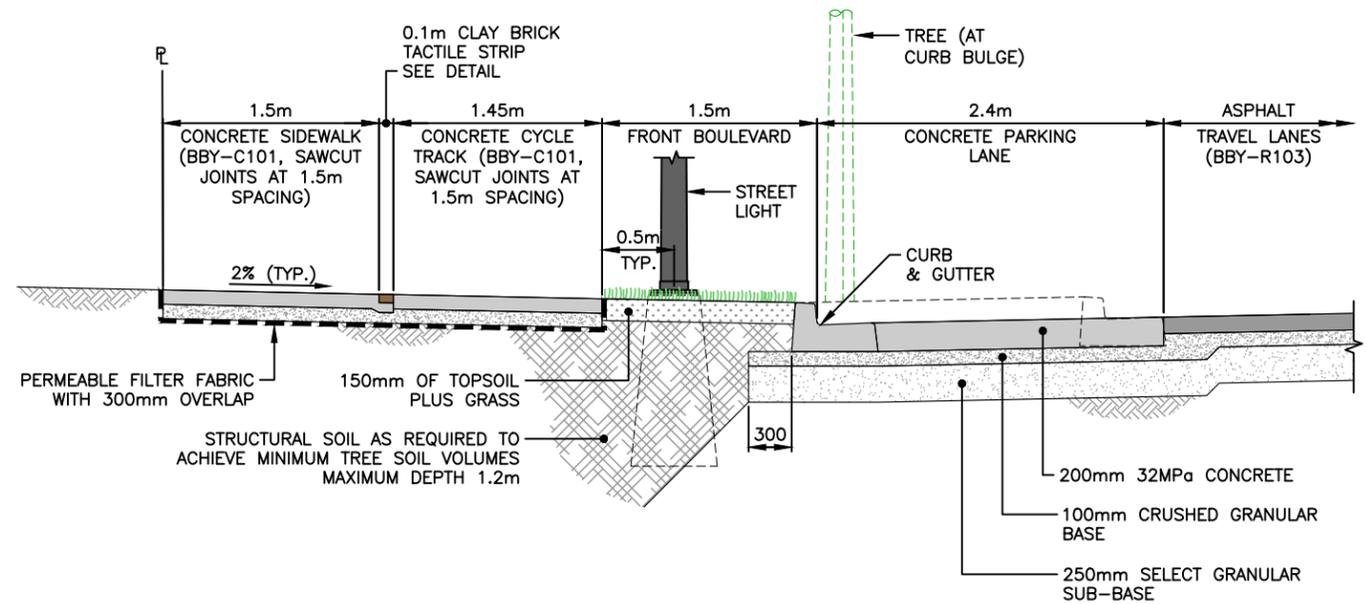
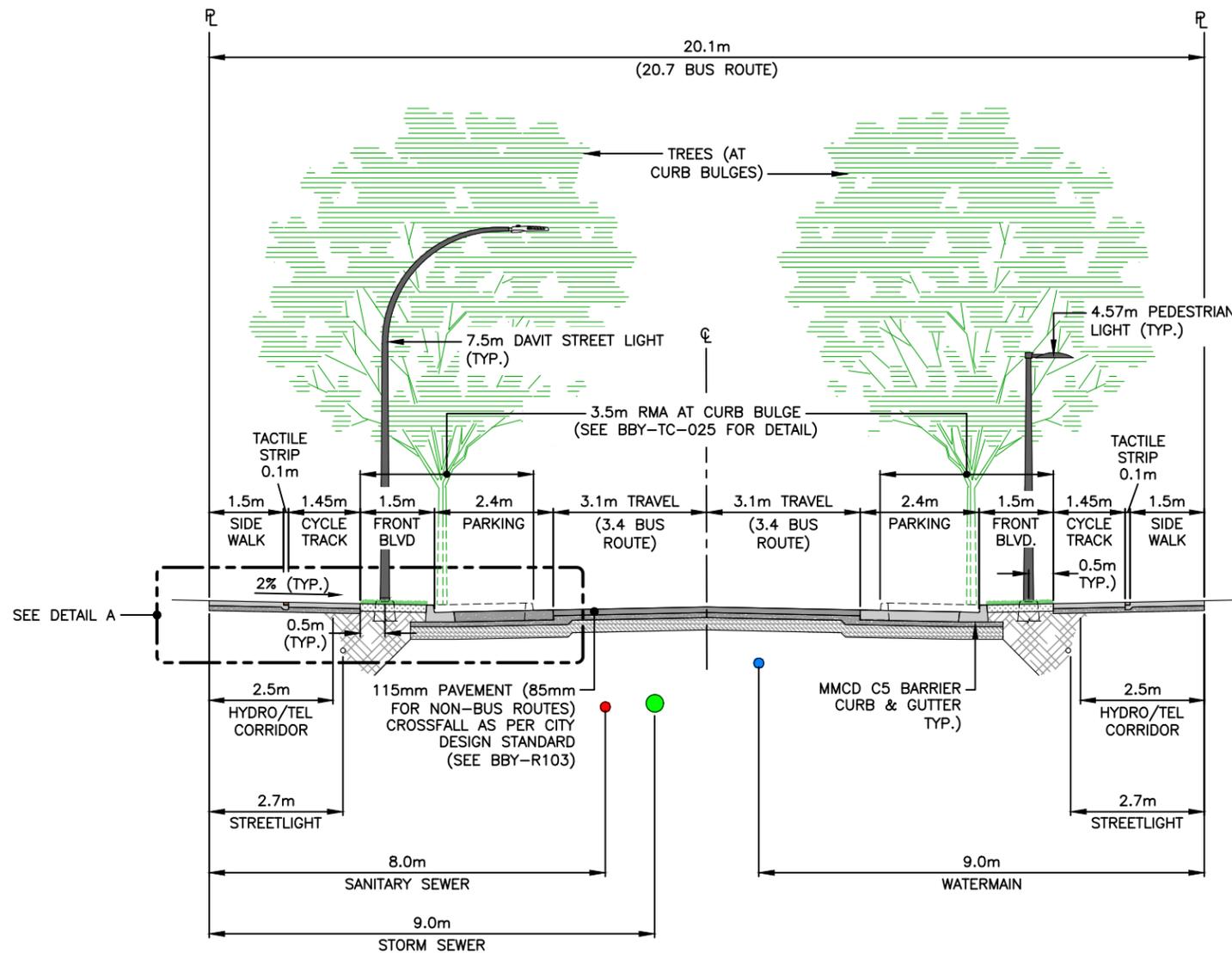
- SINGLE DAVIT PEDESTRIAN LIGHTS, DOUBLE DAVIT PEDESTRIAN LIGHTS AND PEDESTRIAN LIGHT ATTACHED BEHIND ROADWAY STREETLIGHT POLES ARE ACCEPTABLE OPTIONS TO ILLUMINATE PEDESTRIAN PATHWAYS.
- ALL TOWN CENTRE POLES SHALL BE BLACK, UNLESS OTHERWISE DIRECTED BY THE CITY REPRESENTATIVE.
- ALL POLES TO BE A MINIMUM 6" DIAMETER, UNLESS OTHERWISE DIRECTED BY THE CITY REPRESENTATIVE.

NO.	DATE	REVISION

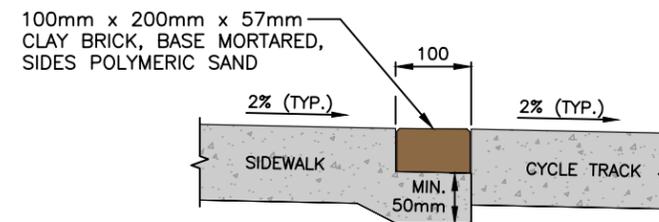


**TOWN CENTRE
TWO-LANE LOCAL STREET
TYPICAL PLAN**

DRAWN BY: DCB	SCALE: N.T.S.	BBY-TC-001
APPR'V'D BY:	DATE: 2020-09-25	



DETAIL A



TACTILE STRIP DETAIL

NOTE:
 COLOUR OF TACTILE BRICK PAVER TO VARY BY TOWN CENTRE. CITY TO REVIEW AND APPROVE COLOUR PRIOR TO INSTALLATION. PATTERN OF COLOURED PAVERS TO MATCH CRITERIA SUMMARIZED IN TABLE ON SHEET BBY-TC-012.

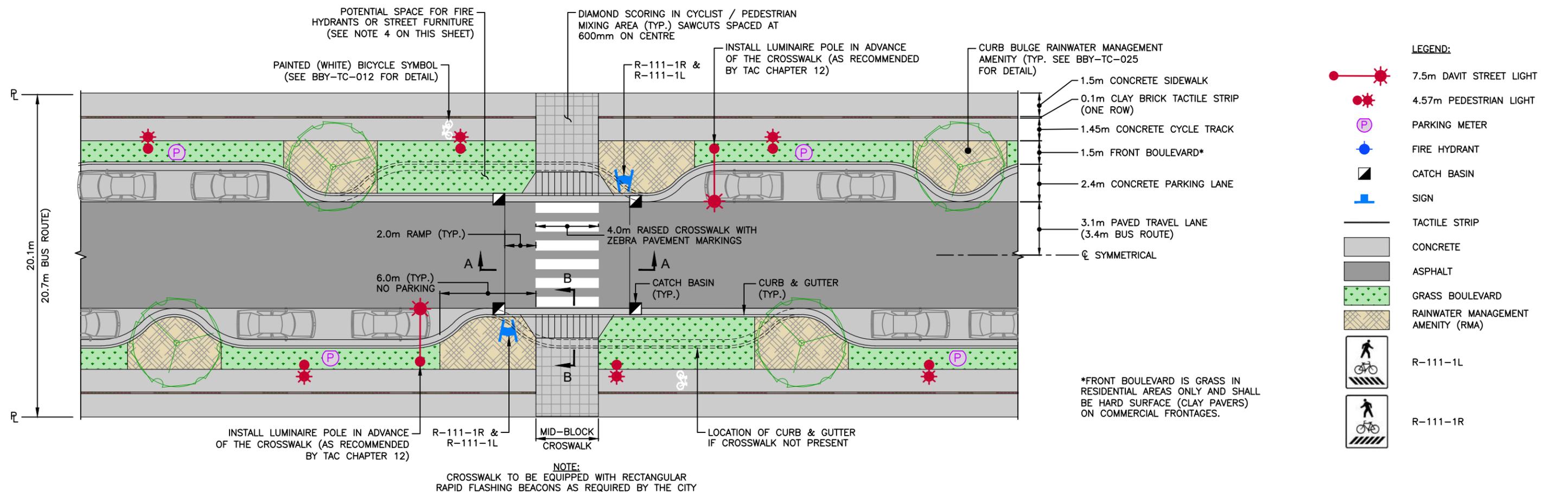
NO.	DATE	REVISION



TOWN CENTRE
 TWO-LANE LOCAL STREET
 TYPICAL SECTION

DRAWN BY: DCB
 SCALE: N.T.S.
 APPR'D BY: DATE: 2020-09-25

BBY-TC-002



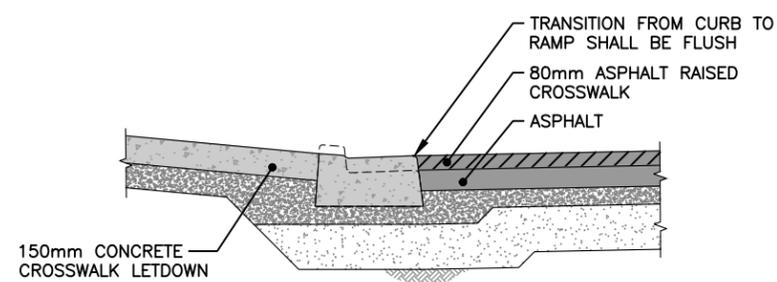
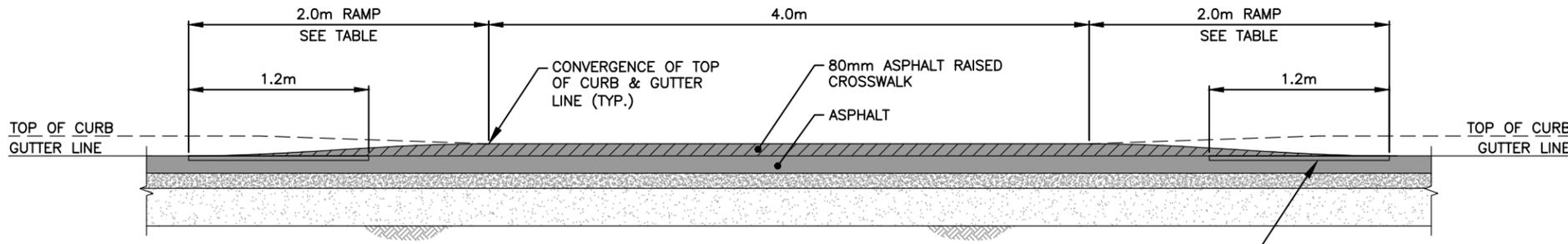
- LEGEND:**
- 7.5m DAVIT STREET LIGHT
 - 4.57m PEDESTRIAN LIGHT
 - PARKING METER
 - FIRE HYDRANT
 - CATCH BASIN
 - SIGN
 - TACTILE STRIP
 - CONCRETE
 - ASPHALT
 - GRASS BOULEVARD
 - RAINWATER MANAGEMENT AMENITY (RMA)
 - R-111-1L
 - R-111-1R

*FRONT BOULEVARD IS GRASS IN RESIDENTIAL AREAS ONLY AND SHALL BE HARD SURFACE (CLAY PAVERS) ON COMMERCIAL FRONTAGES.

NOTES:

1. MID-BLOCK CROSSWALK LOCATIONS SHALL BE APPLIED AT LOCATIONS IDENTIFIED AND APPROVED BY THE CITY.
2. TREES ARE NOT PERMITTED WITHIN 6 METRES OF CROSSWALK. ENGINEER SHALL CONFIRM THAT PEDESTRIAN VISIBILITY IS ADEQUATE AT CROSSWALK.
3. THE ENGINEER SHALL ASSESS DRAINAGE INFRASTRUCTURE REQUIREMENTS AT MID-BLOCK CROSSWALK AND CATCH BASINS SHALL BE PLACED AS NEEDED. THE FEASIBILITY OF RMA'S LOCATED ADJACENT TO THE MID-BLOCK CROSSWALK SHALL BE ASSESSED BY THE ENGINEER.
4. PUBLIC REALM FEATURES, SUCH AS STREET FURNITURE, AT MID-BLOCK CROSSWALKS TO BE IDENTIFIED AND APPROVED BY THE CITY.
5. LUMINAIRE POLES FOR MID-BLOCK CROSSWALKS SHALL BE INSTALLED IN ADVANCE OF THE CROSSWALK AS RECOMMENDED BY TAC GUIDE FOR THE DESIGN OF ROADWAY LIGHTING, CHAPTER 12. LOCATION OF THE POLES FOR MID-BLOCK CROSSWALKS SHALL BE COORDINATED WITH THE LOCATION OF THE ROADWAY STREETLIGHT POLES.
6. POLE SPACING AND CONFIGURATION SHOWN ON THE DRAWINGS IS FOR REFERENCE ONLY. ROADWAY AND PEDESTRIAN LIGHTS ARE TO BE DESIGNED ON A SITE BY SITE BASIS. DESIGN SHOULD BE COMPLETED BY A QUALIFIED ROADWAY LIGHTING DESIGNER IN ACCORDANCE WITH THE CITY OF BURNABY DESIGN CRITERIA MANUAL.
7. SINGLE DAVIT PEDESTRIAN LIGHTS, DOUBLE DAVIT PEDESTRIAN LIGHTS AND PEDESTRIAN LIGHT ATTACHED BEHIND ROADWAY STREETLIGHT POLES ARE ACCEPTABLE OPTIONS TO ILLUMINATE PEDESTRIAN PATHWAYS.
8. ALL TOWN CENTRE POLES SHALL BE BLACK, UNLESS OTHERWISE DIRECTED BY THE CITY REPRESENTATIVE.
9. ALL POLES TO BE A MINIMUM 6" DIAMETER, UNLESS OTHERWISE DIRECTED BY THE CITY REPRESENTATIVE.

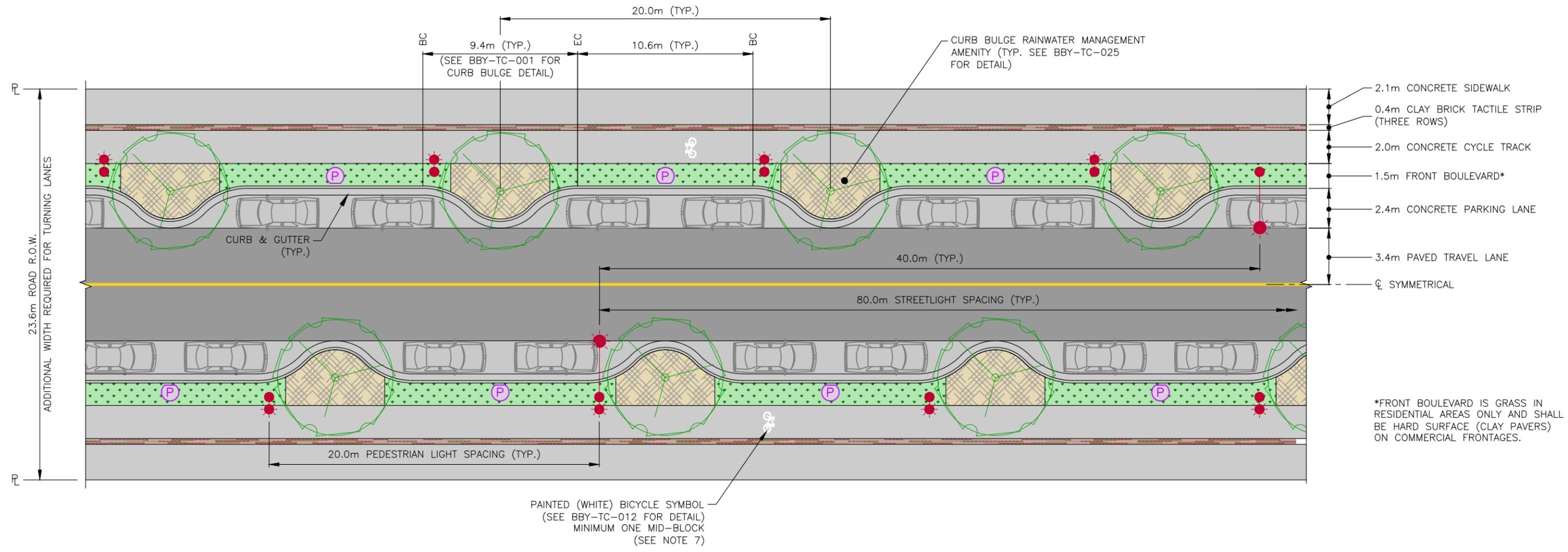
RAMP HEIGHT DEVELOPMENT																	
DISTANCE (m)	0.000	0.125	0.250	0.375	0.500	0.625	0.750	0.875	1.000	1.125	1.250	1.375	1.500	1.625	1.750	1.875	2.000
FINISHED HEIGHT (mm)	0	1	3	7	12	18	25	32	40	48	55	62	68	73	77	79	80



**TOWN CENTRE
TWO LANE LOCAL STREET
MID-BLOCK CROSSWALK**

DRAWN BY: DCB	SCALE: N.T.S.	BBY-TC-003
APPR'D BY:	DATE: 2020-09-25	

NO.	DATE	REVISION



NOTES:

- CURB BULGES TO BE LOCATED 20m MIN. ON CENTRE (TYPICAL) OR AS DIRECTED BY THE CITY. OFF-SET CURB BULGES BY 1/2 SPACING ON OPPOSITE SIDES OF THE STREET OR AS DIRECTED BY THE CITY.
- A MINIMUM OF 2 PARKING STALLS SHALL BE PROVIDED BETWEEN CURB BULGES.
- SPACING OF CURB BULGES SHALL BE ASSESSED ON A STREET BY STREET BASIS, TAKING INTO ACCOUNT FULL BUILD-OUT OF THE BLOCK WITH CONSIDERATION FOR FUTURE INTERSECTION ARRANGEMENTS, DRIVEWAYS, FIRE HYDRANTS, MID-BLOCK CROSSWALKS, AND BUS STOPS.
- STREET LIGHTING TO BE PROVIDED AT 40m ON CENTRE BASED ON COMBINED SPACING OF STREET LIGHTS ON BOTH SIDES OF THE STREET OR AS REQUIRED TO PROVIDE MINIMUM LIGHTING LEVELS AS OUTLINED IN THE CITY OF BURNABY DESIGN CRITERIA MANUAL (SEE NOTE 13).
- PEDESTRIAN LIGHTING TO BE PROVIDED AT 20m ON CENTRE ON BOTH SIDES OF THE STREET OR AS REQUIRED TO PROVIDE MINIMUM LIGHTING LEVELS AS OUTLINED IN THE CITY OF BURNABY DESIGN CRITERIA MANUAL (SEE NOTE 13).
- LEFT-TURN LANES SHALL BE PROVIDED WHERE DIRECTED BY THE CITY. LEFT-TURN LANES SHALL TYPICALLY BE ACCOMMODATED WITHIN THE ROAD RIGHT OF WAY BY LOCAL PARKING RESTRICTIONS. WHERE THIS IS NOT POSSIBLE, ADDITIONAL RIGHTS OF WAY WILL BE REQUIRED.
- BICYCLE SYMBOLS TO BE ADDED AT ENTRY TO CYCLE TRACK, MID BLOCK AND AT APPROACH TO INTERSECTIONS. ADDITIONAL BICYCLE SYMBOLS SHALL BE ADDED TO MAINTAIN A MAXIMUM DISTANCE BETWEEN SYMBOLS OF 75m.
- PARKING LANE TO BE SAWCUT AT DEPTHS AND INTERVALS PER MMCD SPECIFICATIONS.
- CURB AND GUTTER TO BE WIDE BASE CONCRETE BARRIER CURB AS PER MMCD C5.
- PARKING REGULATION SIGNS SHALL BE PLACED AS PER CITY REQUIREMENTS. WHERE SIGN LOCATIONS CONFLICT WITH OTHER FEATURES, LOCATION OF THE SIGN AND RESPECTIVE FEATURES SHALL BE REVIEWED AND APPROVED BY THE CITY.
- STREET LIGHTING POLES AND PARKING METER POLES SHALL MAINTAIN A MINIMUM 0.5m SEPARATION FROM CENTRELINE OF EACH RESPECTIVE POLE.
- FEATURES SUCH AS LIGHT POLES AND PARKING METERS SITUATED WITHIN THE FRONT BOULEVARD MAY REQUIRE A CONCRETE PAD EXTENDING OUTSIDE THE FOOTPRINT OF THE BASE. IN CASES WHERE THE FRONT BOULEVARD IS COMPRISED OF CLAY BRICK PAVERS, THE CONCRETE PAD SHALL BE SIZED AT OR BEYOND MINIMUM REQUIREMENTS TO MINIMIZE CUTTING CLAY PAVERS AROUND THE PADS.

- POLE SPACING AND CONFIGURATION SHOWN ON THE DRAWINGS IS FOR REFERENCE ONLY. ROADWAY AND PEDESTRIAN LIGHTS ARE TO BE DESIGNED ON A SITE BY SITE BASIS. DESIGN SHOULD BE COMPLETED BY A QUALIFIED ROADWAY LIGHTING DESIGNER IN ACCORDANCE WITH THE CITY OF BURNABY DESIGN CRITERIA MANUAL.
- SINGLE DAVIT PEDESTRIAN LIGHTS, DOUBLE DAVIT PEDESTRIAN LIGHTS AND PEDESTRIAN LIGHT ATTACHED BEHIND ROADWAY STREETLIGHT POLES ARE ACCEPTABLE OPTIONS TO ILLUMINATE PEDESTRIAN PATHWAYS.
- ALL TOWN CENTRE POLES SHALL BE BLACK, UNLESS OTHERWISE DIRECTED BY THE CITY REPRESENTATIVE.
- ALL POLES TO BE A MINIMUM 6" DIAMETER, UNLESS OTHERWISE DIRECTED BY THE CITY REPRESENTATIVE.

LEGEND:

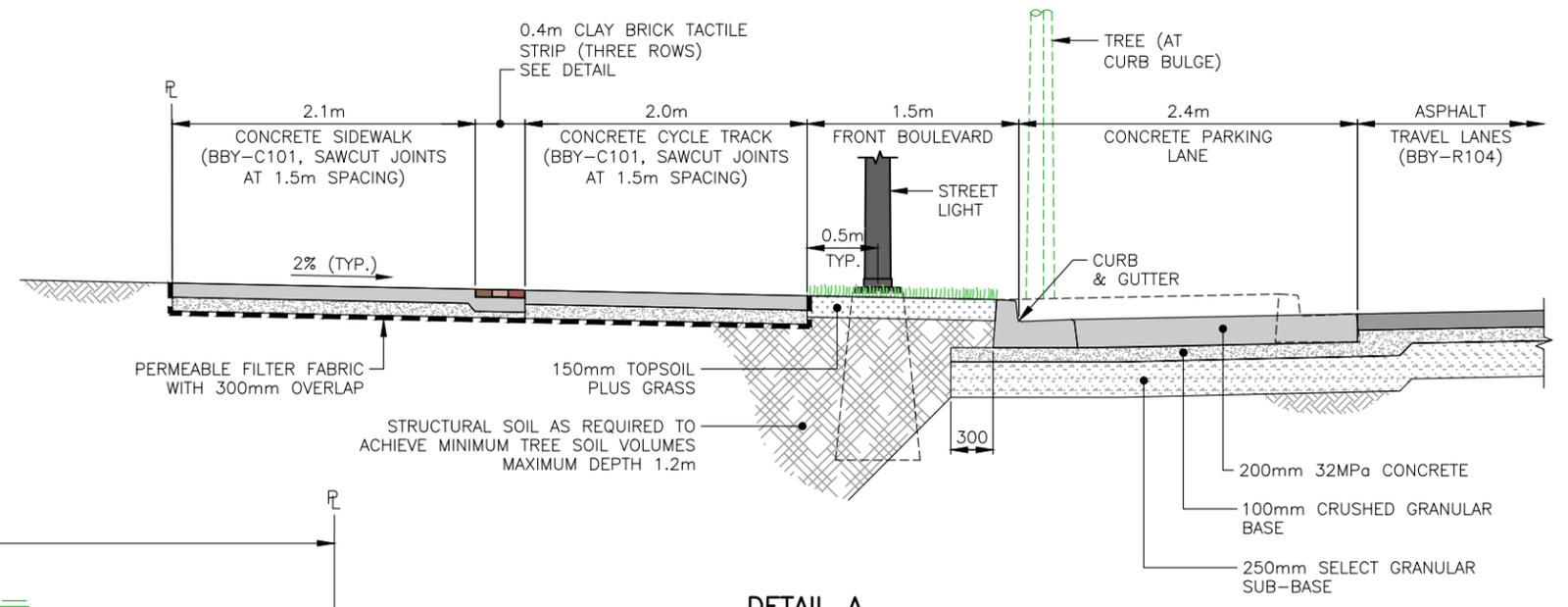
- 7.5m DAVIT STREET LIGHT
- 4.57m PEDESTRIAN LIGHT
- PARKING METER
- FIRE HYDRANT
- CLAY BRICK TACTILE STRIP
- CONCRETE
- ASPHALT
- GRASS BOULEVARD
- RAINWATER MANAGEMENT AMENITY (RMA)

NO.	DATE	REVISION

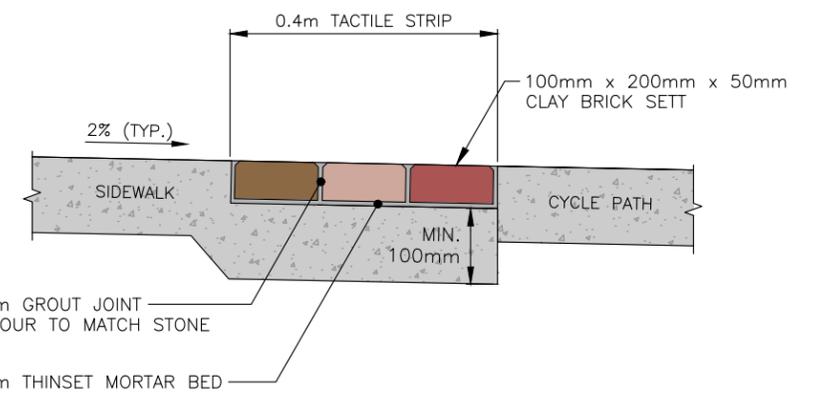
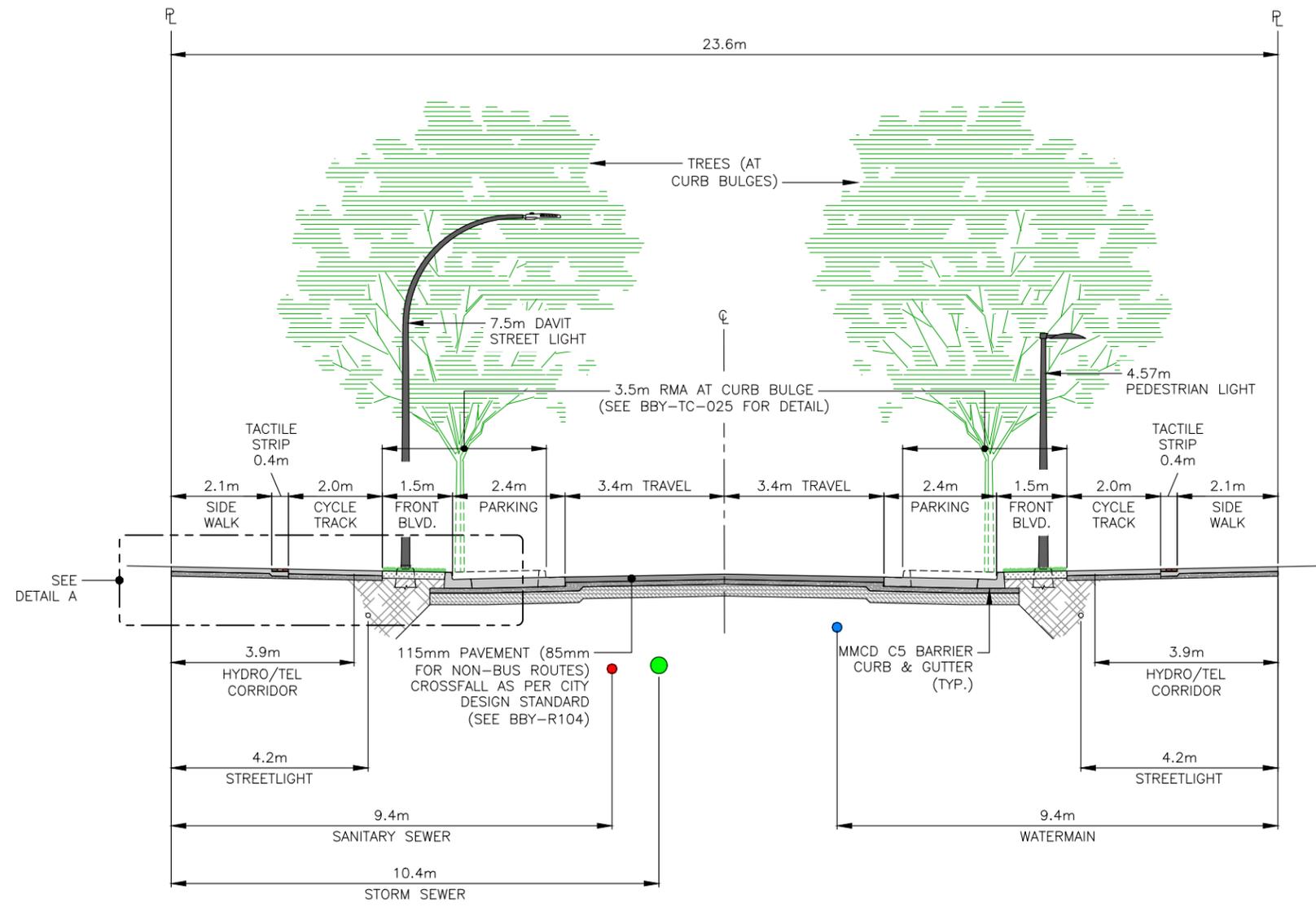


**TOWN CENTRE
TWO-LANE COLLECTOR STREET
TYPICAL PLAN**

DRAWN BY: DCB	SCALE: N.T.S.	BBY - TC - 004
APPR'V'D BY:	DATE: 2020-09-25	



DETAIL A



TACTILE STRIP DETAIL

NOTE:
 COLOUR OF TACTILE BRICK PAVER TO VARY BY TOWN CENTRE. CITY TO REVIEW AND APPROVE COLOUR PRIOR TO INSTALLATION. PATTERN OF COLOURED PAVERS TO MATCH CRITERIA SUMMARIZED IN TABLE ON SHEET BBY-TC-012.

