Future of Centre Street North | Green Line LRT

May 2021

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Executive Summary

In June 2020, City Council approved the updated plan for the Green Line LRT. This new plan outlined the vision for a surface-running light rail transit (LRT) line along Centre Street North, LRT stations at both 9 Avenue N. and 16 Avenue N. and a commitment to improve the overall streetscape along the corridor.

The introduction of the Green Line LRT running along the surface of Centre Street N. provides a timely and unique opportunity to implement the Municipal Development Plan's vision to establish the corridor as an urban main street, which prioritizes pedestrian, transit and local traffic movement over regional commuter traffic; and to build the community's vision for a greener, more attractive and comfortable urban streetscape; all while providing the essential requirements to support local businesses.

As part of Council's approval of the updated Green Line plan, Administration was directed to undertake and report back on three planning studies:

> Community traffic review and plan – to identify if Crescent Heights traffic calming needs to be revised to accommodate the new design for Centre Street N.
>
> Streetscape master plan – to establish an urban design vision for the corridor and conceptual streetscape master plan
>
> Access management plan – to explore potential solutions to manage changes to business access, loading and parking as a result of the new roadway design for Centre Street North

This document presents the future vision for Centre Street North and the outcome of the three planning studies. This information has been presented in six chapters:

1) **Planning guidance** – outlines the overarching principles, objectives, guiding documents and stakeholder & public input that has been used to complete the studies and establish the new vision for Centre Street N.

2) **Mobility network** – describes the design strategies and changes that are being made to the local mobility network (pedestrian, bicycle, roadway) and the results of the community traffic calming review.

3) **LRT stations** – describes the design intent for the 16 Avenue N. and 9 Avenue N. stations.

4) **Streetscape master plan** – outlines the design strategies, design elements and conceptual streetscape design for Centre Street N.

5) **Business access, loading and parking** – identifies design strategies and potential solutions to manage business access, loading and parking changes resulting from the new design for Centre Street N.

6) **Next steps** – outlines the additional work required to advance the planning and design of Centre Street N. mobility network, LRT stations, streetscape master plan and business access, loading and parking.

Planning guidance

This section summarizes the inputs that were used to establish the future vision for Centre Street North. These include overarching planning and design objectives for the corridor, design principles for a successful Main Street, guiding Council-approved documents and stakeholder & public input received throughout 2020 and 2021.

Planning & design objectives

Planning and design objectives, as outlined below, were established in spring 2020 and included in the Green Line concept report that City Council approved in June 2020. These have been used to guide the planning of Centre Street North and the local mobility network and will continue to be used as the design advances.

- Provide urban realm that prioritizes pedestrian experience along the corridor
- Improve pedestrian connectivity across the corridor
- Facilitate reliable, efficient and safe LRT, BRT and local bus operations
- Manage vehicle access for community residents and businesses
- Minimize impacts to existing properties and businesses
- Maximize future development opportunities, prioritizing transit-oriented development (TOD)

Design principles

Building upon key themes for successful urban streets from previous Main Streets Program projects, four overarching design principles (described below) were established to guide the planning and design of Centre Street North. These form the main building blocks for creating a vibrant, thriving and supportive urban environment that will help deliver the future vision for the corridor. Within each theme, design strategies were identified to help guide the planning of the Centre Street N. mobility network, LRT stations, streetscape master plan and business access design.

Mobility & function - create a Centre Street N. that provides safe, accessible and comfortable travel experiences prioritizing LRT and pedestrian travel modes.

Green & healthy - create a Centre Street N. that is healthy and sustainable and creates an environment that is welcoming and comfortable for all.

Community & character - create a Centre Street N. with an urban realm that supports and encourages community activation, social gathering and public connections.

Economic & development – create a Centre Street N. that supports the economic vitality of businesses and stimulates investment and development along the corridor.

Guiding Council approved documents

Council approved plans, policies and guidelines were used to inform the Centre Street North mobility network design, conceptual streetscape design and business vitality strategies outlined in this report. These guiding documents and policies are summarized in the table below:

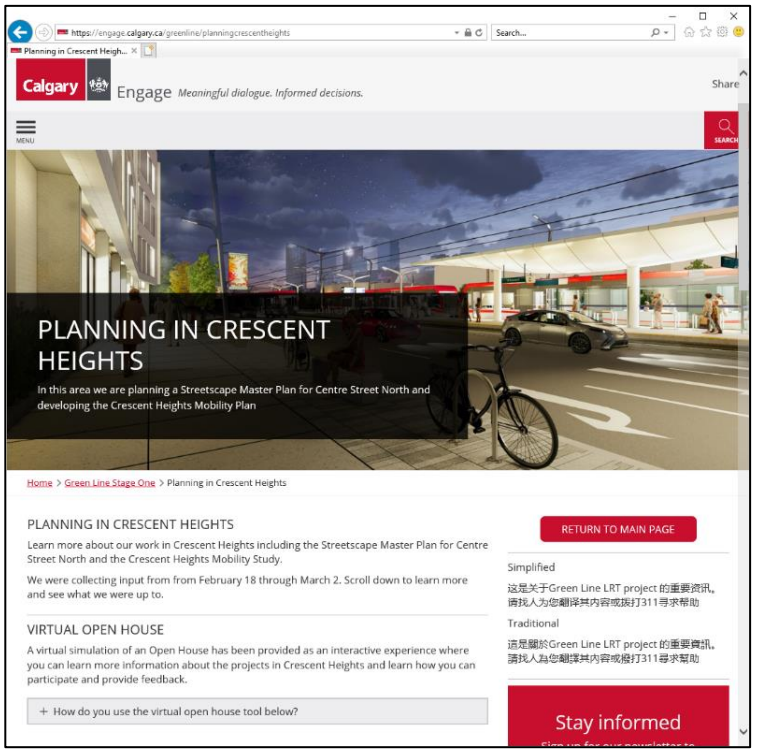
Guiding Document	Key Guidance
Municipal Development Plan (MDP) (2020)	• Create a strong pedestrian environment within transit areas to promote walkability (MDP Design Objective 2.2.2) • Design should include features that create a direct, convenient and safe pedestrian system that is integrated with transit service (MDP Design Objective 2.2.2) • Ensure that the design and mix of land uses surrounding transit stops and stations support transit and emphasize a pedestrian oriented environment (MDP Policy 2.2.2.e) • Respect the needs of businesses and the impact on local communities in the planning, design and maintenance of goods and service movement in the city (MDP Policy 2.5.1.c) • MDP identified Centre Street N. as an Urban Main Street land use typology. Urban Main Streets provide for a high level of residential and employment intensification along an urban boulevard street type, as defined in the Calgary Transportation Plan (CTP). The urban boulevard is a multi-modal street with a strong focus on walking, cycling and transit. Urban Main Streets emphasize a walkable pedestrian environment fronted by a mix of higher intensity residential and business uses. • Mobility policies: Provide transit service along the Urban Main Street via the Primary Transit Network. Development adjacent to transit stops should locate entrances and provide features that make it safe and convenient for transit users.

Calgary Transportation Plan (CTP) (2020)	• Transportation objective: To develop an integrated, multi-modal transportation system that supports land use, provides increased mobility choices for citizens, promotes vibrant, connected communities, protects the natural environment and supports a prosperous and competitive economy.
	• Applied transportation goals:
	  ○ Promote safety for all transportation system users
	  ○ Provide affordable mobility and universal access for all
	  ○ Enable public transit, walking and wheeling as the preferred mobility choices for more people
	  ○ Promote economic development by ensuring the efficient movement of workers and goods
	  ○ Advance environmental sustainability.
	• Applied sustainability principles for land use and mobility:
	  ○ Foster distinctive, attractive communities with a strong sense of place
	  ○ Provide a variety of transportation options
	  ○ Connect people, goods and services locally, regionally and globally
	  ○ Provide transportation services in a safe, effective, affordable and efficient manner that ensures reasonable accessibility to all areas of the city for all citizens.
	• The road and street palette:

	○ CTP classifies Centre Street N. as an Urban Boulevard, which envision a multi-modal street that accommodates walking, wheeling and transit with high standards and accommodates goods and vehicles with variable standards (3.4.2) ○ Provide transit service along the Urban Boulevard via the Primary Transit Network (Policy 3.4.2.f)
Pedestrian Strategy (Step Forward) (2016)	• Prioritize high pedestrian activity areas (i.e. major transit hubs) • Use of enhanced pedestrian crossing markings and increased installations in suitable locations (i.e. near schools, transit stations, institutions) • Provide accessibility ramps, audible pedestrian signals and countdown timers in areas of high pedestrian activity (i.e. major transit hubs)
Interface Areas Policy (Section 5.1.3) (Amended Calgary Parking Policy TP-017)	• Introduce Interface Areas where residential and commercial parking overlap. • Paid on-street parking (guided by commercial policies) and residential permit parking (guided by residential policies) co-existing on the same street.
Complete Streets Policy (TP021) and Guide (2014)	• Improve safety and accessibility for all road users. • Provide the design guidance to accommodate pedestrians, cyclists and street trees while striving to maintain existing right-of-way requirements. • Create liveable communities by encouraging people to travel by walking, wheeling and taking transit.
Design Guideline for Subdivision Servicing (2014)	Urban boulevards (i.e. Center Street N.) should strive to: • provide connections in high density corridors and activity centers • place a high priority on transit, cycling and walking modes • provide high quality urban design.
North Hill Communities Local Area Plan (2021)	• Provide high quality public realm and urban main streets that attract people, businesses and development. • Encourage higher levels of activities and commercial & residential development in station areas. • Establish higher density developments around station areas.
Goods Movement Strategy (2018)	• Action 1.2. Ensure the impacts to goods movement are identified in the evaluation of key infrastructure projects. • Action 4.2. Enhance the supply and use of on-street loading areas. • Action 4.3: Improve delivery vehicle access and circulation.
Route Ahead: A Strategic Plan for Transit in Calgary (2013)	• Centre Street was identified as a Transitway (BRT) from Downtown to North Pointe in the short-term and LRT in the long-term • Follow the core principles: ○ Customer experience – make it easy to use (accessing, waiting, paying, riding and connecting), make it safe, comfortable, accessible and reliable. ○ Network planning – support activity centers and corridors, enhance Primary Transit Connectivity.

Public and stakeholder input

As part of Green Line's segment 2 functional planning, the project team completed an integrated communications and engagement program that provided the opportunity for citizens to participate in meaningful engagement. We ensured coordination across all of the active projects included in functional planning for segment 2.



Engagement and communications occurred for segment 2 projects from October 2020 through to April 2021 over two phases of engagement and one phase of information sharing. Throughout the project, we engaged with residents and Calgarians at-large, community associations, business improvement areas, local business owners, special interest groups and ward offices.

Our first phase of engagement included listening to Calgarians and exploring their perspectives on opportunities and challenges related to the future vision of Centre Street N. The feedback from the first phase was used to inform initial concepts and ideas, which were presented back to the community for evaluation in the second phase of engagement. The final phase included information sharing, reporting back on how community input has informed the final recommendations and sharing the final project recommendations with the public before committee.

We employed a variety of engagement and communications tactics, including a stakeholder working group, online surveys, virtual workshops, meetings and presentations, digital web-based open houses, in-community sounding boards, postcards, signage, social media and email newsletters. We took extra care to ensure that our approach was meaningful, inclusive and removed barriers to participation, examples including but not limited to: the use of plain language and descriptive materials for those with low-vision, translated materials in simplified and traditional Chinese, the use of 311 for feedback and the piloting of new digital based tools to improve user experience.

Throughout the entire project, we held over 19 public sessions and stakeholder meetings, and conducted 3 online surveys. In total over 60,000 people were made aware of the project through our communications campaigns, we connected with over 12,000 participants through our engagement opportunities (online portal and sessions) and received over 500 ideas and contributions across all phases.

For the Streetscape Master Plan and Crescent Heights Mobility Study, the high-level themes we heard from the public through engagement included:

- Importance of pedestrian accessibility and trees & vegetation;
- Desire for better cycling connections throughout the community; and
- Importance of maintaining business access.

We also heard that citizens are concerned about traffic calming, the impacts of construction and saw challenges related to proposed parking changes in the community. The input received through engagement was used to inform and refine the recommendations and next steps outlined in this document.

Mobility network

The 2009 Calgary Transportation Plan / Municipal Development Plan (and the 2020 update) classifies and envisions Centre Street North as an Urban Boulevard and primary transit corridor that supports Urban Main Street land uses, prioritizes pedestrian and transit movement over other travel modes and discourages commuter traffic along the corridor. The goal of this street classification and land use is to move more people by more modes (i.e. high-capacity transit and walking) and to support higher densities of residential and commercial development. The design of a surface-running LRT along Centre Street North provides an opportunity to implement the Calgary Transportation Plan's vision to be a corridor that prioritizes walking, wheeling, transit and local vehicle movement. This future roadway design will move less regional and commuting vehicle traffic and instead will move more Calgarians by transit.

This chapter outlines the design strategies and presents the mobility network design that best integrates the Green Line LRT into Centre Street North. It is important to note that some components of the mobility network design are subject to change as the detailed engineering design advances.

Design strategies

The new design for Centre Street North prioritizes transit and pedestrian movement, followed by local goods movement (deliveries) and vehicle access to local businesses and the Crescent Heights community. In addition, the network was designed to maintain connectivity of bike routes across the corridor and current levels of traffic calming within the community.

This section describes the key design strategies that were used to guide the planning and design of the new mobility network.

Transit movement

- Design LRT infrastructure (i.e. platforms, cross-over tracks, signalling system) to provide efficient LRT turnaround and interim end-of-line operations at the 16 Avenue N. station.
- Design priority of LRT operations and pedestrian movement through intersections while accommodating through and turning movements for buses and vehicles.
- Ensure Centre Street N. continues to accommodate and support efficient BRT and local transit operations. This is particularly important for Green Line stage 1 where there continues to be a need to accommodate a significant number of north-south buses along Centre Street N.
- Operate BRT and local buses in the curb lane along Centre Street N.
- Ensure the width of the single travel lane accommodates safe movement of buses in all seasons.

Pedestrian movement

- Improve pedestrian safety at intersections by providing signal-controlled crossings
- Ensure signalized crossing times are adequate for all modes of travel to cross safely
- Design roadway to minimize the overall length of pedestrian crosswalks
- Provide refuge for pedestrians in areas with longer crosswalks, where possible
- Explore feasibility of vehicle right turn restrictions in intersections which will be busy pedestrian crossings (e.g. 16 Avenue N. intersection)
- Provide minimum 3m wide unobstructed sidewalks in busy pedestrian areas, including the 16 Avenue N. and 9 Avenue N. station areas
- Provide minimum 2m wide unobstructed sidewalks in less busy areas of the corridor

Bicycle movement

- Connect regional bike routes with LRT stations
- Provide wayfinding to direct cyclists from bike routes to LRT stations
- Ensure east-west bike routes are provided across Centre Street N.
- Ensure any new or modified bike routes connect into existing or planned bike routes

Local Goods movement

- Ensure roadway design (lane widths and turn movements) can reasonably accommodate local goods movement and emergency vehicles
- Design to accommodate small delivery trucks, waste and recycling vehicles, single trailers (WB-15) but not larger tractor trailers (WB-21)

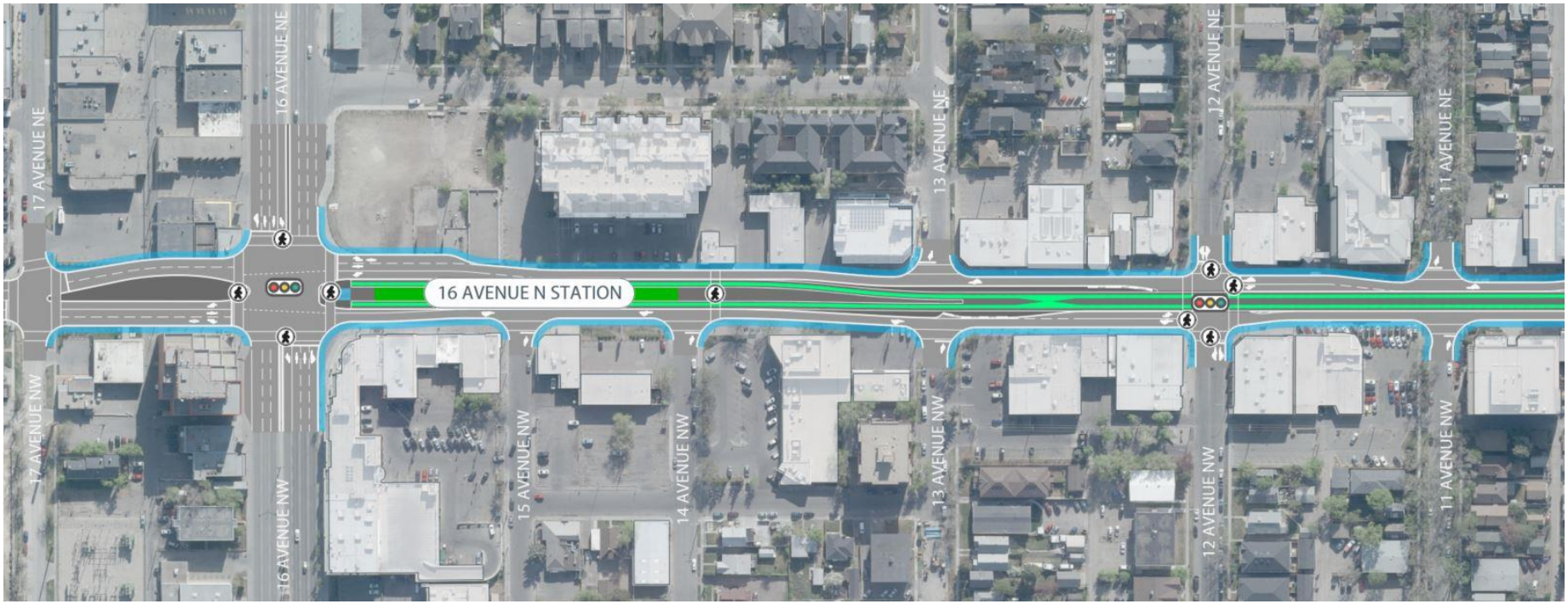
Local business and residential access

- Ensure roadway design maintains local vehicle access to businesses and residential areas while respecting the residential function of the road network in the Crescent Heights community
- Ensure community traffic calming measures continue to discourage cut-through traffic and speeding in the community once the Green Line LRT is operational
- Maintain current traffic calming measures and, if necessary, identify new measures to accommodate changes in network design.

Mobility network design

The new mobility network design for Centre Street North is shown on the images below and descriptions of key network elements (pedestrian, bike and roadway) are described throughout this chapter. It is important to note that some components of the mobility network design are subject to change as the detailed engineering design for Green Line advances. This may shift some sections of the LRT or roadway alignments and may affect final widths of roadways or sidewalks.

This chapter also presents the results of the Crescent Heights traffic calming review, which evaluated if any changes need to be made to the existing traffic calming as a result of the new mobility design for Centre Street N.