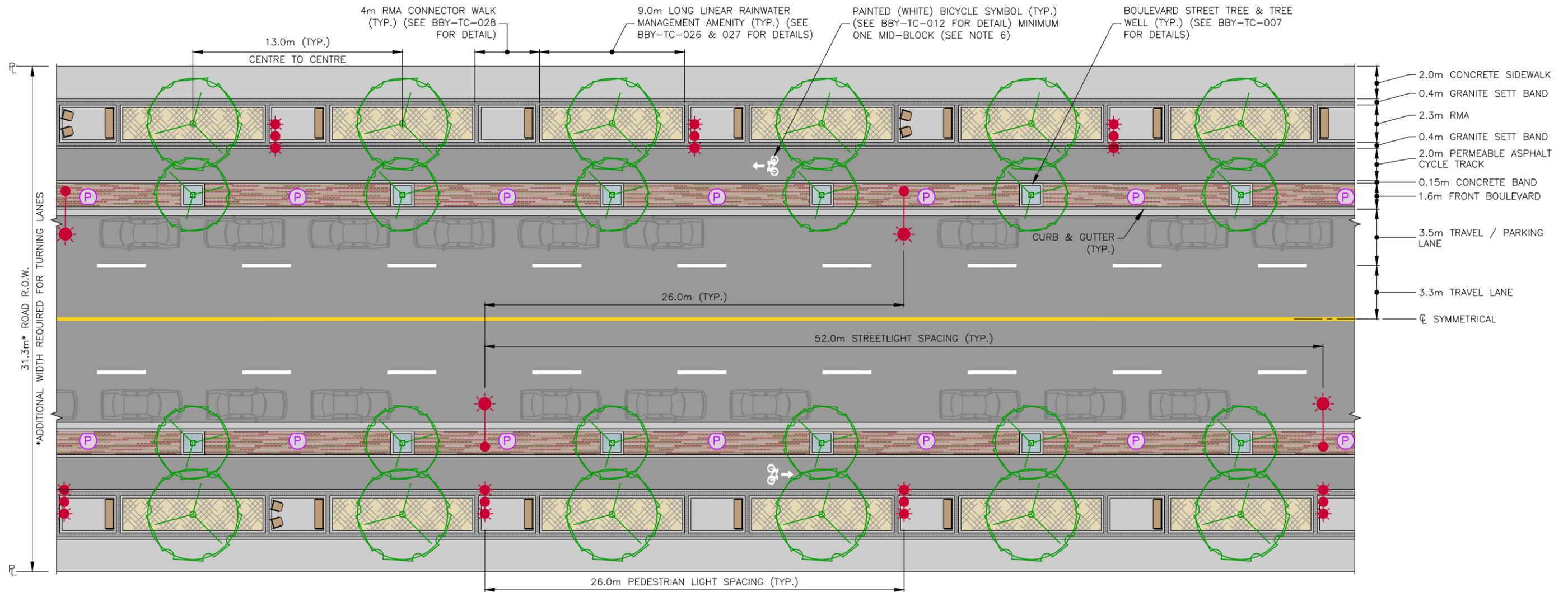


**TOWN CENTRE
 TWO-LANE COLLECTOR STREET
 TYPICAL SECTION**

DRAWN BY: DCB
 SCALE: N.T.S.
 APPR'D BY: DATE: 2020-09-25

BBY - TC - 005

NO.	DATE	REVISION



NOTES:

1. LINEAR RAINWATER MANAGEMENT AMENITIES (RMA'S) SHALL BE SPACED AT 13.0m ON CENTRE OR AS DIRECTED BY THE CITY.
2. STREET LIGHTING TO BE PROVIDED AT 26m ON CENTRE BASED ON COMBINED SPACING OF STREET LIGHTS ON BOTH SIDES OF THE STREET OR AS REQUIRED TO PROVIDE MINIMUM LIGHTING LEVELS AS OUTLINED IN THE CITY OF BURNABY DESIGN CRITERIA MANUAL (SEE NOTE 11).
3. PEDESTRIAN AND CYCLE TRACK LIGHTING TO BE PROVIDED AT 26m ON CENTRE ON BOTH SIDES OF THE STREET OR AS REQUIRED TO PROVIDE MINIMUM LIGHTING LEVELS AS OUTLINED IN THE CITY OF BURNABY DESIGN CRITERIA MANUAL (SEE NOTE 11).
4. LEFT-TURN LANES SHALL BE PROVIDED WHERE DIRECTED BY THE CITY. LEFT-TURN LANES SHALL BE ACCOMMODATED BY INCREASING THE ROAD RIGHT-OF-WAY.
5. PROVIDE 1.2m CENTRE MEDIANS WHERE DIRECTED BY THE CITY TO RESTRICT TURNING MOVEMENTS. CENTRE MEDIANS SHALL BE ACCOMMODATED BY INCREASING THE ROAD RIGHT-OF-WAY.
6. BICYCLE SYMBOLS TO BE ADDED AT ENTRY TO CYCLE TRACK, MID BLOCK AND AT APPROACH TO INTERSECTIONS. ADDITIONAL BICYCLE SYMBOLS SHALL BE ADDED TO MAINTAIN A MAXIMUM DISTANCE BETWEEN SYMBOLS OF 75m.
7. STREET FURNITURE TO BE INCLUDED ON ALL RMA CONNECTOR WALKS. STREET FURNITURE SPECIFICATIONS AND OFFSETS TO BE REVIEWED AND APPROVED BY THE CITY.
8. FEATURES SUCH AS LIGHT POLES AND PARKING METERS SITUATED WITHIN THE FRONT BOULEVARD MAY REQUIRE A CONCRETE PAD EXTENDING OUTSIDE THE FOOTPRINT OF THE BASE. IN CASES WHERE THE FRONT BOULEVARD IS COMPRISED OF CLAY BRICK PAVERS, THE CONCRETE PAD SHALL BE SIZED AT OR BEYOND MINIMUM REQUIREMENTS TO MINIMIZE CUTTING CLAY PAVERS AROUND THE PADS.
9. PARKING REGULATION SIGNS SHALL BE PLACED AS PER CITY REQUIREMENTS. WHERE SIGN LOCATIONS CONFLICT WITH OTHER FEATURES, LOCATION OF THE SIGN AND RESPECTIVE FEATURES SHALL BE REVIEWED AND APPROVED BY THE CITY.
10. TREE GRATES SHALL BE DUCTILE IRON DOBNEY TYPE SJ-48 SET IN CONCRETE TREE GRATE SURROUND.
11. POLE SPACING AND CONFIGURATION SHOWN ON THE DRAWINGS IS FOR REFERENCE ONLY. ROADWAY AND PEDESTRIAN LIGHTS ARE TO BE DESIGNED ON A SITE BY SITE BASIS. DESIGN SHOULD BE COMPLETED BY A QUALIFIED ROADWAY LIGHTING DESIGNER IN ACCORDANCE WITH THE CITY OF BURNABY DESIGN CRITERIA MANUAL.
12. SINGLE DAVIT PEDESTRIAN LIGHTS, DOUBLE DAVIT PEDESTRIAN LIGHTS AND PEDESTRIAN LIGHT ATTACHED BEHIND ROADWAY STREETLIGHT POLES ARE ACCEPTABLE OPTIONS TO ILLUMINATE PEDESTRIAN PATHWAYS.
13. ALL TOWN CENTRE POLES SHALL BE BLACK, UNLESS OTHERWISE DIRECTED BY THE CITY REPRESENTATIVE.
14. ALL POLES TO BE A MINIMUM 6" DIAMETER, UNLESS OTHERWISE DIRECTED BY THE CITY REPRESENTATIVE.

LEGEND:

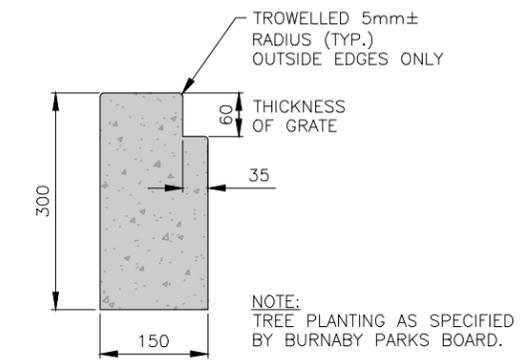
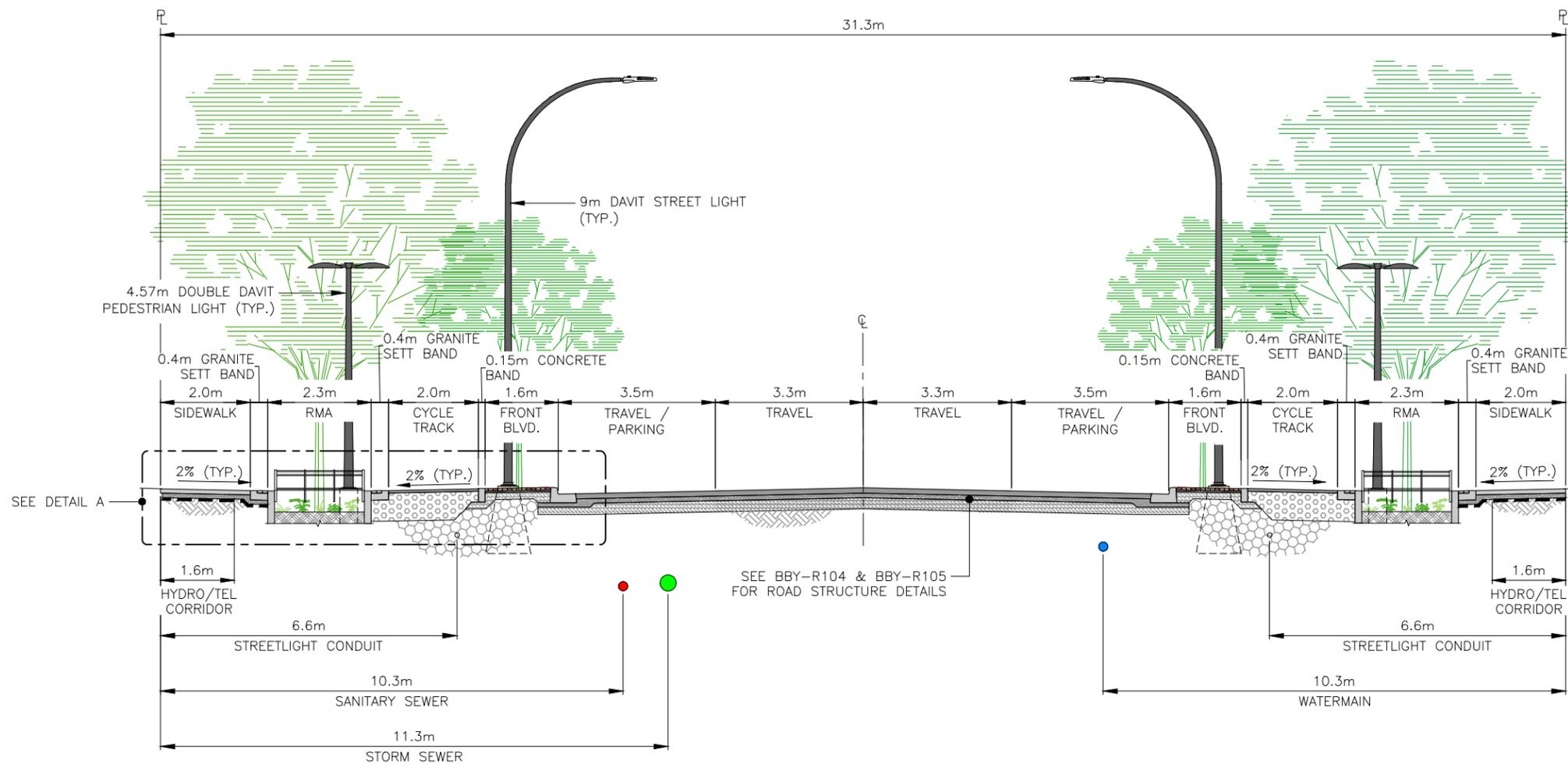
- 9m DAVIT POLE STREETLIGHT
- 4.57m DOUBLE DAVIT PEDESTRIAN LIGHT
- PARKING METER
- FIRE HYDRANT
- TREE WELL
- GRANITE SETT BAND
- CONCRETE
- ASPHALT
- CLAY BRICK PAVERS



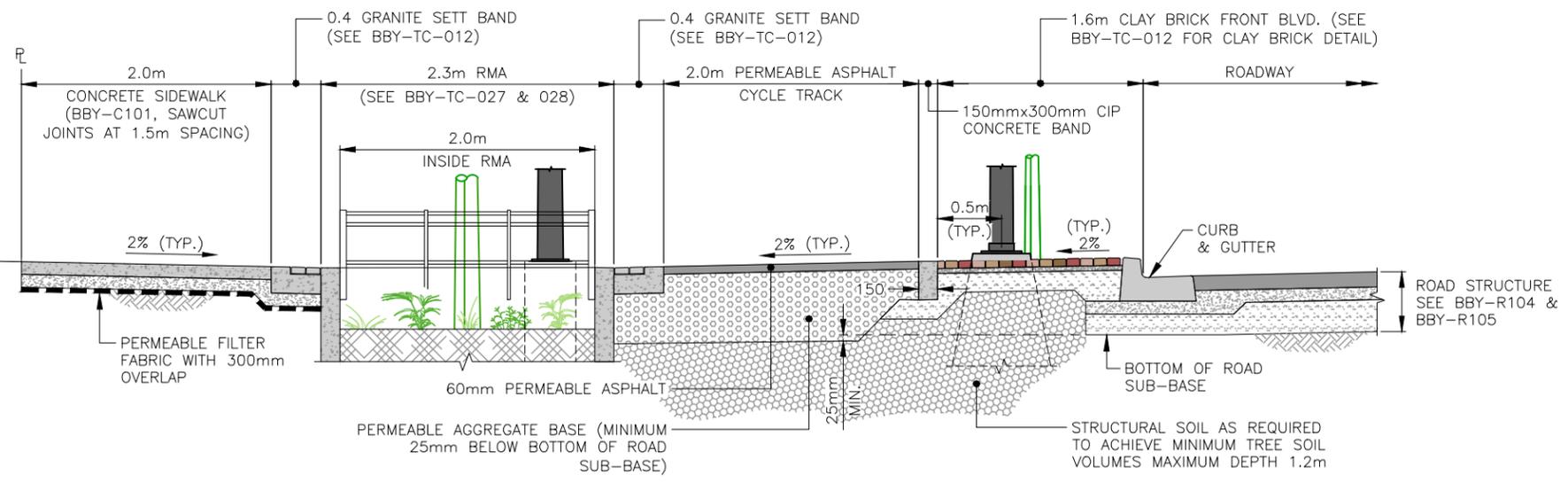
**TOWN CENTRE
FOUR-LANE COLLECTOR & ARTERIAL STREET
TYPICAL PLAN**

DRAWN BY: DCB	SCALE: N.T.S.	BBY - TC - 006
APPR'D BY:	DATE: 2020-09-25	

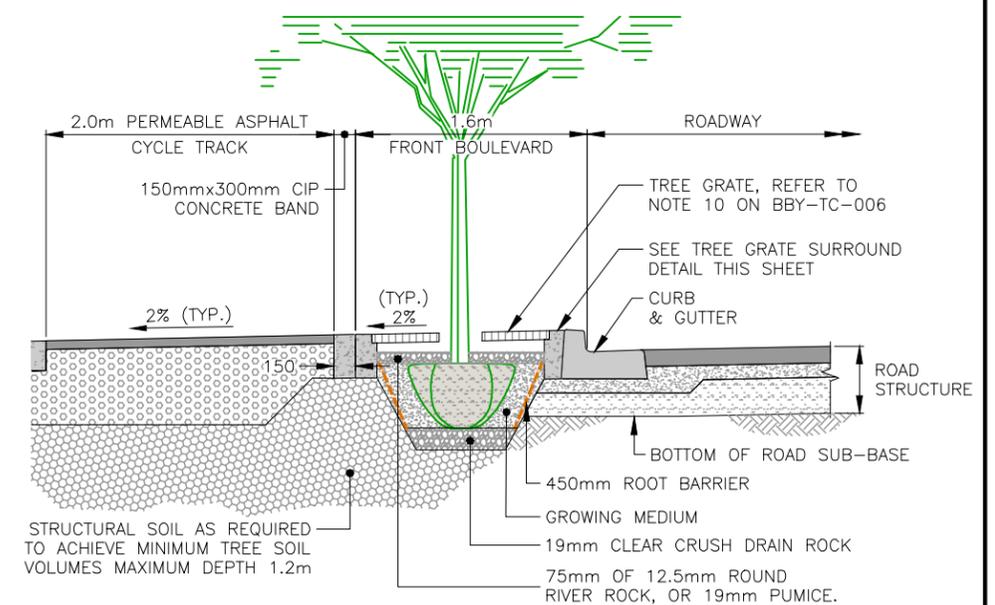
NO.	DATE	REVISION



DETAIL OF CONCRETE TREE GRATE SURROUND



DETAIL A (FRONT BOULEVARD SHOWN AT PAVERS LOCATION)



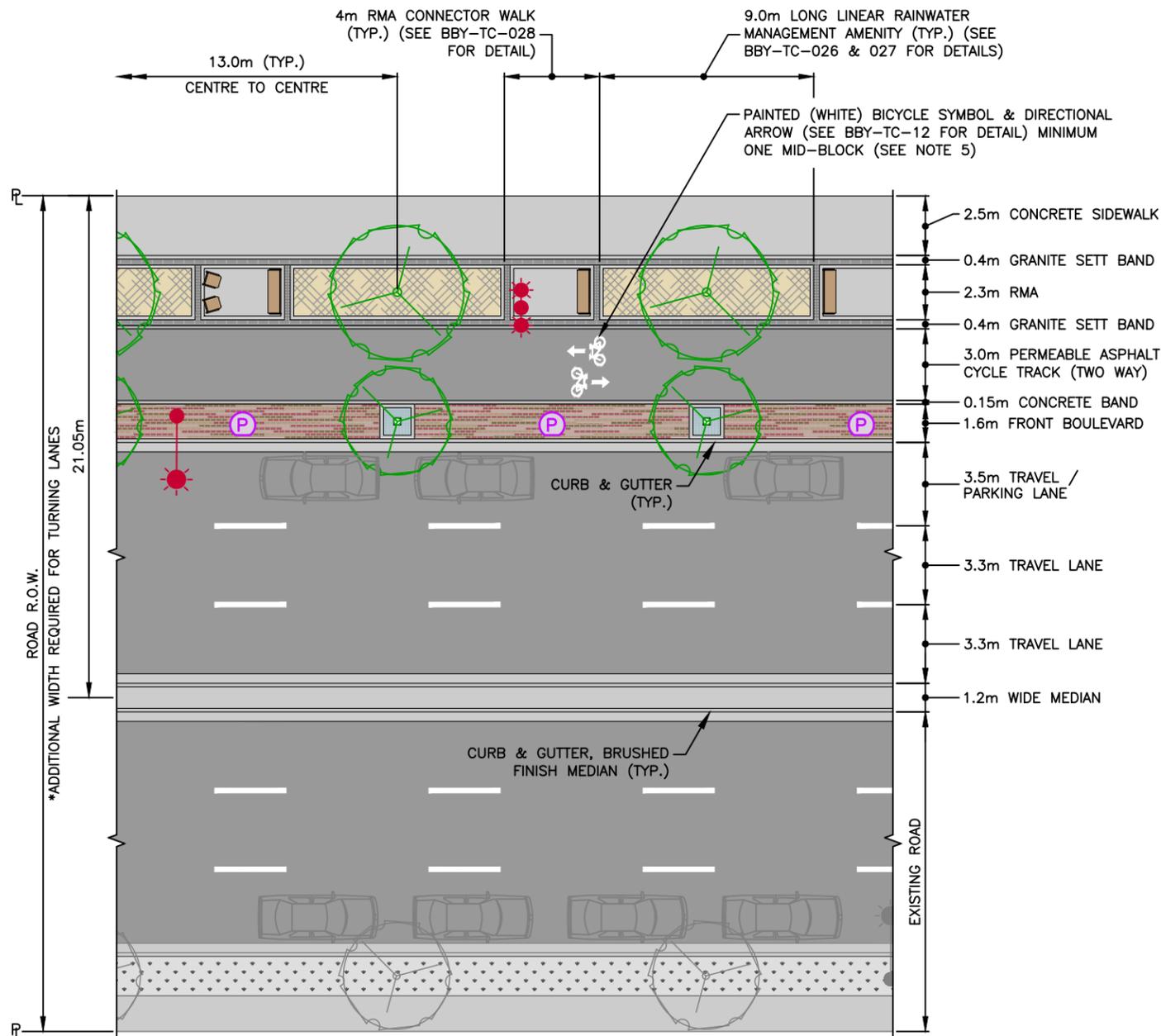
DETAIL B (FRONT BOULEVARD AT TREE WELL LOCATION)

NO.	DATE	REVISION

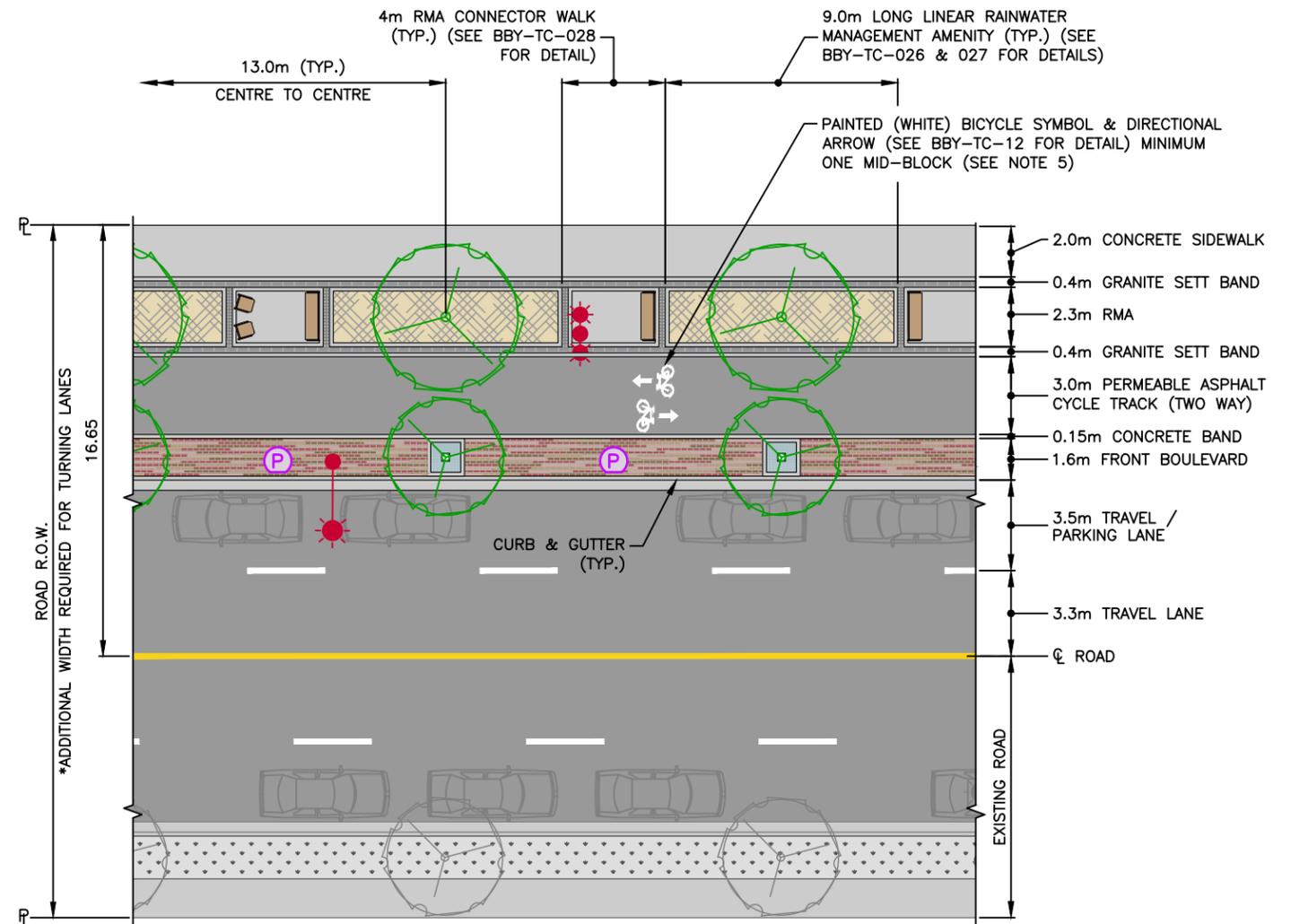


**TOWN CENTRE
FOUR-LANE COLLECTOR & ARTERIAL STREET
TYPICAL SECTION**

DRAWN BY: DCB	SCALE: N.T.S.	BBY - TC - 007
APPR'V'D BY:	DATE: 2020-09-25	



SIX LANE STREET



FOUR LANE STREET

LEGEND:

- 9m DAVIT POLE STREETLIGHT
- 4.57m DOUBLE DAVIT PEDESTRIAN LIGHT
- PARKING METER
- FIRE HYDRANT
- TREE WELL
- GRANITE SETT BAND
- CONCRETE
- ASPHALT

NOTES:

1. STREET AND PEDESTRIAN LIGHTING TO FOLLOW MINIMUM SPACING RECOMMENDATIONS SHOWN ON BBY-TC-006 AND BBY-TC-010 OR AS REQUIRED TO PROVIDE MINIMUM LIGHTING LEVELS AS OUTLINED IN THE GUIDELINES.
2. MODIFIED STREET SECTION SHALL APPLY TO ONE OR BOTH SIDES OF THE STREET CORRIDOR AT LOCATIONS SPECIFIED AS PER CITY REVIEW AND APPROVAL.
3. LEFT-TURN LANES SHALL BE PROVIDED WHERE DIRECTED BY THE CITY. LEFT-TURN LANES SHALL BE ACCOMMODATED BY INCREASING THE ROAD RIGHT OF WAY.
4. PROVIDE 1.2m CENTRE MEDIANS WHERE DIRECTED BY THE CITY TO RESTRICT TURNING MOVEMENTS ON FOUR LANE ROADWAYS. CENTRE MEDIANS SHALL BE ACCOMMODATED BY INCREASING THE ROAD RIGHT-OF-WAY FOR FOUR LANE ROADWAYS. SIX LANE ROADWAYS SHALL PROVIDE 1.2m CENTRE MEDIANS.
5. BICYCLE SYMBOLS TO BE ADDED AT ENTRY TO CYCLE TRACK, MID BLOCK AND AT APPROACH TO INTERSECTIONS. ADDITIONAL BICYCLE SYMBOLS SHALL BE ADDED TO MAINTAIN A MAXIMUM DISTANCE BETWEEN SYMBOLS OF 75m.
6. FEATURES SUCH AS LIGHT POLES AND PARKING METERS SITUATED WITHIN THE FRONT BOULEVARD MAY REQUIRE A CONCRETE PAD EXTENDING OUTSIDE THE FOOTPRINT OF THE BASE. IN CASES WHERE THE FRONT BOULEVARD IS COMPRISED OF CLAY BRICK PAVERS, THE CONCRETE PAD SHALL BE SIZED AT OR BEYOND MINIMUM REQUIREMENTS TO MINIMIZE CUTTING CLAY PAVERS AROUND THE PADS

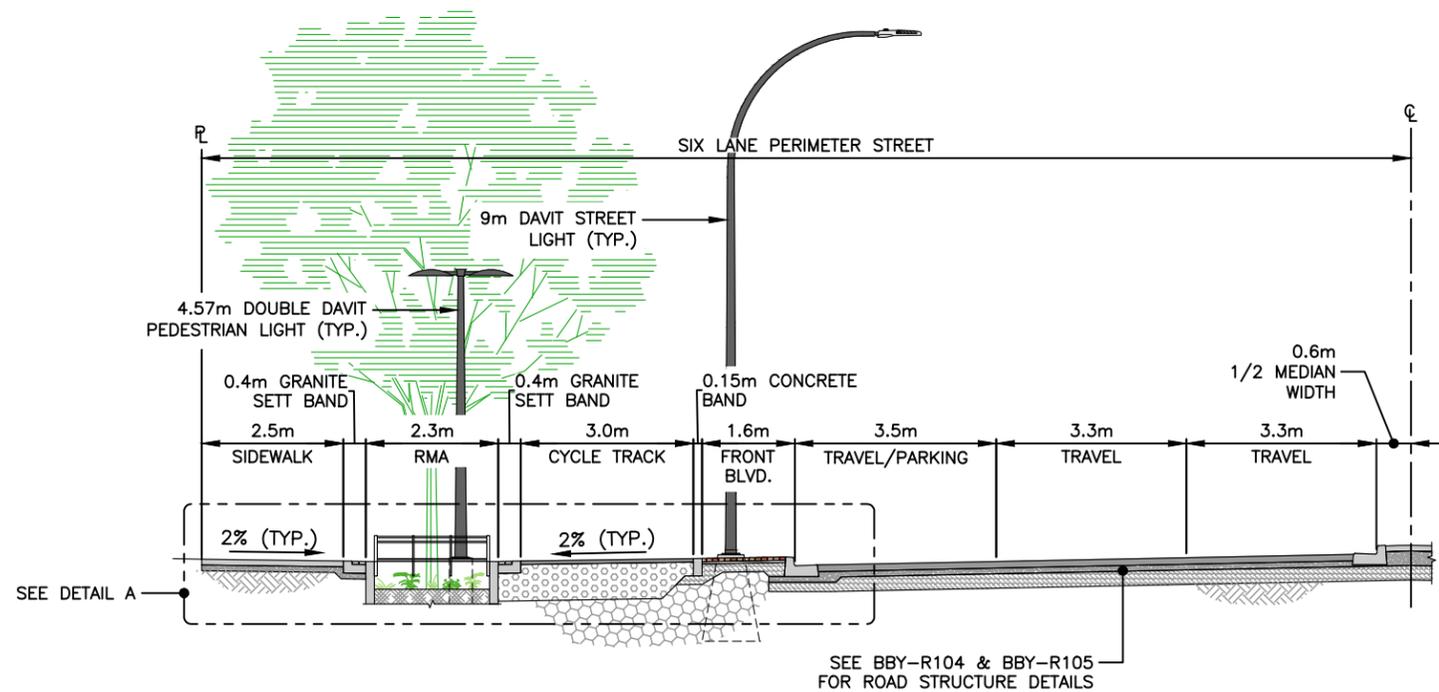
NO.	DATE	REVISION



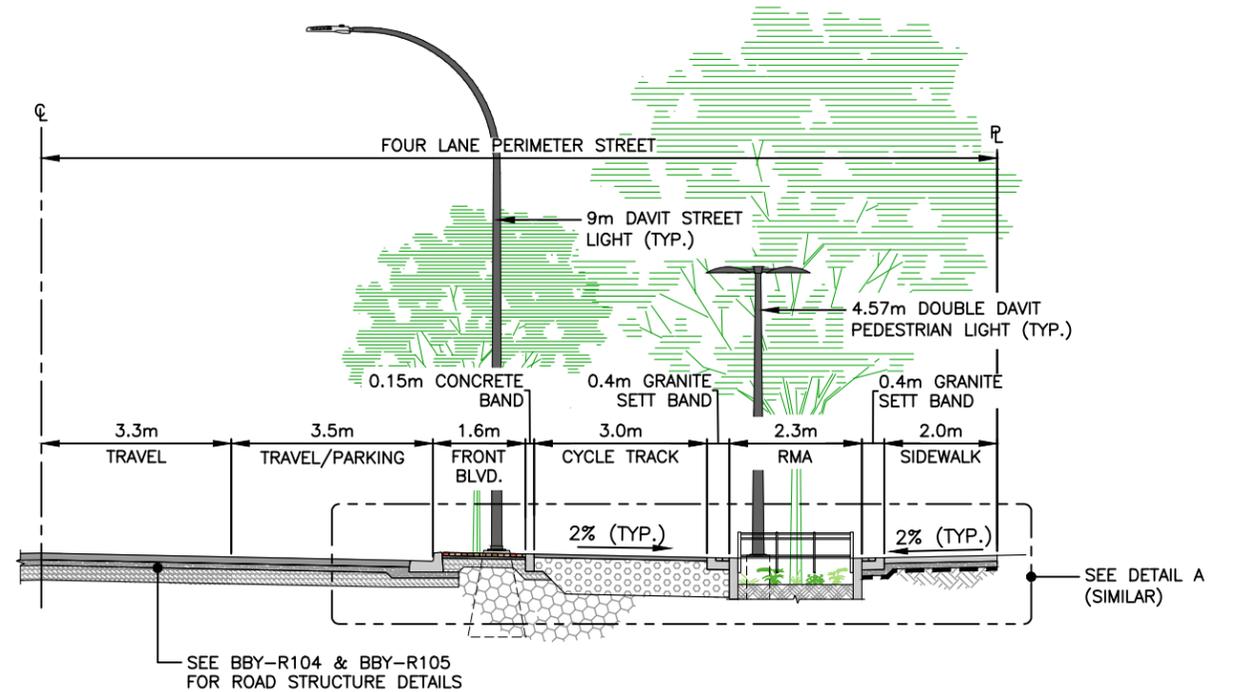
**TOWN CENTRE
PERIMETER STREET TYPICAL PLAN**

DRAWN BY: DCB SCALE: N.T.S.
APPR'D BY: DATE: 2020-09-25

BBY-TC-008

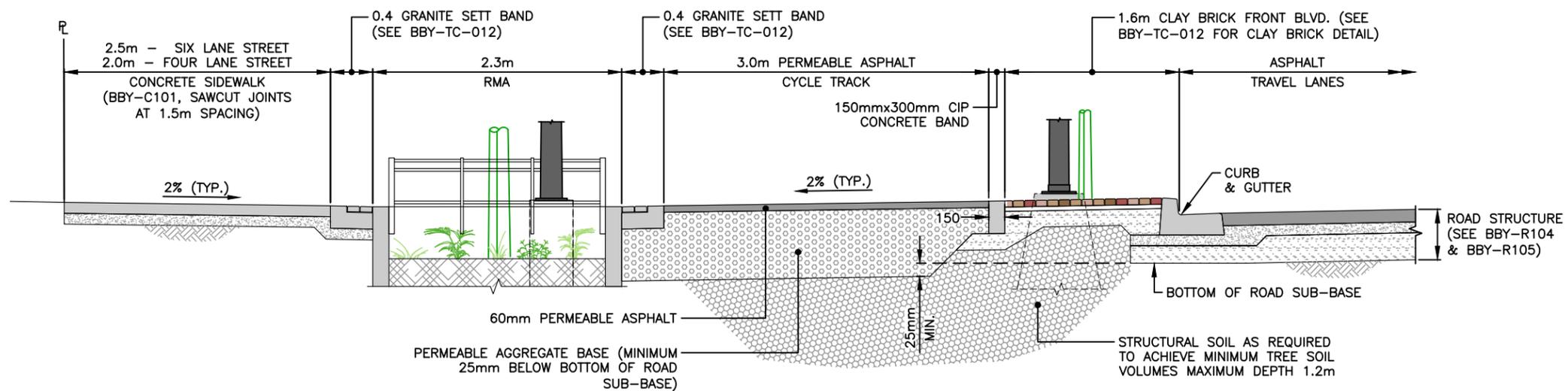


SIX LANE CONFIGURATION



FOUR LANE CONFIGURATION

OPPOSING SIDE OF ROADWAY TO MIRROR PERIMETER STREET SECTION OR OTHER APPLICABLE ROADWAY CONFIGURATION SPECIFIED BY THE CITY



DETAIL A

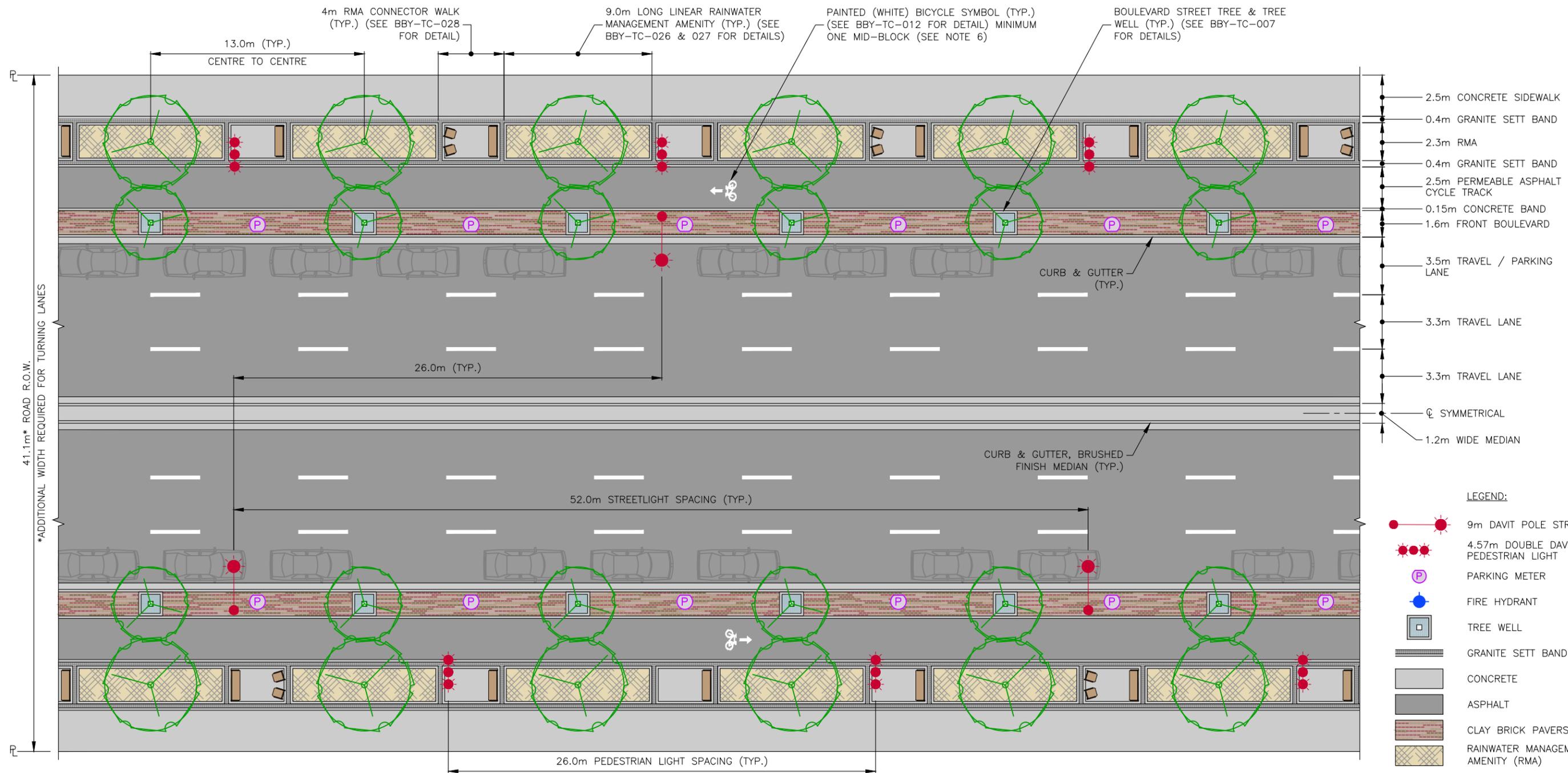
NO.	DATE	REVISION



TOWN CENTRE
PERIMETER STREET TYPICAL SECTION

DRAWN BY: DCB SCALE: N.T.S.
APPR'V'D BY: DATE: 2020-09-25

BBY - TC - 009



- LEGEND:**
- 9m DAVIT POLE STREETLIGHT
 - 4.57m DOUBLE DAVIT PEDESTRIAN LIGHT
 - PARKING METER
 - FIRE HYDRANT
 - TREE WELL
 - GRANITE SETT BAND
 - CONCRETE
 - ASPHALT
 - CLAY BRICK PAVERS
 - RAINWATER MANAGEMENT AMENITY (RMA)

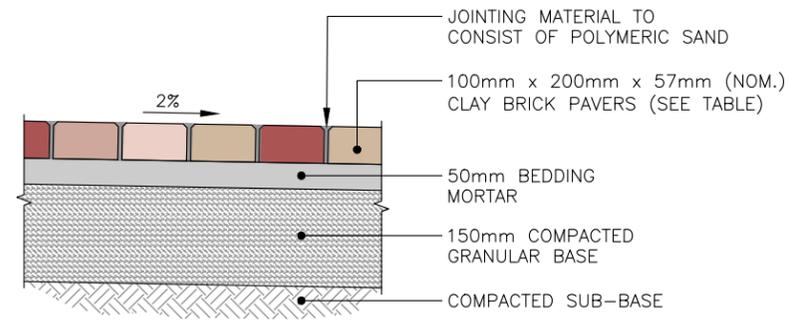
- NOTES:**
1. LINEAR RAINWATER MANAGEMENT AMENITIES (RMA'S) SHALL BE SPACED AT 13m ON CENTRE OR AS DIRECTED BY THE CITY.
 2. STREET LIGHTING TO BE PROVIDED AT 26m ON CENTRE BASED ON COMBINED SPACING OF STREET LIGHTS ON BOTH SIDES OF THE STREET OR AS REQUIRED TO PROVIDE MINIMUM LIGHTING LEVELS AS OUTLINED IN THE CITY OF BURNABY DESIGN CRITERIA MANUAL (SEE NOTE 9).
 3. PEDESTRIAN AND CYCLE TRACK LIGHTING TO BE PROVIDED AT 26m ON CENTRE ON BOTH SIDES OF THE STREET OR AS REQUIRED TO PROVIDE MINIMUM LIGHTING LEVELS AS OUTLINED IN THE CITY OF BURNABY DESIGN CRITERIA MANUAL (SEE NOTE 9).
 4. LEFT-TURN LANES SHALL BE PROVIDED WHERE DIRECTED BY THE CITY. LEFT-TURN LANES SHALL BE ACCOMMODATED BY INCREASING THE ROAD RIGHT OF WAY.
 5. PROVIDE 1.2m CENTRE MEDIANS WHERE DIRECTED BY THE CITY TO RESTRICT TURNING MOVEMENTS. CENTRE MEDIANS SHALL BE ACCOMMODATED BY INCREASING THE ROAD RIGHT OF WAY.
 6. BICYCLE SYMBOLS TO BE ADDED AT ENTRY INTO CYCLE TRACK, MID BLOCK AND AT APPROACH TO INTERSECTIONS. ADDITIONAL BICYCLE SYMBOLS SHALL BE ADDED TO MAINTAIN A MAXIMUM DISTANCE BETWEEN SYMBOLS OF 75m. STREET FURNITURE TO BE INCLUDED ON ALL RMA CONNECTOR WALKS. STREET FURNITURE SPECIFICATIONS AND OFFSETS TO BE REVIEWED AND APPROVED BY THE CITY.
 7. FEATURES SUCH AS LIGHT POLES AND PARKING METERS SITUATED WITHIN THE FRONT BOULEVARD MAY REQUIRE A CONCRETE PAD EXTENDING OUTSIDE THE FOOTPRINT OF THE BASE. IN CASES WHERE THE FRONT BOULEVARD IS COMPRISED OF CLAY BRICK PAVERS, THE CONCRETE PAD SHALL BE SIZED AT OR BEYOND MINIMUM REQUIREMENTS TO MINIMIZE CUTTING CLAY PAVERS AROUND THE PADS.
 8. PARKING REGULATION SIGNS SHALL BE PLACED AS PER CITY REQUIREMENTS. WHERE SIGN LOCATIONS CONFLICT WITH OTHER FEATURES, LOCATION OF THE SIGN AND RESPECTIVE FEATURES SHALL BE REVIEWED AND APPROVED BY THE CITY.
 9. POLE SPACING AND CONFIGURATION SHOWN ON THESE DRAWINGS IS FOR REFERENCE ONLY. ROADWAY AND PEDESTRIAN LIGHTS ARE TO BE DESIGNED ON A SITE BY SITE BASIS. DESIGN SHOULD BE COMPLETED BY A QUALIFIED ROADWAY LIGHTING DESIGNER IN ACCORDANCE WITH THE CITY OF BURNABY DESIGN CRITERIA MANUAL.
 10. SINGLE DAVIT PEDESTRIAN LIGHTS, DOUBLE DAVIT PEDESTRIAN LIGHTS AND PEDESTRIAN LIGHT ATTACHED BEHIND ROADWAY STREETLIGHT POLES ARE ACCEPTABLE OPTIONS TO ILLUMINATE PEDESTRIAN PATHWAYS.
 11. TREE GRATES SHALL BE DUCTILE IRON DOBNEY TYPE SJ-48 SET IN CONCRETE TREE GRATE SURROUND.
 12. ALL TOWN CENTRE POLES SHALL BE BLACK, UNLESS OTHERWISE DIRECTED BY THE CITY REPRESENTATIVE.
 13. ALL POLES TO BE A MINIMUM 6" DIAMETER, UNLESS OTHERWISE DIRECTED BY THE CITY REPRESENTATIVE.

NO.	DATE	REVISION



**TOWN CENTRE
SIX-LANE ARTERIAL STREET
TYPICAL PLAN**

DRAWN BY: DCB	SCALE: N.T.S.	BBY - TC - 010
APPR'V'D BY:	DATE: 2020-09-25	



NOTE:
 APPLIES TO FOUR-LANE AND SIX-LANE ROADWAY WITHIN THE FRONT BOULEVARD. CLAY BRICK COLOURS WILL VARY BETWEEN EACH TOWN CENTRE AS SPECIFIED IN THE TOWN CENTRE CLAY BRICK PATTERN TABLE.

CLAY BRICK DETAIL

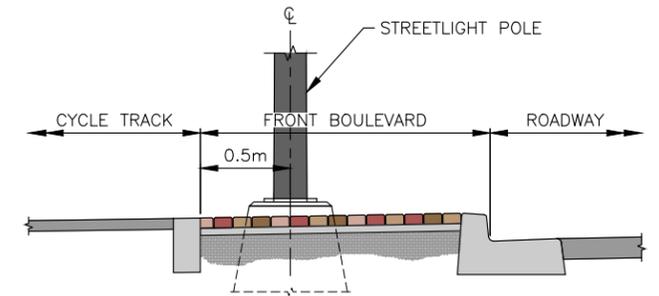
TOWN CENTRE CLAY BRICK PATTERNS	
TOWN CENTRE	BRICK COLOURS
BRENTWOOD	#41 CARIBBEAN, #42 CINNAMON, #44 MAHOGANY
EDMONDS	#50 IVORY, #52 MAJESTIC, #53 CIMMEREAN, #54 CHOCOLATE
LOUGHEED	#34 MULBERRY, #56 DESERT GREY, #50 IVORY, #52 MAJESTIC
METROTOWN	#52 MAJESTIC, #53 CIMMEREAN, #54 CHOCOLATE

BRICK TYPE: 4" x 8" x 2 1/4" THICK (100 x 200 x 57 NOM.) CLAY BRICK PAVERS FROM WHITEACRE GREER PAVERS (OR APPROVED EQUIVALENT)

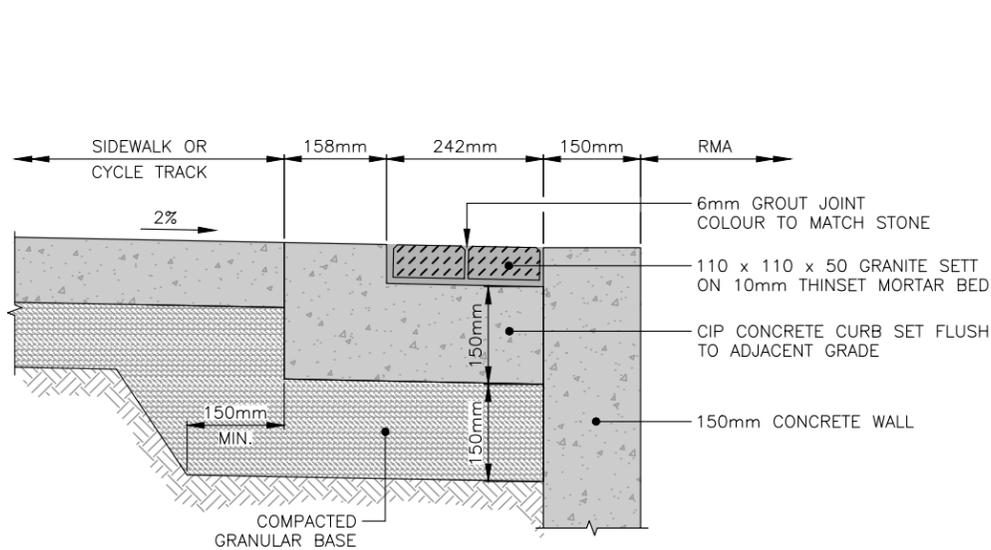
BRICK PATTERN: HALF RUNNING BOND

COLOUR PATTERN: RANDOM CONTINUOUS LINEAR BANDS OF 4 TO 9 BRICKS OF EACH COLOUR WITH NO MORE THAN A TWO BRICK OVERLAP OF THE SAME COLOUR IN ADJACENT BANDS.

APPLICATION: APPLIES TO CLAY BRICK TACTILE STRIPS ON TWO-LANE ROADWAYS AND FOUR-LANE AND SIX-LANE FRONT BOULEVARD.

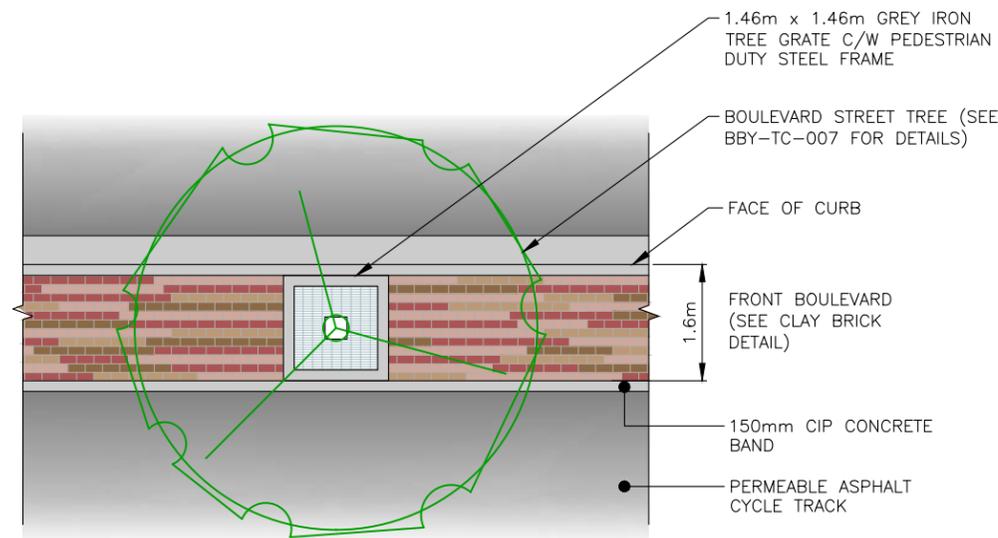


TYPICAL STREETLIGHT POLE LOCATION



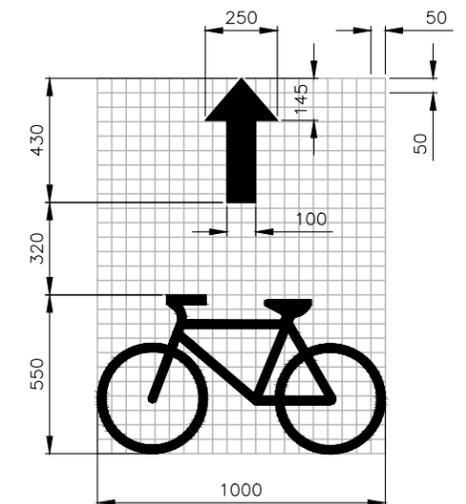
NOTE:
 APPLIES TO FOUR-LANE AND SIX-LANE ROADWAY, ADJACENT TO LINEAR RMAS AND RMA CONNECTOR WALKS.

GRANITE SETT BAND DETAIL



NOTE:
 APPLIES TO FOUR-LANE AND SIX-LANE ROADWAY WITHIN FRONT BOULEVARD. TREE GRATE DIMENSIONS ARE INCLUDED ON SHEET BBY-TC-006 IN NOTE 10.

TYPICAL TREE WELL ARRANGEMENT



NOTE:

1. PAINTED BICYCLE SYMBOL DETAIL TO INCLUDE DIRECTIONAL ARROW ON FOUR-LANE AND SIX-LANE ROADWAYS. TWO-LANE ROADWAYS WILL NOT INCLUDE DIRECTIONAL ARROW.
2. BICYCLE SYMBOL SHALL BE PAINTED EXCEPT WHERE CITY IDENTIFIES LOCATIONS WHERE ALTERNATIVE MARKING MATERIAL IS REQUIRED.

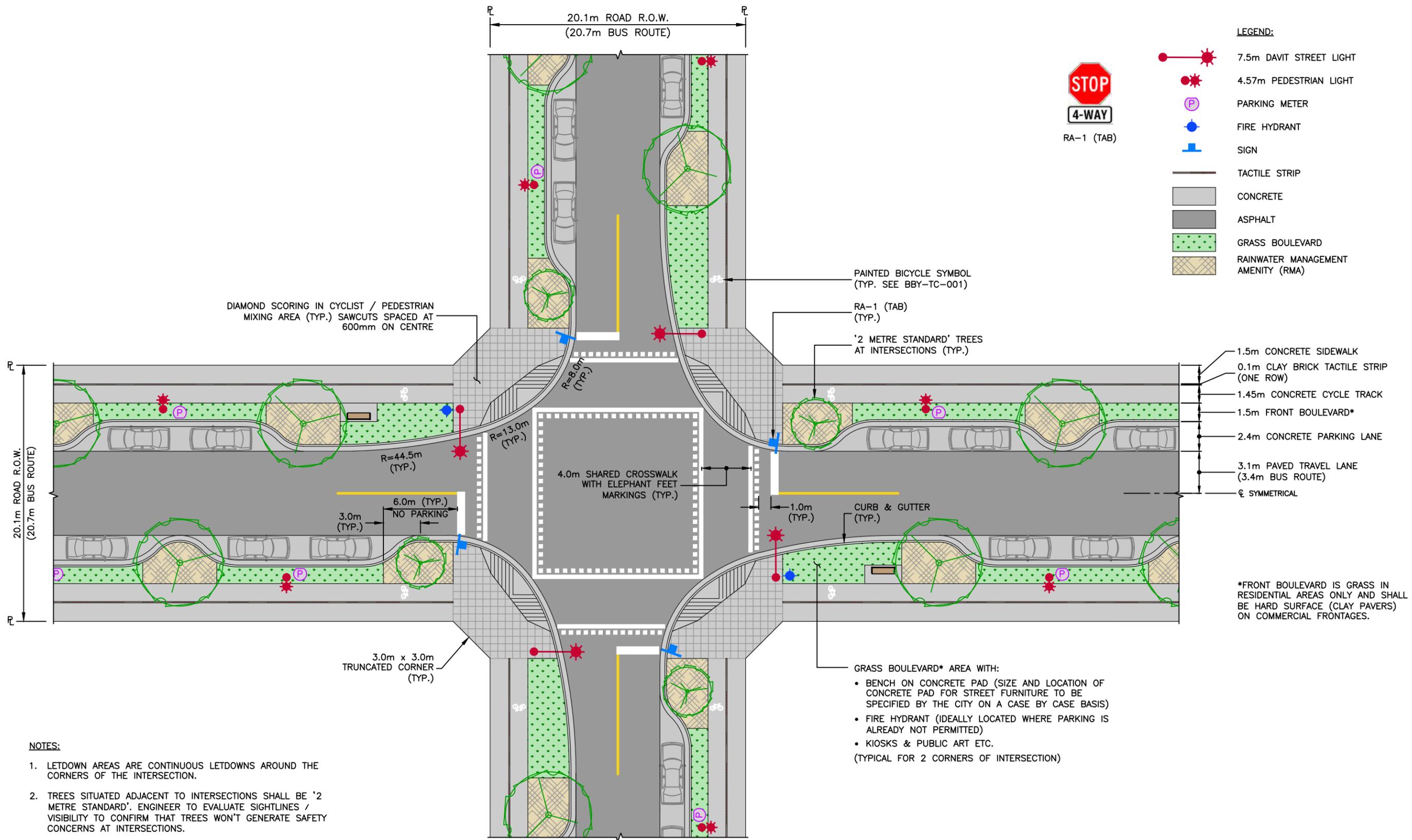
PAINTED BICYCLE SYMBOL DETAIL

NO.	DATE	REVISION



**TOWN CENTRE
 FOUR AND SIX LANE DETAILS**

DRAWN BY: DCB	SCALE: N.T.S.	BBY-TC-012
APPR'D BY:	DATE: 2020-09-25	



NOTES:

1. LETDOWN AREAS ARE CONTINUOUS LETDOWNS AROUND THE CORNERS OF THE INTERSECTION.
2. TREES SITUATED ADJACENT TO INTERSECTIONS SHALL BE '2 METRE STANDARD'. ENGINEER TO EVALUATE SIGHTLINES / VISIBILITY TO CONFIRM THAT TREES WON'T GENERATE SAFETY CONCERNS AT INTERSECTIONS.

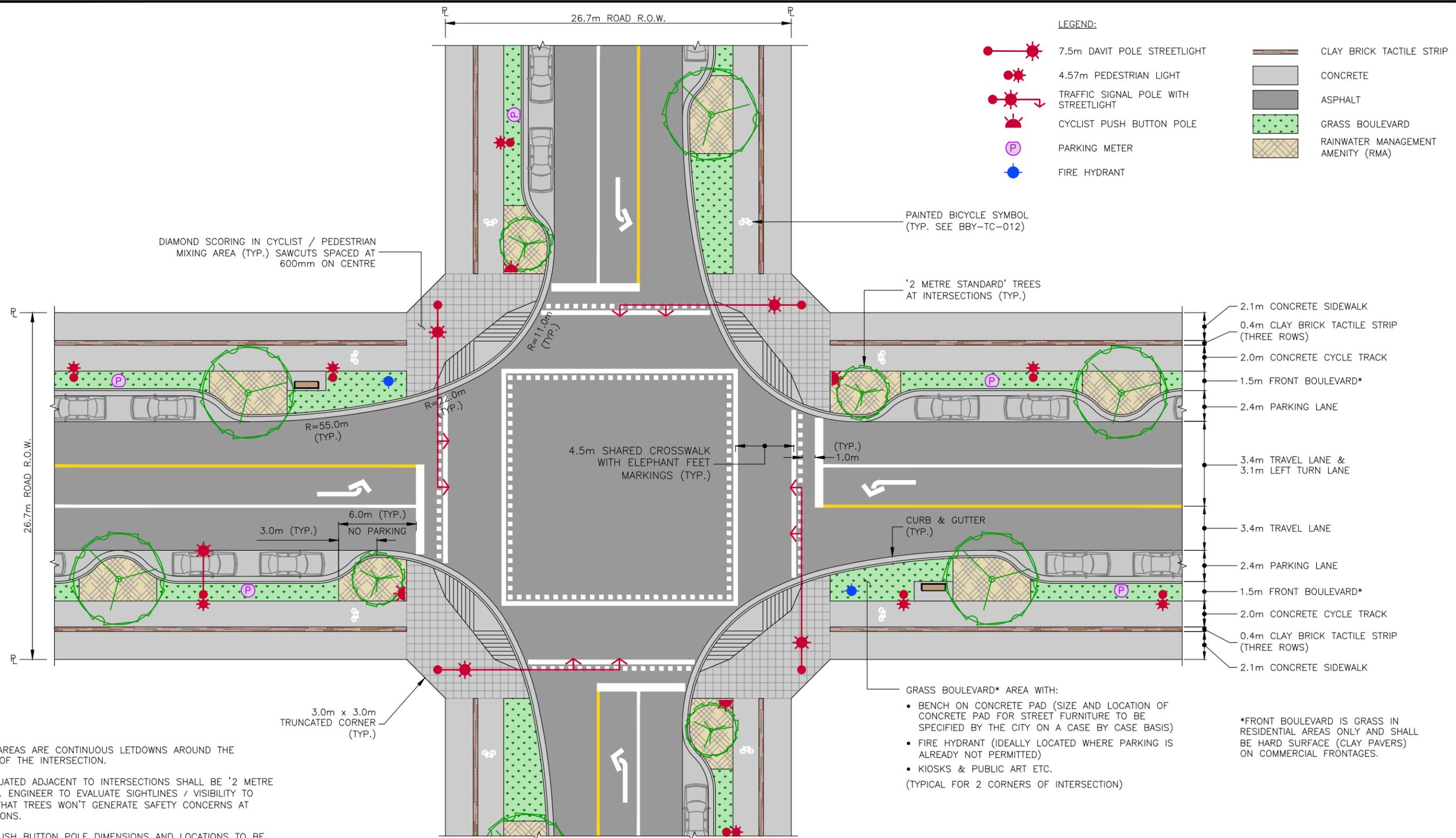


**TOWN CENTRE
TWO-LANE LOCAL INTERSECTION
TYPICAL PLAN**

NO.	DATE	REVISION

DRAWN BY: DCB SCALE: N.T.S.
 APPR'D BY: DATE: 2020-09-25

BBY-TC-013



NOTES:

1. LETDOWN AREAS ARE CONTINUOUS LETDOWNS AROUND THE CORNERS OF THE INTERSECTION.
2. TREES SITUATED ADJACENT TO INTERSECTIONS SHALL BE '2 METRE STANDARD'. ENGINEER TO EVALUATE SIGHTLINES / VISIBILITY TO CONFIRM THAT TREES WON'T GENERATE SAFETY CONCERNS AT INTERSECTIONS.
3. CYCLIST PUSH BUTTON POLE DIMENSIONS AND LOCATIONS TO BE SPECIFIED BY ENGINEER AND APPROVED BY CITY.
4. POSITION OF SIGNAL SHOULD ACCOUNT FOR ADEQUATE ROOM TO KEEP POLE BASE WITHIN THE R.O.W. AND PROVIDE CONSIDERATION FOR PEDESTRIAN AND CYCLIST MOVEMENTS IN PROXIMITY TO THE SIGNAL POLE LOCATIONS. PEDESTRIAN PUSH BUTTONS SHALL BE INCLUDED ON SIGNAL POLES. LOCATION OF SIGNAL POLES ON THESE DRAWINGS ARE SHOWN FOR REFERENCE ONLY.
5. POSITION, SPACING AND SPECIFICATION OF STREET AND PEDESTRIAN LIGHTING POLES SHALL BE SPECIFIED BY THE ENGINEER AND AS REQUIRED TO PROVIDE MINIMUM LIGHTING LEVELS AS OUTLINED IN THE GUIDELINES. LIGHT POLE INFORMATION IS SHOWN FOR REFERENCE ONLY.
6. LEFT-TURN LANES SHALL BE PROVIDED WHERE DIRECTED BY THE CITY. LEFT-TURN LANES SHALL TYPICALLY BE ACCOMMODATED WITHIN THE ROAD RIGHT OF WAY BY LOCAL PARKING RESTRICTIONS. WHERE THIS IS NOT POSSIBLE, ADDITIONAL RIGHTS OF WAY WILL BE REQUIRED. THE INTERSECTION CONFIGURATION SHOWN ON THIS SHEET ACCOMMODATES LEFT TURNS BY MEANS OF ADDITIONAL RIGHTS-OF-WAY.

NO.	DATE	REVISION



**TOWN CENTRE
TWO-LANE COLLECTOR INTERSECTION
TYPICAL PLAN**

DRAWN BY: DCB SCALE: N.T.S.
APPR'V'D BY: DATE: 2020-09-25

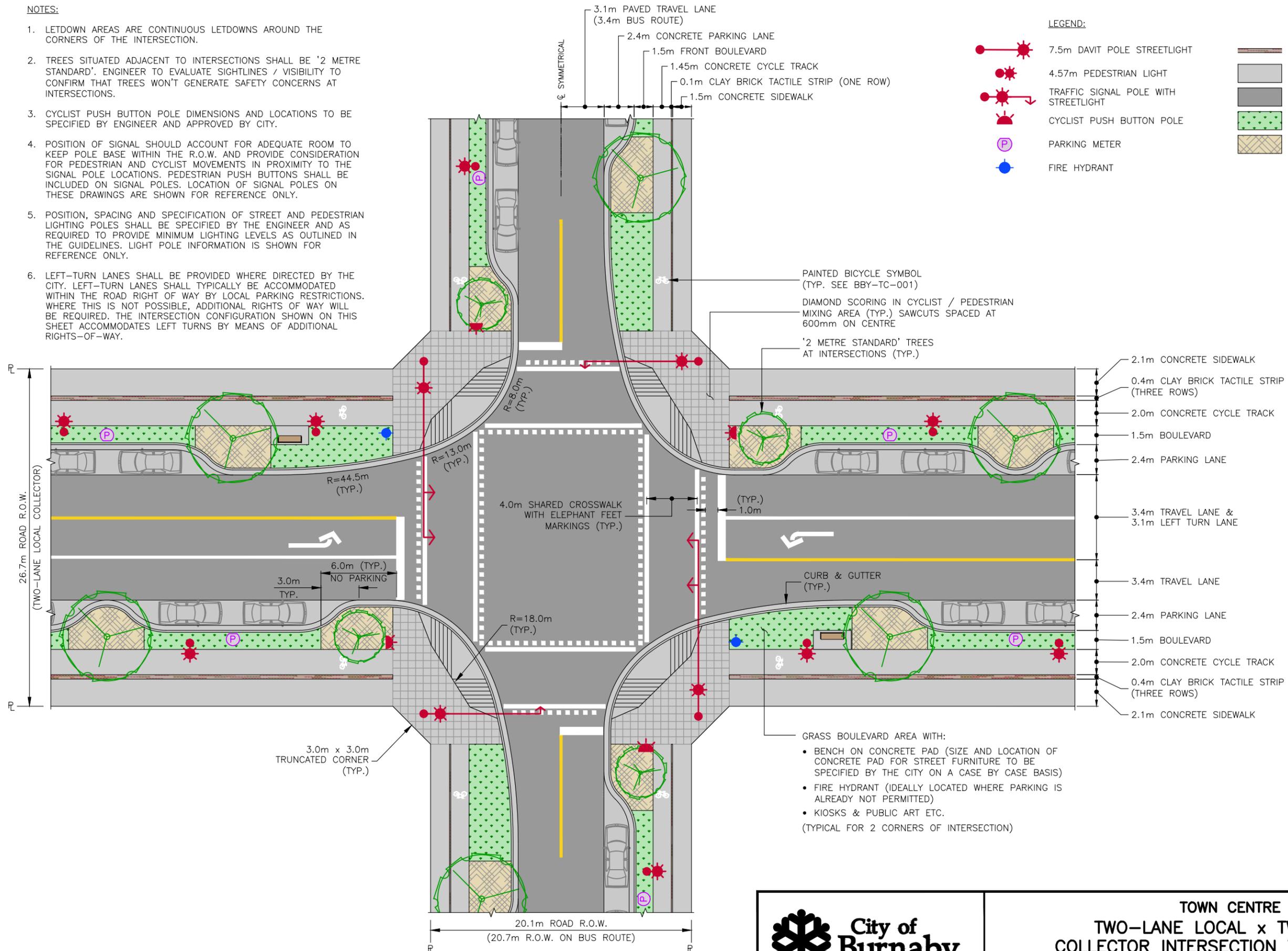
BBY - TC - 014

NOTES:

1. LETDOWN AREAS ARE CONTINUOUS LETDOWNS AROUND THE CORNERS OF THE INTERSECTION.
2. TREES SITUATED ADJACENT TO INTERSECTIONS SHALL BE '2 METRE STANDARD'. ENGINEER TO EVALUATE SIGHTLINES / VISIBILITY TO CONFIRM THAT TREES WON'T GENERATE SAFETY CONCERNS AT INTERSECTIONS.
3. CYCLIST PUSH BUTTON POLE DIMENSIONS AND LOCATIONS TO BE SPECIFIED BY ENGINEER AND APPROVED BY CITY.
4. POSITION OF SIGNAL SHOULD ACCOUNT FOR ADEQUATE ROOM TO KEEP POLE BASE WITHIN THE R.O.W. AND PROVIDE CONSIDERATION FOR PEDESTRIAN AND CYCLIST MOVEMENTS IN PROXIMITY TO THE SIGNAL POLE LOCATIONS. PEDESTRIAN PUSH BUTTONS SHALL BE INCLUDED ON SIGNAL POLES. LOCATION OF SIGNAL POLES ON THESE DRAWINGS ARE SHOWN FOR REFERENCE ONLY.
5. POSITION, SPACING AND SPECIFICATION OF STREET AND PEDESTRIAN LIGHTING POLES SHALL BE SPECIFIED BY THE ENGINEER AND AS REQUIRED TO PROVIDE MINIMUM LIGHTING LEVELS AS OUTLINED IN THE GUIDELINES. LIGHT POLE INFORMATION IS SHOWN FOR REFERENCE ONLY.
6. LEFT-TURN LANES SHALL BE PROVIDED WHERE DIRECTED BY THE CITY. LEFT-TURN LANES SHALL TYPICALLY BE ACCOMMODATED WITHIN THE ROAD RIGHT OF WAY BY LOCAL PARKING RESTRICTIONS. WHERE THIS IS NOT POSSIBLE, ADDITIONAL RIGHTS OF WAY WILL BE REQUIRED. THE INTERSECTION CONFIGURATION SHOWN ON THIS SHEET ACCOMMODATES LEFT TURNS BY MEANS OF ADDITIONAL RIGHTS-OF-WAY.