16 AVENUE N STATION
17 AVENUE NE
16 AVENUE NE
13 AVENUE NE
12 AVENUE NE
11 AVENUE NE
17 AVENUE NW
16 AVENUE NW
15 AVENUE NW
14 AVENUE NW
13 AVENUE NW
12 AVENUE NW
11 AVENUE NW

Pedestrian network design

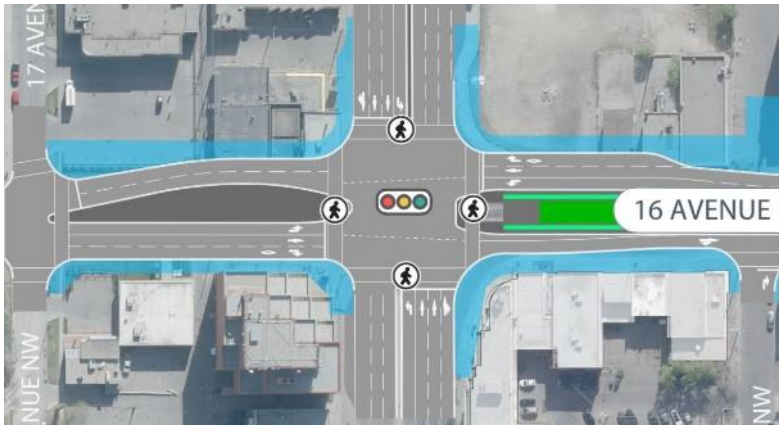
The planning and design objectives for Centre Street North, presented earlier, emphasize the importance of prioritizing pedestrian movement along (north-south) and across (east-west) the corridor and to the two LRT stations.

As part of Green Line LRT, the pedestrian network along Centre Street North will be enhanced by providing:

- Six pedestrian crossings controlled by traffic signals at 7 Avenue N., 9 Avenue N., 10 Avenue N., 12 Avenue N., 14 Avenue N., and 16 Avenue N.
- Safer and more comfortable crossings along the corridor given the reduced number of vehicle travel lanes to cross (one or two) at a time
- Unobstructed walk zones designed to allow pedestrians and mobility devices to comfortably pass each other in most areas along the corridor
- Direct and signalized pedestrian access to both the north and south ends of LRT stations. Access to 16 Avenue N. station will be via 14 and 16 Avenues N., and access to 9 Avenue N. station will be via 7 and 9 Avenues N.

The pedestrian environment at the intersection of Centre Street N. and 16 Avenue N. has prioritized safe pedestrian movement through the following design features:

- Addition of pedestrian refuge for east-west crossings on both the north and south side of the intersection
- Vehicles will not be permitted to turn right during the red signal phase to improve safety for the high volumes of pedestrians anticipated to be crossing at this intersection
- The southwest corner of the intersection has been re-designed to limit larger eastbound trucks turning right (south) onto Centre Street N. This has shortened the pedestrian crosswalk length and re-purposed additional sidewalk space for pedestrians

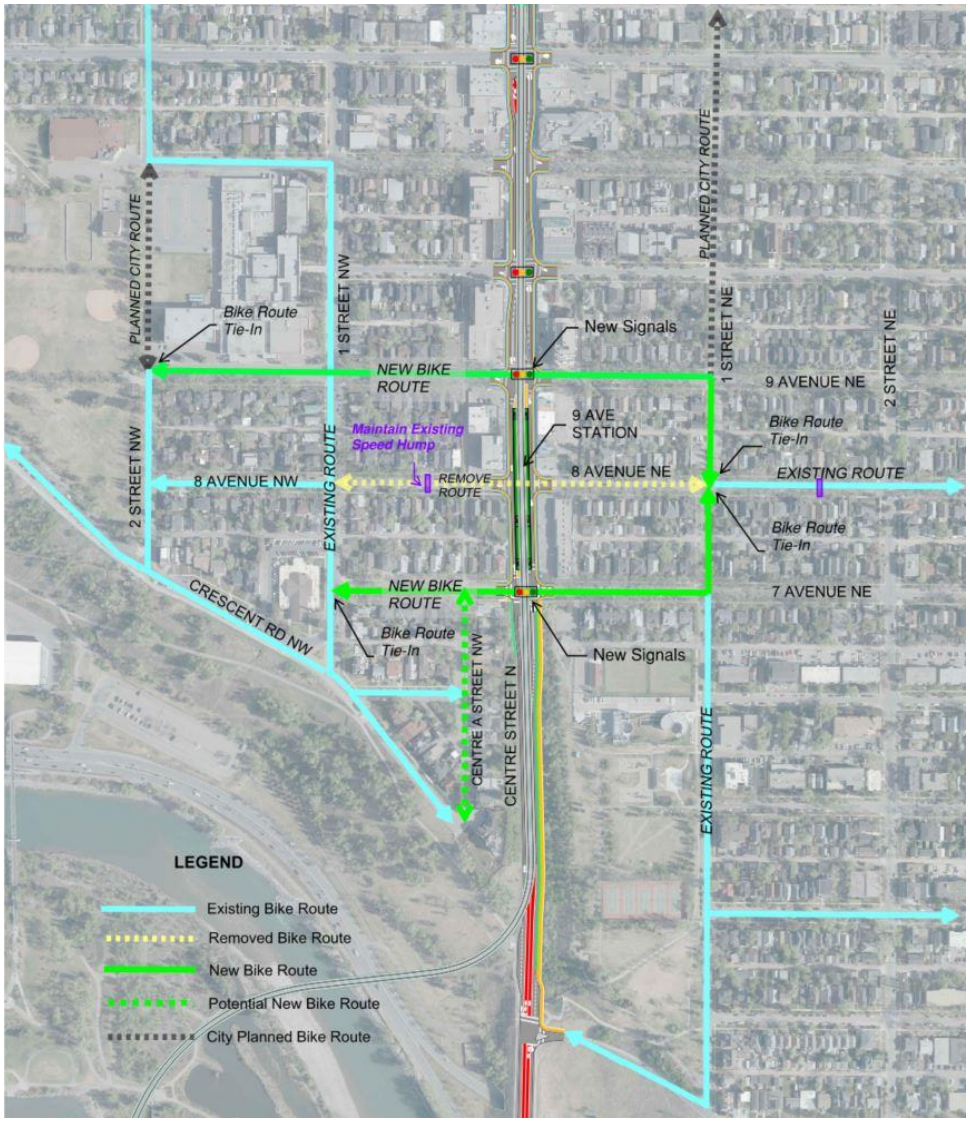


Bike network design

There is currently an east-west bicycle route along 8 Avenue N. that connects the Crescent Heights community east to the Nose Creek Regional Pathway and communities of Renfrew and Mayland Heights. The new 9 Avenue N. Green Line station, which extends between 7 and 9 Avenues N., will disrupt the 8 Avenue N. bicycle crossing of Centre Street N. and require a re-alignment of the bicycle network.

As part of Green Line LRT, the bicycle network in Crescent Heights will be modified and improved by:

- Realigning the current 8 Avenue N. bike route between 1 Street S.W. and 1 Street S.E. onto both 7 Avenue N. and 9 Avenue N. (both avenues were selected given there is equal demand for bicycle movement at 1 Street S.W. to go northbound to 12 Avenue and southbound to Crescent Road N.W.)
- Providing signalized crossings at both 7 and 9 Avenues N.
- Extending the new 9 Avenue N. bike route to 2 Street S.W. where The City has plans to establish a new north-south bicycle connection behind Crescent Heights High School
- Connecting new bike routes directly with the 9 Avenue N. station
- Providing bike parking at both 9 Avenue N. and 16 Avenue N. stations
- Providing wayfinding signage from the north-south bike routes on 2 Street N.W. and 1 Street N.E. to guide the way to the LRT stations
- Provide safe and convenient access for bicycle passage through traffic closures/gates



Roadway design

Green Line LRT will change the form and function of Centre Street North. Today, the street operates as a four-lane undivided arterial roadway and serves as a major north-south vehicle corridor into the downtown. With Green Line LRT, Centre Street N. will remain an important north-south corridor for moving people, however, the future street will move more Calgarians by transit.

As described earlier, the Calgary Transportation Plan (2020) classifies Centre Street N. as an Urban Boulevard, which as a principle prioritizes pedestrian and transit movement over other travel modes and discourages commuter traffic along the corridor. The design of Centre Street N. will significantly reduce the capacity of the street to move high volumes of vehicles in the future, and it is anticipated that commuting traffic will move to a variety of other north-south corridors, including Deerfoot Trail, Edmonton Trail, 10 Street N., 14 Street N. and Crowchild Trail.

As part of Green Line LRT, the roadway design along Centre Street North will be modified as follows:

- LRT operating in the middle of Centre Street N. on tracks that are embedded into a concrete surface.
- Raised curb separating LRT guideway from the roadway.
- Single travel lanes, one lane each for northbound and southbound vehicle travel.
- Lane widths designed to provide space for safe movement of the vehicles that will most commonly use Centre Street N., such as buses, delivery trucks and medium-sized tractor-trailer delivery vehicles.
- Lane widths designed to account for snow and ice control.
- No on-street parking to be provided along Centre Street N.
- Signalized intersections for vehicle movement at 7 Avenue N., 9 Avenue N., 10 Avenue N., 12 Avenue N. and 16 Avenue N.
- East-west thru traffic across Centre Street N. permitted at signalized intersections, no thru traffic across Centre Street N. at 8 Avenue N., 11 Avenue N., and 13 Avenue N., 14 Avenue N. and 15 Avenue N. as these will become right-in-right-out only intersections.
- Left turn lanes at signalized intersections to enhance traffic flow along Centre Street N. and maintain local vehicle access to businesses and residential areas:
    - Northbound left turn access provided at 7 Avenue N., 10 Avenue N., 12 Avenue N. and 16 Avenue N.
    - Southbound left turn access at 9 Avenue N., 12 Avenue N. and 16 Avenue N.

The 16 Avenue N. intersection has been designed to accommodate Green Line LRT stage 1, as well as the planned extension to the north. Given the 16 Avenue N. LRT station is in the middle of the roadway, the intersection has been designed to include a temporary traffic island north of the LRT station to safely direct traffic flow around the station and protect space for the future LRT extension.

This will be a busy and important intersection for pedestrians given the high volume of people who live and work in the area and because this will be a key transfer point for Green Line LRT, MAX Orange and north central BRT riders. As such, care has been taken to minimize the pedestrian crossing distance across Centre Street N. and align traffic lanes in a way that maximizes how much sidewalk space is provided for pedestrians. As well, to improve pedestrian safety while in crosswalks, vehicles will not be permitted to make right turns on red signals.

The intersection will include three northbound and southbound lanes with dedicated left, through (north/south) and right turn lanes. This three-lane design is required to maintain the operational efficiency and priority given to the high-volume BRT service along Centre Street N. Once Green Line LRT extends north, high-volume BRT operations will no longer be required on Centre Street N., at which time the southbound through and right turn lanes can be combined to make room for the LRT to cross through the intersection and provide opportunities to further increase widths of sidewalks for pedestrians.

Community traffic calming

Community traffic calming is a strategy used by The City of Calgary to encourage slower vehicle speeds and discourage short-cutting activity, with the goal of improving overall safety for residents of the community. Like many established communities near the city centre with high-volume arterial streets (i.e. 16 Avenue N.), Crescent Heights has many traffic calming measures already in place to reduce speeds and discourage short-cutting through the community.

A community traffic calming review was undertaken to determine if the mobility changes to Centre Street North would impact the effectiveness of the existing traffic calming in Crescent Heights. The study also considered proposed traffic calming measures from the North Hill Area Project and evaluated if the current and proposed measures would be sufficient to discourage short-cutting and speeding through the community once Green Line LRT is operational. Overall, the study concluded that no new community traffic calming measures are required given the effectiveness of the current and proposed measures, lower anticipated traffic volumes along Centre Street N. and the reduced access points into the community Through the engagement process, the Crescent Height's community expressed concern that short-cutting through the community will increase, despite the mobility study findings. Given this concern, it is recommended that The City review traffic patterns and traffic calming measures once major LRT construction activities along Centre Street N. are completed, but prior to opening day of Green Line. Considerations and results of the study are discussed below.

Summary of current and proposed North Hill Area Project community traffic calming in Crescent Heights

Most of the community's current speed reduction measures are focussed on four corridors, as summarized below:

- **12 Avenue N.W. / 4 Street N.W.:** Speed reduction (40 km/hr), curb extensions to slow traffic speeds and peak hour turning movement restrictions
- **8 Avenue N.W & 8 Avenue N.E.:** Speed humps to slow traffic speeds mid-block
- **1 Street N.E.:** Traffic buttons to slow traffic speeds at intersections
- **Crescent Road N.W.:** Raised crosswalks to slow traffic speeds and improve pedestrian crossing safety.

In addition to speed reduction measures, several access restrictions exist to discourage traffic on arterial streets, such as 16 Avenue N. and Edmonton Trail N.E., from short-cutting through the residential community and to separate local-business traffic from residential streets. These include:

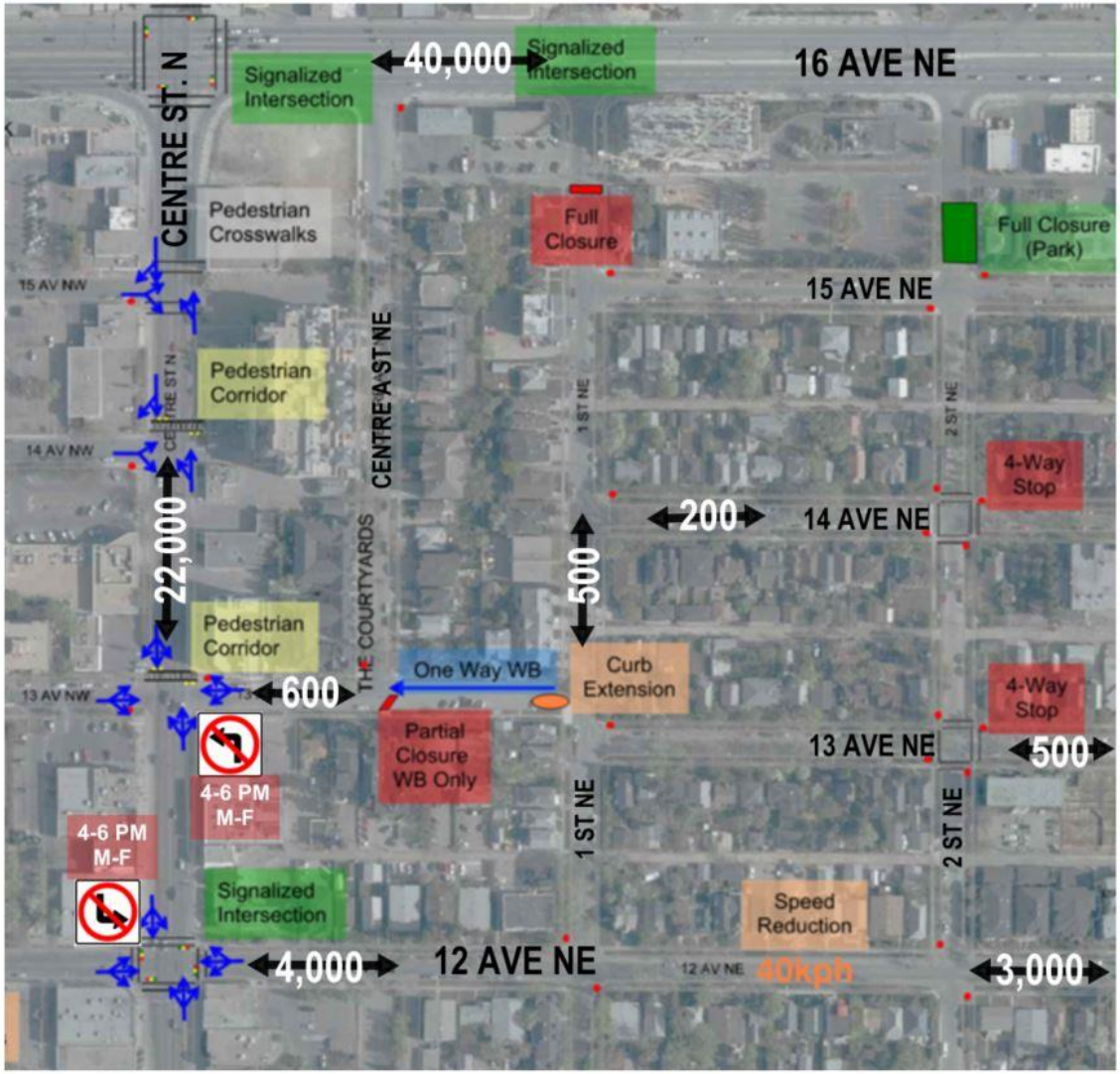
- Permanent closures to/from 16 Avenue N. at 3 Street N.W., 2A Street N.W., 2 Street N.W., 1 Street N.W., 1 Street N.E. and 2 Street N.E. to block northbound traffic destined for 16 Avenue N. and southbound traffic originating from 16 Avenue N.

- Partial closure/curb extension on 13 Avenue N.E. between Centre A Street and 1 Street N.E. to prevent eastbound business traffic from traveling through the residential neighborhood from Centre Street N and just east of 4 Street N.W. to prevent westbound traffic from existing onto 4 Street N.E.
- Diverter at 4 Street N.W. (between 12 Avenue and 13 Avenue N.W.) to allow only northbound right turning traffic from 4 Street N.W. to enter 12 Avenue N.W. (a median barrier around the corner prevents any other turning movements at this intersection).
- Permanent closures to/from 1 Street N.W. at 15 Avenue N.W., 14 Avenue N.W., and 13 Avenue N.W. to discourage both 16 Avenue N. traffic, and business-related traffic to/from the businesses west of Centre Street and north of 13 Avenue N.
- Signed weekday AM Peak (7-8:30 a.m.) turn restrictions for the:
    - Eastbound right turn at the intersection of 12 Avenue N.W. and 3 Street N.W.
    - Eastbound right turn at the intersection of 12 Avenue N.W. and 2 Street N.W.
    - Eastbound right turn at the intersection of 12 Avenue N.W. and 1 Street N.W.
    - Southbound left turn at the intersection of 4 Street N.W. and 13 Avenue N.W.
- Signed weekday PM Peak (4-6 p.m.) turn restrictions for the:
    - Northbound left turn at the intersection of 4 Street N.W. and 13 Avenue N.W.
- Signed weekday PM Peak (3:30-6 p.m.) turn restrictions for the:
    - Northbound left turn at the intersection of Centre Street N. and 7 Avenue N.
    - Northbound left turn at the intersection of Centre Street N. and 13 Avenue N.
    - Southbound left turn at the intersection of Centre Street N. and 12 Avenue N.