LEGEND:

-  7.5m DAVIT POLE STREETLIGHT
-  4.57m PEDESTRIAN LIGHT
-  TRAFFIC SIGNAL POLE WITH STREETLIGHT
-  CYCLIST PUSH BUTTON POLE
-  PARKING METER
-  FIRE HYDRANT
-  CLAY BRICK TACTILE STRIP
-  CONCRETE
-  ASPHALT
-  GRASS BOULEVARD
-  RAINWATER MANAGEMENT AMENITY (RMA)



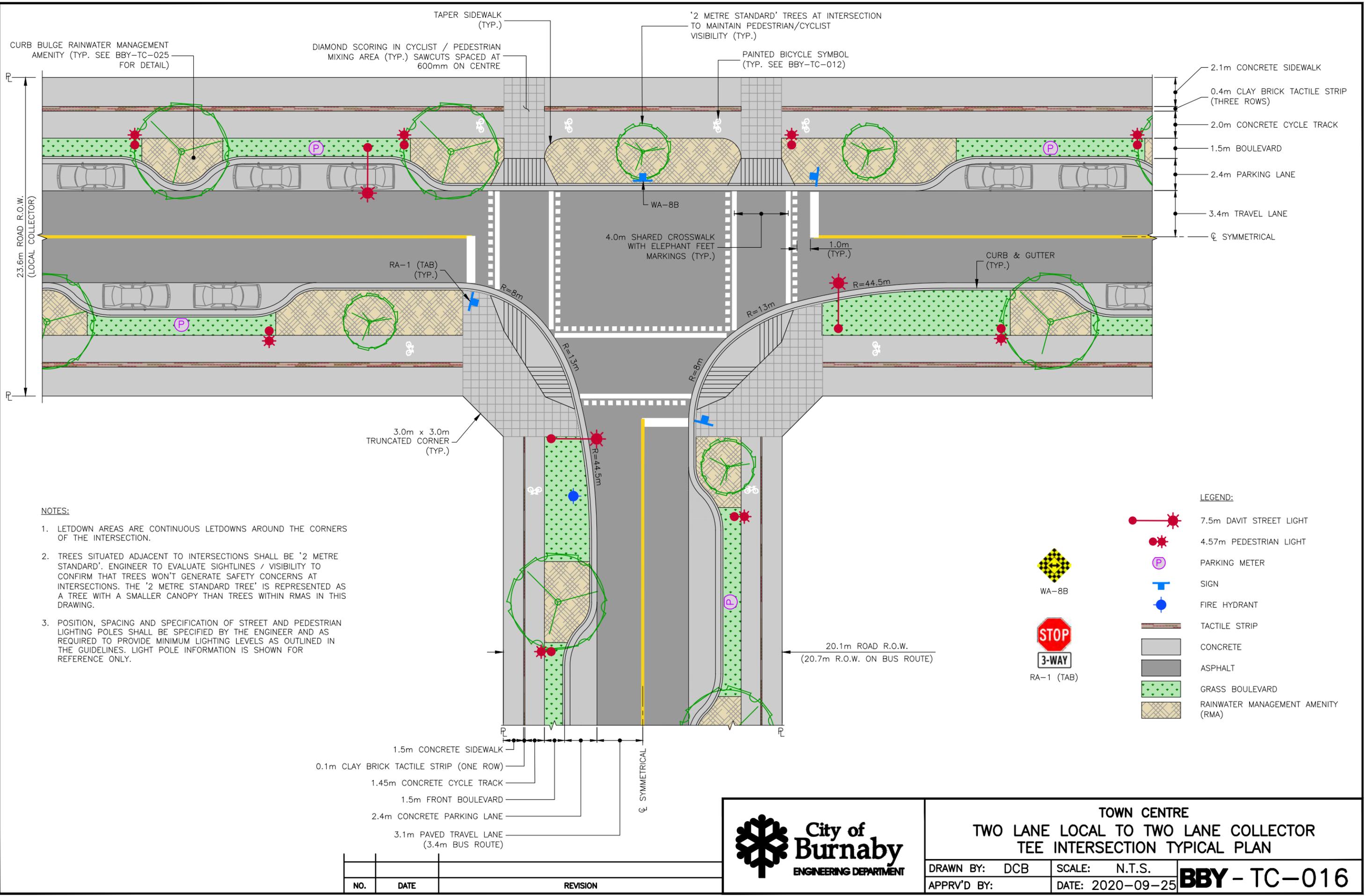
- GRASS BOULEVARD AREA WITH:
- BENCH ON CONCRETE PAD (SIZE AND LOCATION OF CONCRETE PAD FOR STREET FURNITURE TO BE SPECIFIED BY THE CITY ON A CASE BY CASE BASIS)
 - FIRE HYDRANT (IDEALLY LOCATED WHERE PARKING IS ALREADY NOT PERMITTED)
 - KIOSKS & PUBLIC ART ETC.
- (TYPICAL FOR 2 CORNERS OF INTERSECTION)

NO.	DATE	REVISION



**TOWN CENTRE
TWO-LANE LOCAL x TWO-LANE
COLLECTOR INTERSECTION TYPICAL PLAN**

DRAWN BY: DCB	SCALE: N.T.S.	BBY - TC - 015
APPR'V'D BY:	DATE: 2020-09-25	



CURB BULGE RAINWATER MANAGEMENT AMENITY (TYP. SEE BBY-TC-025 FOR DETAIL)

DIAMOND SCORING IN CYCLIST / PEDESTRIAN MIXING AREA (TYP.) SAWCUTS SPACED AT 600mm ON CENTRE

'2 METRE STANDARD' TREES AT INTERSECTION TO MAINTAIN PEDESTRIAN/CYCLIST VISIBILITY (TYP.)

PAINTED BICYCLE SYMBOL (TYP. SEE BBY-TC-012)

2.1m CONCRETE SIDEWALK
 0.4m CLAY BRICK TACTILE STRIP (THREE ROWS)
 2.0m CONCRETE CYCLE TRACK
 1.5m BOULEVARD
 2.4m PARKING LANE
 3.4m TRAVEL LANE
 ☉ SYMMETRICAL

23.6m ROAD R.O.W. (LOCAL COLLECTOR)

RA-1 (TAB) (TYP.)

4.0m SHARED CROSSWALK WITH ELEPHANT FEET MARKINGS (TYP.)

1.0m (TYP.)

CURB & GUTTER (TYP.)

3.0m x 3.0m TRUNCATED CORNER (TYP.)

NOTES:

1. LETDOWN AREAS ARE CONTINUOUS LETDOWNS AROUND THE CORNERS OF THE INTERSECTION.
2. TREES SITUATED ADJACENT TO INTERSECTIONS SHALL BE '2 METRE STANDARD'. ENGINEER TO EVALUATE SIGHTLINES / VISIBILITY TO CONFIRM THAT TREES WON'T GENERATE SAFETY CONCERNS AT INTERSECTIONS. THE '2 METRE STANDARD TREE' IS REPRESENTED AS A TREE WITH A SMALLER CANOPY THAN TREES WITHIN RMAS IN THIS DRAWING.
3. POSITION, SPACING AND SPECIFICATION OF STREET AND PEDESTRIAN LIGHTING POLES SHALL BE SPECIFIED BY THE ENGINEER AND AS REQUIRED TO PROVIDE MINIMUM LIGHTING LEVELS AS OUTLINED IN THE GUIDELINES. LIGHT POLE INFORMATION IS SHOWN FOR REFERENCE ONLY.

LEGEND:

- 7.5m DAVIT STREET LIGHT
- 4.57m PEDESTRIAN LIGHT
- PARKING METER
- SIGN
- FIRE HYDRANT
- TACTILE STRIP
- CONCRETE
- ASPHALT
- GRASS BOULEVARD
- RAINWATER MANAGEMENT AMENITY (RMA)

1.5m CONCRETE SIDEWALK
 0.1m CLAY BRICK TACTILE STRIP (ONE ROW)
 1.45m CONCRETE CYCLE TRACK
 1.5m FRONT BOULEVARD
 2.4m CONCRETE PARKING LANE
 3.1m PAVED TRAVEL LANE (3.4m BUS ROUTE)
 ☉ SYMMETRICAL



**TOWN CENTRE
 TWO LANE LOCAL TO TWO LANE COLLECTOR
 TEE INTERSECTION TYPICAL PLAN**

DRAWN BY: DCB SCALE: N.T.S.
 APPR'D BY: DATE: 2020-09-25

BBY-TC-016

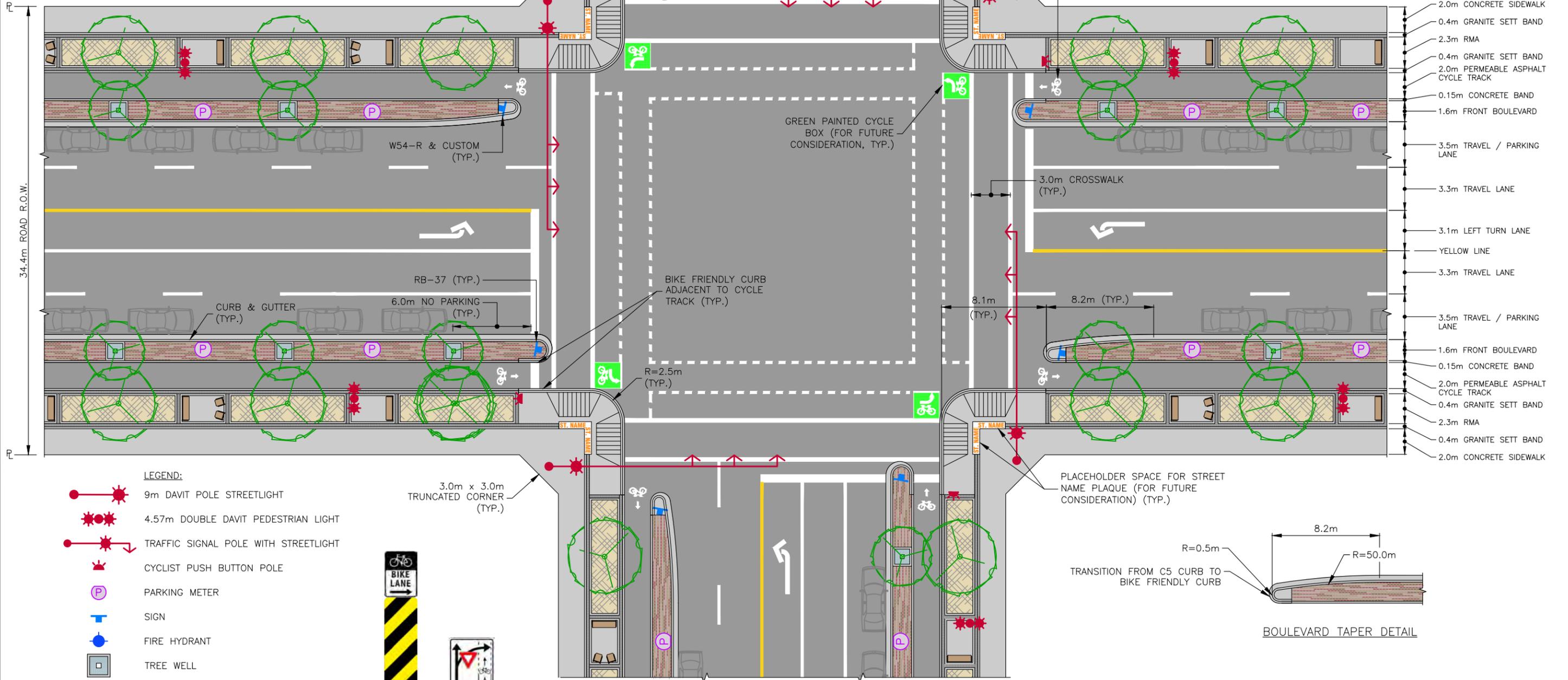
NO.	DATE	REVISION

NOTES:

- ENGINEER TO EVALUATE SIGHTLINES / VISIBILITY TO CONFIRM THAT TREES WON'T GENERATE SAFETY CONCERNS AT INTERSECTIONS.
- CYCLIST PUSH BUTTON POLE DIMENSIONS AND LOCATIONS TO BE SPECIFIED BY ENGINEER AND APPROVED BY CITY.
- POSITION OF SIGNAL SHOULD ACCOUNT FOR ADEQUATE ROOM TO KEEP POLE BASE WITHIN THE R.O.W. AND PROVIDE CONSIDERATION FOR PEDESTRIAN AND CYCLIST MOVEMENTS IN PROXIMITY TO THE SIGNAL POLE LOCATIONS. PEDESTRIAN PUSH BUTTONS SHALL BE INCLUDED ON SIGNAL POLES. LOCATION OF SIGNAL POLES ON THESE DRAWINGS ARE SHOWN FOR REFERENCE ONLY.
- POSITION, SPACING AND SPECIFICATION OF STREET AND PEDESTRIAN LIGHTING POLES SHALL BE SPECIFIED BY THE ENGINEER AND AS REQUIRED TO PROVIDE MINIMUM LIGHTING LEVELS AS OUTLINED IN THE GUIDELINES, LIGHT POLE INFORMATION IS SHOWN FOR REFERENCE ONLY.

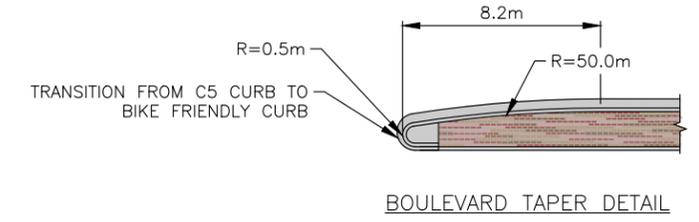
NOTES CONTINUED:

- LEFT-TURN LANES SHALL BE PROVIDED WHERE DIRECTED BY THE CITY. LEFT-TURN LANES SHALL TYPICALLY BE ACCOMMODATED WITHIN THE ROAD RIGHT OF WAY BY LOCAL PARKING RESTRICTIONS. WHERE THIS IS NOT POSSIBLE, ADDITIONAL RIGHTS OF WAY WILL BE REQUIRED. THE INTERSECTION CONFIGURATION SHOWN ON THIS SHEET ACCOMMODATES LEFT TURNS BY MEANS OF ADDITIONAL RIGHTS-OF-WAY.
- CYCLE TRACKS SHALL VERTICALLY TRANSITION TO AND FROM ROADWAY ELEVATION OVER A 6.0m LENGTH.



LEGEND:

- 9m DAVIT POLE STREETLIGHT
- 4.57m DOUBLE DAVIT PEDESTRIAN LIGHT
- TRAFFIC SIGNAL POLE WITH STREETLIGHT
- CYCLIST PUSH BUTTON POLE
- PARKING METER
- SIGN
- FIRE HYDRANT
- TREE WELL
- TACTILE STRIP



- CONCRETE
- ASPHALT
- CLAY BRICK PAVERS
- RAINWATER MANAGEMENT AMENITY (RMA)

NO.	DATE	REVISION



TOWN CENTRE
FOUR-LANE INTERSECTION TYPICAL PLAN

DRAWN BY: DCB	SCALE: N.T.S.	BBY-TC-017
APPR'V'D BY:	DATE: 2020-09-25	

NOTES:

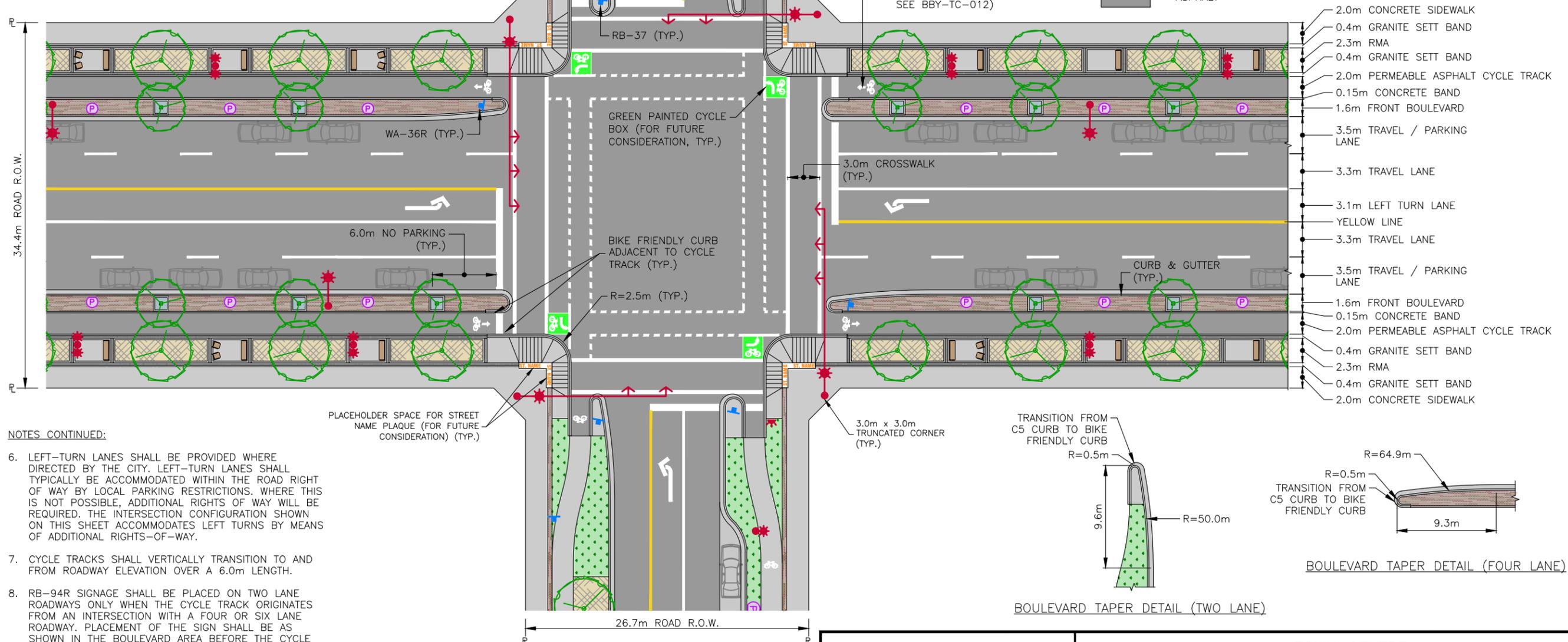
1. LETDOWN AREAS ARE CONTINUOUS LETDOWNS AROUND THE CORNERS OF THE INTERSECTION.
2. ENGINEER TO EVALUATE SIGHTLINES / VISIBILITY TO CONFIRM THAT TREES WON'T GENERATE SAFETY CONCERNS AT INTERSECTIONS.
3. CYCLIST PUSH BUTTON POLE DIMENSIONS AND LOCATIONS TO BE SPECIFIED BY ENGINEER AND APPROVED BY CITY.
4. POSITION OF SIGNAL SHOULD ACCOUNT FOR ADEQUATE ROOM TO KEEP POLE BASE WITHIN THE R.O.W. AND PROVIDE CONSIDERATION FOR PEDESTRIAN AND CYCLIST MOVEMENTS IN PROXIMITY TO THE SIGNAL POLE LOCATIONS. PEDESTRIAN PUSH BUTTONS SHALL BE INCLUDED ON SIGNAL POLES. LOCATION OF SIGNAL POLES ON THESE DRAWINGS ARE SHOWN FOR REFERENCE ONLY.
5. POSITION, SPACING AND SPECIFICATION OF STREET AND PEDESTRIAN LIGHTING POLES SHALL BE SPECIFIED BY THE ENGINEER AND AS REQUIRED TO PROVIDE MINIMUM LIGHTING LEVELS AS OUTLINED IN THE GUIDELINES, LIGHT POLE INFORMATION IS SHOWN FOR REFERENCE ONLY.

3.4m TRAVEL LANE
2.4m CONCRETE PARKING LANE
1.5m FRONT BOULEVARD
2.0m CONCRETE CYCLE TRACK
0.4m GRANITE TACTILE STRIP
2.1m CONCRETE SIDEWALK

3.1m LEFT TURN LANE
3.4m TRAVEL LANE
2.4m CONCRETE PARKING LANE
1.5m FRONT BOULEVARD
2.0m CONCRETE CYCLE TRACK
0.4m GRANITE TACTILE STRIP
2.1m CONCRETE SIDEWALK

LEGEND:

- 9.0m DAVIT POLE STREETLIGHT
- 5m PEDESTRIAN LIGHT
- 5m DOUBLE DAVIT PEDESTRIAN LIGHT
- TRAFFIC SIGNAL POLE WITH STREETLIGHT
- CYCLIST PUSH BUTTON POLE
- PARKING METER
- FIRE HYDRANT
- SIGN
- TREE WELL
- GRANITE SETT BAND
- CLAY BRICK TACTILE STRIP
- CONCRETE
- ASPHALT
- CLAY BRICK PAVERS
- GRASS BOULEVARD
- RAINWATER MANAGEMENT AMENITY (RMA)
- CUSTOM WA-36R
- RB-94R
- RB-37



NOTES CONTINUED:

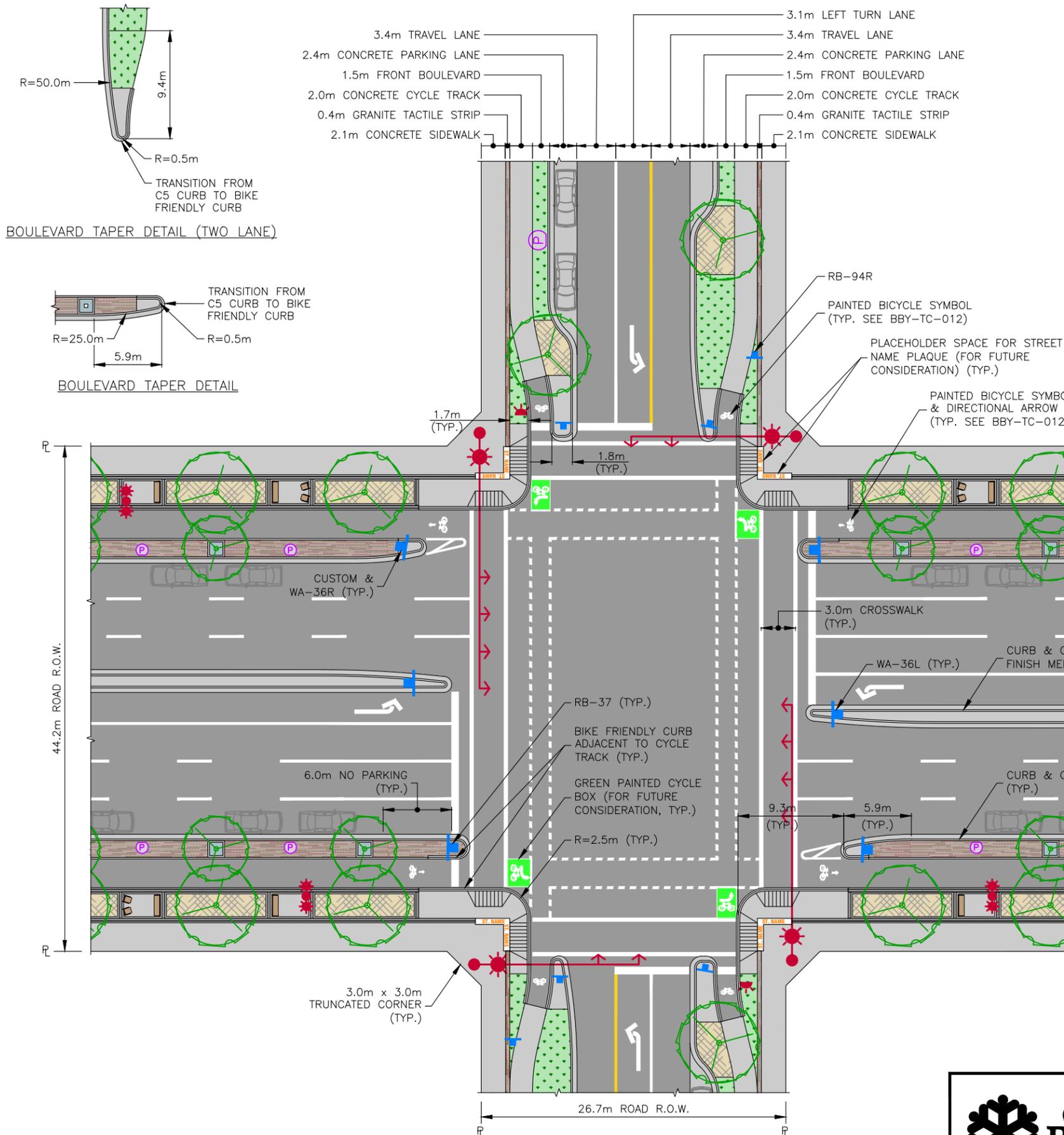
6. LEFT-TURN LANES SHALL BE PROVIDED WHERE DIRECTED BY THE CITY. LEFT-TURN LANES SHALL TYPICALLY BE ACCOMMODATED WITHIN THE ROAD RIGHT OF WAY BY LOCAL PARKING RESTRICTIONS. WHERE THIS IS NOT POSSIBLE, ADDITIONAL RIGHTS OF WAY WILL BE REQUIRED. THE INTERSECTION CONFIGURATION SHOWN ON THIS SHEET ACCOMMODATES LEFT TURNS BY MEANS OF ADDITIONAL RIGHTS-OF-WAY.
7. CYCLE TRACKS SHALL VERTICALLY TRANSITION TO AND FROM ROADWAY ELEVATION OVER A 6.0m LENGTH.
8. RB-94R SIGNAGE SHALL BE PLACED ON TWO LANE ROADWAYS ONLY WHEN THE CYCLE TRACK ORIGINATES FROM AN INTERSECTION WITH A FOUR OR SIX LANE ROADWAY. PLACEMENT OF THE SIGN SHALL BE AS SHOWN IN THE BOULEVARD AREA BEFORE THE CYCLE TRACK AND SIDEWALK ARE DIRECTLY ADJOINED BY THE CLAY BRICK PAVER TACTILE STRIP.

NO.	DATE	REVISION



**TOWN CENTRE
FOUR-LANE x TWO-LANE COLLECTOR
INTERSECTION TYPICAL PLAN**

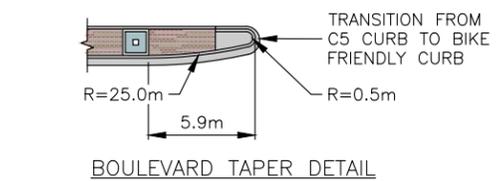
DRAWN BY: DCB	SCALE: N.T.S.	BBY - TC - 018
APPR'V'D BY:	DATE: 2020-09-25	



NOTES:

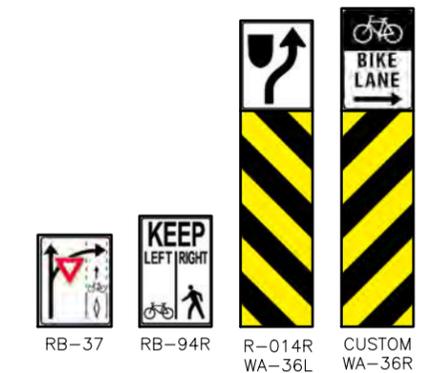
- ENGINEER TO EVALUATE SIGHTLINES / VISIBILITY TO CONFIRM THAT TREES WON'T GENERATE SAFETY CONCERNS AT INTERSECTIONS.
- CYCLIST PUSH BUTTON POLE DIMENSIONS AND LOCATIONS TO BE SPECIFIED BY ENGINEER AND APPROVED BY CITY.
- POSITION OF SIGNAL SHOULD ACCOUNT FOR ADEQUATE ROOM TO KEEP POLE BASE WITHIN THE R.O.W. AND PROVIDE CONSIDERATION FOR PEDESTRIAN AND CYCLIST MOVEMENTS IN PROXIMITY TO THE SIGNAL POLE LOCATIONS. PEDESTRIAN PUSH BUTTONS SHALL BE INCLUDED ON SIGNAL POLES. LOCATION OF SIGNAL POLES ON THESE DRAWINGS ARE SHOWN FOR REFERENCE ONLY.
- POSITION, SPACING AND SPECIFICATION OF STREET AND PEDESTRIAN LIGHTING POLES SHALL BE SPECIFIED BY THE ENGINEER AND AS REQUIRED TO PROVIDE MINIMUM LIGHTING LEVELS AS OUTLINED IN THE GUIDELINES, LIGHT POLE INFORMATION IS SHOWN FOR REFERENCE ONLY.
- LEFT-TURN LANES SHALL BE PROVIDED WHERE DIRECTED BY THE CITY. LEFT-TURN LANES SHALL TYPICALLY BE ACCOMMODATED WITHIN THE ROAD RIGHT OF WAY BY LOCAL PARKING RESTRICTIONS. WHERE THIS IS NOT POSSIBLE, ADDITIONAL RIGHTS OF WAY WILL BE REQUIRED. THE INTERSECTION CONFIGURATION SHOWN ON THIS SHEET ACCOMMODATES LEFT TURNS BY MEANS OF ADDITIONAL RIGHTS-OF-WAY.
- CYCLE TRACKS SHALL VERTICALLY TRANSITION TO AND FROM ROADWAY ELEVATION OVER A 6.0m LENGTH.
- RB-94R SIGNAGE SHALL BE PLACED ON TWO LANE ROADWAYS ONLY WHEN THE CYCLE TRACK ORIGINATES FROM AN INTERSECTION WITH A FOUR OR SIX LANE ROADWAY. PLACEMENT OF THE SIGN SHALL BE AS SHOWN IN THE BOULEVARD AREA BEFORE THE CYCLE TRACK AND SIDEWALK ARE DIRECTLY ADJOINED BY THE CLAY BRICK PAVER TACTILE STRIP.

BOULEVARD TAPER DETAIL (TWO LANE)



LEGEND:

- 9.0m DAVIT POLE STREETLIGHT
- 4.57m PEDESTRIAN LIGHT
- 4.57m DOUBLE DAVIT PEDESTRIAN LIGHT
- TRAFFIC SIGNAL POLE WITH STREETLIGHT
- CYCLIST PUSH BUTTON POLE
- PARKING METER
- FIRE HYDRANT
- SIGN
- TREE WELL
- GRANITE SETT BAND
- CLAY BRICK TACTILE STRIP
- CONCRETE
- ASPHALT
- CLAY BRICK PAVERS
- GRASS BOULEVARD
- RAINWATER MANAGEMENT AMENITY (RMA)



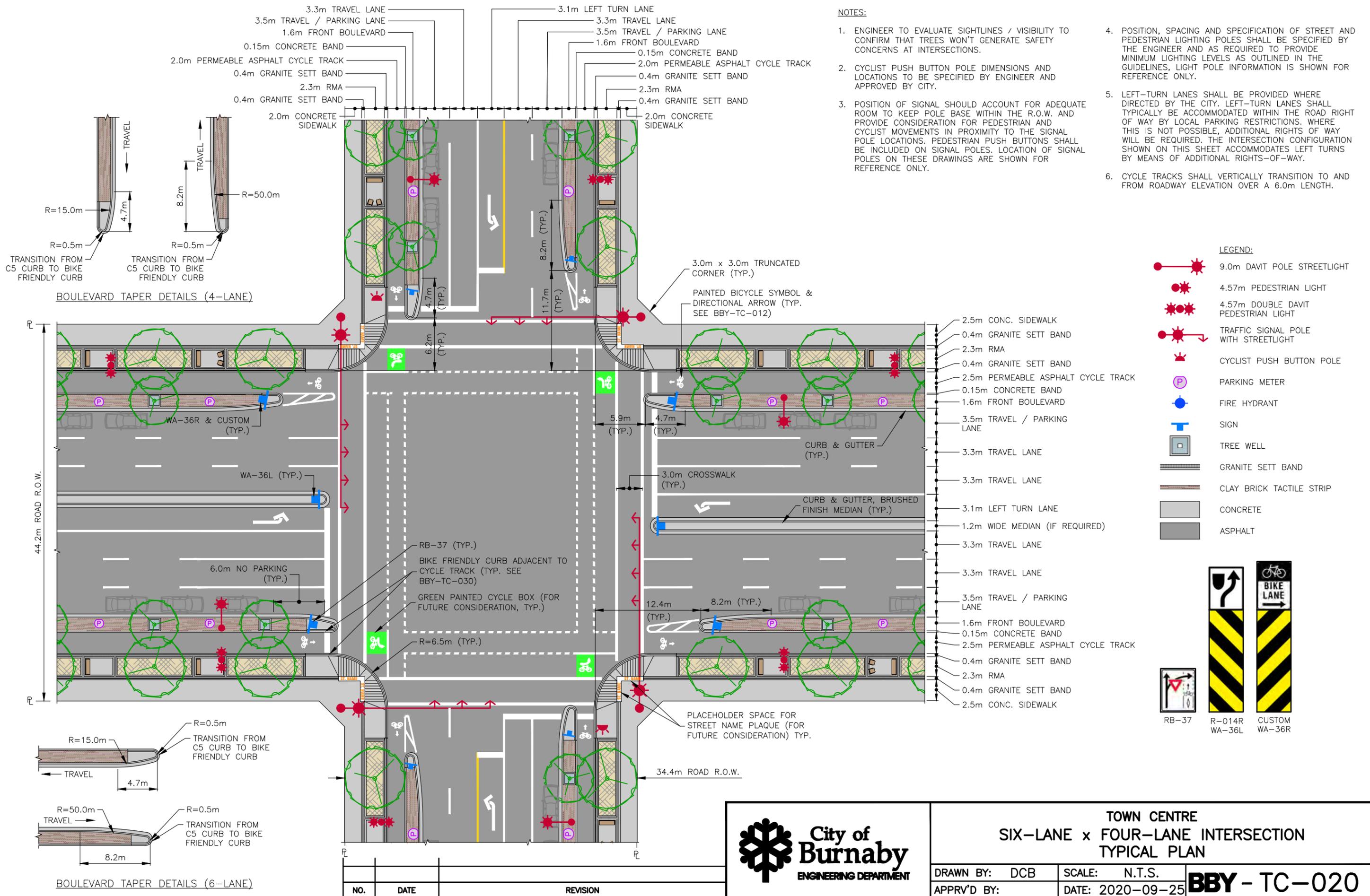
NO.	DATE	REVISION



**TOWN CENTRE
SIX-LANE x TWO-LANE COLLECTOR INTERSECTION
TYPICAL PLAN**

DRAWN BY: DCB	SCALE: N.T.S.
APPR'V'D BY:	DATE: 2020-09-25

BBY - TC - 019

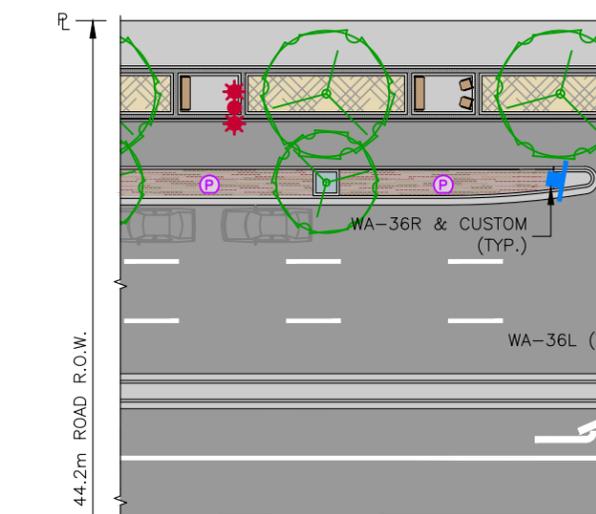
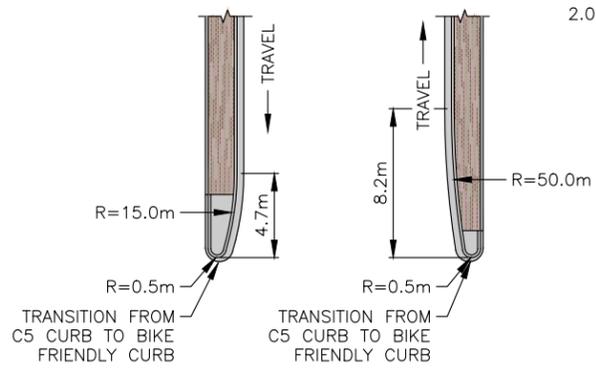


- NOTES:**
- ENGINEER TO EVALUATE SIGHTLINES / VISIBILITY TO CONFIRM THAT TREES WON'T GENERATE SAFETY CONCERNS AT INTERSECTIONS.
 - CYCLIST PUSH BUTTON POLE DIMENSIONS AND LOCATIONS TO BE SPECIFIED BY ENGINEER AND APPROVED BY CITY.
 - POSITION OF SIGNAL SHOULD ACCOUNT FOR ADEQUATE ROOM TO KEEP POLE BASE WITHIN THE R.O.W. AND PROVIDE CONSIDERATION FOR PEDESTRIAN AND CYCLIST MOVEMENTS IN PROXIMITY TO THE SIGNAL POLE LOCATIONS. PEDESTRIAN PUSH BUTTONS SHALL BE INCLUDED ON SIGNAL POLES. LOCATION OF SIGNAL POLES ON THESE DRAWINGS ARE SHOWN FOR REFERENCE ONLY.
 - POSITION, SPACING AND SPECIFICATION OF STREET AND PEDESTRIAN LIGHTING POLES SHALL BE SPECIFIED BY THE ENGINEER AND AS REQUIRED TO PROVIDE MINIMUM LIGHTING LEVELS AS OUTLINED IN THE GUIDELINES, LIGHT POLE INFORMATION IS SHOWN FOR REFERENCE ONLY.
 - LEFT-TURN LANES SHALL BE PROVIDED WHERE DIRECTED BY THE CITY. LEFT-TURN LANES SHALL TYPICALLY BE ACCOMMODATED WITHIN THE ROAD RIGHT OF WAY BY LOCAL PARKING RESTRICTIONS. WHERE THIS IS NOT POSSIBLE, ADDITIONAL RIGHTS OF WAY WILL BE REQUIRED. THE INTERSECTION CONFIGURATION SHOWN ON THIS SHEET ACCOMMODATES LEFT TURNS BY MEANS OF ADDITIONAL RIGHTS-OF-WAY.
 - CYCLE TRACKS SHALL VERTICALLY TRANSITION TO AND FROM ROADWAY ELEVATION OVER A 6.0m LENGTH.

LEGEND:

- 9.0m DAVIT POLE STREETLIGHT
- 4.57m PEDESTRIAN LIGHT
- 4.57m DOUBLE DAVIT PEDESTRIAN LIGHT
- TRAFFIC SIGNAL POLE WITH STREETLIGHT
- CYCLIST PUSH BUTTON POLE
- PARKING METER
- FIRE HYDRANT
- SIGN
- TREE WELL
- GRANITE SETT BAND
- CLAY BRICK TACTILE STRIP
- CONCRETE
- ASPHALT

RB-37
 R-014R
 WA-36L
 CUSTOM WA-36R



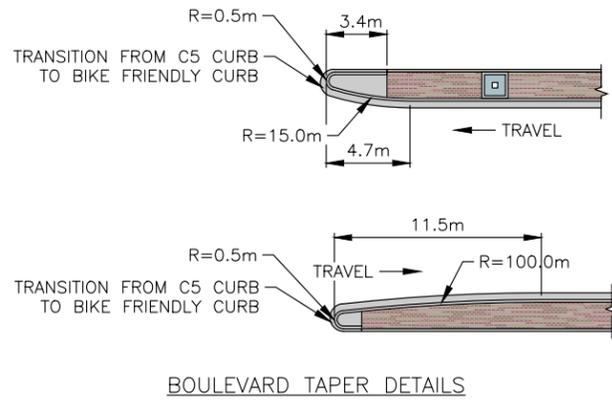
NO.	DATE	REVISION



**TOWN CENTRE
SIX-LANE x FOUR-LANE INTERSECTION
TYPICAL PLAN**

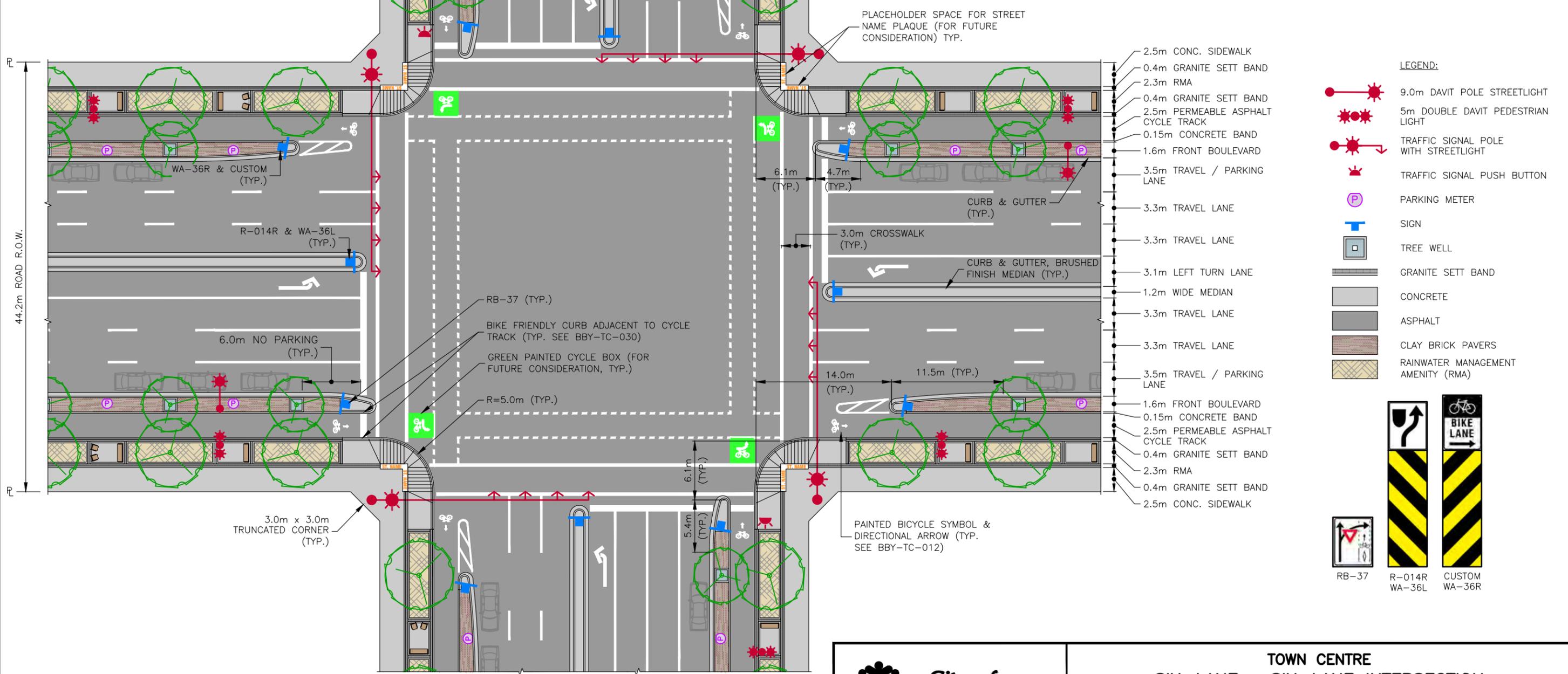
DRAWN BY: DCB	SCALE: N.T.S.
APPR'V'D BY:	DATE: 2020-09-25

BBY - TC - 020



NOTES:

- ENGINEER TO EVALUATE SIGHTLINES / VISIBILITY TO CONFIRM THAT TREES WON'T GENERATE SAFETY CONCERNS AT INTERSECTIONS.
- CYCLIST PUSH BUTTON POLE DIMENSIONS AND LOCATIONS TO BE SPECIFIED BY ENGINEER AND APPROVED BY CITY.
- POSITION OF SIGNAL SHOULD ACCOUNT FOR ADEQUATE ROOM TO KEEP POLE BASE WITHIN THE R.O.W. AND PROVIDE CONSIDERATION FOR PEDESTRIAN AND CYCLIST MOVEMENTS IN PROXIMITY TO THE SIGNAL POLE LOCATIONS. PEDESTRIAN PUSH BUTTONS SHALL BE INCLUDED ON SIGNAL POLES. LOCATION OF SIGNAL POLES ON THESE DRAWINGS ARE SHOWN FOR REFERENCE ONLY.
- POSITION, SPACING AND SPECIFICATION OF STREET AND PEDESTRIAN LIGHTING POLES SHALL BE SPECIFIED BY THE ENGINEER AND AS REQUIRED TO PROVIDE MINIMUM LIGHTING LEVELS AS OUTLINED IN THE GUIDELINES, LIGHT POLE INFORMATION IS SHOWN FOR REFERENCE ONLY.
- LEFT-TURN LANES SHALL BE PROVIDED WHERE DIRECTED BY THE CITY. LEFT-TURN LANES SHALL TYPICALLY BE ACCOMMODATED WITHIN THE ROAD RIGHT OF WAY BY LOCAL PARKING RESTRICTIONS. WHERE THIS IS NOT POSSIBLE, ADDITIONAL RIGHTS OF WAY WILL BE REQUIRED. THE INTERSECTION CONFIGURATION SHOWN ON THIS SHEET ACCOMMODATES LEFT TURNS BY MEANS OF ADDITIONAL RIGHTS-OF-WAY.
- CYCLE TRACKS SHALL VERTICALLY TRANSITION TO AND FROM ROADWAY ELEVATION OVER A 6.0m LENGTH.



LEGEND:

- 9.0m DAVIT POLE STREETLIGHT
- 5m DOUBLE DAVIT PEDESTRIAN LIGHT
- TRAFFIC SIGNAL POLE WITH STREETLIGHT
- TRAFFIC SIGNAL PUSH BUTTON
- PARKING METER
- SIGN
- TREE WELL
- GRANITE SETT BAND
- CONCRETE
- ASPHALT
- CLAY BRICK PAVERS
- RAINWATER MANAGEMENT AMENITY (RMA)

RB-37

R-014R
WA-36L

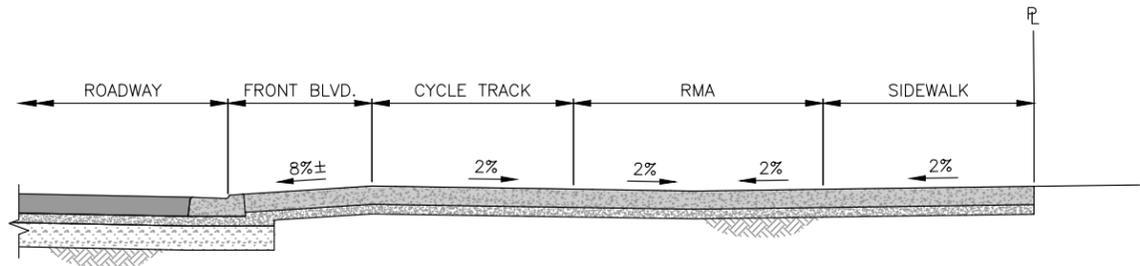
CUSTOM
WA-36R



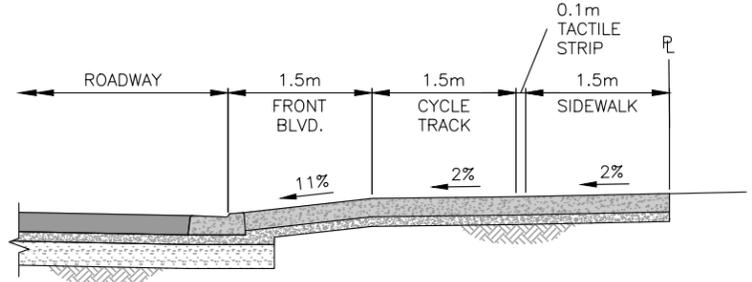
TOWN CENTRE
SIX-LANE x SIX-LANE INTERSECTION
TYPICAL PLAN

NO.	DATE	REVISION

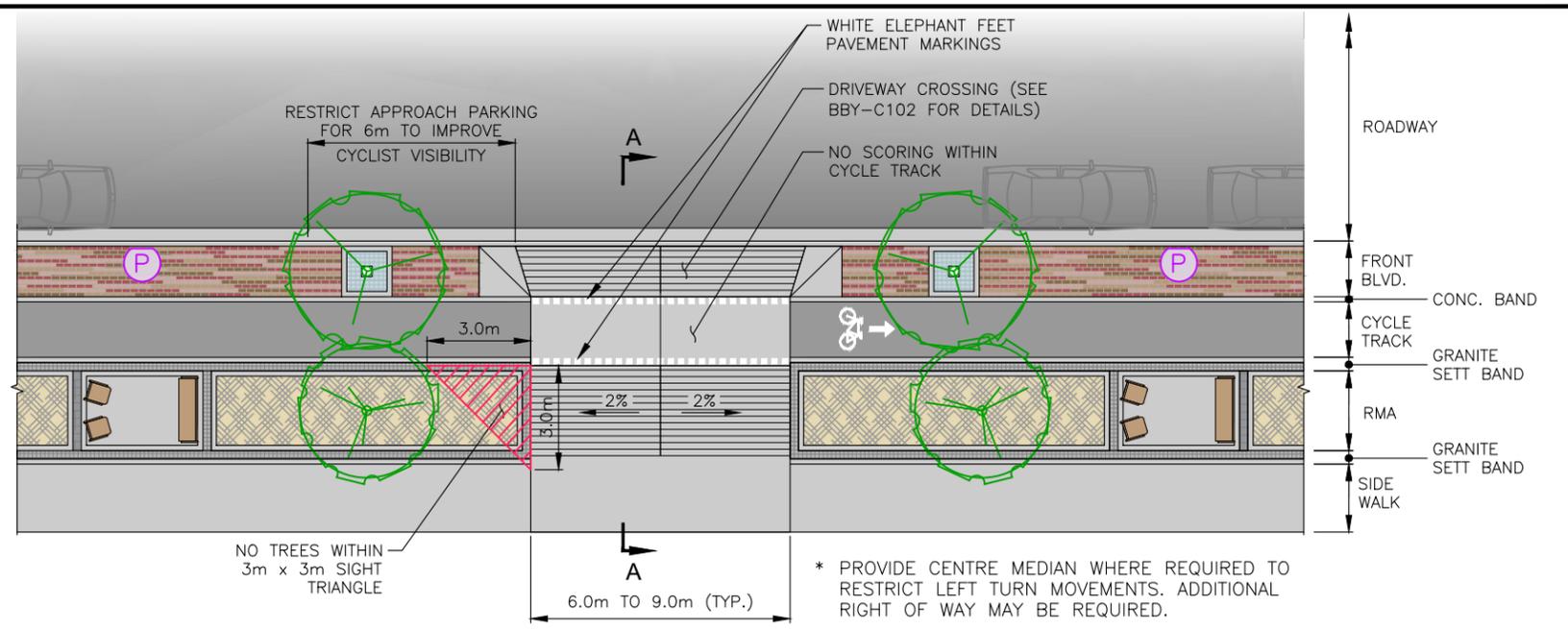
DRAWN BY: DCB	SCALE: N.T.S.	BBY - TC - 021
APPR'D BY:	DATE: 2020-09-25	



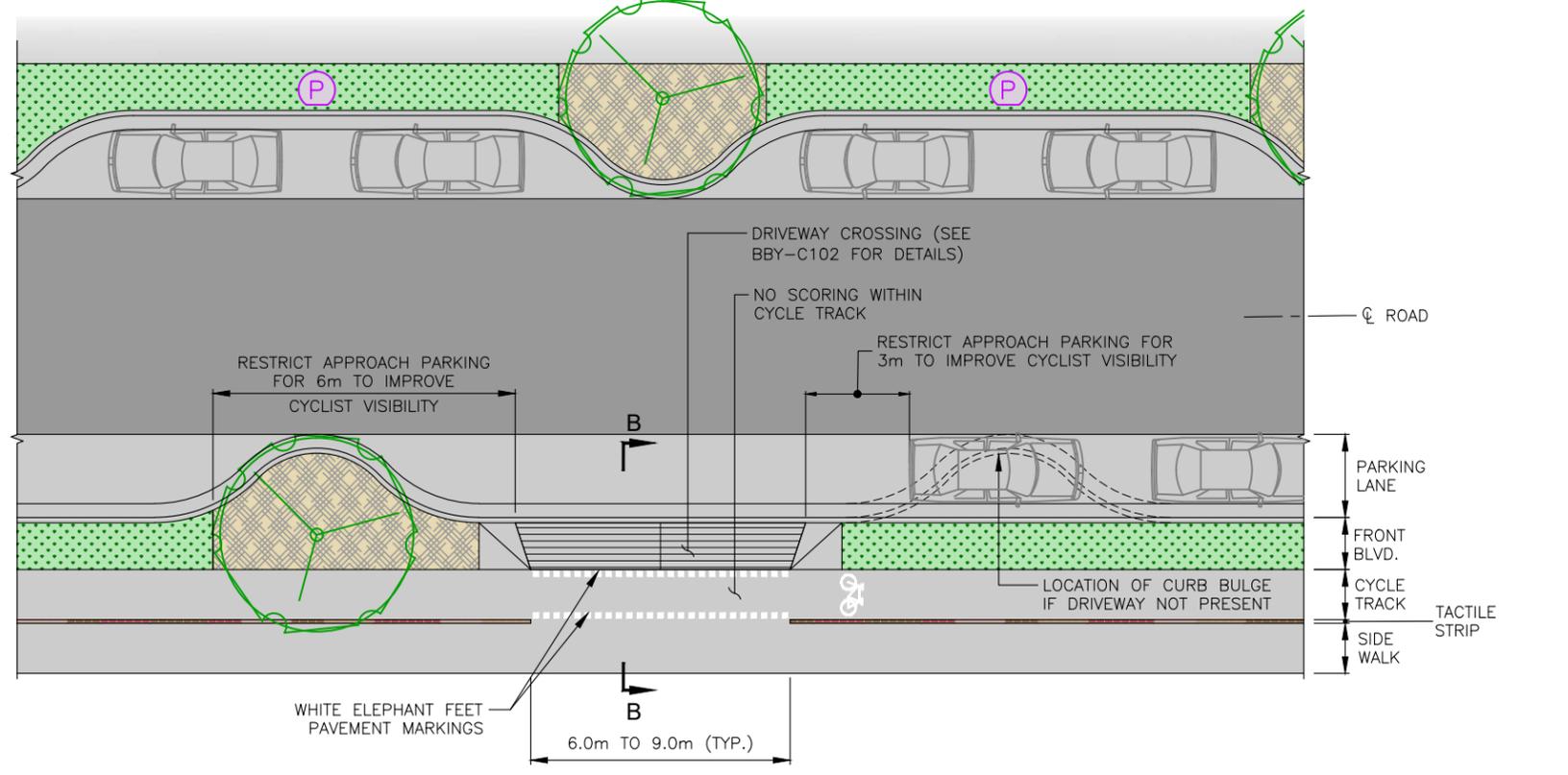
SECTION A-A



SECTION B-B



4-LANE / 6-LANE DRIVEWAY OR LANEWAY LETDOWN



2-LANE DRIVEWAY OR LANEWAY LETDOWN (FOR RESIDENTIAL)

NOTES:

- ENGINEER TO EVALUATE SIGHTLINES / VISIBILITY TO CONFIRM THAT TREES WON'T GENERATE SAFETY CONCERNS AT INTERSECTIONS.
- SPACING OF CURB BULGES SHALL BE ASSESSED ON A STREET BY STREET BASIS, TAKING INTO ACCOUNT VARYING WIDTH OF DRIVEWAYS, LARGER DRIVEWAYS (+7.5m) MAY REQUIRE ADDITIONAL SPACING BETWEEN BULGES OR AN ALTERNATIVE BULGE CONFIGURATION TO WHAT IS SHOWN ON THIS DRAWING.
- IN THE EVENT THAT ALTERNATIVE BULGE CONFIGURATION IS SPECIFIED (THROUGH CITY REVIEW AND APPROVAL) PARKING SHALL BE RESTRICTED FOR 6m ON APPROACH TO IMPROVE CYCLIST VISIBILITY. PARKING SHALL BE RESTRICTED FOR 3m ON DESCENDING SIDE OF DRIVEWAY FOR CYCLIST VISIBILITY.

LEGEND:

- PARKING METER
- FIRE HYDRANT
- TREE WELL
- GRANITE SETT BAND
- CLAY BRICK TACTILE STRIP
- CONCRETE
- ASPHALT
- CLAY BRICK PAVERS
- GRASS BOULEVARD
- RAINWATER MANAGEMENT AMENITY (RMA)

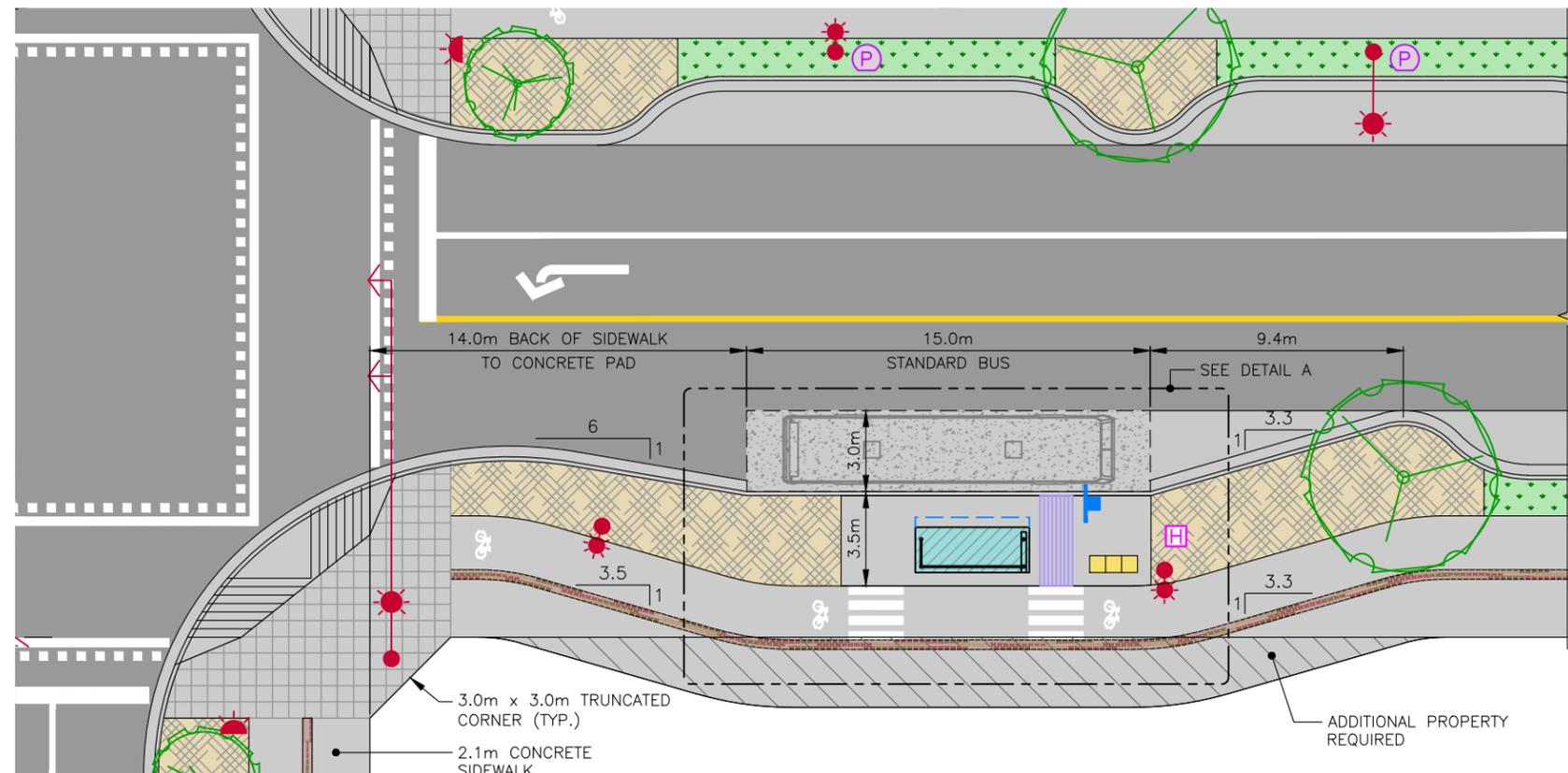
NO.	DATE	REVISION



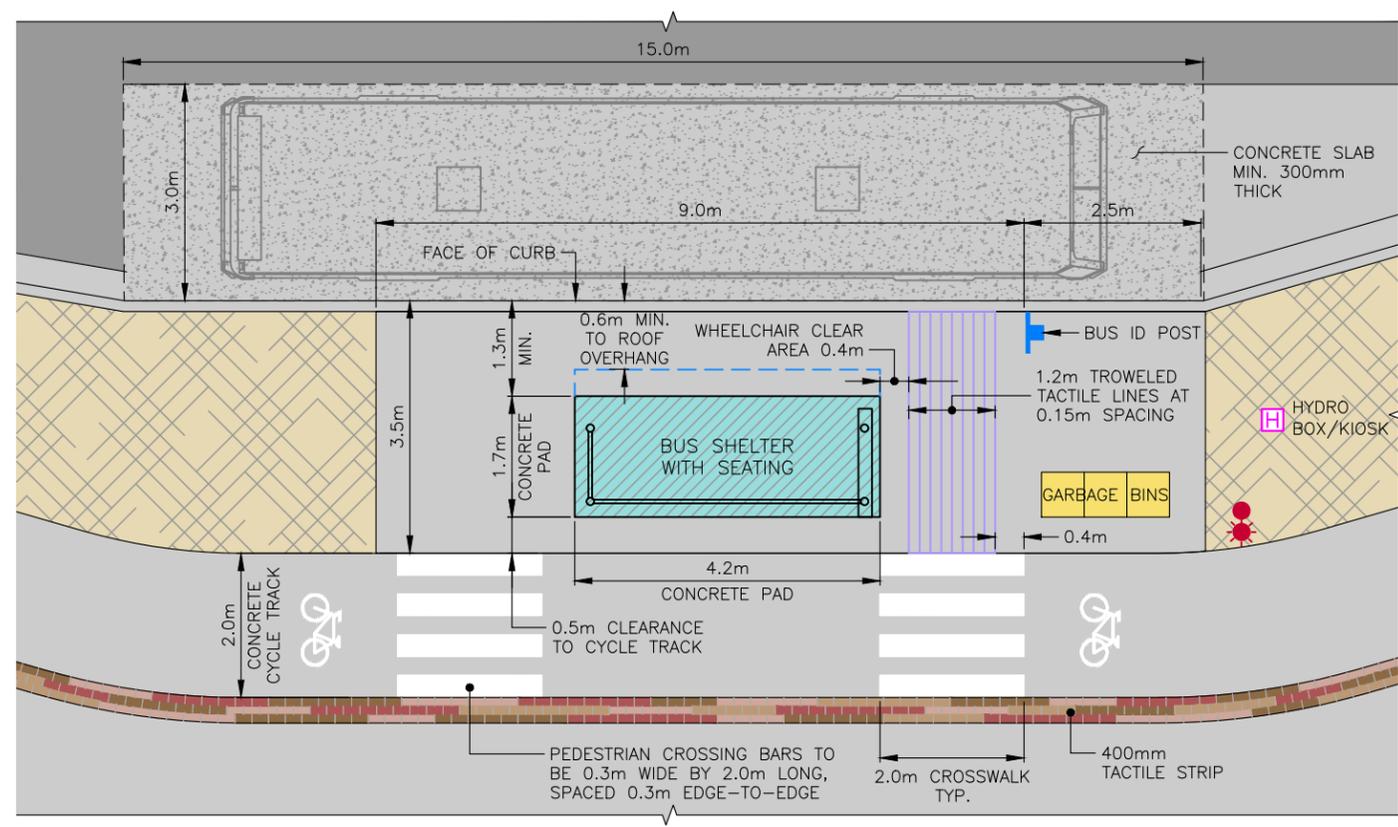
TOWN CENTRE

TYPICAL DRIVEWAY OR LANEWAY LETDOWN DETAILS

DRAWN BY: DCB	SCALE: N.T.S.	BBY - TC - 022
APPR'D BY:	DATE: 2020-09-25	



- LEGEND:**
- 7.5m DAVIT POLE STREETLIGHT
 - 4.57m PEDESTRIAN LIGHT
 - SIGN
 - PARKING METER
 - FIRE HYDRANT
 - TACTILE STRIP
 - CONCRETE
 - ASPHALT
 - GRASS BOULEVARD
 - RAINWATER MANAGEMENT AMENITY (RMA)



DETAIL A
N.T.S.