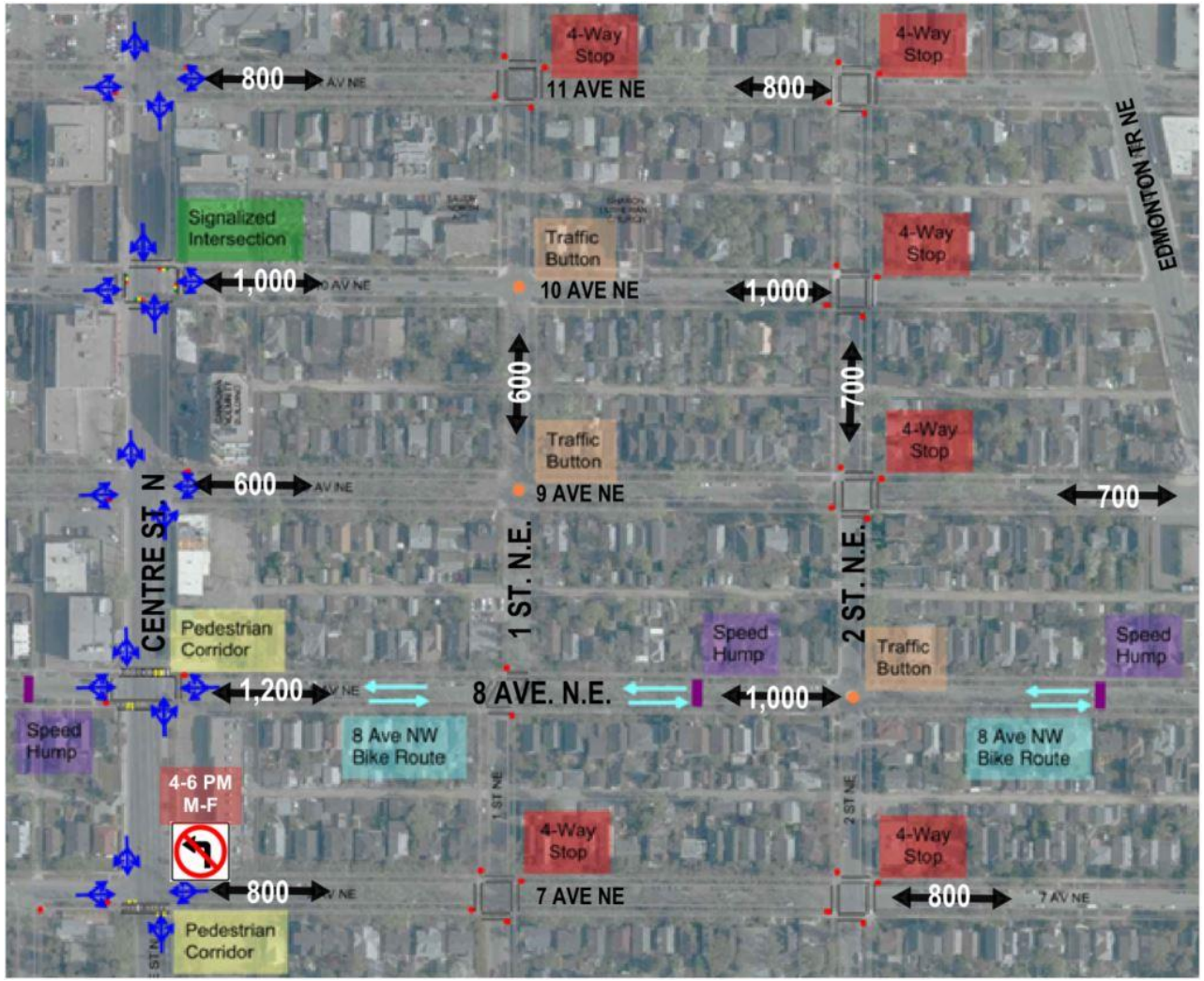
Maps of the area, by quadrant, have been provided to summarize all speed reduction measures, short-cutting/access restrictions and intersection controls that currently exist in Crescent Heights, along with daily traffic volumes.

N.W. Quadrant Traffic Calming:

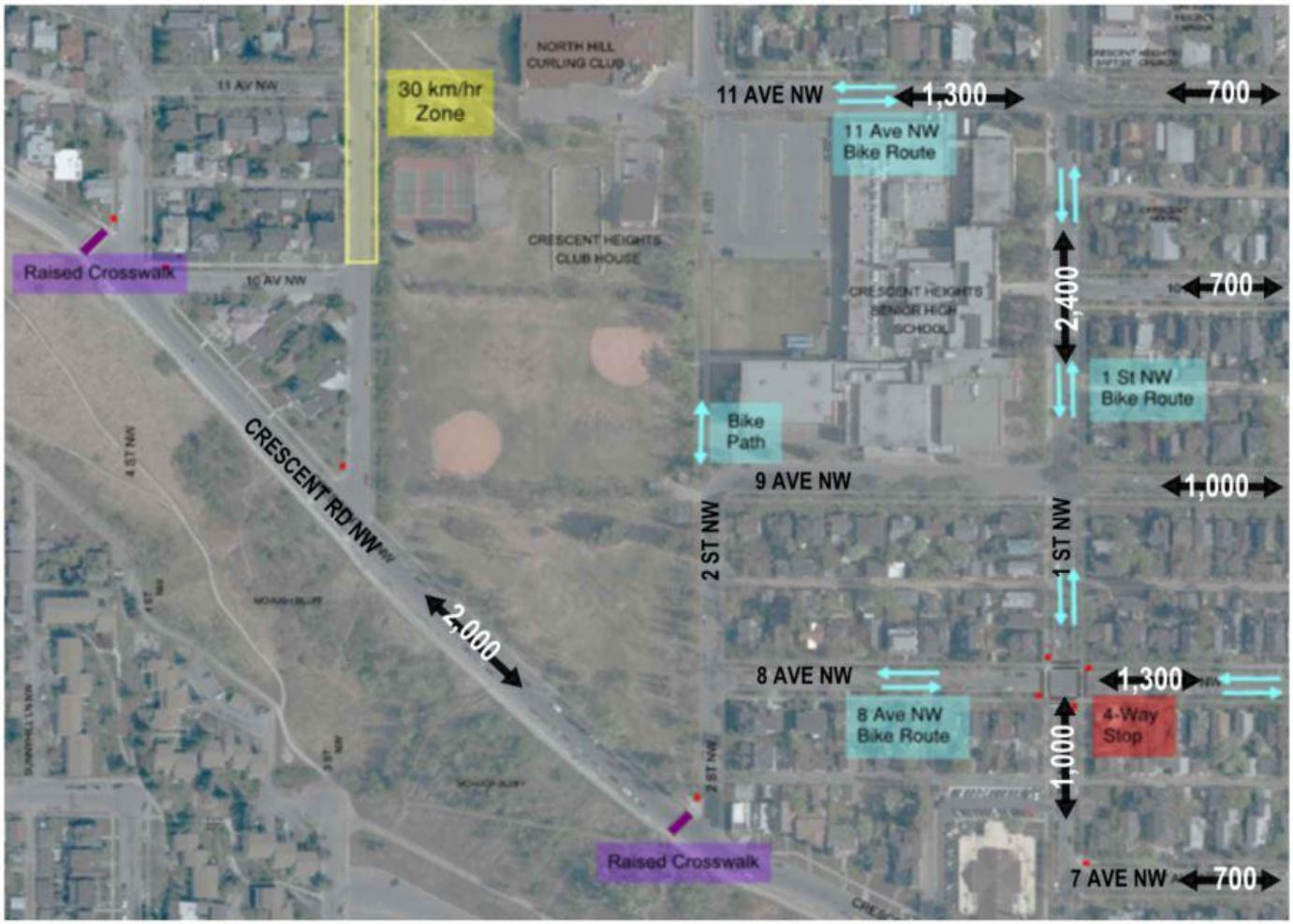
N.E. Quadrant:


CENTRE ST. N
Signalized Intersection
40,000
Signalized Intersection
16 AVE NE
Pedestrian Crosswalks
Full Closure
Full Closure (Park)
15 AV NW
15 AVE NE
Pedestrian Corridor
CENTRE A ST NE
1 ST NE
2 ST NE
14 AV NW
4-Way Stop
22,000
200
14 AVE NE
500
Pedestrian Corridor
THE COURTYARDS
One Way WB
Curb Extension
13 AV NW
600
4-Way Stop
Partial Closure WB Only
13 AVE NE
500
4-6 PM M-F
4-6 PM M-F
1 ST NE
2 ST NE
Signalized Intersection
Speed Reduction
4,000
12 AVE NE
12 AV NE
40kph
3,000

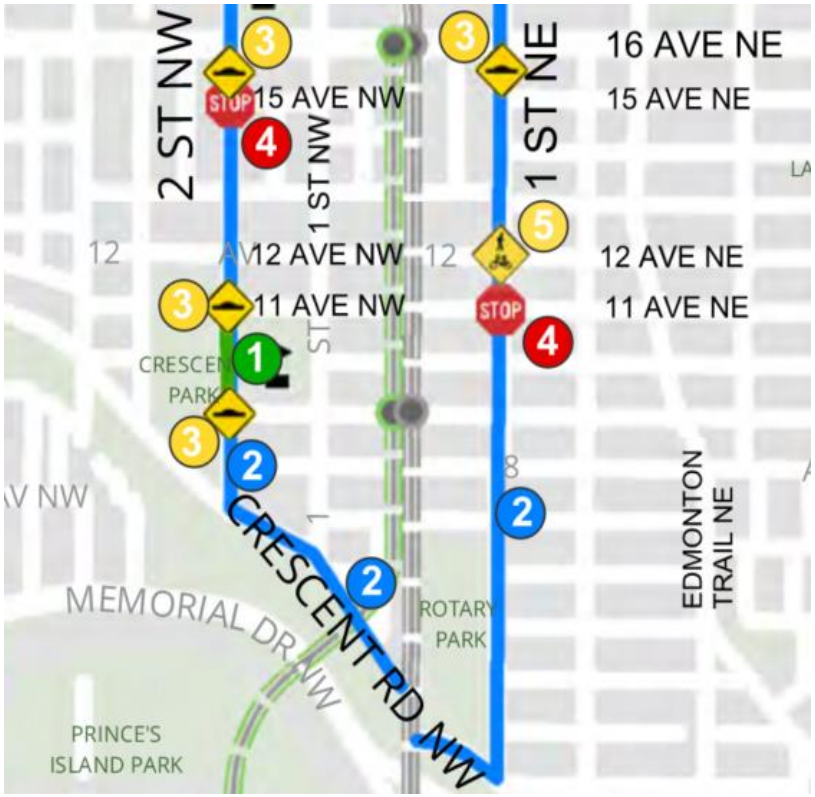
S.E. Quadrant:


4-Way Stop
11 AVE NE
800
4-Way Stop
EDMONTON TR NE
Signalized Intersection
Traffic Button
10 AVE NE
1,000
4-Way Stop
600
700
Traffic Button
9 AVE NE
4-Way Stop
600
700
CENTRE ST N
1 ST. N.E.
2 ST. N.E.
Pedestrian Corridor
Speed Hump
Traffic Button
Speed Hump
1,200
8 AVE. N.E.
1,000
Speed Hump
8 Ave NW Bike Route
8 Ave NW Bike Route
4-6 PM M-F
4-Way Stop
4-Way Stop
800
7 AVE NE
800
Pedestrian Corridor

S.W. Quadrant:



As part of the North Hill Communities Local Growth Planning work, additional traffic calming measures have been proposed for Crescent Heights and other neighbouring communities. These measures are summarized in the graphic and table below. Implementation of these additional measures will be dependent on further evaluation through the North Hill Area Project.



Number on Figure	Symbol	Measure(s)	Location(s)
1		Pathway connection	2 Street NW between 9 Ave and 11 Ave
2		Bike route	2 Street NW, Crescent Road, 1 Street NE
3		Speed hump	- 2 Street NW between 15 Ave and 16 Ave - 2 Street NW between 8 Ave & 11 Ave (2 locations) - 1 Street NE between 15 Ave and 16 Ave
4	STOP	Stop sign direction change	- 2 Street NW @ 15 Avenue NE - 1 Street NE @ 11 Avenue NW
5		Potential crossing improvement	1 Street NE @ 12 Avenue NE

Community Traffic Evaluation and Recommendations for Green Line Opening Day

The community traffic calming study evaluated anticipated volumes and movement of traffic to determine if any changes will be required to the existing traffic calming measures or those proposed as part of the North Hill Project. An analysis of the existing road network and community traffic calming measures in Crescent Heights indicate that these will minimize any potential traffic impacts generated by the Green Line project. The following is a summary of this analysis:

- The current road network is a grid (square blocks) which makes the community resilient to changes in traffic patterns (in other words, there are options for traffic circulation and many route choices to disperse traffic).
- With the exception of 12 Avenue N., no east-west roads in the community carry significant traffic volumes (>2,000 vehicles per day) suggesting that there currently is not a very high east-west cut-through desire or need.
- All residential streets in the area carry much less than the 2,000 vehicle per day, which is the upper threshold recommended in the City's Street Capacity Guidelines.
- As an established community with mature boulevard trees (and canopy) and well utilized on-street parking, the physical environment is one that naturally calms traffic speeds.
- Traffic calming measures that are currently in place or proposed are focused on the higher traffic corridors (12 Avenue N.) and residential streets
- Road restrictions or closures are currently in place to:
    - Prevent cut-through traffic on the north-south streets that parallel Centre Street N. and connect to 16 Avenue N.
    - Limit the business traffic access to West Crescent Heights
    - Limit the bypassing of the signal at the intersection of Centre Street N. and 12 Avenue N.

The new design of Centre Street N., with a single lane of traffic in the northbound and southbound directions, will significantly reduce the capacity of the corridor, meaning it will not be able to move the same volumes of vehicle traffic in the future that it does today. This will result in commuting traffic moving to other north-south corridors (e.g. 14 Street N.W., 10 Street N.W., Edmonton Trail N.E., Deerfoot Trail, etc.) and with traffic calming measures already in place, no significant short-cutting traffic is anticipated to be introduced into the community. The design of the corridor will also limit which streets can be accessed by left turns off Centre Street N. The reduction in these community access points is further anticipated to limit new traffic in the community.

Because of the aforementioned turn restrictions into the community, the avenues where access will be provided were more closely examined to determine if new speed reduction measures need to be introduced. It was concluded that with 8 Avenue N.E. (the only signalized avenue at Edmonton Trail N.E.) not crossing Centre Street N, coupled with no signalized access to 7 Avenue N.E. and 9 Avenue N.E. from Edmonton Trail, potential traffic

increases on these avenues is anticipated to be low. If any east-west corridor were to experience additional traffic demands, it would be 12 Avenue N. and as this corridor is already traffic calmed (curb extensions west of Centre Street N. and 40 km/h reduced posted speeds) no additional measures are recommended.

The community traffic evaluation concluded that given the existing traffic calming in the neighbourhood, there is no need to add to or modify the existing traffic calming measures. However, a separate business access study did identify the potential requirement to relocate the traffic gate that is currently located at 13 Avenue N.W. and Centre B Street N.W. This access restriction paired with changes to left turn movements off Centre Street N. impacts the ability for vehicles travelling northbound on Centre Street N. to access businesses northwest of 12 Avenue N. This access constraint and potential solution is discussed later in the **Business Access, Loading and Parking** chapter of this report.

Public feedback & next steps

Through the engagement process, the Crescent Height's community expressed concern that short-cutting through the community will increase, despite the mobility study findings. Given this concern, it is recommended that The City review traffic patterns and traffic calming measures once major LRT construction activities along Centre Street N. are completed, but prior to opening day of Green Line. This recommendation assumes that construction along Centre Street N. will affect traffic through the community and that a traffic management plan will be developed to provide detours during various stages of construction. It is anticipated that this plan will implement various strategies, including temporary traffic calming, within Crescent Heights community. Community feedback on the temporary traffic calming installations and changes in traffic patterns observed as construction advances will be used to identify and implement any new permanent traffic calming measures required prior to opening day of Green Line.

LRT Stations

This chapter presents the design strategies and concept design of Centre Street N. Green Line LRT stations. It is important to note that some components of the station design are subject to change as the detailed engineering for Green Line advances.

Design strategies

The following section outlines specific design strategies that guided the conceptual planning of Centre Street N. LRT stations.

Station location & access

- Ensure stations and entrances are in locations that serve ridership demands and enable safe and convenient passenger access
- Position station platform access at signalized pedestrian crosswalks, which are located at roadway intersections (rather than at mid-block), to capture the largest pedestrian flow and provide safe and convenient access onto the platform
- Design the platform height to accommodate low-floor light rail vehicles and provide accessible ramps for all passengers to access platforms

Passenger safety & comfort

- Design platforms to provide safe and secure protection from the adjacent roadway traffic
- Where required, provide a guard rail and splash protection from the adjacent roadway
- Incorporate Crime Prevention Through Environmental Design (CPTED) principles into the design (i.e. provide unobstructed sight lines between station platform and sidewalk to minimize hiding places) to enhance safety and comfort for transit passengers
- Provide CCTV cameras and help call boxes at stations to maintain safety and security of transit passengers
- Design platform size to fit anticipated ridership numbers at the stations
- Reduce clutter on station platforms by carefully locating station equipment and furniture on and off platform
- Provide weather protection on the platform where feasible

Station architecture

- Meet the functional and code requirements of a light rail transit passenger station. For example, provide a station that meets accessible design requirements for passengers with disabilities and platform widths that accommodate safe exit in the event of emergencies
- Develop an architectural design that compliments the overall character of the streetscape master plan
- Incorporate the established Green Line design language (i.e. flowing forms, curved edges, natural colours) into the station architecture and furniture design
- Scale and position the height of station canopies to respect the context of surrounding properties and roof lines and maintain visibility of business frontage and side streets

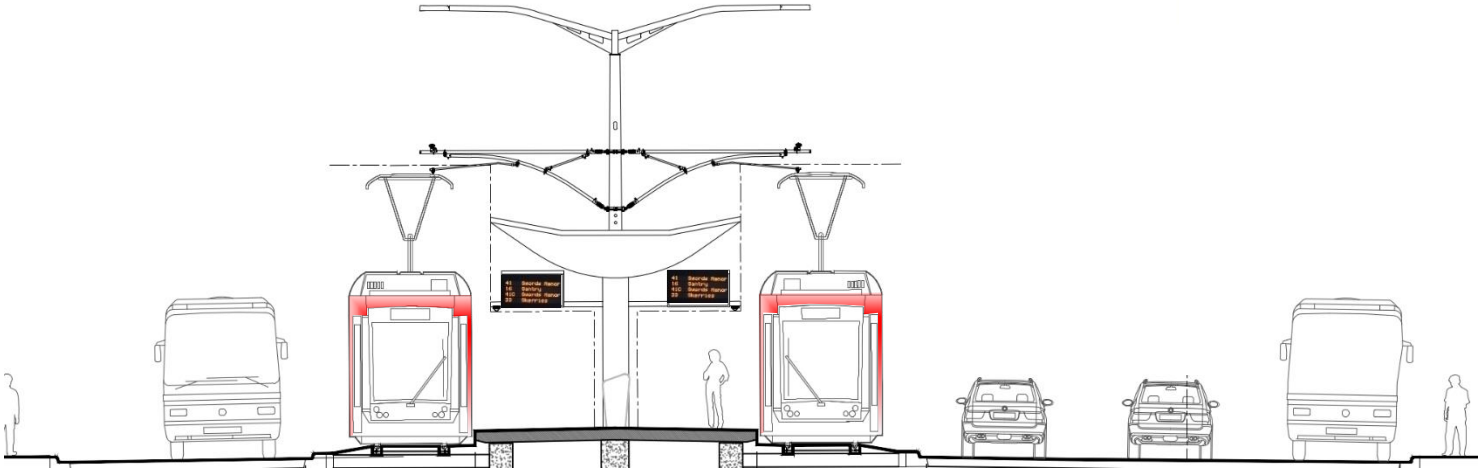
LRT station concept design

16 Avenue N. station

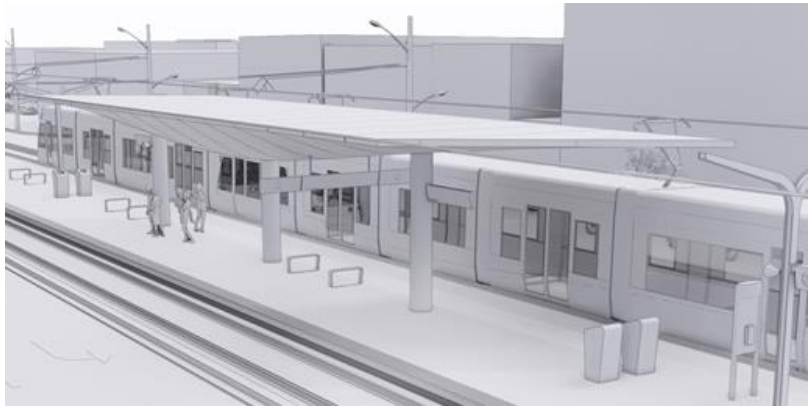
The 16 Avenue N Station is an at-grade station located in the middle of the road between 14 Avenue N. and 16 Avenue N. There will be signalized crosswalks at both avenues to access the station, leading passengers up a small ramp to the platform.

The station has been designed with a 130m long centre-loaded platform in order to best support Green Line stage 1 terminus operations, where 16 Avenue N. will be the temporary end of the line and will need to support turn-around operations. As shown on the graphic below, there will be one large central platform at this station that will support inbound and outbound operations from both sets of LRT tracks.

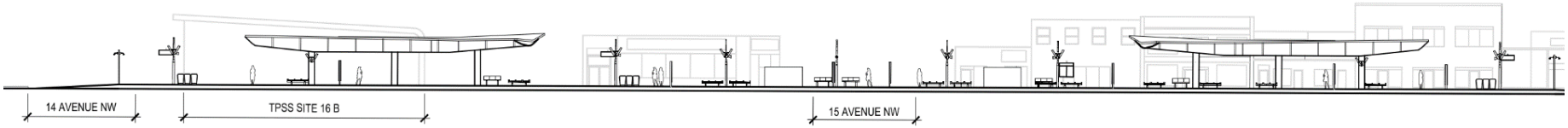
The centre-loaded platform is protected from adjacent vehicle traffic through the LRT tracks that border both sides of the platform, as well as the raised curbs, which will prevent vehicles from driving up onto the LRT tracks. Given this design and distance from the roadway, no safety barriers or splash guards are required between the road and platform.



The station will incorporate a central overhead canopy with a flat roof to provide shelter from the sun, rain and snow. As shown on the graphic below, the canopy will incorporate the architectural language of the project. The canopy design preserves sightlines between the platform and adjacent sidewalks. This is important to provide natural surveillance of the platform, minimize potential hiding places, deter potential safety incidents and contribute towards an overall sense of security for transit passengers, adjacent property owners and the community. As with all Calgary Transit stations, CCTV cameras and help call boxes will be provided at the station to further support customer safety.



As Centre Street N. is limited in width and the project has an objective of minimizing impacts on surrounding properties, the width of the station platforms has been designed to best accommodate projected ridership demands within the smallest footprint possible. Because the platform width has been minimized, enclosed and heated shelters will not be provided, however glass windbreak will be provided where appropriate to provide some degree of weather protection. Where possible, station amenities, such as help call boxes, will be incorporated onto the canopy columns and lighting poles to ensure unobstructed passenger flow on the platform. Other amenities, such as ticket vending machines, bicycle and scooter parking and station-related equipment cabinets, will be placed off-platform in adjacent sidewalk areas so they do not interfere with passenger flows during peak times. Essential furniture such as benches and waste and recycling containers will remain on the platform, discreetly placed to minimize interference with passenger movements.

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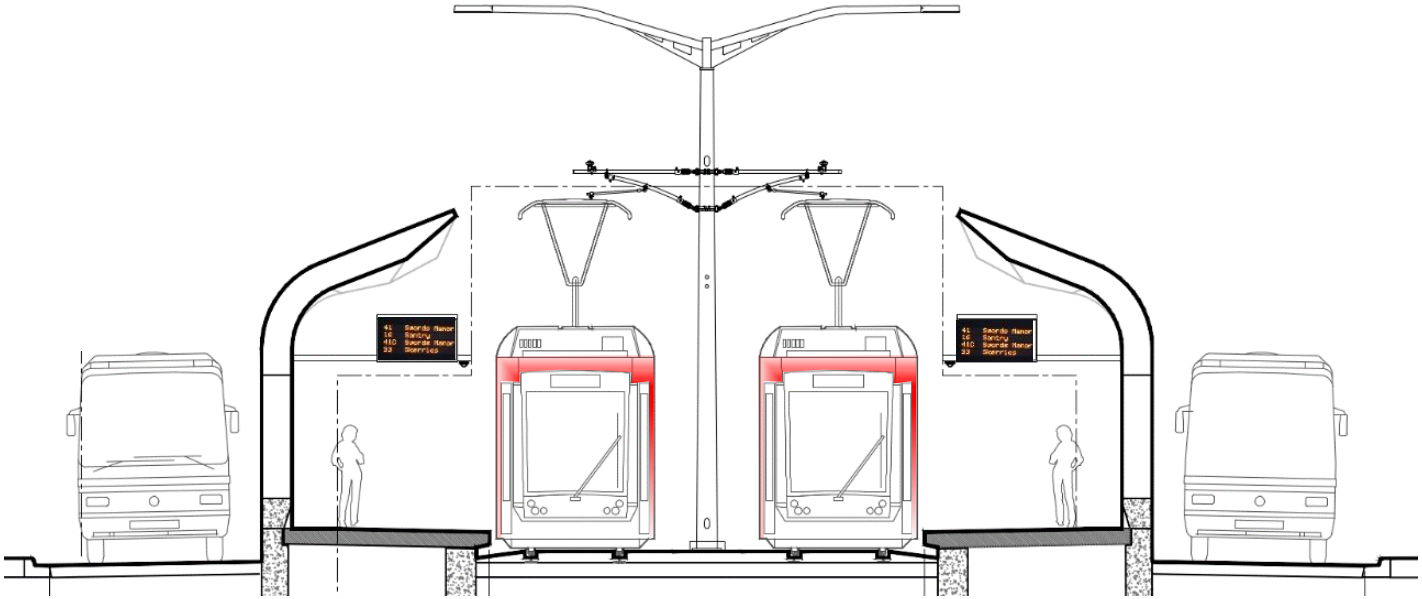
FOR DISCUSSION

9 Avenue N. station

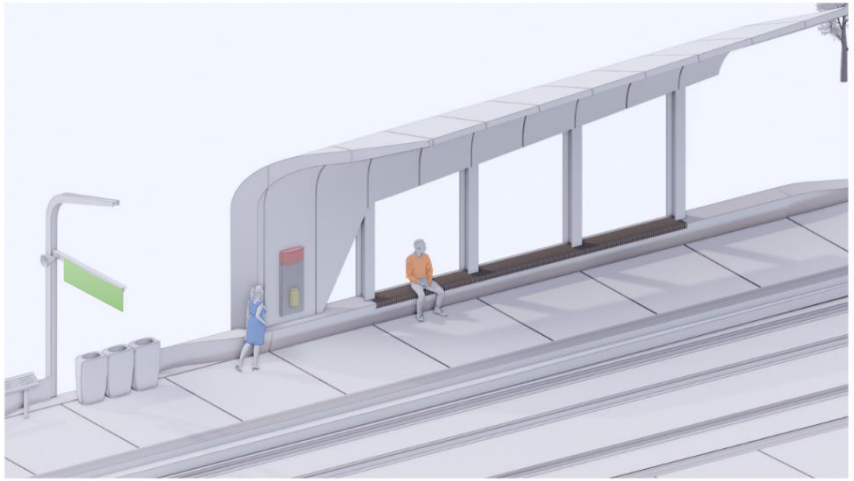
The 9 Avenue N. Station is an at-grade station located in the middle of the road between 7 Avenue N. and 9 Avenue N. There will be signalized crosswalks at both avenues to access the station, leading passengers up a small ramp to the platform.

The station has been designed with two 130m long side-loaded platforms: inbound (to downtown) and outbound (to 16 Avenue N.) with LRT tracks and overhead power infrastructure running in the middle of Centre Street N.

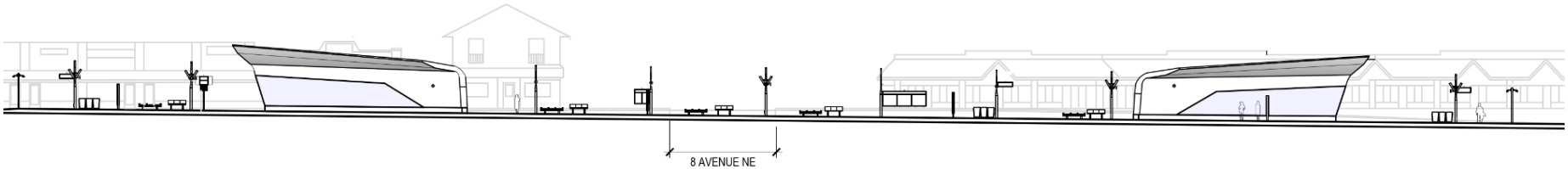
To protect transit passengers from adjacent roadway traffic, a barrier will be provided between the back of the platform and roadway along the full length of the platform. The barrier will incorporate splash guards to protect transit passengers from spray from moving vehicles. The station will include canopies to provide passengers with protection and shelter from the wind, rain and snow. As shown on the graphic below, the canopies will be curved, incorporating the architectural language of the project.



The canopies will incorporate glass walls to maintain views between the LRT platform and adjacent roadway and sidewalk. The approach to design for natural surveillance and safety will be consistent with that described for the 16 Avenue N. station. Again, a compact approach with the smallest footprint possible will be taken on the platform design to minimize impacts on surrounding properties.



To respect the context of the surrounding area, the height and location of canopies will respect adjacent roof lines, consider existing and future business frontage (i.e. signage) and maintain unobstructed views at intersections and cross-streets. The canopies will be located away from road intersections to provide unobstructed views across the corridors and maintain the existing character of the streetscape. The exact location of the canopies can shift north or south but should respect the clear visual corridor at the 8 Avenue N. cross street. An example conceptual layout of the canopies is shown in the image below.

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Streetscape Masterplan

Green Line LRT on Centre Street N. provides a unique opportunity to enhance the streetscape and deliver dynamic public realm improvements that will integrate the LRT into the neighbourhood in a way that reflects the neighbourhood's character, creating a vibrant, safe, sustainable and welcoming pedestrian environment.

This chapter presents the design strategies, design elements and conceptual streetscape design for Centre Street N. It is important to note that some components of the streetscape design are subject to change as the detailed engineering for Green Line advances, which might shift some areas of the LRT or roadway alignment and affect the final width and layout of the streetscape.

Design strategies

A series of design strategies guided the development of the streetscape masterplan for Centre Street N. and which aimed to create a safe, comfortable and accessible pedestrian environment, a green and healthy street, and a vibrant corridor that promotes social connection and community placemaking. These design strategies are listed below.

Pedestrians

- Provide consistent pedestrian lighting along the Centre Street North corridor to improve pedestrian comfort and safety, ensuring pedestrians are highly visible along the corridor and at crosswalks.
- Incorporate accessible design features such as using contrasting sidewalk colours and textures to distinguish pedestrian zones from furniture zones, to help define the barrier-free route for those with low vision.
- Incorporate tactile surfaces (bumpy strips) at driveway locations and pedestrian crosswalks to help define roadway crossings for those with low vision.
- Use tree planting, furnishings and other streetscape elements such as pedestrian lighting, vertical elements (i.e. banner poles) and signage to create a buffer between pedestrians and the road. Wherever possible, the tree and furniture zone should be located next to the curb edge and the pedestrian zones be located further back to provide the greatest separation from traffic.
- Locate streetscape amenities such as seating, newspaper/mailboxes and waste and recycling bins in convenient and logical locations to help minimize clutter across the streetscape.
- Provide convenient and predictable places to stop and rest along the streetscape to ensure the elderly and those with mobility challenges have an opportunity to take a break.

Cyclists & multimodal users

- Provide secure bike parking and space for scooter parking at station areas.
- Provide bike racks along the corridor and/or side streets near bike routes to allow cyclists to stop and visit along the corridor.
- Where bike routes cross Centre Street North, consider incorporation of bike-activated (pavement detection) signals.

Landscaping

- Maximize tree planting opportunities to provide shade and improved comfort for pedestrians.
- Approach tree planting in a more organic and adaptable way that responds to changing curb lines and helps avoid underground utilities.
- Incorporate tree planting methods that promote tree health and sustainability by providing adequate soil volumes and growing conditions. Example tree planting methods include soil cells, structural soils and soil bridging, in addition to the standard City of Calgary tree trench design
- Explore opportunities to integrate stormwater management where soil cells are used.
- Incorporate raised planters to provide greenery where underground utilities may limit the ability to plant trees.
- Incorporate the use of raised planters and landscaping in roadway medians and traffic islands adjacent to the LRT tracks to screen LRT infrastructure and provide visual interest.
- Explore use of both vegetation and community placemaking elements (i.e. gateway features, public art) within landscape planters.
- When selecting plant materials consider hardy materials that are low maintenance and drought and/or salt resistant. In addition, consider plant materials that attract and support pollinators (i.e. bees).

Community character

- Design streetscape elements, such as pedestrian streetlight poles, to include space and hardware for features such as banners and/or hanging baskets, which could be provided by the Business Improvement Area (BIA) or Community Association (CA) in the future.
- Provide power receptables within pedestrian streetlight poles to provide future opportunities for the BIA or CA to install seasonal or specialty lighting.
- Design spaces around LRT infrastructure to also serve as community gathering spaces.

Private/public interface

- In areas with narrow and/or constrained sidewalks, explore opportunities with adjacent landowners to jointly improve the streetscape though extension of sidewalk improvements onto private land, providing tree planting, shrub beds or landscape planters to improve the overall aesthetic of the corridor and other creative design solutions to help widen the sidewalk and improve comfort for pedestrians.
- Explore opportunities with adjacent landowners and businesses to provide additional amenity space such as outdoor seating, gathering space, public art (i.e., murals) and sidewalk retail opportunities (i.e. sidewalk sales) to add vibrancy, celebrate community character or express cultural heritage.

Streetscape Elements

This section describes the key design elements and features that will be incorporated into the Streetscape Master Plan for Centre Street North.

Street trees: Street trees will be provided along Centre Street North in areas where there is enough space for comfortable pedestrian movement and room for tree planting. Trees are an important design element that improves the look of the street, provides shade and comfort for people and helps reduce the heat island effects in urban environments.

The design will take on a dynamic approach to tree planting to maximize the number of trees planted along the corridor. This means trees do not have to be planted in constant equal spacing or in a straight line. Instead, the location and spacing of trees may vary where sidewalk width and below-ground utilities allow. The design will explore use of circular or oval tree grates which allow for a more interesting appearance that is easier to fit with the flexible spacing and alignment of trees.

To maximize the health of trees, the project will include integrated stormwater management design features, such as soil cells, to help improve stormwater quality, slow down infiltration and provide passive irrigation to trees. Additionally, to protect against disease and improve biodiversity, a variety of tree species will be planted along the corridor.

Pedestrian lighting: Bright and consistent lighting will be provided to illuminate the pedestrian zone, creating a safe and welcoming public realm. Pedestrian streetlighting will be provided within the furniture zone, to help buffer between pedestrians and traffic.

The aesthetic design of pedestrian light poles will be determined in the next stages of design and should consider the unique character of the community, cultural and historical context and new emerging technologies, while balancing maintenance and lifecycle needs and coordinating with the look and feel of the overall Green Line design. Regardless of the aesthetic design, key features should include:

- Height and hardware that allows community banners to be hung from the poles
- Power receptacles to allow the business improvement area of community association to provide seasonal lighting

Accessible/universal design elements: Accessible/universal design elements will be built into the streetscape design to create an equitable and user-friendly streetscape for everyone. Design elements include:

- Use of tactile surfaces and other textured paving elements at driveway crossings, intersections and stations
- Enhanced intersection treatments with clearly marked access points and features such as pedestrian refuge areas in longer crossings to help make crossing the street easier and safer
- Contrasting sidewalk colours and textures that highlight the clear walking zone for all users and call attention to pedestrian crossing areas
- Pedestrian lighting to ensure the sidewalk area is well lit for all users

Benches: Benches will be located throughout the streetscape in appropriate and predictable locations that will allow for pedestrians, especially seniors and those with mobility challenges, to stop and rest regularly along the way. They will also be grouped in priority areas next to businesses where people may want to sit and stay or wait for a service (i.e. next to coffee shops or take-out restaurants).

The design and selection of benches will be determined in the next stages of design but should consider options both with and without backrests to provide greater seating variety. Backless options should be provided where seating orientation needs to be flexible allowing people to face different directions. Benches with backrests should be placed in areas where people may want to sit for longer periods, such as in plazas or gathering spaces. Armrests in both options should be considered for added comfort and assistance in sitting down or getting up.

The overall size and shape of benches should consider a slender and adaptable profile that can easily fit in all conditions, including wider and narrower areas of the streetscape. The material and finish of the benches should complement and match the look and feel of other site furnishings and consider lifecycle replacement, operation and maintenance requirements.

Bike and scooter parking: Bike racks and space for e-scooter parking will be prioritized near station areas to encourage different ways to get to and from the LRT stations and to ensure demand for bike and scooter parking is suitably met. Providing a variety of bike/scooter parking options from simple bike racks, to covered areas, to potential secured bike/scooter parking areas (i.e., individual lockers, fenced and gated areas, indoor storage room) may be explored where space and infrastructure opportunities are available.

Additional bike racks can be placed along the corridor and near key bike routes to provide convenient parking for the community and businesses. Placement of racks will consider the space needed to accommodate bikes without blocking pedestrian movement along the sidewalk. The material and finish of the bike racks should complement and match the look and feel of other site furnishings and consider lifecycle replacement, operation and maintenance requirements.

Bollards and leaning rails: Small, vertical street furniture elements such as bollards and leaning rails can be used in narrow streetscape areas where space is limited, but a need for screening between the pedestrian zone and adjacent roadway is desired. These help to provide a visual buffer and added sense of separation in areas where larger features such as street trees, benches and bike racks do not fit in the limited sidewalk space. Vertical elements along the roadway also help to make drivers more aware and encourages them to slow down and drive with extra caution.

Placement of bollards and leaning rails will be used in select locations and between pedestrian light poles to add visual interest to the streetscape while providing a physical, yet permeable barrier between pedestrians and vehicular traffic. Combining lights into the bollards may also be considered to add extra lighting where needed. The material and finish of these features should complement and match the look and feel of other site furnishings and consider lifecycle replacement, operation and maintenance requirements.

Community placemaking and public art features: Community placemaking and public art features will help create a sense of place, build community identity and be a way to express the different cultures, ethnicities and First Nations and community history that is important to the neighbourhood.