	TRAVEL LANE	PARKING LANE	FRONT BLVD.	CYCLE TRACK	TACTILE STRIP	SIDE WALK
2-LANE COLLECTOR ROAD	3.4m	2.4m	1.5m	2.0m	0.4m	2.1m
2-LANE LOCAL ROAD	3.4m	2.4m	1.5m	1.4m	0.1m	1.5m

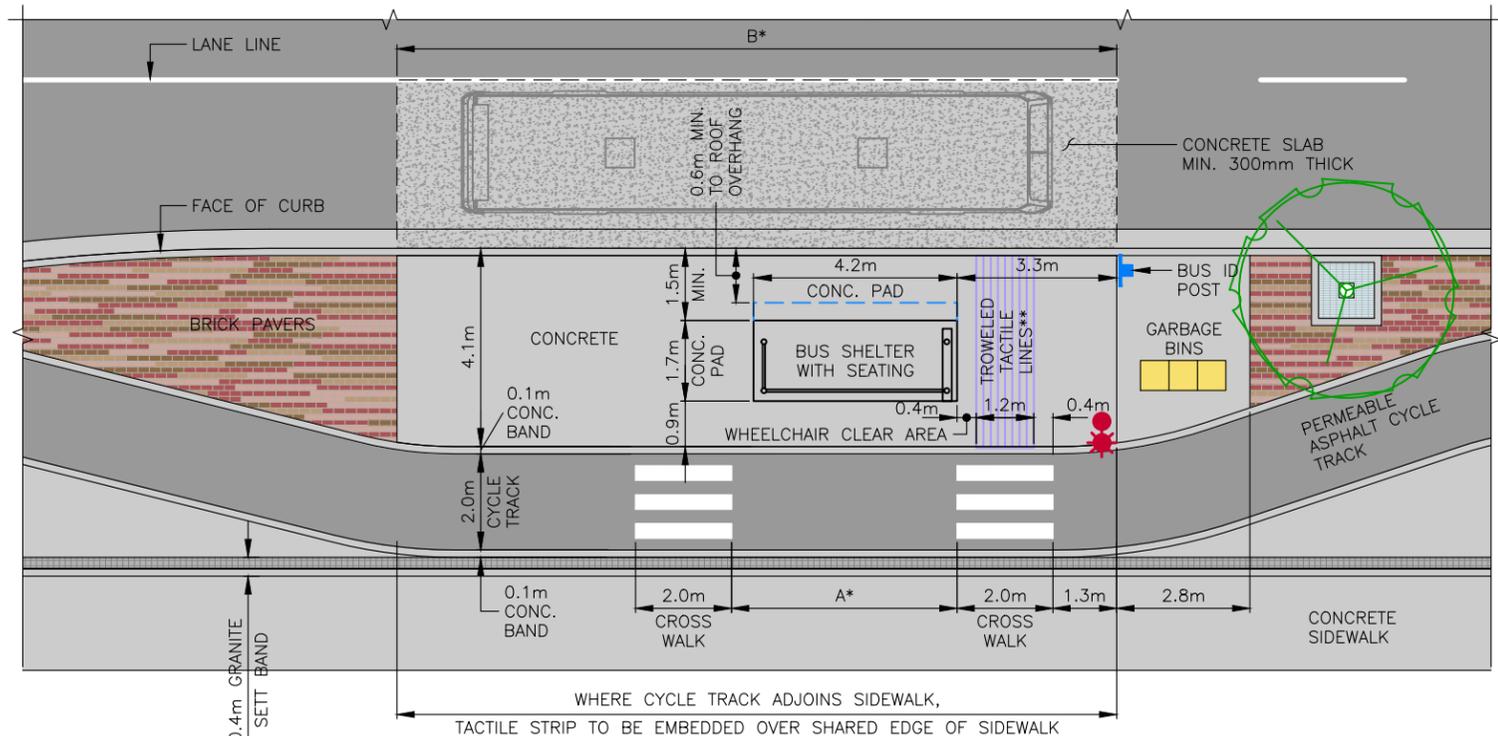
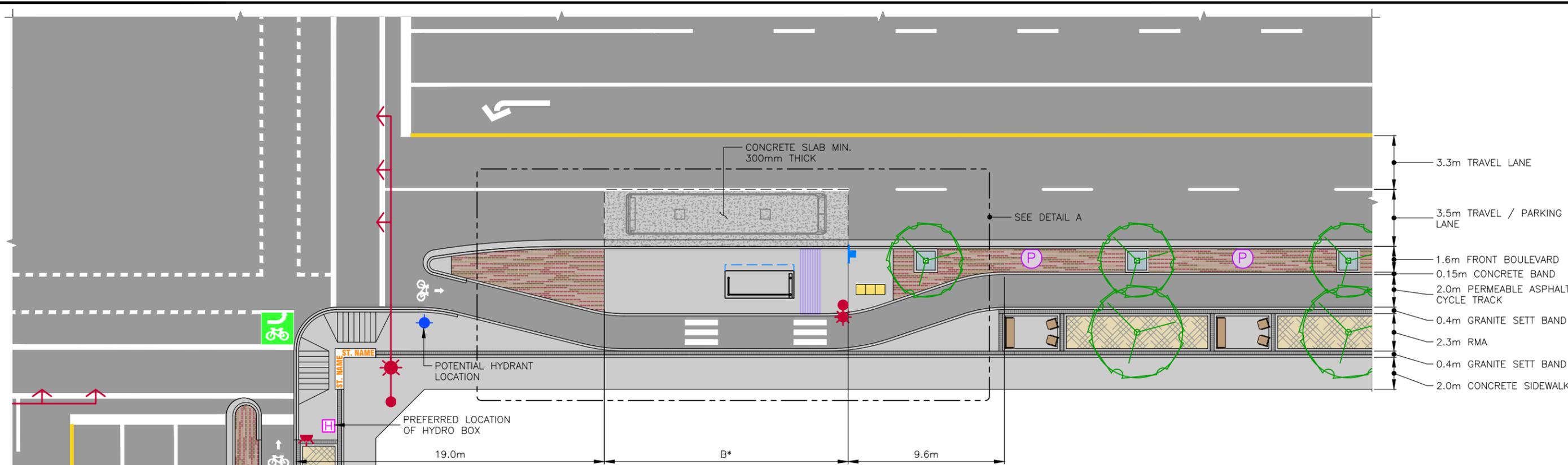
- NOTES:**
- BUS BAYS SHALL BE DESIGNED TO CONFORM WITH THE CURRENT VERSIONS OF THE TRANSLINK INFRASTRUCTURE DESIGN GUIDELINES AND THE UNIFORMLY ACCESSIBLE BUS STOP DESIGN GUIDELINES.
 - ADDITIONAL PROPERTY DEDICATIONS, STATUTORY RIGHTS OF WAY OR EASEMENTS MAY BE REQUIRED TO ACCOMMODATE BUS BAY.
 - ENGINEER SHALL DESIGN PADS TO CONFORM WITH CITY AND TRANSLINK MINIMUM REQUIREMENTS. IT IS NOTED THAT THE PAD BELOW THE BUS SHELTER WILL BE A DIFFERENT THICKNESS OF CONCRETE AS COMPARED TO THE CONCRETE PAD AREA SURROUNDING IT.
 - DESIGNER TO INCORPORATE UNDERGROUND POWER CONNECTION TO PROPOSED BUS SHELTER.

NO.	DATE	REVISION



**TOWN CENTRE
TWO-LANE FAR SIDE BUS BAY ARRANGEMENT
TYPICAL PLAN**

DRAWN BY: DCB	SCALE: N.T.S.	BBY - TC - 023
APPR'V'D BY:	DATE: 2020-09-25	



- LEGEND:**
- 9m DAVIT POLE STREETLIGHT
 - 4.57m DOUBLE DAVIT PEDESTRIAN LIGHT
 - PARKING METER
 - FIRE HYDRANT
 - TREE WELL
 - GRANITE SETT BAND
 - CONCRETE
 - ASPHALT
 - CLAY BRICK PAVERS
 - RAINWATER MANAGEMENT AMENITY (RMA)

NOTES:

1. BUS BAYS SHALL BE DESIGNED TO CONFORM WITH THE CURRENT VERSIONS OF THE TRANSLINK INFRASTRUCTURE DESIGN GUIDELINES AND THE UNIFORMLY ACCESSIBLE BUS STOP DESIGN GUIDELINES.
2. ADDITIONAL PROPERTY DEDICATIONS, STATUTORY RIGHTS OF WAY OR EASEMENTS MAY BE REQUIRED TO ACCOMMODATE BUS BAY.
3. USE OF CONCRETE PAD BELOW BUSES TO BE DETERMINED ON A CASE-BY-CASE BASIS BY THE CITY.

BUS STOP DIMENSIONS		
	A	B
STANDARD BUS	4.7m	15m
ARTICULATED BUS	10.7m	21m

DETAIL A
N.T.S.

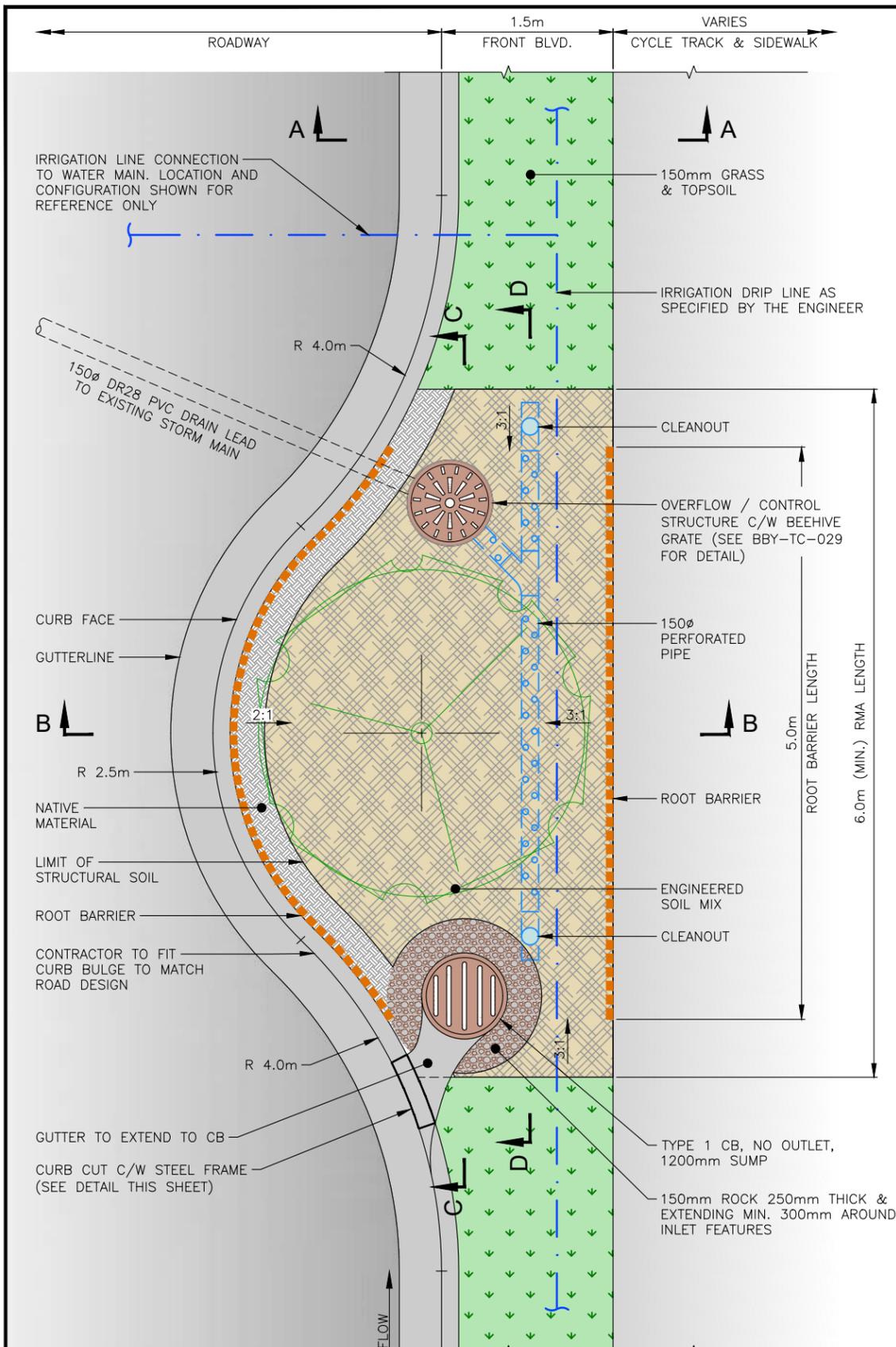
* STANDARD BUS DIMENSIONS SHOWN
**TROWELLED TACTILE LINES AT 0.15m SPACING

NO.	DATE	REVISION



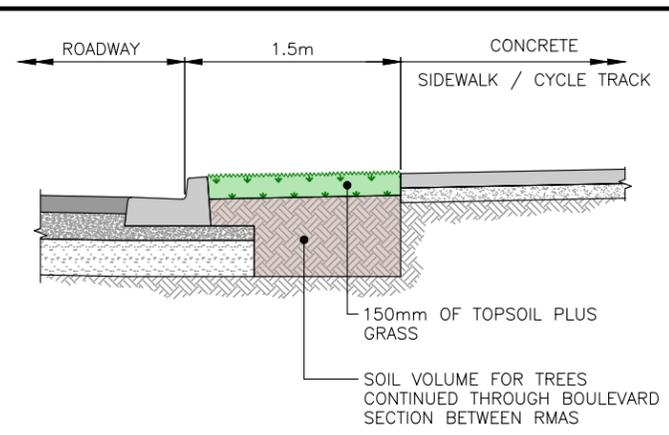
**TOWN CENTRE
FOUR-LANE COLLECTOR-ARTERIAL
BUS BAY ARRANGEMENT**

DRAWN BY: DCB	SCALE: N.T.S.	BBY - TC - 024
APPR'D BY:	DATE: 2020-09-25	

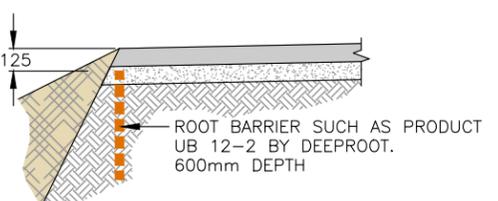
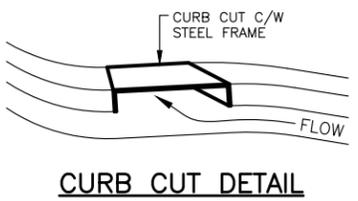


CLEANOUTS:
 ALL RMA CLEANOUTS TO BE NON-PERFORATED PIPE UNLESS OTHERWISE REQUESTED BY INSPECTOR. ALL CLEANOUTS SHALL BE CAPPED. CONFIGURATION OF CLEANOUT CONNECTIVITY TO PERFORATED UNDERDRAIN IS FOR REFERENCE ONLY.

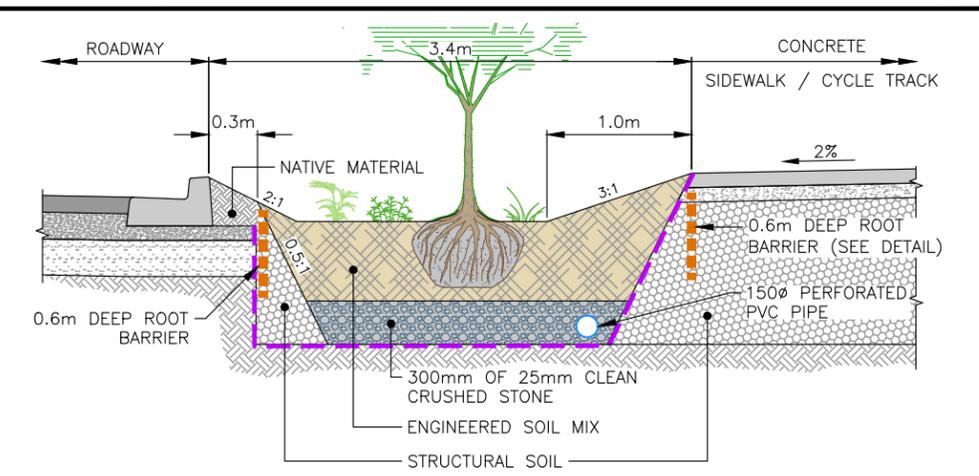
NO.	DATE	REVISION



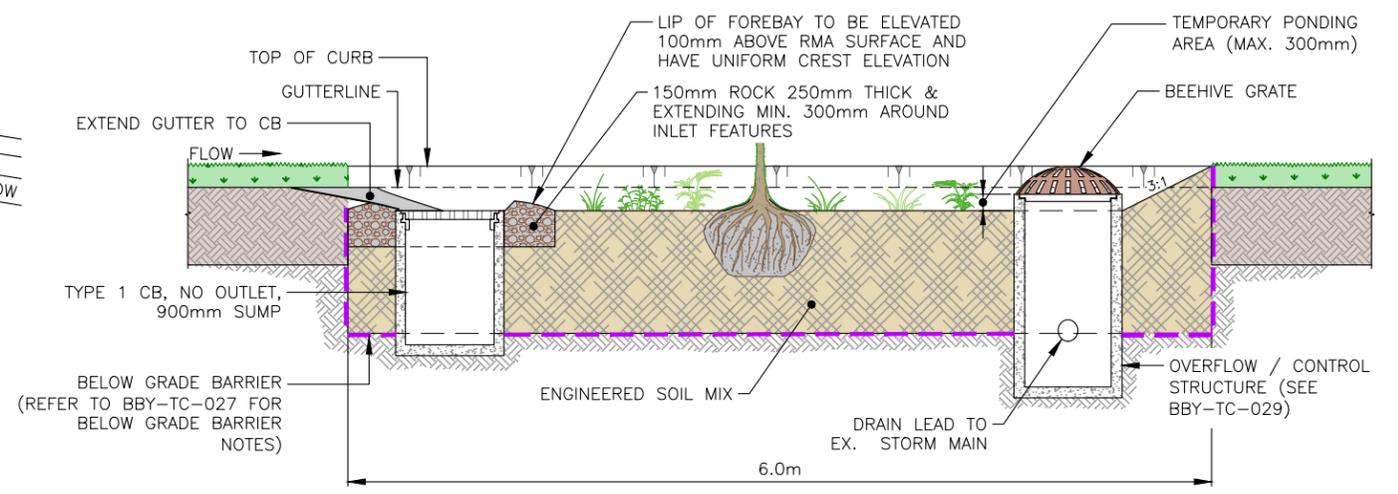
SECTION A-A



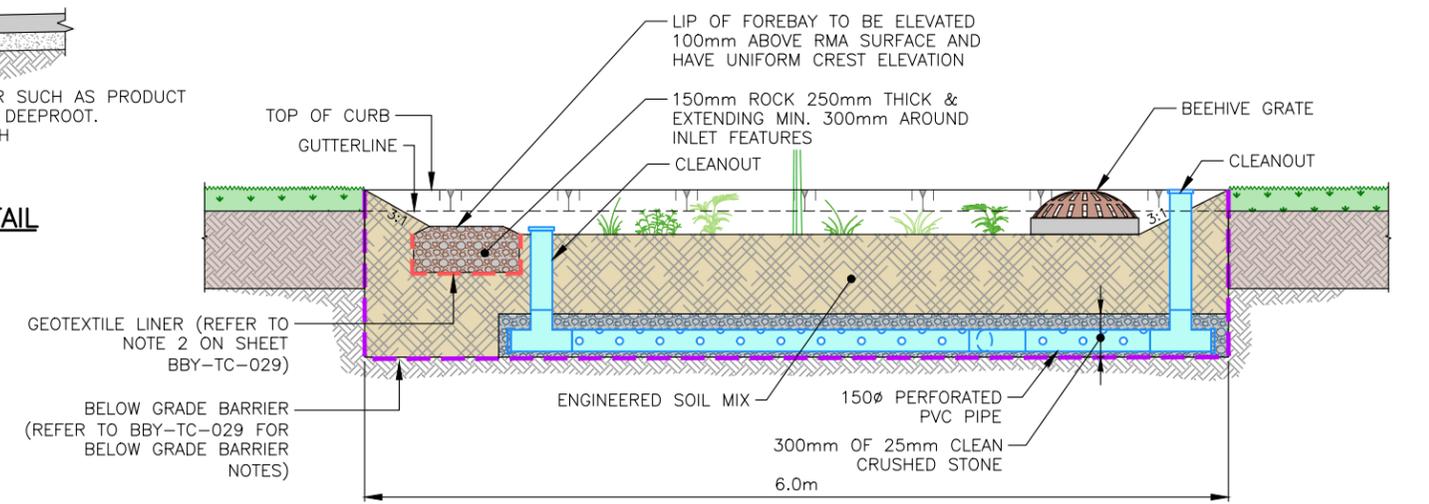
ROOT BARRIER DETAIL



SECTION B-B



SECTION C-C



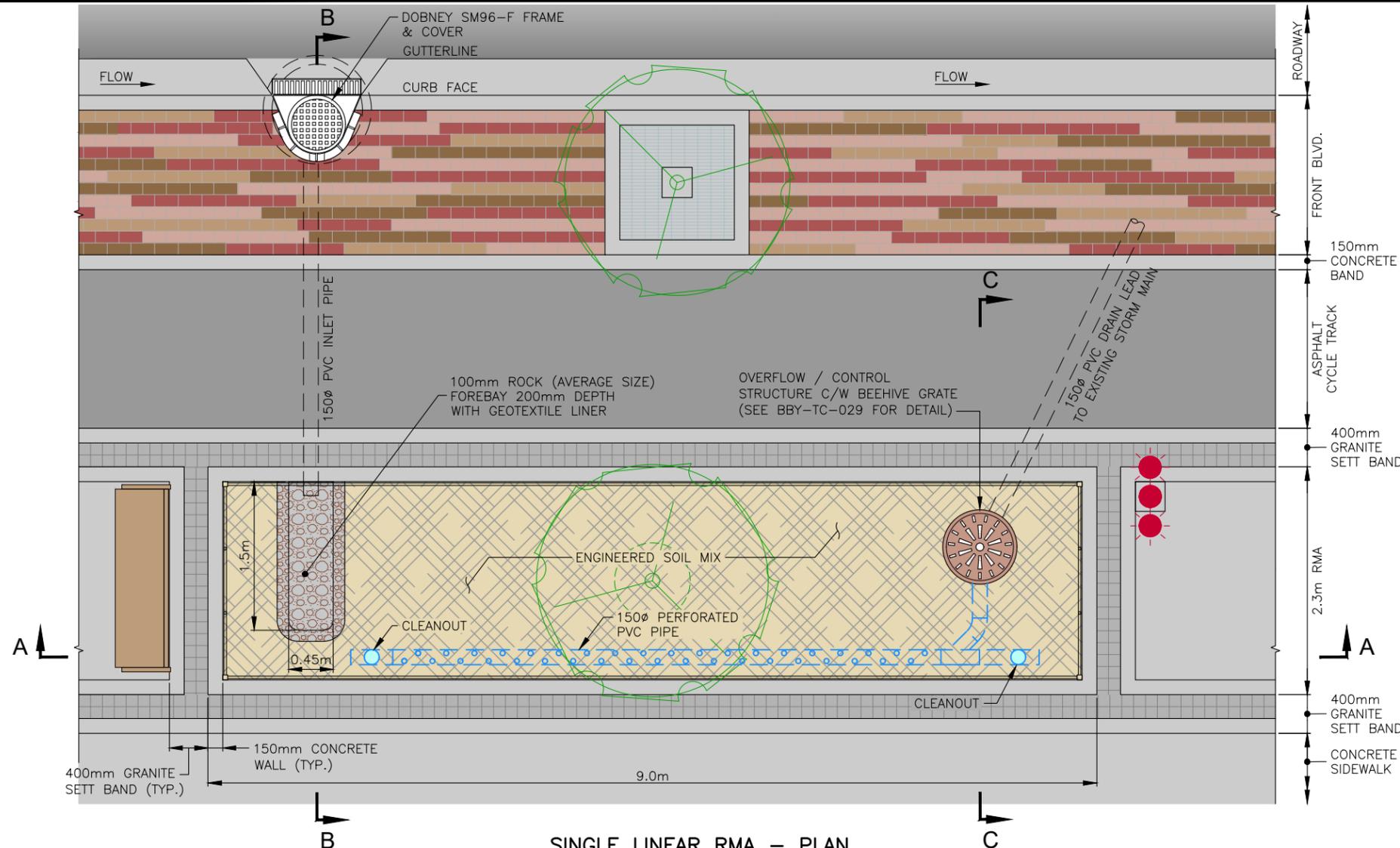
SECTION D-D



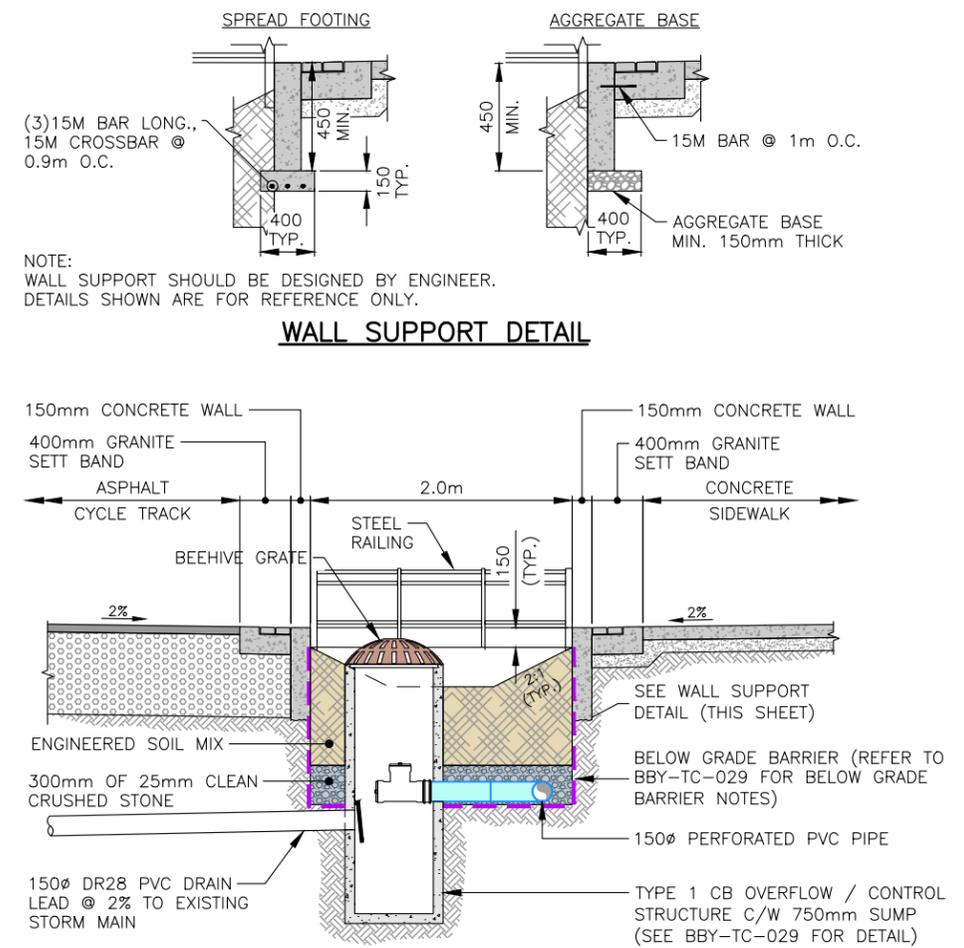
TOWN CENTRE
CURB BULGE RAINWATER MANAGEMENT AMENITY

DRAWN BY: DCB
 SCALE: N.T.S.
 APPR'D BY: DATE: 2020-09-25

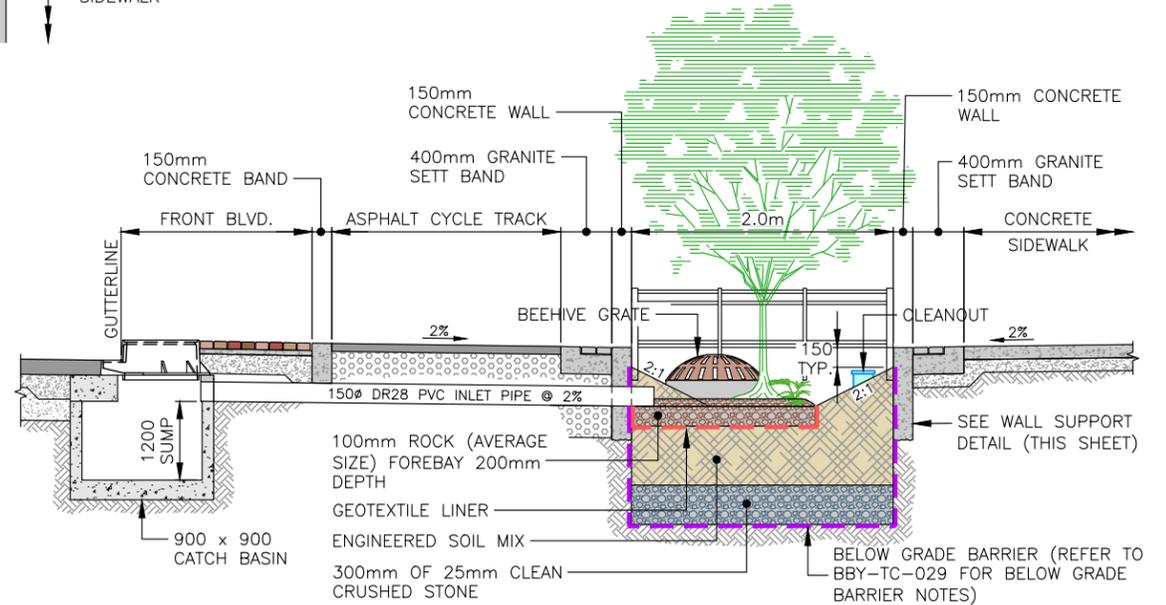
BBY - TC - 025



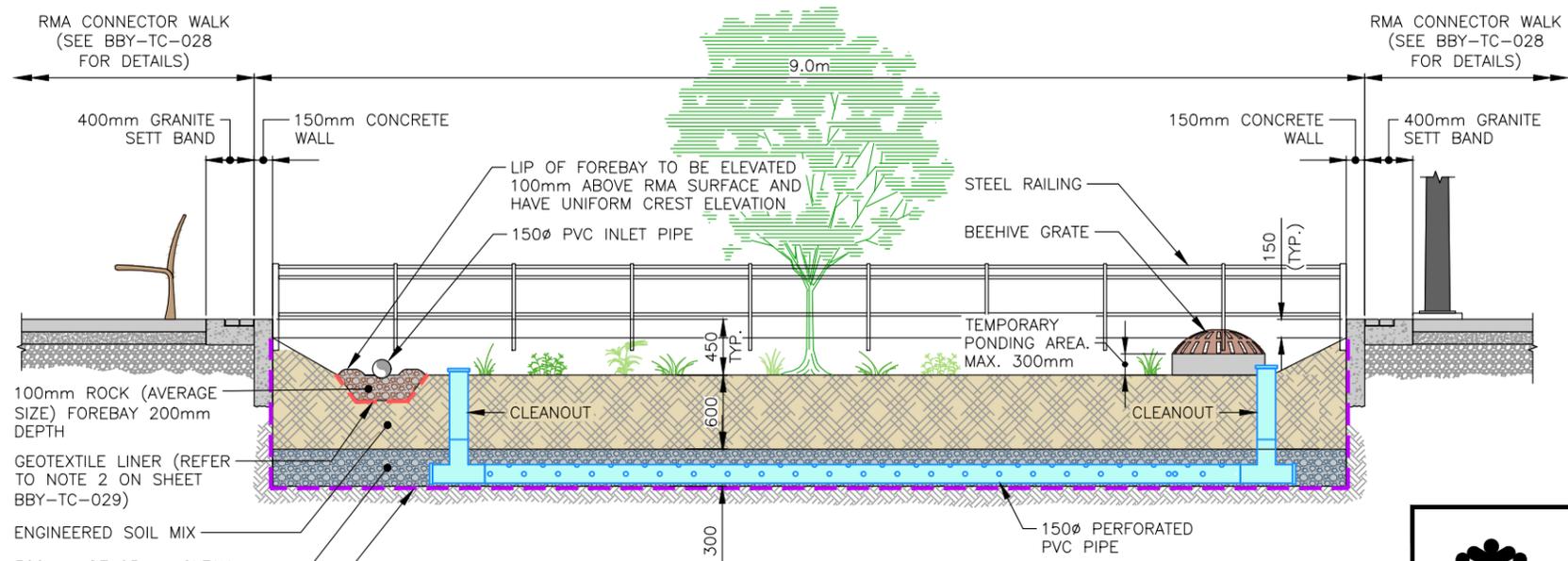
SINGLE LINEAR RMA – PLAN



SECTION C-C



SECTION B-B



SECTION A-A

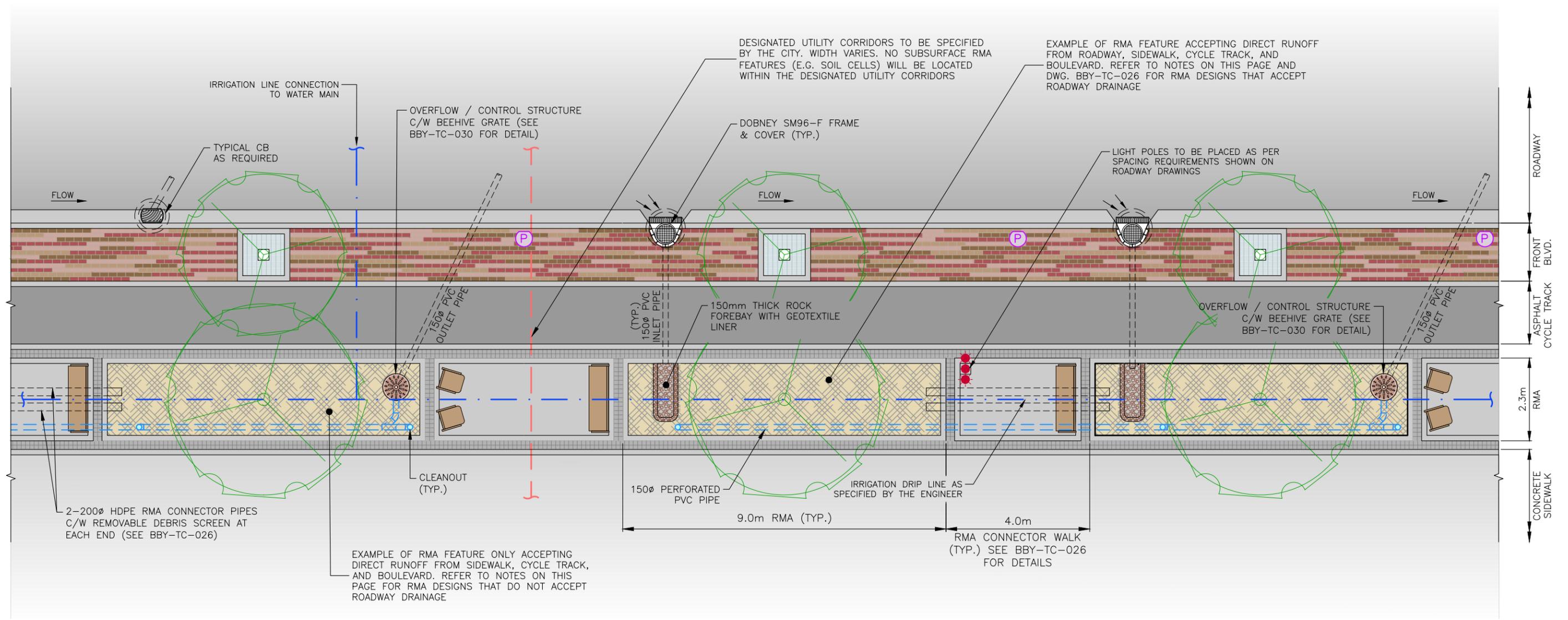
100mm ROCK (AVERAGE SIZE) FOREBAY 200mm DEPTH
 GEOTEXTILE LINER (REFER TO NOTE 2 ON SHEET BBY-TC-029)
 ENGINEERED SOIL MIX
 300mm OF 25mm CLEAN CRUSHED STONE
 BELOW GRADE BARRIER (REFER TO BBY-TC-029 FOR BELOW GRADE BARRIER NOTES)