Potential places for gateway features, community signage and other community amenities will be identified through engagement with the business improvement area and community association. The intent is to provide opportunities along the corridor where these associations can install placemaking features in the future.

Crosswalks and enhanced intersection treatment: To improve pedestrian safety, increase connectivity and achieve universal accessibility, each intersection and crosswalk will be designed to prioritize pedestrian movements along and across the corridor. Design ideas such as curb extensions and raised intersections will be explored, with the goal of reinforcing slower vehicles speeds and encouraging motorists to yield to pedestrians at crosswalks.

Median landscaping: Raised planters and landscaped medians are proposed to be used in areas where there will be roadway medians, such as those used to counterbalance left turn lanes or protect LRT infrastructure, or in areas with wider gaps between the inbound and outbound LRT tracks.

Typically, medians are built as a simple concrete barrier, however, given the importance of creating an interesting and attractive streetscape environment, it is recommended the medians be designed to include plantings such as grasses and low shrubs, non-plant materials such as rock or mulch, and community placemaking elements such as public art or banner poles. Modular or pre-cast concrete planters should be considered for all raised planters for easy maintenance and replacement. Plant materials should be low maintenance, drought and salt tolerant and easy to maintain.

Raised planters: Raised planters can be provided in areas with wider sidewalks to provide rest spaces and greenery in areas where tree planting might not be possible due to conflicts with underground utilities. The design of these planters should be modular or made up of changeable, pre-cast pieces that can be easily relocated or replaced should they need to be temporarily moved to allow for utility servicing of new developments.

The height, shape and orientation of planters should allow for integrated seating, where possible. Strategically locating the raised planters will also provide an attractive barrier to deter jaywalking and to define the edge of sidewalks and intersection areas. Given the urban environment, the planters should be designed with notches or 'skate-stops' to deter and prevent damage from skateboards. Planter design should provide space to accommodate snow storage, snow removal and other street cleaning activities.

Roadway lighting integrated within LRT power system (Overhead Catenary System): The roadway lighting for Centre Street N. will be incorporated into the LRT overhead power system to help minimize how much infrastructure is required within the pedestrian environment and to help ensure elements within the sidewalk are pedestrian-scale, where possible.

The current design features the LRT overhead power system located within the middle of the LRT tracks in order to minimize underground utilities in sidewalk areas. Overall, the approach for integrating roadway lighting within the LRT overhead power system will help reduce clutter in the street and allow for better function, reliability and maintenance of the LRT system. The material and finish of the integrated roadway lighting and LRT poles will be designed to the latest industry standards and will complement the look and feel of other site furnishings in the streetscape.

Sidewalk materials: Contrasting sidewalk materials, textures and colours will be used to define different areas of the sidewalk. Having a distinct look for clear pedestrian zones that is different from furniture zones is important for those with low vision and helps to clearly mark where it's safe to walk without the risk of running into obstacles.

Different materials and patterns in the sidewalk may also help define changes in grade, transitions at intersections or mark important locations such as connections to station platforms, as a form of subtle wayfinding. Use of removable unit pavers or other flexible paving material could be considered in areas where access to utilities or other underground infrastructure is needed.

Waste and recycling bins: Waste and recycling bins will be provided along Centre Street North in locations that are conveniently accessible and logical at alternating street corners. Placement near intersection corners will allow for easy emptying of the bins without the need for maintenance crews to stop along the single traffic lane on Centre Street N.

The design and selection of these bins will be determined in the next stages of design but should include a slender and adaptable profile that can easily fit in all conditions - both wider and narrower areas - of the streetscape. The material and finish of the bins should complement and match the look and feel of other site furnishings and consider lifecycle replacement, operation and maintenance requirements.

Streetscape concept design

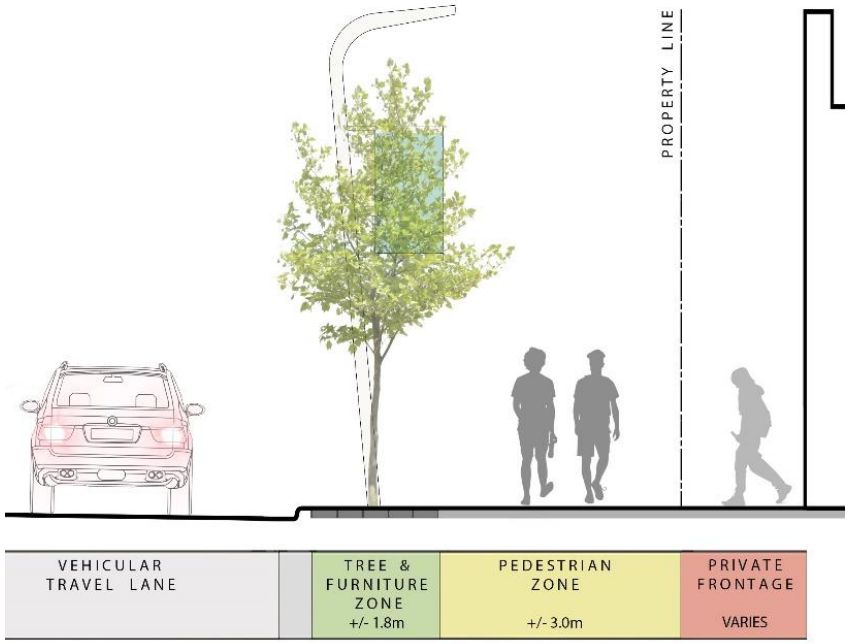
This section presents the conceptual streetscape design for Centre Street N. The section begins by describing the key streetscape zones, including intended uses and design features, and presents the conceptual streetscape plans for each block along the corridor.

Streetscape zones

A conceptual streetscape master plan has been developed that responds to the current base engineering design of the LRT system and roadway. The space needed for the layout of the LRT and roadway has determined where future curb lines will be, which in turn defines the space available for the streetscape.

As the width of the corridor varies along Centre Street N., there will not always be space available to fit all the elements of a streetscape - such as trees, benches, trees or bike racks. For much of the corridor, sidewalk widths are wide enough to comfortably allow higher volumes of pedestrian traffic to freely move while also providing space to plant trees and provide elements such as benches and bike racks. Along a limited number of blocks, the sidewalk width will be narrower and there will not be space available for trees or other site furnishings.

The different streetscape zones and their characteristics are illustrated in the graphic above and described in the section below.



Pedestrian zone

The pedestrian zone is designed to provide clear space along the entire corridor for people to move by foot, wheelchair or scooter. Centre Street N. has been designed to provide pedestrian zones that vary between 2m and 3m. The wider 3m pedestrian zones will be provided near LRT stations, where higher volumes of pedestrians are anticipated, and in other areas of the corridor where space permits. In areas further away from LRT stations or where space is limited, efforts will be taken to provide a minimum 2m pedestrian zone. To support pedestrian movement, this zone should have a consistent sidewalk material, colour and texture that is visibly different from the adjacent furniture & tree zone and intersections.

Furniture & tree zone

The furniture and tree zone is designed to improve the safety of pedestrians and add vibrancy to the street. This zone provides space for streetscape elements such as street trees, pedestrian lighting, benches and bike rack, and in winter, this zone can be used for snow storage. In many areas along the corridor, the furniture and tree zone is designed to improve pedestrian safety as it provides a buffer between the vehicle travel lane and pedestrians. In areas with reduced sidewalk widths, a narrow furniture zone will be provided with limited furnishings, such as streetlight poles and bollards, to continue providing separation between pedestrians and vehicle traffic. To create distinction between the unobstructed pedestrian zone, the furniture and tree zone should use contrasting sidewalk material, colour and textures.

Private frontage zone

The private frontage zone is where the sidewalk space is privately owned by adjacent property owners. The streetscape master plan envisions sidewalk improvements will be extended into this zone, pending agreement by individual property owners, to create a seamless streetscape for pedestrians from the curb to the face of private buildings. As planning and design of Centre Street N. progresses, opportunities for improvements will be explored with adjacent landowners to determine if there is shared interest to collaborate on a streetscape design solution that improves this interface. This will be especially important in areas with narrow sidewalk widths, where the pedestrian environment could be improved and perhaps widened if The City and private landowners collaborate on design solutions.

Community and plaza space

As a complement to the streetscape, space has been identified along the corridor for potential transit plazas and community placemaking opportunities, which can provide added value to the Crescent Heights community and business environment. As the engineering design of Centre Street N. is still being refined, potential areas have been identified at current time and additional work is required to determine which areas could be included within the scope of the Green Line. As planning and design of Centre Street N. progresses, The City will engage with the Business Improvement Area and Community Association to explore potential placemaking opportunities within the areas.

Conceptual streetscape plans

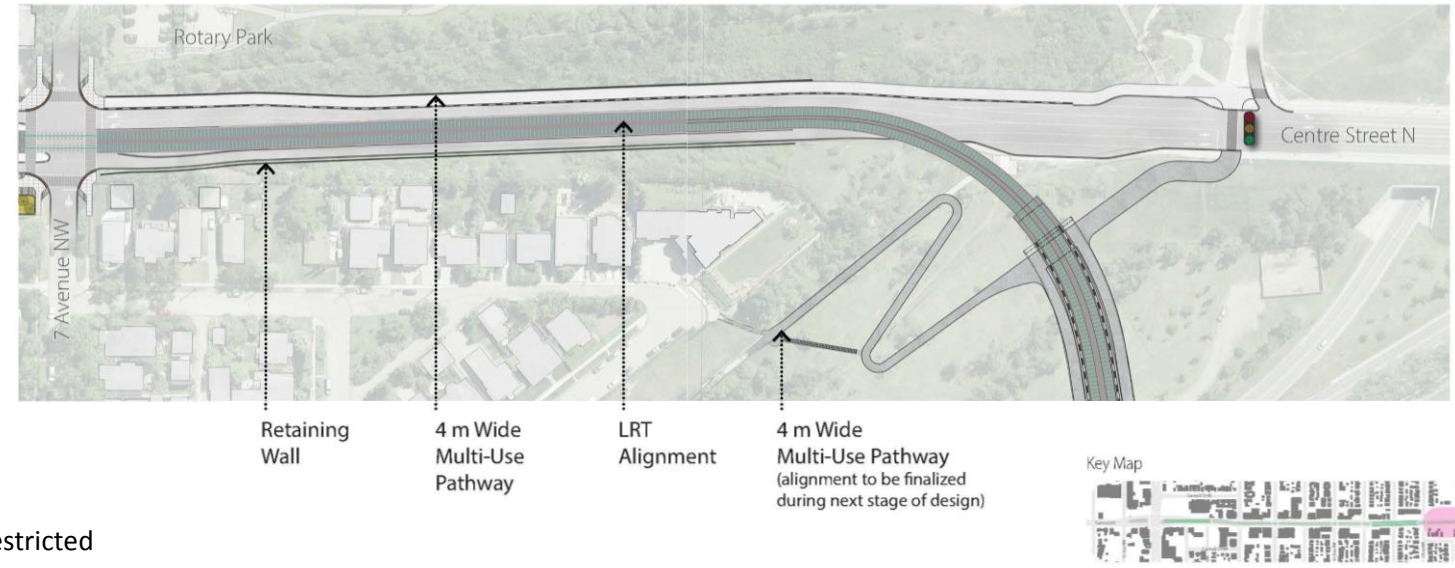
This section presents block-by-block conceptual streetscape plans for Centre Street N. from Samis Road north to 17 Avenue N.

The escarpment

The escarpment borders the Centre Street bridge to the south and 7 Avenue to the north. This area is defined by steep slopes with trees, shrubs and grass on both sides of the street. The current 2.5m sidewalk on the east side of the street needs to be relocated to accommodate the new Green Line LRT and roadway design. Instead of replacing with a sidewalk, a 4m wide multi-use pathway is proposed for the east side of the street. This multi-use pathway will better accommodate the high volumes of people that use this route and create safer passing distance for all modes of travel (walking and wheeling). The pathway will connect the neighbourhood of Crescent Heights to downtown Calgary, the new LRT bridge multi-use pathway and the neighbourhood of Eau Claire.

Key streetscape design elements to be provided in the escarpment area include:

- 4m wide multi-use pathway on the east side of Centre Street N.
- Pedestrian lighting along the multi-use pathway
- Barriers between the multi-use pathway and vehicle traffic
- Potential to collaborate with the Community Association or Business Improvement Area to install placemaking or gateway features announcing the entry into Crescent Heights



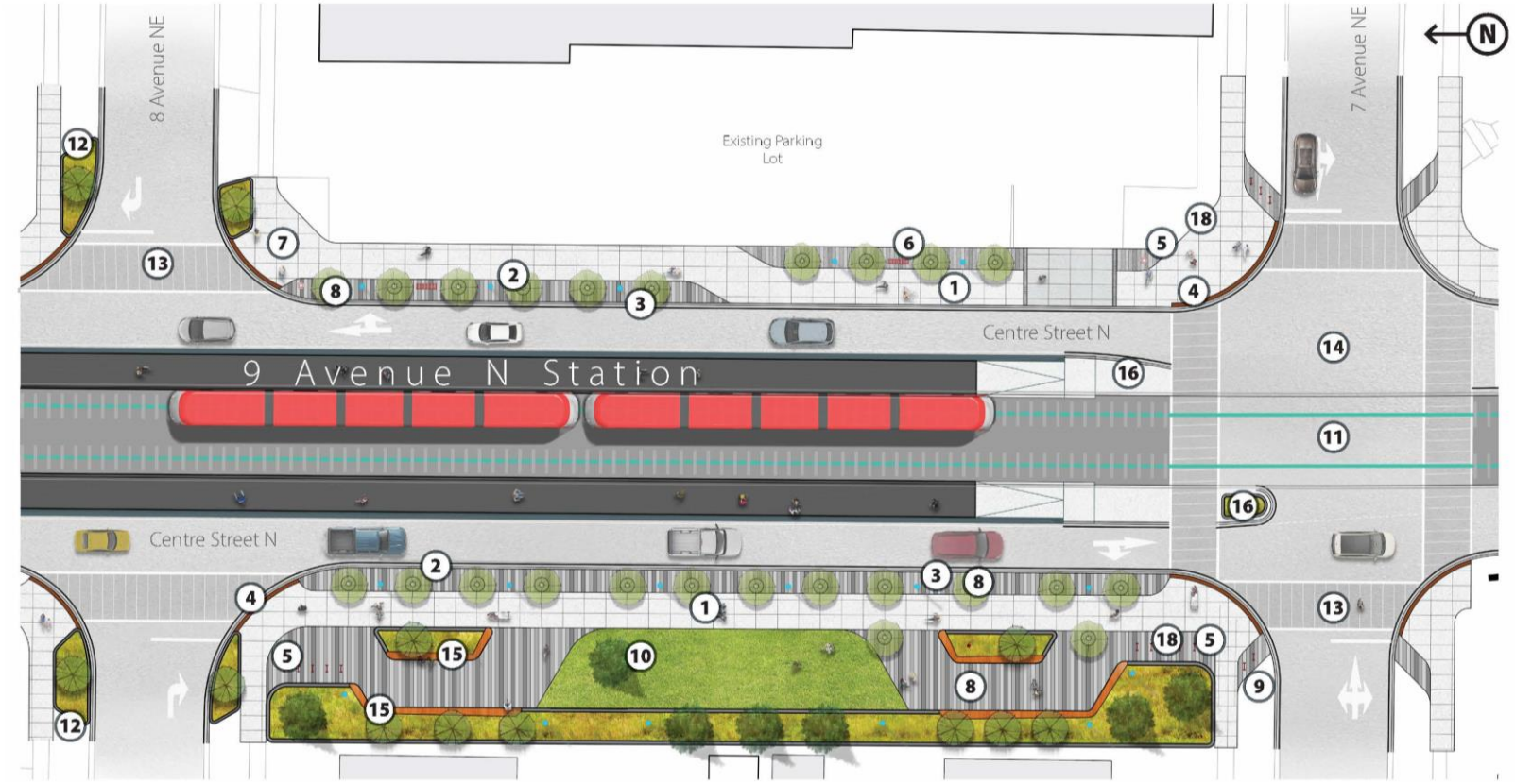
7 Avenue N. to 9 Avenue N.

Defined by the 9 Avenue N. LRT station, this section of the corridor marks the official gateway from the escarpment zone into the neighbourhood of Crescent Heights. This section of the corridor aims to provide a 3m wide pedestrian zone adjacent to the LRT station entrances and crosswalks, ensuring ample space for all transit users. The design concept also identifies potential space to incorporate placemaking elements unique to Crescent Heights.

Key streetscape design elements to be provided in the 7 Avenue N. to 9 Avenue N. area include:

- Minimum 3m wide clear pedestrian zone adjacent to the station access points
- Street tree planting buffering the pedestrian zone from vehicle traffic
- Pedestrian scale lighting
- Potential plaza and gathering space with amenities such as seating, bicycle and scooter parking, tree planting and ticket payment machines
- Potential to collaborate with the Community Association or Business Improvement Area to provide gateway or community placemaking features
- Site elements including seating, waste bins, raised planters and visually contrasting sidewalk materials

Conceptual Streetscape Design | 7 Avenue N to 8 Avenue N



1 Walk and Wheel Zone
2 Street Trees
3 Pedestrian Lighting
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5 Waste and Recycling Receptacles
6 Benches
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9 Bike and Scooter Parking
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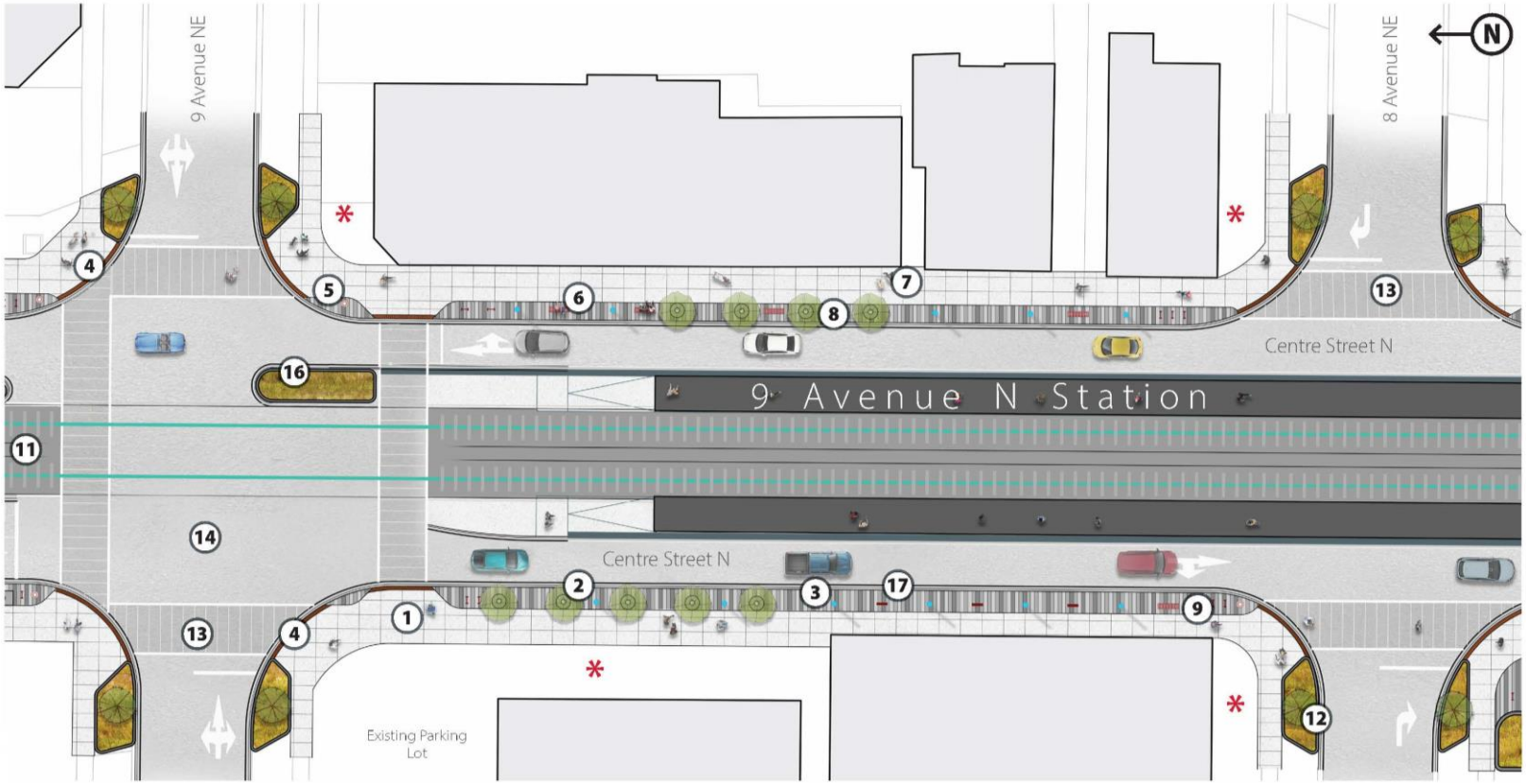
13 Crosswalk
14 Enhanced Intersection Treatment
15 Raised Planters with Integrated Seating
16 Median Landscaping
17 Bollards and Leaning Rails
18 Transit Kiosks

* Opportunities for additional public area improvements to be explored with adjacent land owners

Note: Not all legend items are present in this concept.

Conceptual Streetscape Design | 8 Avenue N to 9 Avenue N



Conceptual rendering of 9 Avenue N LRT station and surrounding streetscape (view facing south from southeast corner of Centre Street N and 9 Avenue N)

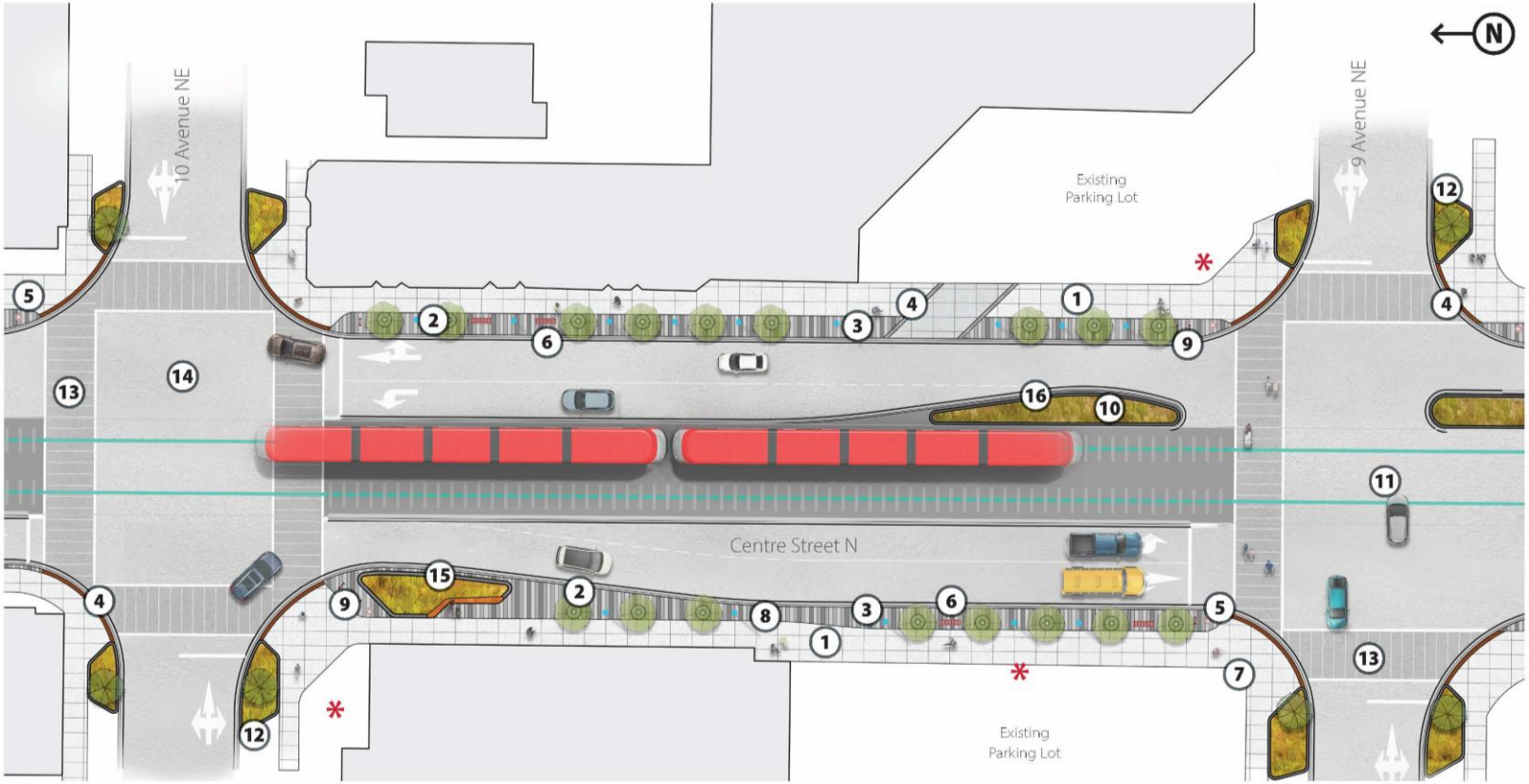
9 Avenue N. to 11 Avenue N.

A varied public realm makes up the majority of these two blocks. The width of the sidewalks between 9 Avenue N. and 10 Avenue N. and along the east side of the block between 10 Avenue N. and 11 Avenue N. will provide for a 3m wide pedestrian zone as well as space for street trees and other furnishings. The sidewalk width on the west side of the block between 10 Avenue N. and 11 Avenue N. is narrower and will not accommodate street trees or extensive site furnishings. In this narrower area, the design team will work with adjacent landowners to explore opportunities to improve the pedestrian environment at the public / private interface.

Key streetscape design elements to be provided in the 9 Avenue N. to 11 Avenue N. area include:

- 2m – 3m wide clear pedestrian zones
- Street tree planting to provide a buffer between the pedestrian zone and vehicle traffic (in areas with wider sidewalks)
- Pedestrian scale lighting
- Vertical elements such as bollards, railings and pedestrian lighting to create a buffer between pedestrians and vehicle traffic (in areas with narrower sidewalks)
- Site elements including benches, waste bins, raised planters with integrated seating and visually contrasting sidewalk materials

Conceptual Streetscape Design | 9 Avenue N to 10 Avenue N



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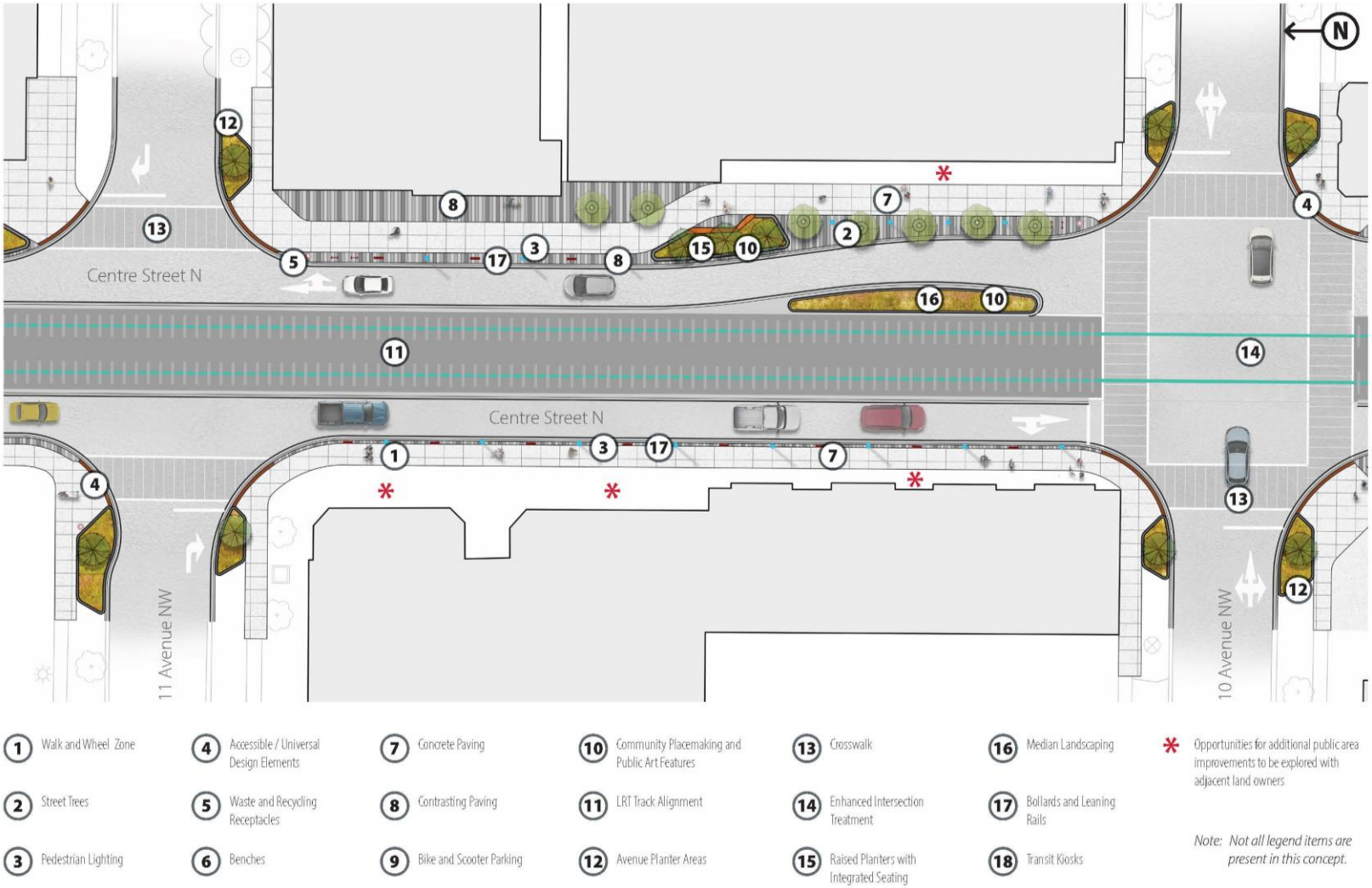
Conceptual Streetscape Design | 10 Avenue N to 11 Avenue N



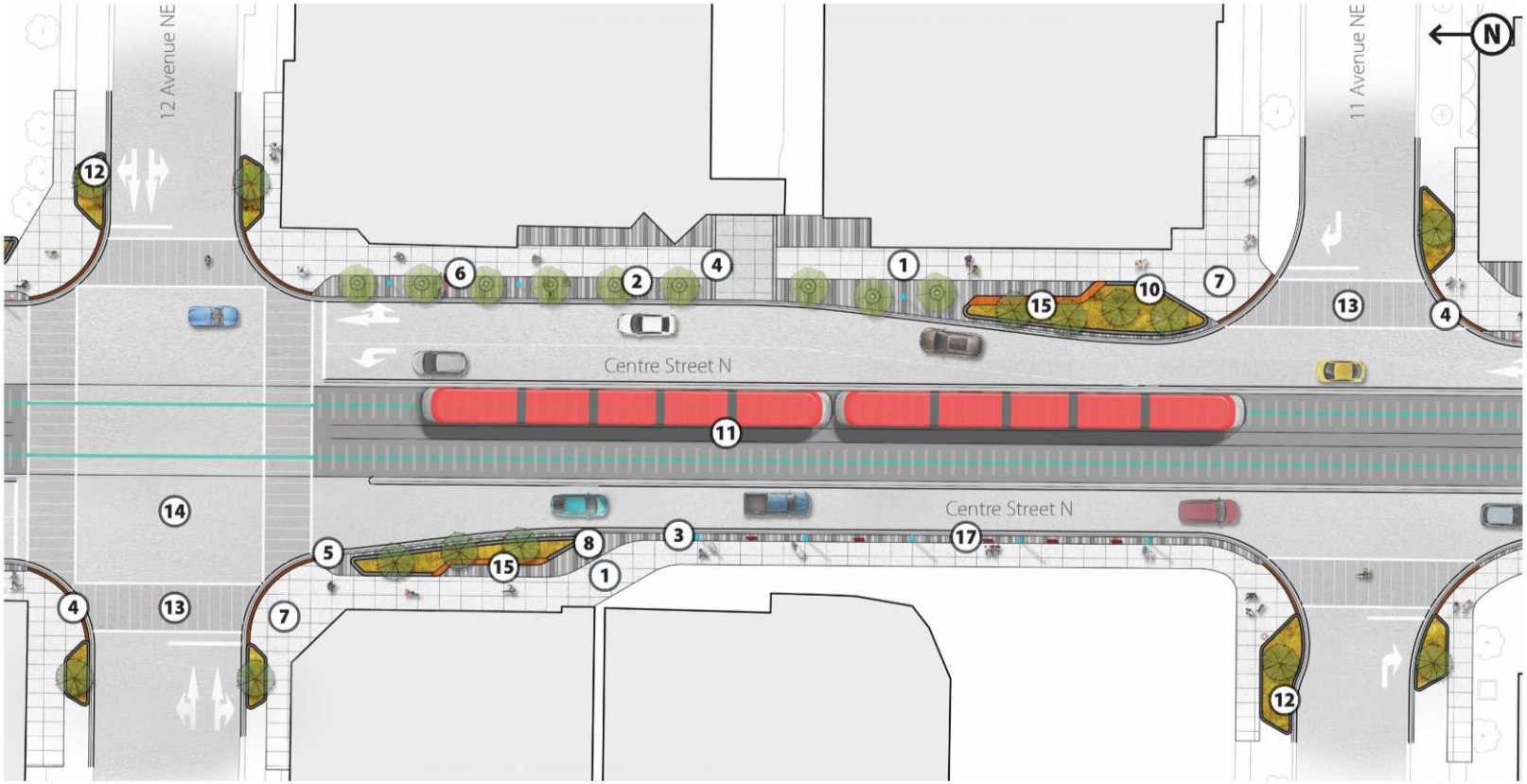
11 Avenue N. to 14 Avenue N.

These blocks have a varied public realm with many areas providing room for both a 3m wide pedestrian zone and a tree and furniture zone, while other sections will have narrower sidewalks where a clear and comfortable pedestrian zone has been prioritized over providing streetscape elements such as street trees and site furnishings. As the planning and design progresses, The City will work with adjacent landowners to explore opportunities to improve the pedestrian environment at the public and private interface in the narrow areas.

Key streetscape design elements to be provided in the 11 Avenue N. to 14 Avenue N. zone include:

- 2 – 3m wide clear pedestrian zones
- Street tree planting to provide a buffer between the pedestrian zone and vehicle traffic (in areas with wider sidewalks)
- Pedestrian scale lighting
- Vertical elements such as bollards, railings and pedestrian lighting to create a buffer between pedestrians and vehicle traffic (in areas with narrower sidewalks)
- Site elements including benches, waste bins, raised planters with integrated seating and visually contrasting sidewalk materials

Conceptual Streetscape Design | 11 Avenue N to 12 Avenue N



1 Walk and Wheel Zone
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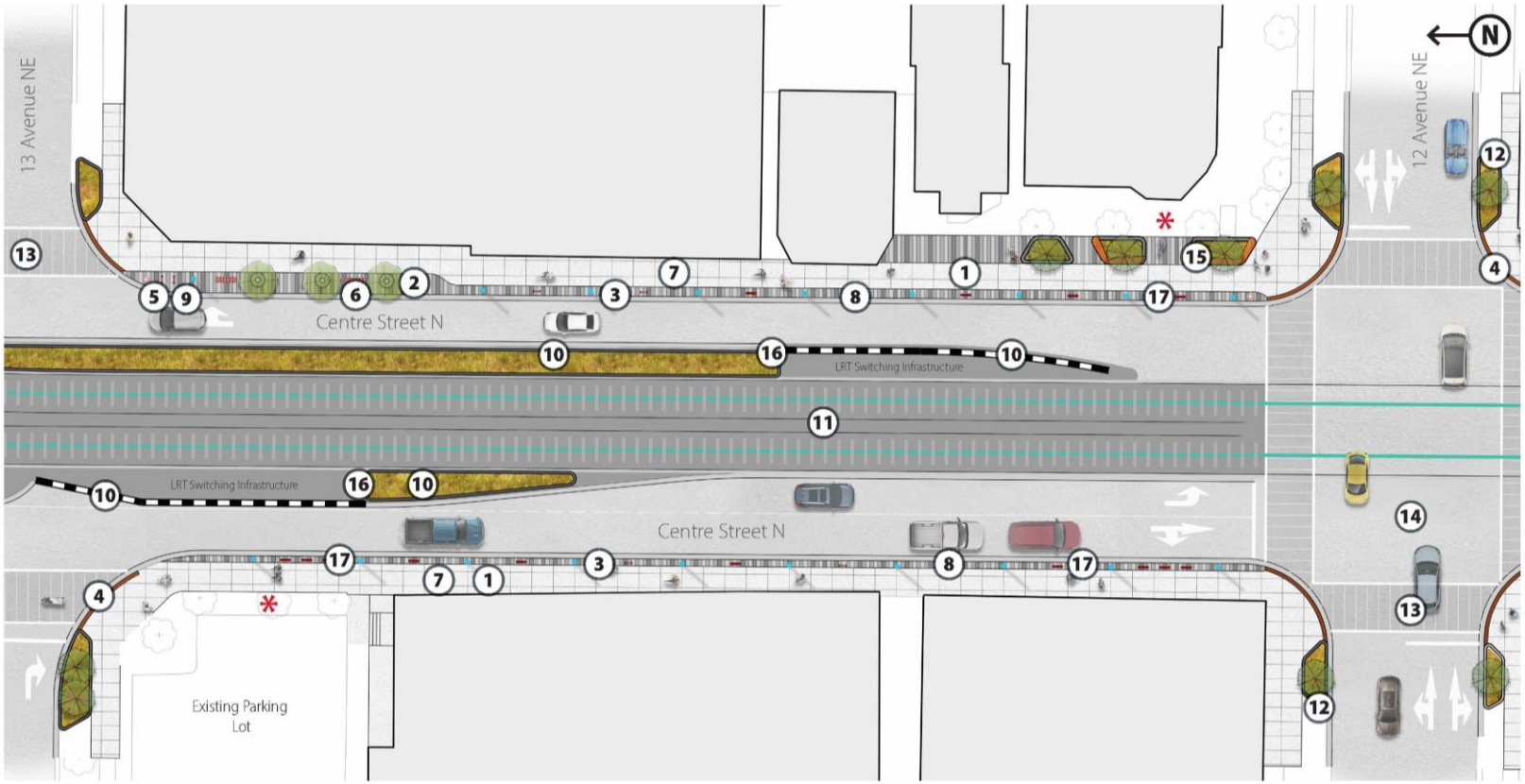
Conceptual rendering of streetscape (view facing south from mid-block Centre Street N. between 11 Avenue N. and 12 Avenue N.)