NO.	DATE	REVISION



**TOWN CENTRE
 LINEAR RAINWATER MANAGEMENT AMENITY
 DETAILS**

DRAWN BY: DCB SCALE: N.T.S.
 APPR'D BY: DATE: 2020-09-25 **BBY-TC-026**



LEGEND:

-  9m DAVIT POLE STREETLIGHT
-  4.57m DOUBLE DAVIT PEDESTRIAN LIGHT
-  PARKING METER
-  FIRE HYDRANT
-  IRRIGATION LINE
-  MUNICIPAL UTILITY
-  TREE WELL
-  GRANITE SETT BAND
-  CONCRETE
-  ASPHALT
-  CLAY BRICK PAVERS
-  RAINWATER MANAGEMENT AMENITY (RMA)

NOTES:

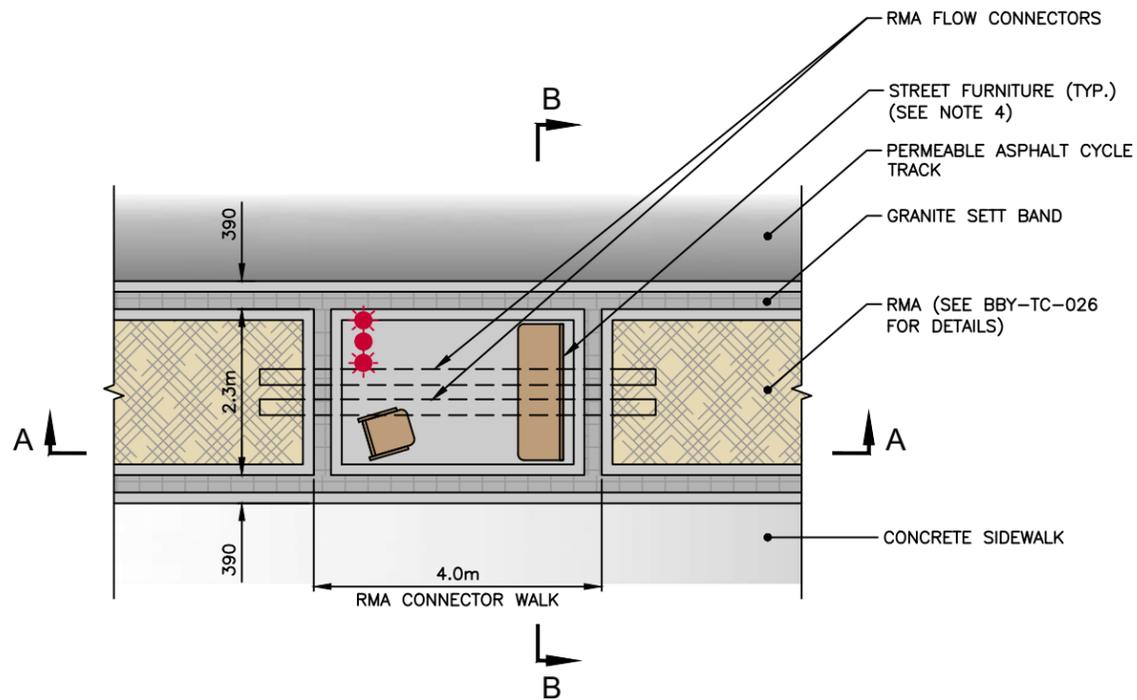
1. A MAXIMUM OF THREE RMA CELLS CAN BE INTERCONNECTED AND UTILIZE A SINGLE COMMON DRAIN LEAD DISCHARGING OUT TO THE EXISTING (OR PROPOSED) STORM MAIN WITHIN THE ROADWAY.
2. RMA CELLS THAT DO NOT ACCEPT ROADWAY DRAINAGE CAN BE MODIFIED BY THE ENGINEER TO EXCLUDE THE ROCK FOREBAY INLET FEATURE AND RAISE THE SURFACE ELEVATION OF THE RMA WHEN NOT IN SERIES WITH OTHER RMA CELLS ACCEPTING ROADWAY RUNOFF. IN THIS INSTANCE, RMA SURFACE ELEVATIONS SHOULD NOT BE RAISED GREATER THAN 150mm AND SHALL BE APPROVED BY THE CITY. THE ENGINEER SHALL DESIGN THESE RMAS SUCH THAT THE TEMPORARY PONDING AREA DOES NOT EXCEED 300mm AND THE RMA FEATURES ARE CAPABLE OF CONVEYING THE 10-YEAR DESIGN STORM.
3. THE ENGINEER SHALL CONFIRM THE LOCATION OF DESIGNATED UTILITY CORRIDORS WITH THE CITY. RMA FEATURES WILL END ADJACENT TO THE DESIGNATED UTILITY CORRIDORS.
4. SPACING BETWEEN UNDERDRAIN CLEANOUTS SHALL NOT EXCEED MORE THAN 16 METRES. EACH LINEAR RMA SHALL CONTAIN A MINIMUM OF ONE CLEANOUT WHEN INTERCONNECTED IN A SERIES. A MINIMUM OF ONE CLEANOUT SHALL BE POSITIONED AT THE UPSTREAM END OF THE LINEAR RMA CELL.

NO.	DATE	REVISION

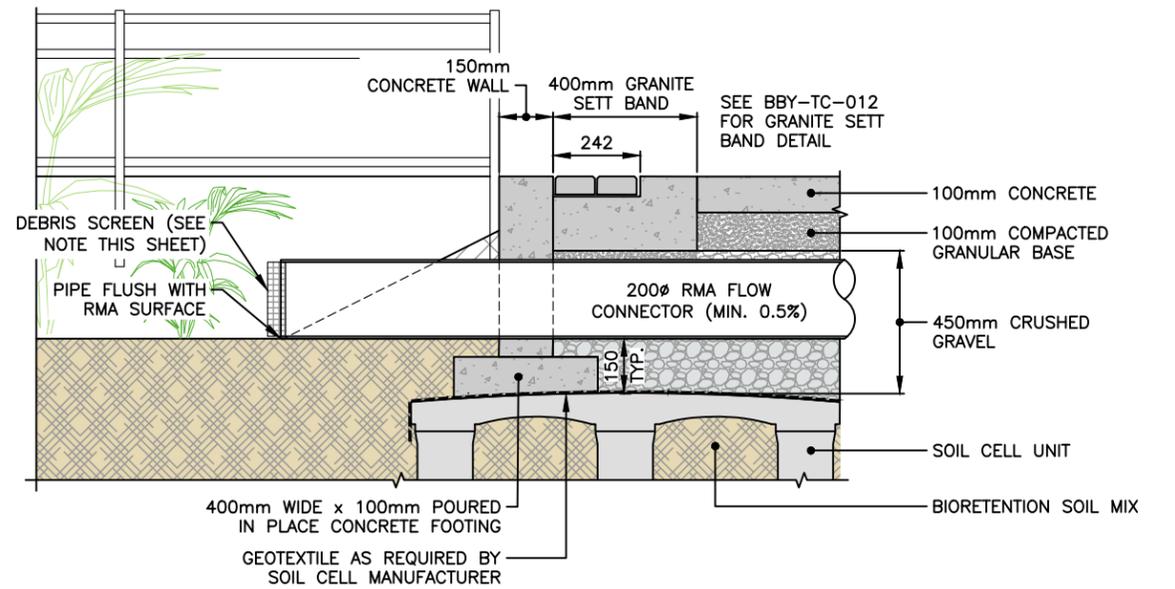


**TOWN CENTRE
LINEAR RAINWATER MANAGEMENT AMENITY
PLAN VIEW**

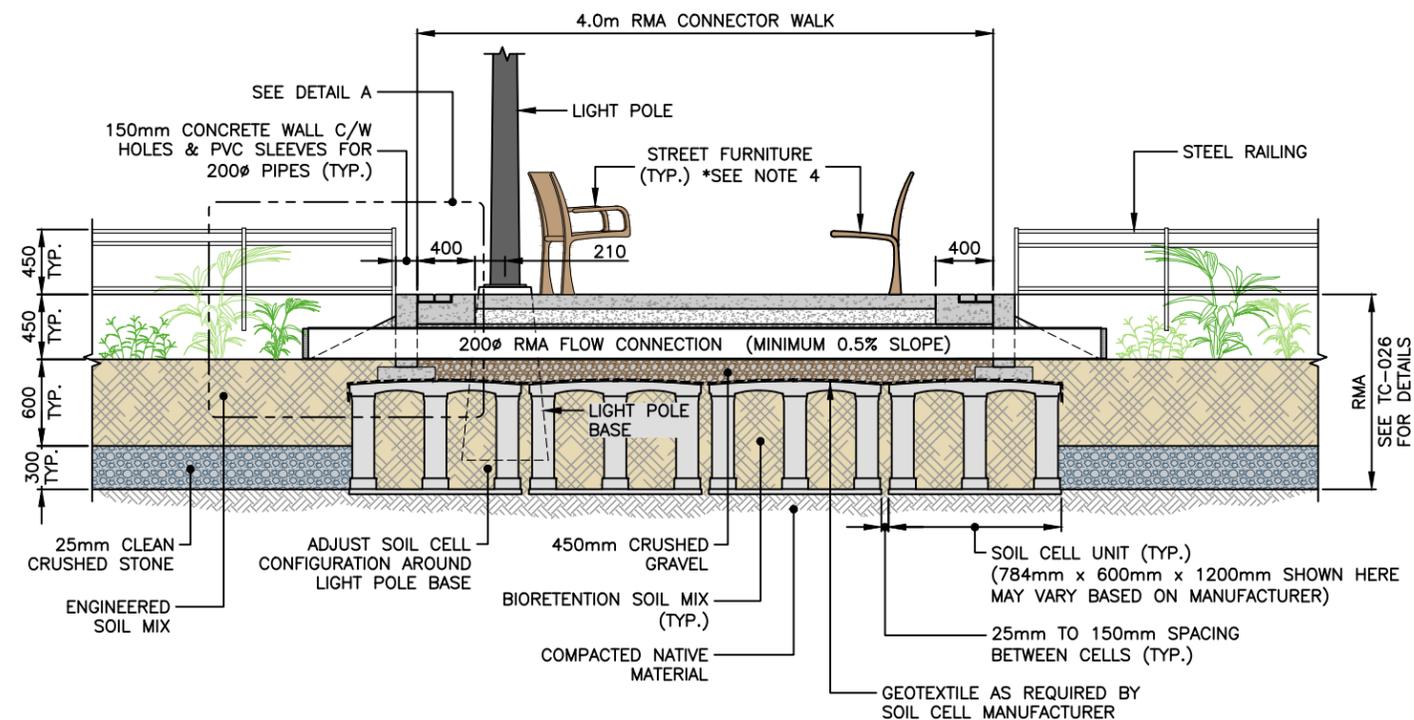
DRAWN BY: DCB	SCALE: N.T.S.	BBY-TC-027
APPR'V'D BY:	DATE: 2020-09-25	



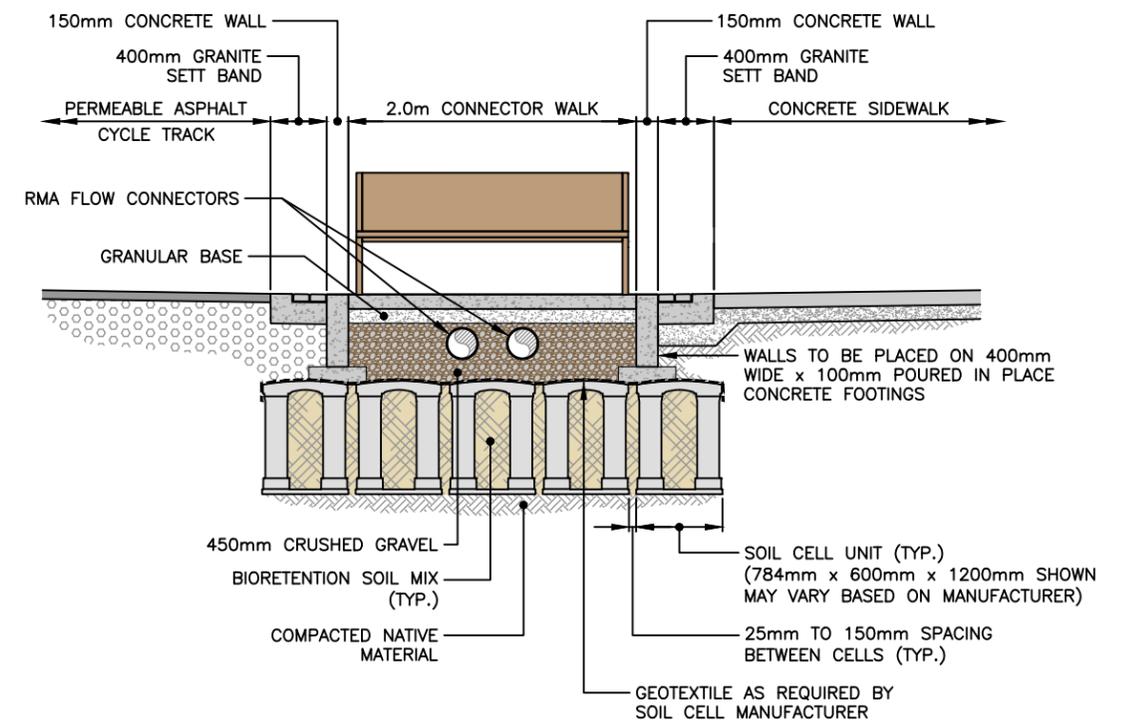
TYPICAL RMA CONNECTOR WALK – PLAN VIEW



DETAIL A



SECTION A-A



SECTION B-B

NOTES:

- RMA CONNECTOR WALKS SHALL BE POSITIONED TO PROVIDE ACCESSIBILITY IN FRONT OF PRINCIPAL BUILDING ENTRANCES FOR BUILDING USERS AND EMERGENCY SERVICES.
- DEBRIS SCREEN TO BE MOUNTED ON PIPE TO PREVENT DEBRIS OR RODENTS FROM ENTERING THE PIPE. THE SCREEN IS RECOMMENDED TO BE INSERTED INTERNALLY WITH OPENINGS SIZED TO PREVENT MULCH FROM ENTERING THE PIPE.
- RMA OVERFLOW CONNECTION PIPES SHALL BE HDPE DR26 BLACK PIPE.
- STREET FURNITURE CONFIGURATION VARIES. SPECIFICATIONS AND OFFSETS TO BE REVIEWED AND APPROVED BY THE CITY.
- RMA RAILING TYPE AND SHOP DRAWINGS TO BE SUBMITTED TO CITY FOR APPROVAL.

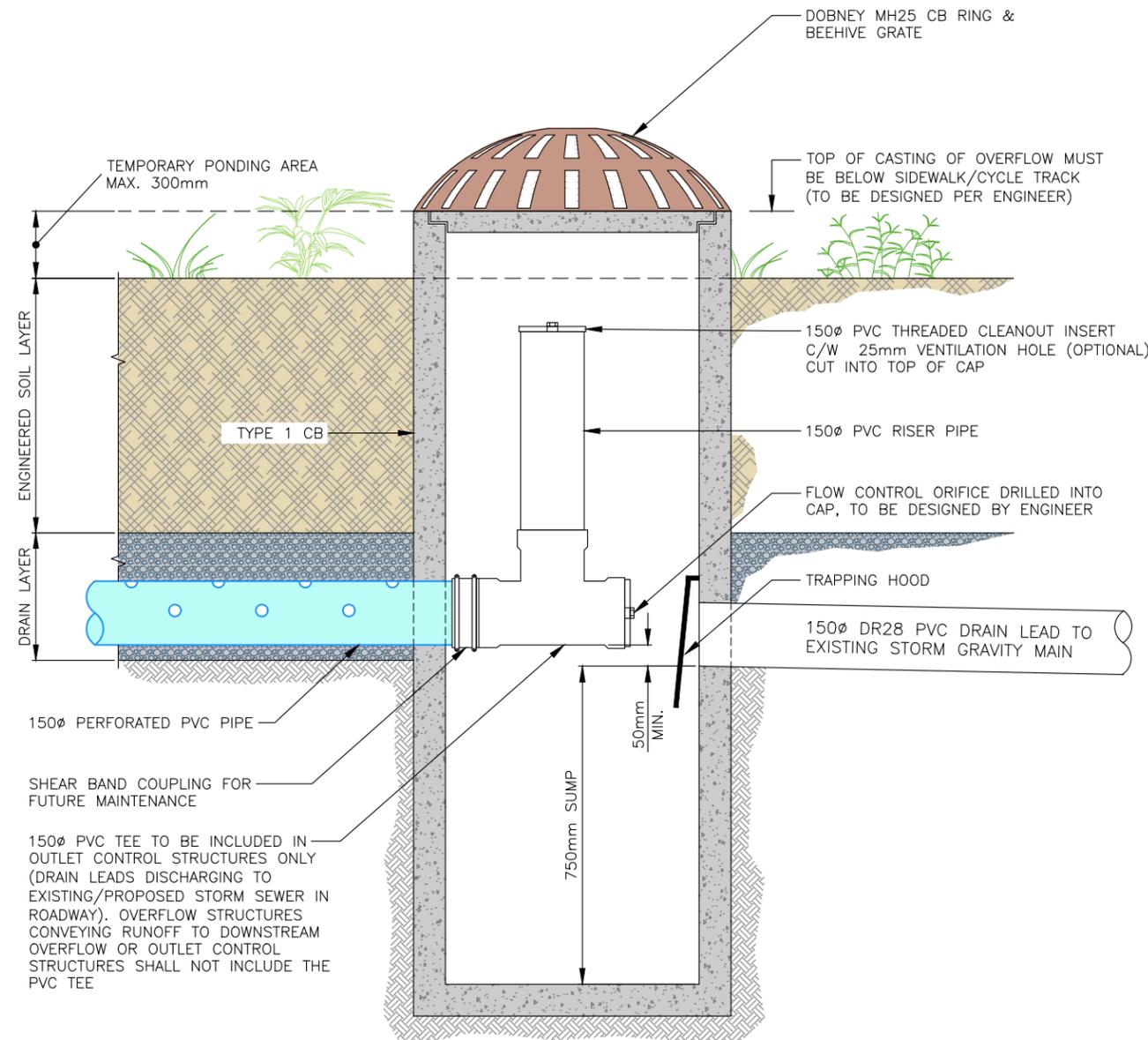
NO.	DATE	REVISION



TOWN CENTRE
 LINEAR RAINWATER MANAGEMENT AMENITY
 CONNECTOR WALK DETAILS

DRAWN BY: DCB
 SCALE: N.T.S.
 APPR'D BY: DATE: 2020-09-25

BBY-TC-028



RMA OVERFLOW / CONTROL STRUCTURE DETAIL – ELEVATION

LINEAR RMA:

1. THE LOCATION, QUANTITY, ELEVATION AND SIZE OF INLET AND OUTLET FEATURES FOR LINEAR RMAS SHALL BE DESIGNED BY THE ENGINEER TO COMPLY WITH CITY'S DESIGN CRITERIA MANUAL AND THE REQUIREMENTS ESTABLISHED IN THE TOWN CENTRE STANDARDS DOCUMENT. LINEAR RMAS CAN BE CONNECTED IN SERIES TO MEET WATER QUALITY OBJECTIVES AND RAINWATER CONVEYANCE REQUIREMENTS, POTENTIALLY REQUIRING ONE OR MORE OF THE INLET AND OUTLET FEATURES SHOWN ON THIS SHEET. THE DESIGN ENGINEER SHALL PREPARE DESIGN CALCULATIONS THAT VERIFY THE FUNCTION OF INLET AND OUTLET FEATURES AND INTERCONNECTED RMAS.
2. ROCK FOREBAY SHALL BE SHAPED INTO 'V-SHAPED' CONFIGURATION WITH SLOW-DRAINING (WITHIN 12-24 HOURS) GEOTEXTILE FABRIC PLACED UNDER THE AGGREGATE. THE PERIMETER OF THE ROCK FOREBAY SHOULD BE LEVEL SO THAT INCOMING RUNOFF IS EVENLY DISTRIBUTED ACROSS THE SURFACE OF THE RMA.
3. THE SURFACE SLOPE OF THE ENGINEERED SOIL LAYER IS INTENDED TO BE FLAT. WHERE SURFACE SLOPES OF THE PARALLEL ROADWAY EXCEED 1%, THE ENGINEER SHALL INCORPORATE INTERNAL DAMS/BAFFLES (ORIENTED PERPENDICULAR TO THE ROADWAY) TO BREAK UP CONCENTRATED FLOW AND ESTABLISH SECTIONS OF THE RMA THAT MINIMIZE THE SURFACE SLOPE TO NOT EXCEED 1%.
4. RMA OVERFLOW ELEVATIONS MUST BE SET BELOW THE SIDEWALK ELEVATION. ENGINEER TO DESIGN OVERFLOW STRUCTURE(S) TO COMPLY WITH CITY'S STORMWATER DESIGN CRITERIA.
5. RMA WALL SUPPORT OPTIONS SHOWN ON THIS SHEET ARE TO BE SELECTED AND DESIGNED THROUGH A GEOTECHNICAL ASSESSMENT AND BY A STRUCTURAL ENGINEER. WALL SUPPORTS SHALL BE APPROVED BY CITY.
6. TEMPORARY PONDING ABOVE THE RMA SURFACE SHALL NOT EXCEED 300mm BEFORE ACTIVATING THE OVERFLOW STRUCTURE. THE ENGINEER WILL SET THE OVERFLOW STRUCTURE CASTING ELEVATION SUCH THAT THE TEMPORARY PONDING AREA SATISFIES THE CITY'S WATER QUALITY OBJECTIVES OUTLINED IN THE TOWN CENTRE STANDARDS DOCUMENT. IN NO CASE SHALL THE OVERFLOW STRUCTURE CASTING BE FLUSH WITH THE SURFACE OF THE RMA.
7. SCARIFY SUBGRADE 100mm MINIMUM BEFORE RMA IS INSTALLED.
8. RMA SHALL BE PLANTED PER APPROVED LANDSCAPE PLAN.
9. SURFACE MULCH SHALL BE COMPOSTED BLACK BARK MULCH. MULCH SHALL BE 75mm IN DEPTH AND FREE OF FOREIGN MATERIAL, INCLUDING OTHER PLANT MATERIAL.
10. ENGINEERED SOIL MIX TO CONFORM TO APPROVED MIX AND WILL REQUIRE INDEPENDENT TESTING AT THE TIME OF INSTALLATION TO CONFIRM THE MIX MEETS THE CITY'S REQUIREMENTS.
11. ENGINEERED SOIL MIX SHALL BE PLACED IN LAYERS NOT MORE THAN 300mm IN LOOSE DEPTH, PLACED BY HAND OR WITH SMALL EQUIPMENT. IF USING SMALL EQUIPMENT, REFRACTURE SOILS THAT HAVE BEEN COMPACTED BY RAKING, DISKING OR TILLING TO A MINIMUM DEPTH OF 100mm. SETTling OF SOIL BY WALKING ON SURFACE AND WORKING WITH HAND EQUIPMENT IS ACCEPTABLE. DO NOT USE VIBRATING PLATE-STYLE COMPACTORS TO INDUCE SETTling. UNIFORMLY GRADE ENGINEERED SOIL MIX TO A SMOOTH SURFACE FREE OF IRREGULAR SURFACE CHANGES.
12. STANDARD SPACING FOR RMA'S SHALL BE AS PER THE DIMENSIONS NOTED ON THE FOUR-LANE AND SIX-LANE TYPICAL STREET PLAN VIEWS.
13. CLEANOUTS CONNECTIONS SHALL BE DESIGNED SUCH THAT THEY CAN BE UTILIZED AS AN INSPECTION PORT AS WELL AS AN ACCESS POINT FOR FLUSHING THE UNDERDRAIN.

CURB BULGE RMA:

1. GUTTER EXTENSION INTO RMA SHALL BE ROUGHENED CONCRETE PAD, COMPRISED OF COMMERCIAL CONCRETE AND WITH 150mm STREAMBED AGGREGATE TO CREATE ROUGHNESS, 50% MINIMUM OF THE SURFACE SHALL HAVE PROTRUDING AGGREGATE. PAD SHOULD BE FORMED TO DIRECT INCOMING RUNOFF TO THE INLET SUMP STRUCTURE.
2. TYPICAL MAXIMUM SIDE-SLOPE ALLOWED IS 2.0H=1V.
3. ROCK FORBAY LINING THE PERIMETER OF THE INLET SUMP STRUCTURE SHALL INCLUDE SLOW-DRAINING (WITHIN 12-24 HOURS) GEOTEXTILE FABRIC UNDER THE AGGREGATE TO PREVENT SHORT-CIRCUITING.
4. RMA OVERFLOW ELEVATIONS MUST BE SET BELOW THE SIDEWALK ELEVATION. ENGINEER TO DESIGN OVERFLOW STRUCTURE(S) TO COMPLY WITH CITY'S STORMWATER DESIGN CRITERIA.
5. TEMPORARY PONDING ABOVE THE RMA SURFACE SHALL NOT EXCEED 300mm BEFORE ACTIVATING THE OVERFLOW STRUCTURE. THE ENGINEER WILL SET THE OVERFLOW STRUCTURE CASTING ELEVATION SUCH THAT THE TEMPORARY PONDING AREA SATISFIES THE CITY'S WATER QUALITY OBJECTIVES OUTLINED IN THE TOWN CENTRE STANDARDS DOCUMENT. IN NO CASE SHALL THE OVERFLOW STRUCTURE CASTING BE FLUSH WITH THE SURFACE OF THE RMA.
6. SCARIFY SUBGRADE 100mm MINIMUM BEFORE RMA IS INSTALLED.
7. RMA SHALL BE PLANTED PER APPROVED LANDSCAPE PLAN.
8. SURFACE MULCH SHALL BE COMPOSTED BLACK BARK MULCH. MULCH SHALL BE 75mm IN DEPTH AND FREE OF FOREIGN MATERIAL, INCLUDING OTHER PLANT MATERIAL.
9. THE SURFACE SLOPE OF THE ENGINEERED SOIL LAYER IS INTENDED TO BE FLAT. SURFACE SLOPES SHALL NOT EXCEED 1%.
10. ENGINEERED SOIL MIX TO CONFORM TO APPROVED MIX AND WILL REQUIRE INDEPENDENT TESTING AT THE TIME OF INSTALLATION TO CONFIRM THE MIX MEETS THE CITY'S REQUIREMENTS.
11. ENGINEERED SOIL MIX SHALL BE PLACED IN LAYERS NOT MORE THAN 300mm IN LOOSE DEPTH, PLACED BY HAND OR WITH SMALL EQUIPMENT. IF USING SMALL EQUIPMENT, REFRACTURE SOILS THAT HAVE BEEN COMPACTED BY RAKING, DISKING OR TILLING TO A MINIMUM DEPTH OF 100mm. SETTling OF SOIL BY WALKING ON SURFACE AND WORKING WITH HAND EQUIPMENT IS ACCEPTABLE. DO NOT USE VIBRATING PLATE-STYLE COMPACTORS TO INDUCE SETTling. UNIFORMLY GRADE ENGINEERED SOIL MIX TO A SMOOTH SURFACE FREE OF IRREGULAR SURFACE CHANGES.
12. RMA CURB BULGES SHALL BE SPACED 20 METRES O.C.
13. DIMENSIONS OF THE CURB CUTS SHOULD BE DETERMINED BY ENGINEER TO CONFIRM ADEQUATE FLOW IS ROUTED TO THE RMA. CURB CUT SHALL INCLUDE METAL FRAME SUCH THAT THE TOP OF THE FRAME IS FLUSH WITH THE TOP OF CURB.

BELOW GRADE BARRIERS:

1. BELOW GRADE BARRIERS ARE USED TO CONTROL AND PREVENT THE MOVEMENT OF SUBSURFACE MATERIALS THAT FILTER AND CONVEY RUNOFF. THE ENGINEER SHALL SPECIFY BELOW GRADE BARRIERS TO MEET THE CITY'S DESIGN CRITERIA MANUAL AND THE REQUIREMENTS ESTABLISHED IN THE TOWN CENTRE STANDARDS DOCUMENT.
2. IMPERMEABLE BARRIERS SHALL BE INSTALLED WHERE THE POTENTIAL EXISTS FOR STORMWATER RUNOFF TO NEGATIVELY IMPACT EXISTING OR PROPOSED ADJOINING INFRASTRUCTURE, SUCH AS UTILITIES, STRUCTURES, OR PAVEMENT. IMPERMEABLE BARRIERS SHALL ALSO BE INSTALLED IN AREAS WHERE PERMEABILITY IS LIMITED AND/OR EXISTING SOILS ARE CONTAMINATED. IMPERMEABLE BARRIERS SHALL BE IMPERMEABLE GEOTEXTILE LINERS, COMPACTED CLAYS, OR OTHER IMPERMEABLE MATERIAL AS APPROVED BY THE CITY.
3. PERMEABLE BARRIERS SHALL BE INSTALLED ON THE VERTICAL SIDES OF RAINWATER MANAGEMENT AMENITIES (RMA) TO PREVENT MIGRATION OF SOILS AND MATERIALS. PERMEABLE GEOTEXTILE LINERS SHALL BE USED IN VERTICAL APPLICATIONS AND SHALL NOT BE PLACED HORIZONTALLY BETWEEN LAYERS OR ON THE BOTTOM OF THE RMA DUE TO HIGH CLOGGING POTENTIAL. HORIZONTAL PERMEABLE LINERS BELOW THE RMA MEDIA LAYERS SHALL BE NO. 8 AGGREGATE (2.4mm to 10mm STONE SIZE) OR PERMEABLE BARRIERS APPROVED BY THE CITY.
4. ADJACENT STRIPS OF GEOTEXTILE SHALL OVERLAP A MINIMUM OF 450mm OR PER MANUFACTURER SPECIFICATIONS, WHICHEVER IS GREATER.
5. AN ANTI-SEEP COLLAR SHOULD BE CONSIDERED FOR INSTALLATION AT THE EDGE OF THE RMA FOR OUTLET PIPING CONNECTING RMA DRAINAGE TO THE ROADWAY STORM SEWER SYSTEM.