Conceptual Streetscape Design | 12 Avenue N to 13 Avenue N



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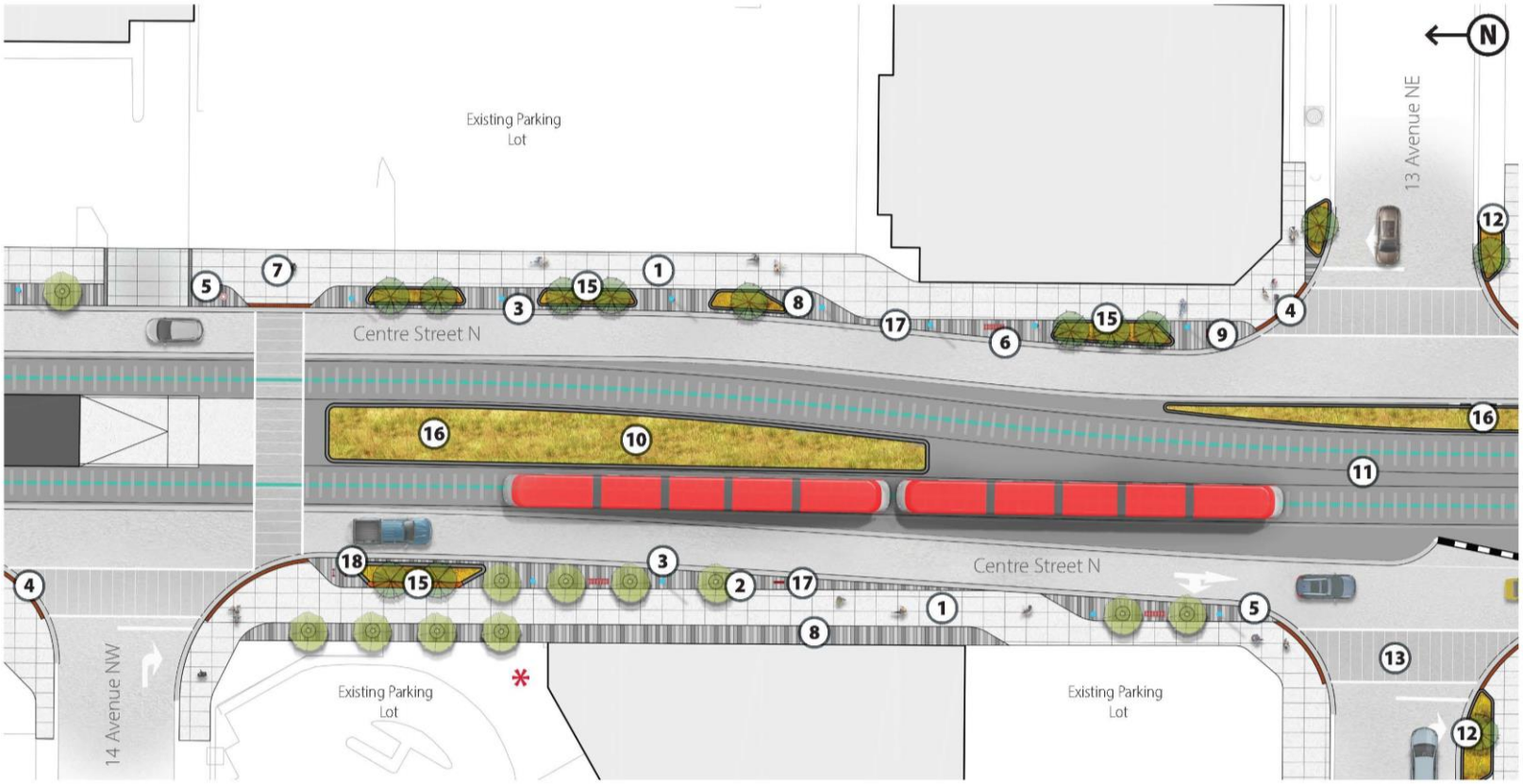
Note: Not all legend items are present in this concept.

Conceptual rendering of streetscape (view facing south from mid-block Centre Street N. between 12 Avenue N. and 13 Avenue N.)

Conceptual Streetscape Design | 13 Avenue N to 14 Avenue N



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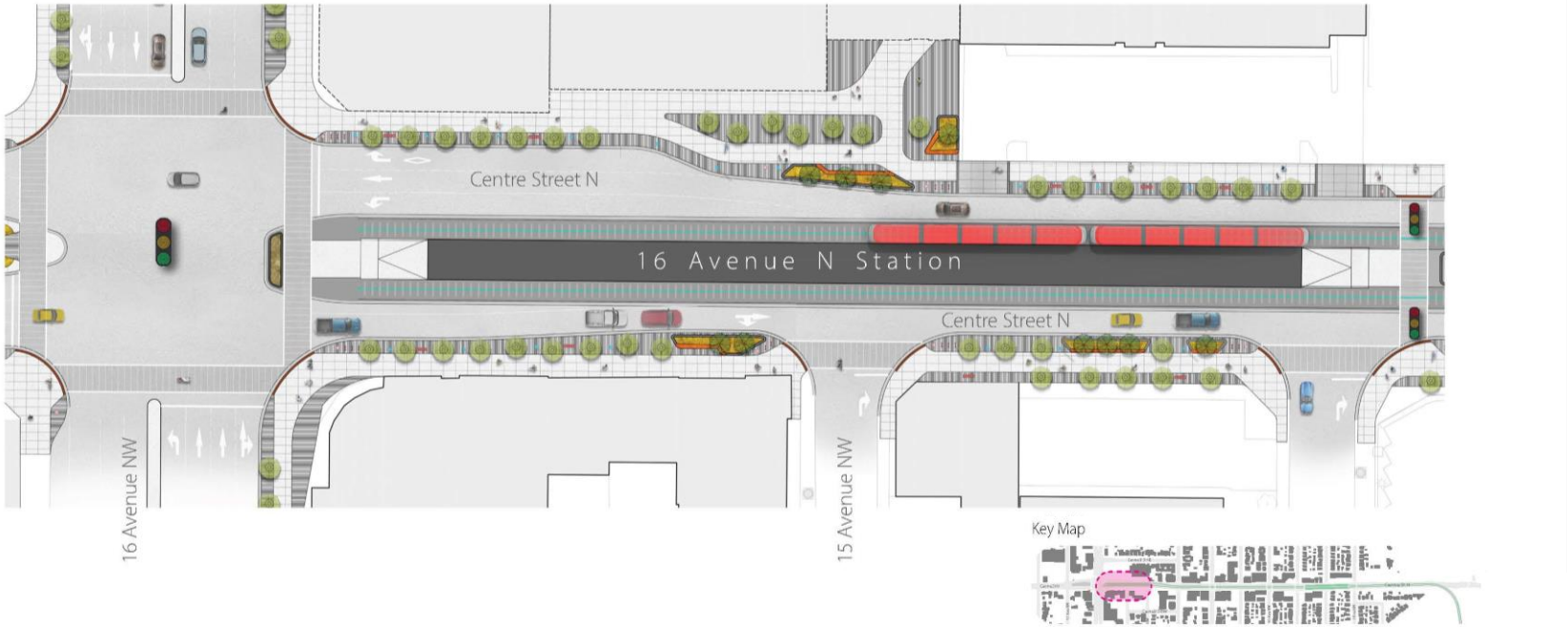
14 Avenue N. to 16 Avenue N.

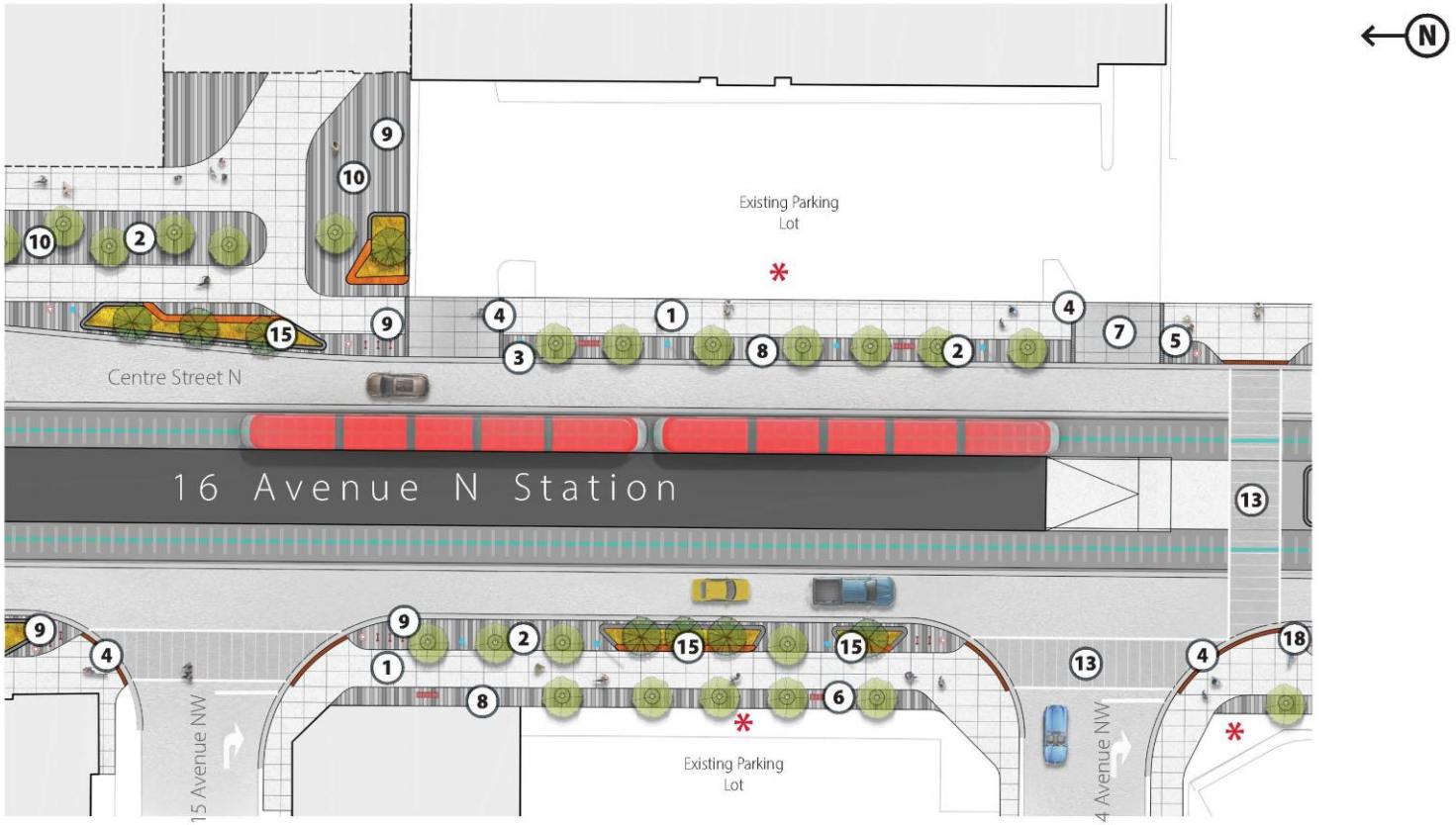
Defined by the 16 Avenue N. LRT station, this area marks the official gateway between the neighbourhoods of Crescent Heights and Tuxedo Park. The streetscape design prioritizes pedestrian movement and connections between the Green Line LRT 16 Avenue station and adjacent BRT stations. Wider sidewalks are provided to accommodate the high volumes of pedestrians that are anticipated to travel through this area and connect with the adjacent community and future transit-oriented development.

Key streetscape design elements to be provided in the 14 Avenue N. to 16 Avenue N. area include:

- 3m wide clear pedestrian zone adjacent to the station access points
- Street tree planting to provide a buffer between the pedestrian zone and vehicle traffic
- Pedestrian scale lighting
- Transit-specific site elements such as wide pedestrian zones at crossings, bicycle and scooter parking, ticket payment machines and integrated planters with seating opportunities to promote community gathering and discourage jaywalking near station areas
- Potential to collaborate with the Community Association or Business Improvement Area to install gateway or community placemaking features



Conceptual Streetscape Design | 14 Avenue N to 15 Avenue N



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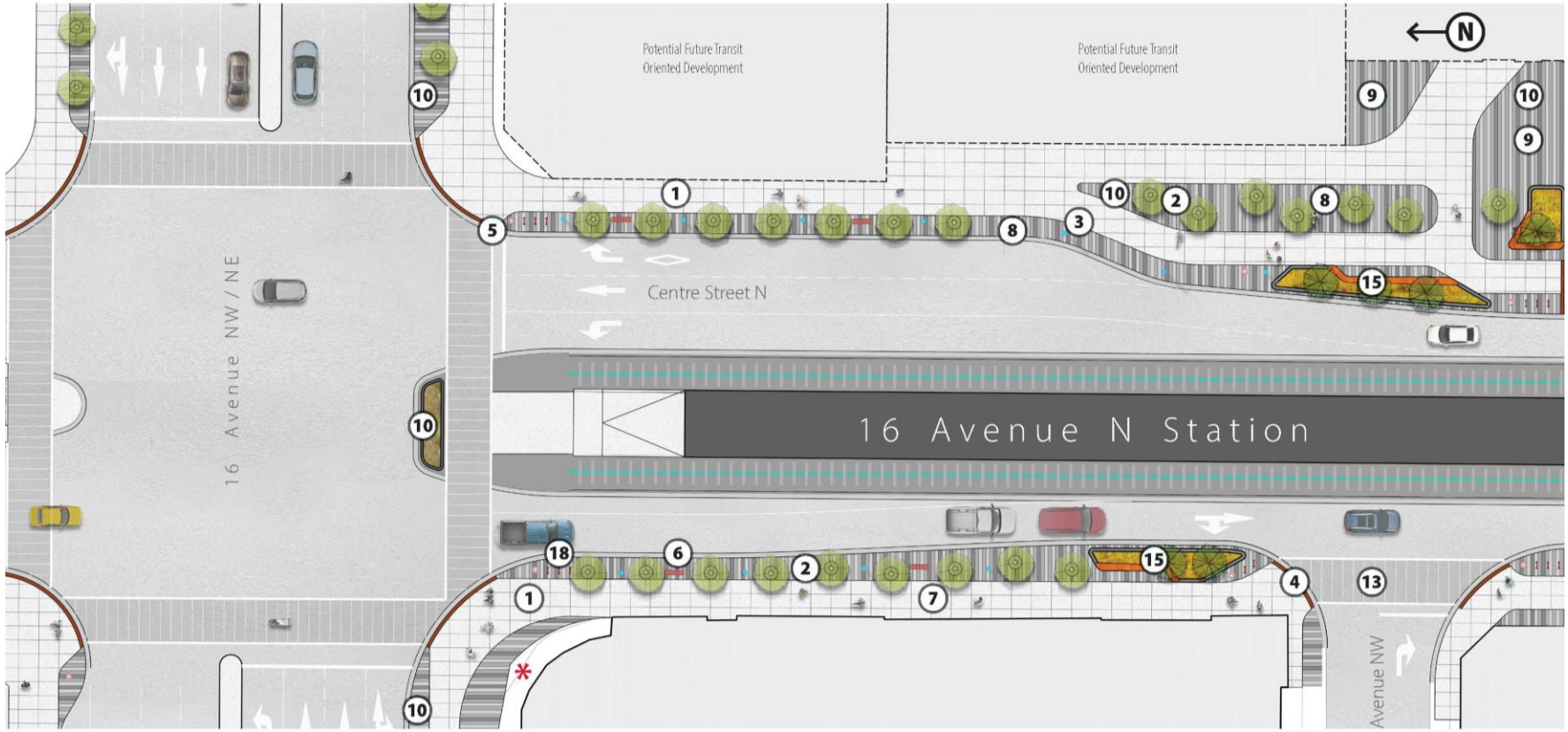
Conceptual Streetscape Design | 15 Avenue N to 16 Avenue N



1 Pedestrian Zone
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Conceptual rendering of 16 Avenue N. LRT station and surrounding streetscape (view facing south from southeast corner of Centre Street N. and 16 Avenue N.)

16 Avenue N. to 17 Avenue N.

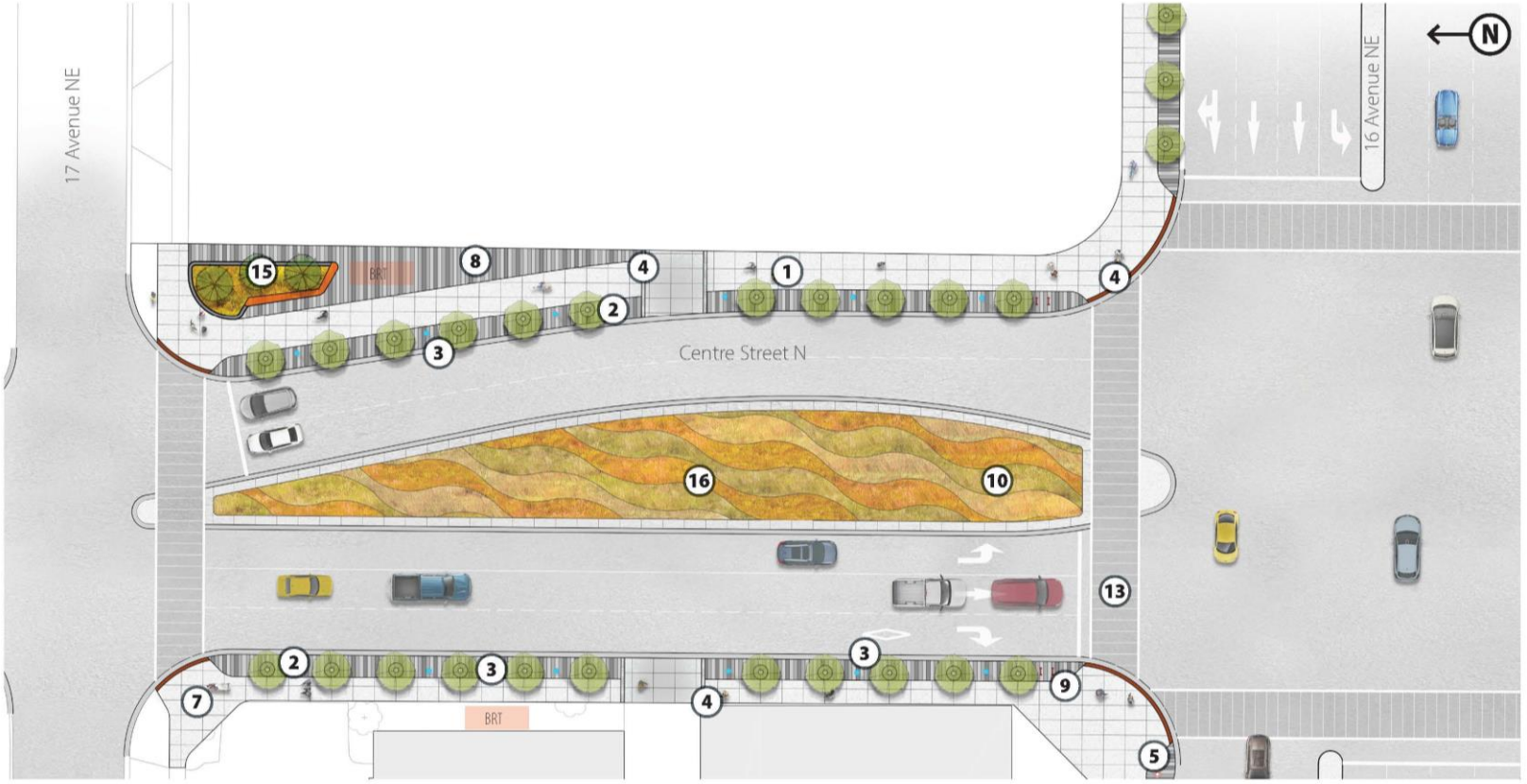
With the temporary end of the Green Line LRT at 16 Avenue N., the connection across the intersection and to the north aims to transition the streetscape to tie into the existing conditions at 17 Avenue N. Special consideration will be placed on improving pedestrian safety at crosswalks and to provide wayfinding between the LRT and BRT stations, while also creating a well-connected public realm from the transit stops into the neighbourhood.