OVERFLOW / CONTROL STRUCTURE:

1. SIZE OF PVC DRAIN LEAD TO BE REVIEWED AND SIZED BY ENGINEER. STORM SEWER SYSTEMS MUST BE CAPABLE OF BYPASSING 10-YEAR DESIGN STORM.
2. PVC OUTLET CONTROL 'TEE' TO BE SECURED WITHIN OVERFLOW STRUCTURE PER ENGINEER.
3. 25mm VENTILATION HOLE IS OPTIONAL AND RECOMMENDED TO MAINTAIN EFFICIENCY OF FLOW CONTROL ORIFICE. THE OPEN AREA OF VENTILATION HOLE SHOULD BE CONSIDERED IN DETERMINING THE SIZE OF THE FLOW CONTROL ORIFICE.
4. FLOW CONTROL ORIFICE TO BE SIZED PER CITY'S DESIGN CRITERIA FOR NON-INFILTRATING RMA DESIGNS.
5. TOP OF CASTING OF OVERFLOW CONTROL STRUCTURE SHALL NOT BE SITUATED MORE THAN 300mm ABOVE THE TOP OF THE ENGINEERED SOIL LAYER AND SHALL BE LOCATED BELOW THE ADJACENT GUTTER LINE AND SIDEWALK/CYCLE TRACK GRADES. TOP OF CASTING ELEVATIONS RELATIVE TO ADJACENT FEATURES TO BE DESIGNED BY ENGINEER TO MEET BYPASS FLOW REQUIREMENTS.

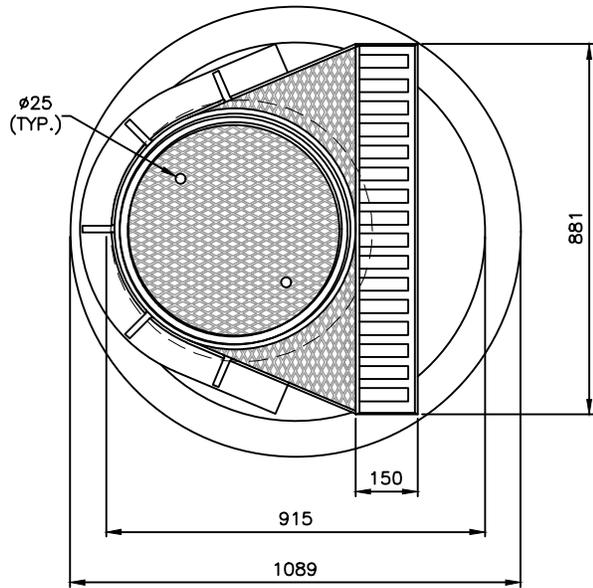


**TOWN CENTRE
RMA NOTES & RMA OVERFLOW / CONTROL
STRUCTURE DETAIL**

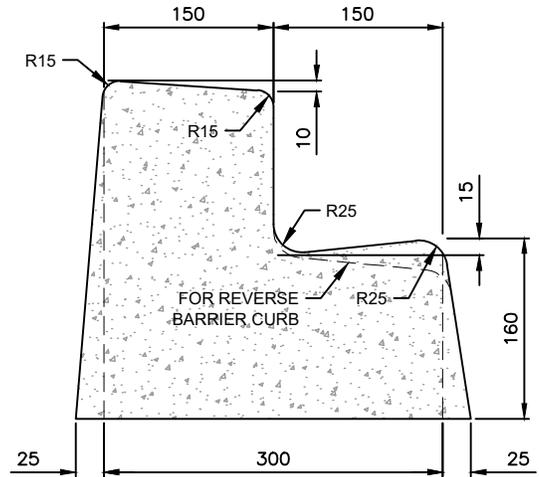
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BBY - TC - 029

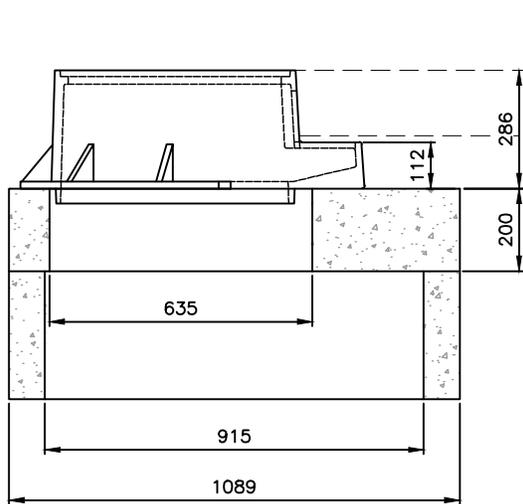
NO.	DATE	REVISION



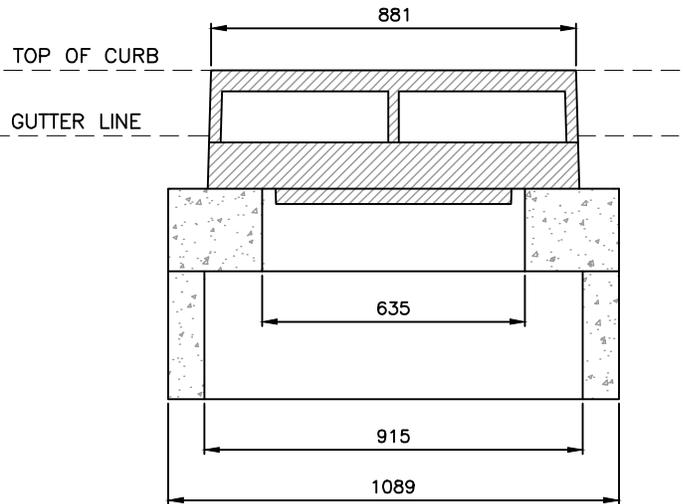
PLAN



CURB DETAIL



SECTION



CURB VIEW

NO.	DATE	REVISION



TOWN CENTRE

BICYCLE FRIENDLY CURB & CATCH BASIN

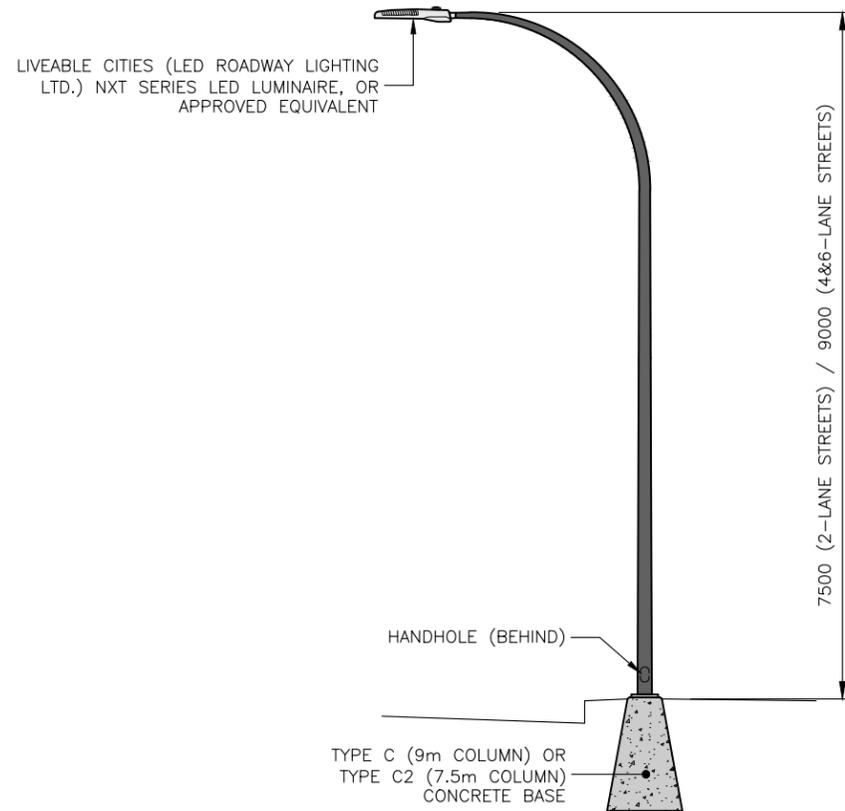
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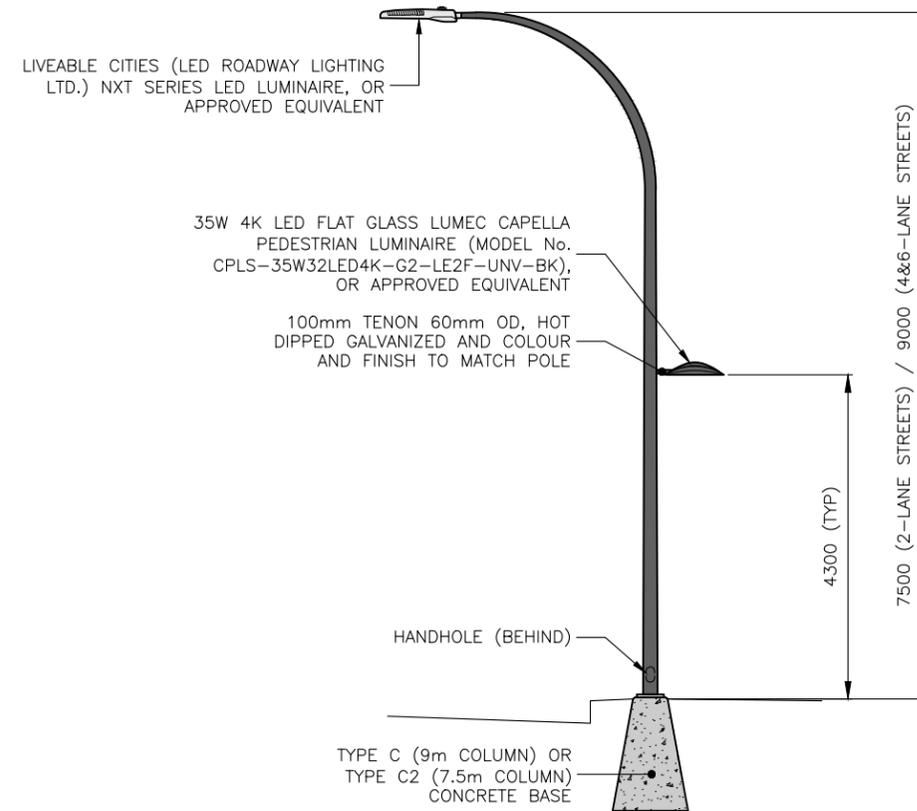
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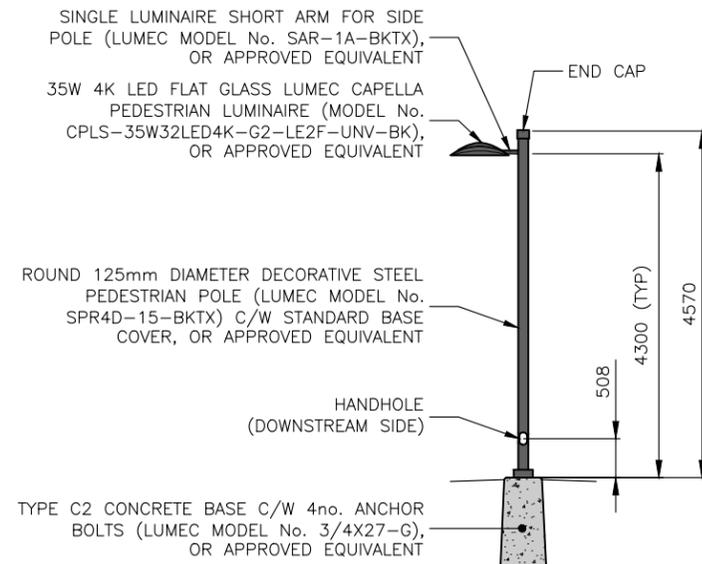
TYPICAL DAVIT STREET LIGHT POLE (7.5/9.0m)

NTS



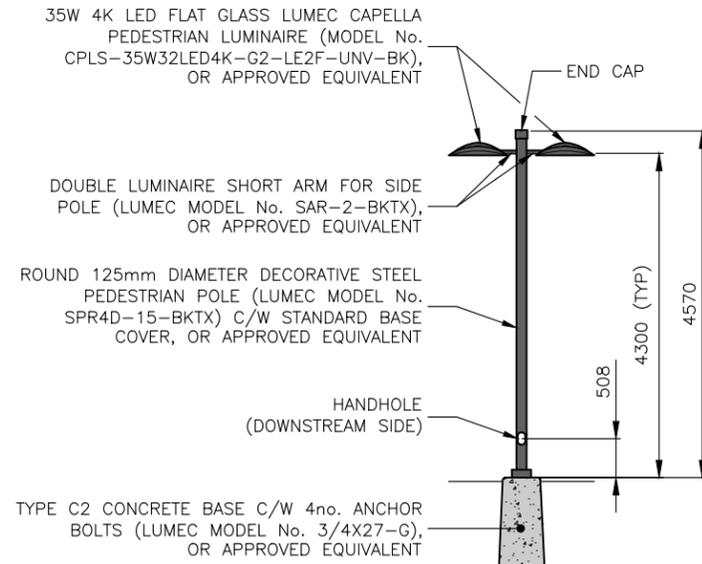
TYPICAL DAVIT STREET LIGHT POLE (7.5/9.0m) C/W PEDESTRIAN LIGHT

NTS



TYPICAL PEDESTRIAN/CYCLE PATH POLE (SINGLE LUMINAIRE)

NTS



TYPICAL PEDESTRIAN/CYCLE PATH POLE (DOUBLE LUMINAIRE)

NTS

NOTES:

1. REFER TO TYPICAL SECTION DRAWINGS FOR STREET LIGHT BASE OFFSETS.
2. BANNER ARM AND DUPLEX RECEPTACLE INSTALLATION TO BE DESIGNED WHERE REQUIRED BY THE CITY.
3. POLE FINISH TO BE POWDER COATED PECTRUM XP CARBON BLACK (BK50-XP63)

NO.	DATE	REVISION



TOWN CENTRE
STREET LIGHTING DETAILS

DRAWN BY: DW SCALE: N.T.S.
APPR'V'D BY: DATE: 2020-09-25

BBY - TC - 031

Appendix B

Landscape Planting Palette

Reference Table

CITY OF BURNABY TOWN CENTRE STANDARDS

BOTANICAL NAME	COMMON NAME	EVERGREEN	NA NATIVE	DROUGHT TOLERANT	EXPOSURE			MATURE SIZE		LOCATION**										
					Sun	Partial	Shade	Height	Spread	Boulevard	Bulge	RMA	Traffic Circle	Mid Block						
Trees*																				
<i>Acer x freemanii</i> varieties	Red / Freeman Maple	N	N	N	Y	Y		12.0 - 18.0m	6.0 - 12.0m	Y	Y	Y		Y						
<i>Acer platanoides</i> 'Easy Street'	Easy Street' Norway Maple	N	N	N	Y			12.0m	6.0 - 12.0m	Y	Y	Y		Y						
<i>Acer rubrum</i> 'Brandywine'	Brandywine Red Maple	N	N	Y	Y	Y		7.5 - 10.5m	4.5 - 7.5m	Y	Y	Y		Y						
<i>Acer rubrum</i> 'Bowhall'	Bowhall Red Maple	N	N	Y	Y	Y		12.0m	4.5m	Y	Y	Y		Y						
<i>Acer rubrum</i> 'Frank Jr'	Redpointe Red Maple	N	N	Y	Y			13.5m	9.0m	Y	Y	Y		Y						
<i>Acer rubrum</i> 'Somerset'	Somerset Red Maple	N	N	Y	Y			13.5 - 15.0m	10.5 - 12.0m	Y	Y	Y		Y						
<i>Betula nigra</i> 'Cully'	Heritage River Birch	N	Y	Y	Y	Y		12.0 - 21.0m	12.0 - 18.0m			Y								
<i>Carpinus betulus</i> 'Fastigiata'	Pyramidal European Hornbeam	N	Y	Y	Y	Y		10.5 - 13.5m	7.5 - 10.5m	Y										
<i>Celtis occidentalis</i>	Hackberry	N	Y	Y	Y	Y		12.0 - 18.0m	12.0 - 18.0m	Y	Y	Y		Y						
<i>Comus kousa</i> 'Satomii'	Red Flowering Kousa Dogwood	N	N	N	Y	Y		4.5 - 7.5m	7.5m		Y	Y								
<i>Davidia involucreta</i>	Dove Tree	N	N	Y	Y	Y		6.0 - 19.5m	6.0 - 10.5m	Y	Y									
<i>Fagus sylvatica</i> 'Asplenifolia'	Cut or Fern Leaf European Beech	N	N	Y	Y	Y		18.0 - 24.5m	10.5 - 13.5m	Y	Y									
<i>Fraxinus americana</i>	White Ash	N	Y	Y	Y	Y		15.0 - 24.5m	12.0 - 15.0m	Y	Y		Y							
<i>Fraxinus Americana</i> 'Autumn Applause'	Autumn Applause America Ash	N	Y	N	Y	Y		12.0 - 15.0m	7.5 - 9.0m	Y	Y		Y	Y						
<i>Ginkgo biloba</i>	Ginkgo	N	N	Y	Y	Y		7.5 - 15.0m	7.5 - 10.5m				Y							
<i>Magnolia</i> 'Galaxy'	Galaxy Magnolia	N	Y	N	Y	Y		10.0m	5.0m				Y							
<i>Magnolia grandiflora</i>	Southern Magnolia	Y	N	Y	Y			12.0 - 15.0m	7.5m	Y		Y		Y						
<i>Magnolia x veitchii</i>	Veitch's Magnolia	N	Y	N	Y	Y		30.0m	10.0 - 12.0m	Y										
<i>Metasequoia glyptostroboides</i>	Dawn Redwood	S	N	Y	Y			21.0 - 30.5m	7.5m				Y							
<i>Nyssa sylvatica</i>	Sour Gum / Black Tupelo	N	N	Y	Y	Y		9.0 - 15.0m	6.0 - 9.0m	Y	Y	Y								
<i>Parrotia persica</i> 'Vanessa'	Persian Ironwood	N	N	Y	Y	Y		9.0m	4.0m		Y	Y		Y						
<i>Picea omonika</i>	Serbian Spruce	Y	N	Y	Y	Y		15.0 - 18.0m	6.0 - 7.5m				Y							
<i>Pyrus calleryana</i> 'Capital'	Capital Pear	N	N	Y	Y			10.5 - 13.5m	3.5 - 4.5m		Y		Y	Y						
<i>Prunus serrulata</i> Kwanzan	Kwanzan Cherry	N	N	N	Y			9.0 - 12.0m	9.0 - 12.0m	Y	Y			Y						
<i>Quercus trainetto</i> 'Schmidt'	Italian Oak	N	N	Y	Y	Y		20.0m	12.0 - 15.0m	Y			Y							
<i>Quercus garyana</i>	Garry Oak	N	Y	Y	Y	Y		18.0 - 23.0m	20.0m		Y		Y							
<i>Quercus pagoda</i>	Cherrybark Oak	N	Y	Y	Y			18.0 - 33.0m	15.0m		Y	Y	Y	Y						
<i>Quercus palustris</i>	Pin Oak	N	N	Y	Y	Y		18.0 - 21.0m	7.5 - 12.0m	Y	Y	Y	Y	Y						
<i>Quercus robur</i>	English Oak	N	N	Y	Y	Y		20.0 - 40.0m	15.0 - 18.0m		Y		Y							
<i>Zelkova serrata</i>	Japanese Zelkova	N	N	Y	Y			15.0 - 24.0m	15.0 - 24.5m	Y	Y		Y	Y						
<i>Zelkova serrata</i> 'Green Vase'	Japanese Zelkova	N	N	Y	Y			18.0 - 24.0m	12.0 - 15.0m	Y	Y		Y	Y						
Shrubs & GroundCover*																				
<i>Achillea</i>	Yarrow	N	Y	Y	Y	Y		0.6 - 0.9m	0.6 - 0.9m	Y	Y	Y		Y						
<i>Acorus g. ogon</i>	Sweet Flag	Y	N	Y	Y	Y		0.3m	0.2m	Y	Y	Y	Y	Y						
<i>Agastache cv</i>	Mexican Hyssop	N	N		Y			0.3-0.5m	0.3m	Y	Y	Y	Y	Y						
<i>Aster chilensis</i>	California Aster	N	N	S	Y	Y		0.7 - 1.2m	0.5 - 1.0m	Y		Y								
<i>Aster modestus</i>	Great Northern Aster	N	Y	S	Y			0.3 - 1.0m	0.9m	Y	Y	Y	Y							
<i>Aster novi-belgii cvs</i>	Fall Aster	N	N		Y	Y		0.3-0.8m	0.5m	Y	Y	Y								
<i>Astilbe cvs</i>	Astilbe	N	N	Y		Y														
<i>Blechnum spicant</i>	Deer Fern	Y	Y	N		Y		0.3 - 0.6m	0.6m				Y	Y						
<i>Calamagrostis x acutiflora</i> 'Karl Foerster'	Feather Reed Grass	Y	Y	S	Y	Y		0.9 - 1.5m	0.5 - 0.7m			Y		Y						
<i>Camassia leichtlinii</i>	Large / Giant Camas	N	Y	Y	Y	Y		0.9 - 1.2m	0.5m			Y		Y						
<i>Camassia quamash</i>	Common Camas	N	Y	Y	Y	Y		0.5m	0.3m		Y	Y	Y	Y						
<i>Carex elata</i> 'Aurea'	Bowles' Golden Sedge	Y	N	N	Y	Y		0.3 - 0.6m	0.6 - 1.0m		Y	Y	Y	Y						
<i>Carex flacca</i>	Blue Sedge	S	Y	Y	Y	Y		0.2 - 0.3m	0.2 - 0.3m		Y	Y	Y	Y						
<i>Carex flagellifera</i> 'Kiwi'	Kiwi Weeping Sedge	N	N	N	Y	Y		0.4 - 0.5m	0.5 - 0.8m		Y	Y	Y	Y						
<i>Carex oshimensis</i> 'Evergold'	Variegated Japanese sedge	Y	N	Y	Y	Y		0.3 - 0.6m	0.6 - 0.9		Y	Y	Y	Y						
<i>Ceanothus thyrsiflorus</i>	Blueblossom	Y	Y	Y	Y	Y		2.0 - 3.0m	1.5 - 1.8m	Y		Y								
<i>Ceratostigma willmottianum</i>	Chinese Plumbago	N	N	Y	Y	Y		1.0m	1.0m		Y									
<i>Cholsya temata</i>	Mexican Mock Orange	Y	Y	Y	Y	Y		1.8 - 2.1m	1.2 - 1.5m	Y		Y								
<i>Deschampsia cespitosa</i>	Tufted Hairgrass	Y	Y	N		Y		0.6 - 1.2m	0.6 - 1.2m			Y		Y						
<i>Deschampsia cespitosa</i> 'Northern Lights'	Tufted Hairgrass	Y	Y	N	Y	Y		0.2 - 0.3m	0.2 - 0.3m		Y	Y	Y	Y						
<i>Echinacea purpurea</i>	Purple Coneflower	S	Y	Y	Y			0.9 - 1.2m	0.6m	Y		Y		Y						
<i>Echinacea purpurea</i> 'Alba'	White Coneflower	S	Y	Y	Y			0.9 - 1.2m	0.6m			Y		Y						
<i>Epimedium x rubrum</i>	Barrenwort	Y	N	Y	Y	Y		0.3m	0.3m		Y		Y	Y						
<i>Erica carnea</i> 'Springwood Pink'	Spring Pink Winter Heath	Y	N	N	Y	Y		0.3 - 0.5m	0.5 - 0.8m		Y		Y	Y						
<i>Erica carnea</i> 'Springwood White'	Dwarf White Heath	Y	N	Y	Y	Y		0.2m	0.4m		Y		Y	Y						
<i>Euonymus fortunei</i> 'Emerald Gaiety'	Emerald Gaiety Wintercreeper	Y	N	Y	Y	Y		1.2 - 1.5m	1.0m	Y		Y								
<i>Gaura lindheimeri</i>	Wand Flower	S	N	Y	Y	Y		0.5m	0.3m	Y	Y									
<i>Geranium sanguineum</i>	Cranesbill Geranium	N	N	N	Y	Y		0.3 - 0.5m	0.4 - 0.6m		Y	Y	Y	Y						
<i>Geum</i>	Avens	N	N		Y	Y		0.5m	0.3m	Y	Y	Y								
<i>Iberis sempervirens</i> 'Snowflake'	Candytuft	Y	N	Y	Y	Y		0.2 - 0.3m	0.2 - 0.5m		Y	Y	Y	Y						
<i>Iris douglasiana</i>	Douglas Iris	Y	Y	Y	Y	Y		0.2 - 1.0m	1.0m	Y	Y	Y								
<i>Kalmia dwf cvs</i>	Mountain Laurel	Y	N	Y	Y	Y		0.3-1.0m	1.0m	Y	Y	Y								
<i>Lavandula</i> 'Hidcote'	Hidcote Lavender	Y	N	Y	Y			0.5m	0.5m		Y		Y	Y						
<i>Liatris spicata</i>	Gayfeather	N	Y	N	Y	Y		0.6 - 1.2m	0.2 - 0.5m	Y		Y								
<i>Liriope muscari</i>	Lily Turf	N	N	Y	Y	Y		0.3 - 0.5m	0.2 - 0.3m		Y		Y	Y						
<i>Lithodora d</i>	Lithodora	Y	N	N	Y	Y		0.1m	0.3m		Y	Y	Y	Y						
<i>Lonicera pileata</i>	Boxwood honeysuckle	Y	N	Y	Y	Y		0.9m	1.5m		Y	Y								
<i>Mahonia nervosa</i>	Longleaf Mahonia	Y	Y	Y	Y	Y		0.3 - 0.9m	0.3 - 0.9m		Y		Y	Y						
<i>Pachysandra terminalis</i>	Japanese Spurge	Y	N	Y	Y	Y		0.1 - 0.2m	0.1 - 0.3m		Y		Y	Y						
<i>Panicum virgatum</i>	Switch Grass	N	Y	N	Y	Y		1.2 - 1.8m	1.2 - 1.8m			Y								
<i>Paxistima myrsinites</i>	Oregon Boxwood	Y	Y	N	Y	Y		0.2 - 0.8m	0.5m		Y		Y	Y						
<i>Pennisetum alopecuroides</i> 'Hameln'	Dwarf Fountain Grass	N	N	Y	Y	Y		0.5 - 0.8m	0.5 - 0.7m		Y	Y	Y	Y						
<i>Perovskia atriplicifolia</i>	Russian Sage	S	N	Y	Y	Y		0.9 - 1.2m	0.9 - 1.2m	Y		Y								
<i>Polystichum munitum</i>	Western Sword Fern	Y	Y	S		Y		1.0 - 1.8m	1.0 - 1.8m			Y		Y						
<i>Potentilla fruticosa</i>	Shrubby Cinquefoil	N	Y	Y	Y	Y		0.6 - 1.2m	0.9 - 1.5m	Y			Y	Y						
<i>Rosmarinus officinalis</i> 'Prostratus'	Creeping Rosemary	Y	N	Y	Y			0.1 - 0.3m	1.2-2.1m		Y		Y	Y						
<i>Rudbeckia fulgida</i> 'Goldsturm'	Black Eyed Susan	N	N	Y	Y			0.6m	0.6m	Y	Y	Y	Y	Y						
<i>Salix purpurea</i> 'Nana'	Dwarf Purple Osier	S	Y	S	Y	Y		1.5 - 2.2m	1.5 - 2.2m			Y								
<i>Sarcococca hookeriana var. humilis</i>	Himalayan Sweet Box	Y	N	S		Y		0.5 - 0.6m	2.0m		Y		Y	Y						
<i>Sedum</i> 'Autumn Joy'	Stonecrop	S	Y	Y	Y	Y		0.3 - 0.9m	0.3 - 0.9m		Y		Y	Y						
<i>Skimmia japonica</i>	Japanese Skimmia	Y	N	Y	Y	Y		0.9 - 1.2m	1.2 - 1.5m			Y								
<i>Spiraea japonica</i>	Japanese Spirea	N	N	Y	Y	Y		0.5 - 1.5m	0.5 - 1.5m			Y								
<i>Spiraea japonica</i> 'Magic Carpet'	Magic Carpet Spirea	N	N	Y	Y	Y		0.5 - 0.8m	0.8m		Y	Y	Y	Y						
<i>Taxus media</i> 'Hicksii'	Hick's Yew	Y	N	S	Y	Y		3.0 - 4.0m	1.0 - 1.2m											
<i>Vaccinium corymbosum</i>	Blueberry	N	Y	Y	Y	Y		2.0 - 3.0m	2.0 - 3.0m			Y								
<i>Viburnum opulus</i> 'Nanum'	Dwarf Cranberry Bush	N	N	Y	Y	Y		0.6 - 0.9m	0.9m		Y	Y	Y	Y						
<i>Viburnum tinus</i> 'Spring Bouquet'	Spring Bouquet	N	Y	Y	Y	Y		1.2 - 1.8m	1.2 - 1.8m			Y								
<i>Weigela dwf cvs</i>	Weigela	N	N	Y	Y	Y		0.3-0.6m	0.6m	Y	Y	Y	Y	Y						

* The following is a list of tree species that are acceptable for boulevard planting in Burnaby City Centres. Species of trees, other than those listed, may be planted, however require approval in writing by the City of Burnaby Urban Design Planner.

Specifications presented in this document shall supersede those contained in the Canadian Standards for Nursery Stock. However, the quality of all trees shall meet the specifications in the most recent edition of the Canadian Standards for Nursery Stock as published by the Canadian Nursery Landscape Association. All tree seed source and rootstock shall be Pacific Northwest hardy and capable of surviving in Canadian hardiness Zone 8 or lower.

Caliper of all trees shall be measured at 150 mm above ground, as the tree stands at the nursery. Refer to the City of Burnaby City Centre Standards for specifics on planting requirements.

The green (■) Botanical and Common names are considered desirable by the City of Burnaby.

- ** Planting Location Definitions:
- 1. Boulevard: City boulevard trees are located on the strip of City-owned land between the sidewalk and the private property. Consider trees that provide shade and high canopy cover. Low shrubs that can tolerate compaction recommended for understory. Ensure that roots are managed and canopies are trimmed where they are beneath poles.
 - 2. Bulge: Curb bulges are a traffic calming measure that widen the green space at intersections. Shrubs kept at a maximum height of 1.0m.
 - 3. RMA: RMAs are located on city property between the sidewalk and cycle tracks, and may also be planted in bulges at corners of intersections

Appendix C

Preliminary Design Report Requirements
for Rainwater Management Amenities

Preliminary Design Report Requirements for Rainwater Management Amenities

The City of Burnaby requires a preliminary design report for all proposed rainwater management amenities (RMA). This report should be signed and sealed by a qualified Professional Engineer or Geoscientist of BC, and must include the following:

1. Assessment to support the type of RMA proposed (i.e. infiltration based vs. sealed-bottom), see table below
2. Drawing (plan view) of the RMA and the drainage catchment for the RMA
3. RMA sizing criteria:
 - All RMA – must include high-flow bypass to the storm sewer system to prevent overtopping during 10-year storm event
 - Metro Vancouver’s Stormwater Source Control Guidelines (2012) provides guidance on rainfall capture targets
 - Infiltration based RMA – must fully infiltrate the capture target rainfall within 48 hours
 - design infiltration rate x 1.5 = minimum field infiltration rate
 - Sealed-bottom RMA – maximum release flow of capture target rainfall of 0.25L/s per hectare of tributary catchment

Information Required	Test or Review Required	Criteria for Infiltration based RMA	Criteria for Sealed-bottom RMA
Soil conditions (i.e. provide borehole logs and profiles)	Boreholes or test pits, taken at proposed location of the RMA (or representative location within 30m)	Soil properties favorable for infiltration	Soil properties that may limit infiltration (e.g. increase soil consolidation at depth, presence of impermeable soils, etc.)
Groundwater elevation	Boreholes or test pits, taken at proposed location of the RMA (or within 30m)	Bottom of RMA with more than 1.5m clearance to seasonal mean high groundwater table	Bottom of RMA with less than 1.5m clearance to seasonal mean high groundwater table
Infiltration test results	Double-ring infiltrometer test, one test location at every 30m to a maximum of one at each RMA, three tests at each test location	Infiltration rate more than 6mm per hour	Infiltration rate less than 6mm per hour
Utility Impact	Review of existing and proposed City and third-party utilities longitudinal and crossing proposed RMA and potential impact of RMA on these utilities	No conflict with high risk utilities, service connections and utility trenches	Direct conflict with high risk utility, services or utility trench, and when RMA cannot be designed to avoid the conflict or potential impact to the utility
Site Contamination	Identify known current or historic soil or groundwater contamination in the vicinity	No known soil or groundwater contamination that would impact the RMA as identified by the engineer and the City	Known soil or groundwater contamination that would impact the RMA as identified by the engineer or the City
Slopes that may influence drainage paths	Review of slopes in the vicinity	RMA is more than 10m from a slope of more than 5%	RMA is within 10m of a slope at more than 5%

A comprehensive Technical Design Guidelines report with additional details on RMA design criteria is available upon request. Design of RMA should be based on results of the preliminary design report that has been approved by the City.