As a result of the infrastructure required to transition from an LRT corridor to an existing street, a temporary traffic island has been established on the north side of the 16 Avenue intersection. The streetscape master plan recommends that the island be converted into a landscape area that incorporate design elements such as decorative shrubs and grass planting, and gateway and community placemaking features.

Key streetscape design elements to provided in the 16 Avenue N. to 17 Avenue N. area include:

- 2 – 3m wide clear pedestrian zones
- Street tree planting to provide a buffer between the pedestrian zone and vehicle traffic
- Pedestrian scale lighting
- Vertical elements such as bollards, railings and pedestrian lighting to create a buffer between pedestrians and vehicle traffic (in areas with narrower sidewalks)
- Site elements including seating, waste bins and visually contrasting sidewalk materials
- Wayfinding between the BRT and LRT Stations

Conceptual Streetscape Design | 16 Avenue N to 17 Avenue N



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Business Access, loading & parking

As Centre Street North is intended to function as an Urban Main Street, with retail and commercial uses, it was important to consider the needs of existing and future businesses in the design of the corridor. This section outlines the design strategies being considered to ensure access to local businesses is maintained as part of the Green Line LRT on Centre Street North. It is important to note that some components of the street are subject to change as the detailed engineering for Green Line advances and as redevelopment happens along the street before and after Green Line.

Design strategies

Design strategies considered to support businesses along Centre Street N. with the introduction of Green Line LRT include:

Business access, loading & deliveries

- Design roadway (lane widths, turn movements) to reasonably accommodate delivery vehicles
- Maintain access to businesses for customers arriving by foot, transit and private vehicles
- Maintain access for waste and recycling service vehicles
- Maintain areas that provide short-term loading for businesses

Short-term customer parking

- Where required, mitigate removal of on-street parking by providing other means of short-term customer parking
- Maintain access to private business parking lots used for customer parking

Design for business access, loading & parking

A Business Access, Loading and Parking study was undertaken to determine how to best provide access to businesses by delivery and customer vehicles, protect space for loading/unloading and ensure opportunities for short-term customer parking are provided, while also ensuring that the streetscape design prioritizes pedestrians and transit movement along the corridor. The following describes the analysis, recommendations and next steps from the study.

Business access – design vehicle

The design of a roadway, including lane widths and size of intersection corners, is influenced by the size of vehicles that are anticipated to use the street on a regular basis, known as the design vehicle. Roads that are frequently used by larger delivery vehicles require wider travel lanes and intersections with larger sized intersection corners to accommodate the turning radius of the vehicle. Roads designed for larger delivery vehicles can impact how much sidewalk space remains available for pedestrians and the large corner design can impact the safety of pedestrian crossings by increasing the length of pedestrian crosswalks.

Given pedestrians and wider sidewalks are prioritized for the new Centre Street North design, it was important to design the roadway with the most common delivery vehicle used along the corridor to ensure the roadway is not overdesigned for larger vehicles, thereby maximizing how much sidewalk space is available for pedestrians and to minimize the length and improve safety of pedestrian crosswalks.

A study was undertaken to understand the most common size of delivery vehicles that turn from Centre Street North onto side streets to access businesses and homes. This vehicle size would be used to establish the design of the corridor. In fall 2020, a review of typical delivery vehicles along Centre Street N. was conducted and businesses that typically utilize larger vehicles for goods deliveries, such as grocery stores, were contacted to learn more about their delivery vehicles. The following summarizes the various vehicle types servicing the corridor as identified through observations and discussions with businesses that responded to the information request.

- The most common delivery vehicles across the corridor are waste and recycling trucks and other smaller delivery trucks
- School buses also require access to both residential and commercial areas

- Within the business area northwest of 12 Avenue N., medium sized tractor semi-trailers are required to service grocery-based businesses
- A larger car carrier trailer is used to deliver vehicles to the auto dealership located on the corridor and uses the Centre Street N. corridor for loading

Given the importance of designing the Centre Street North roadway to accommodate the most frequently used delivery vehicles and the results of the study, the corridor will be designed to accommodate the following:

- Smaller delivery vehicles and school buses turning from Centre Street N. onto all side streets
- Medium sized semi-trailers turning from 16 Avenue N. onto Centre Street N.
- Medium-sized semi-trailers turning from Centre Street N. into the commercial zone between 13 Avenue N. and 15 Avenue N. On-street parking restrictions may be required on these side streets during specific times of the day to ensure there is room for medium-sized delivery vehicles to access area businesses

The future roadway network will not be designed to accommodate larger semi-trailers, which were not identified as a common delivery vehicle, or the car carrier trailer, because this would significantly impact the width of sidewalk and intersection corners and increase the length of pedestrian crosswalks at side streets. Any business that uses larger semi-trailers today will be required to switch to medium semi-trailers in the future once the roadway changes are introduced.

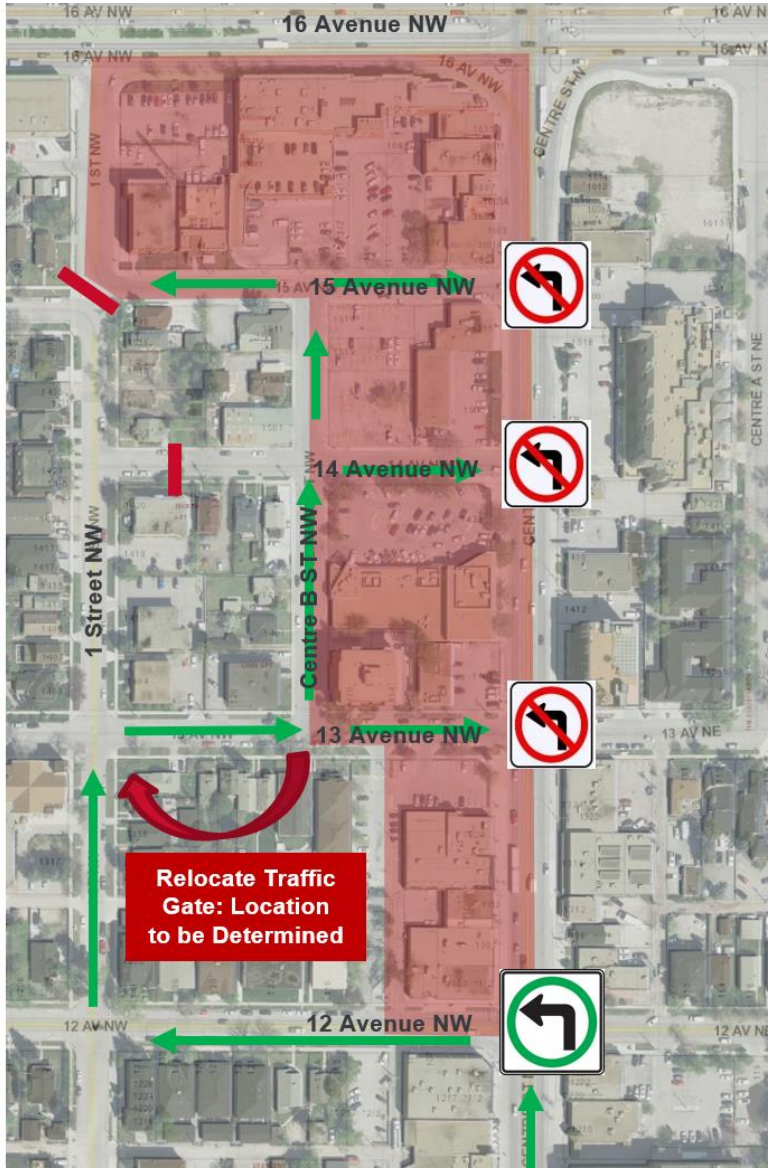
Business access – routes

Businesses in Crescent Heights are generally located along Centre Street N. or within one block to the east or west. The grid layout of the existing road network coupled with the ability to make left and right turns from each intersection provides several opportunities for drivers to access area businesses directly from Centre Street N.

In 2004, traffic gates were put in place to separate business and residential traffic north of 12 Avenue N. and west of Centre Street N. as a means of reducing cut-through and speeding traffic in the residential community. This was required because at the time 16 Avenue N. only had two eastbound and westbound lanes (today it has three lanes in each direction) and therefore the roadway was congested, which led to motorists short-cutting through the community.

Given the importance of maintaining customer access to Crescent Height businesses, an evaluation was undertaken to determine how the new roadway design for Centre Street N. might impact how customers would access businesses. Routes were evaluated to determine how customers would access businesses from northbound and southbound Centre Street N., to identify if the new roadway design would impact access.

The evaluation confirmed that access to businesses along the east side of Centre Street N. and the west side of Centre Street N. south of 12 Avenue N. will generally be maintained, however some of the routes that customers take will need to change because left turns from Centre Street N. will only be permitted at certain intersections. This means some vehicles will need to travel on side streets or laneways to access a specific business.



The new roadway design for Centre Street N. will continue to provide southbound access to businesses located north of 12 Avenue N. and west of Centre Street N., however access from northbound lanes will be impacted. This is because northbound left turns can only occur at 7 Avenue N., 10 Avenue N. and 12 Avenue N. and these routes cannot provide access to the northwest business area because of the existing traffic gates, described earlier.

Proposed access route solution

Due to the importance of maintaining access to area businesses, a proposed access solution was presented to the public and stakeholders in winter 2021. This solution required the traffic gate at 13 Avenue N.W. and Centre B Street N.W. be relocated west of 1 Street N.W., which would allow vehicles traveling northbound on Centre Street N. to reach businesses by using a new access route: northbound left turn at 12 Avenue N., westbound right turn at 1 Street N.W., northbound right turn at 13 Avenue N.W. and eastbound left turn onto Centre B Street N.W.

It was proposed that additional community engagement be undertaken to determine where the traffic gate might be relocated and what additional traffic calming might be required on the new access route to slow vehicle speeds and deter short-cutting through the community. As the new access route would not be required until such time that construction of the Green Line in Crescent Heights has advanced to the point that the left turn movements to/from Centre Street are eliminated, it was proposed that the additional engagement on this proposed solution should occur six to nine months ahead of the start of construction.

Public feedback & next steps

Through the winter 2021 engagement, The City received mixed feedback on the proposed new access route. Some citizens and stakeholders supported the new access route, others expressed concern that the new route would introduce additional vehicle traffic into the community, increasing the risk of speeding vehicles and impacting safety of area residents and those that use the nearby church and daycare.

Given the mixed feedback, additional work is required to determine how vehicle access from Centre Street N. to businesses northwest of 12 Avenue N. could be provided and identify what additional traffic calming or other roadway design features might be required to provide a safe travel route. The City will continue engaging with the Crescent Heights Communication Association and Crescent Heights Village Business Improvement Area to further explore access and traffic calming considerations.

Loading zones

Today, businesses located along Centre Street N. can receive deliveries from loading zones located across the corridor, in rear laneways and private parking lots. With the new single-lane roadway design., loading will not be permitted on Centre Street N.

Proposed loading zone solution

In the future, loading can continue to be supported via the rear laneways or private lots. In areas where these loading opportunities are not available, The City will look to designate loading zones on east-west avenues to support adjacent businesses.

Public feedback & next steps

The exact location of loading zones will be determined once the final design for Centre Street N. is complete and through engagement with the Business Improvement Area, commercial property owners and businesses.

Through the engagement process, requests were made to improve the rear laneways to support loading and customer access to businesses. It is recommended that The City further engage with the Business Improvement Area, commercial property owners and businesses to identify and prioritize the laneway improvements that are most required.

Short-term customer parking

Short-term parking for customers is important for businesses to be successful. This is especially important for Green Line LRT stage 1, where the LRT terminates at 16 Avenue N. and does not yet extend into communities north of Crescent Heights. In order to integrate Green Line LRT into the mobility network, on-street parking along Centre Street N. and some areas along adjacent side streets will be removed. A parking study was undertaken to understand how parking currently functions in the area and to determine if any actions are required to mitigate the removal of on-street parking.

Current parking review

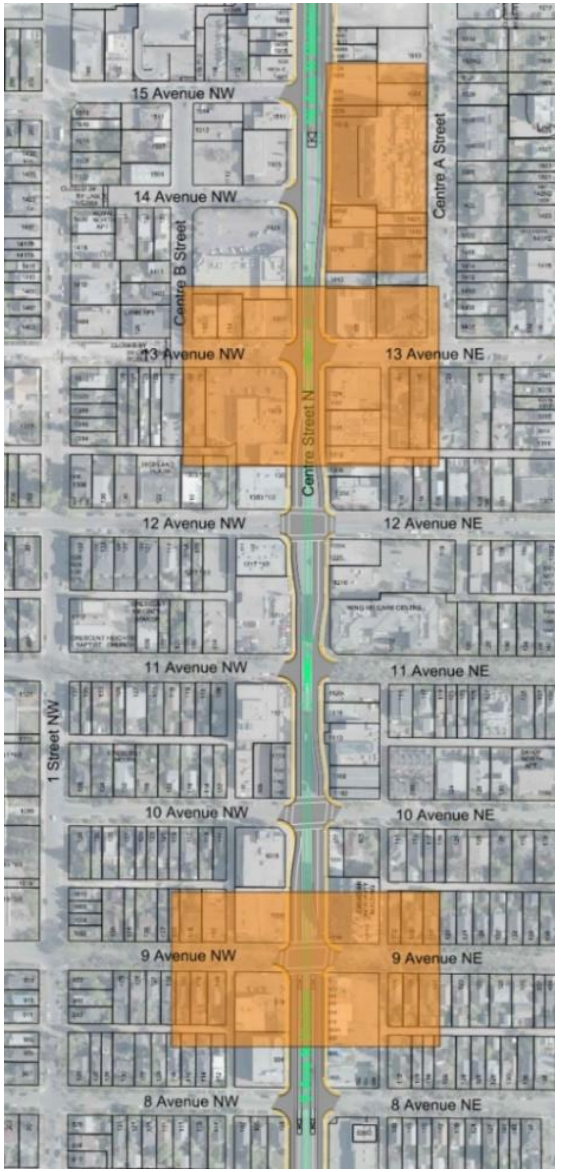
In fall 2020, a parking study was undertaken to count the number and utilization of parking spaces within Crescent Heights. The study reviewed both public and private on-street and off-street parking along Centre Street N. and within one block of the corridor. The study boundary was bordered by the south side of 7 Avenue N., north side of 15 Avenue N., east side of 1 Street N.W. and west side of 1 Street N.E. The parking study was undertaken on a weekday (Wednesday, September 30, 2020) and a weekend day (Saturday, October 3, 2020). A comparison of this parking data against that collected by The City of Calgary for a portion of the study area on Thursday, June 21, 2018 (pre-COVID) revealed very similar parking occupancy results. It was concluded, therefore, that potential impacts due to COVID restrictions were not significant enough to influence the results of the parking study.

A detailed parking inventory (capacity) was determined for all private parking lots, the Calgary Parking Authority public lot and all on-street parking including public and residential permit areas. Loading zones, time of day restrictions, and paid parking zones were also inventoried. To supplement parking data collected in 2018, which indicated very low utilization in the early morning hours and moderately low utilization in the late afternoon hours, occupancy counts were undertaken between 10 a.m. - 3 p.m. and 6–8 p.m. for every hour. A summary of the review is described below.

Within the study area, there are currently 559 on-street and 682 off-street parking spaces (most of which are private lots for the individual businesses along the corridor). The utilization study demonstrated that the overall peak demand for on-street parking occurs on weekdays and Saturdays between 6-7:00 p.m. when around one third of the available parking spaces are used at a given time. During the survey, approximately 45 percent of the on-street parking spaces (250) were utilized and approximately 25 percent of the off-street parking spaces (168) were utilized at peak time, meaning 823 spaces remained unoccupied.

It is important to highlight that this trend was not consistent across the corridor. Three specific areas were observed to have limited availability of parking supply during peak time. These areas are shaded in orange on the attached map and are broadly defined as:

- East side of Centre Street N. in the vicinity of 14 Avenue N. and 15 Avenue N.
- All corners of the intersection of 13 Avenue N. and Centre Street N.
- All corners of the intersection of 9 Avenue N. and Centre Street N.



Many of the parking spaces available along the corridor are restricted (private parking lots or residential permits). In terms of parking that is available to the general public, there are currently 261 on-street and 66 off-street parking spaces avaialble within the study boundary during peak period of parking utilization (6-7 p.m. on weeknights), when approximately 36 percent of the public spaces are utilized.

Impacts of parking changes

Integration of Green Line LRT into the new Centre Street N. mobility network will reduce the number of on-street public parking spaces by 44 percent, from 261 to 147 spaces. This includes:

- Removal of all 72 parking spaces along Centre Street N (not available during the morning (7-8:30 a.m.) and evening (3:30-6 p.m.) commute)
- Removal of an estimated 42 parking spaces along side streets

If parking utilization does not change in the future and parking is evenly distributed across the corridor, the future parking supply of 147 spaces would support the current utilization. However, the parking study indicated that parking demand is not evenly distributed across the study area. As previously noted, there are three parking zones that are at or near capacity during the peak parking demand. If the peak demand in these zones remains the same upon the opening of Green Line LRT, additional parking supply will be required to support the demand in these three zones. In addition, if peak demand increases in other areas as new businesses move into the corridor, there may be more need to provide additional parking supply in Crescent Heights.

The design of Centre Street N. will also impact an estimated 30 private parking spaces in lots fronting the corridor. These spaces are required to accommodate the widening of the corridor to make room for the LRT infrastructure. This will increase public parking demand, especially in areas where on-street public parking supply is already in short supply due to residential parking restrictions, existing driveways and the introduction of business loading zones on side streets.

Proposed parking solution

While the study identified three areas as having on-street public parking supply issues in the future, if new businesses move to Centre Street N. there is the potential for other areas, at other times of day, to experience parking supply issues. To address the reduction in on-street public parking supply and off-street private business parking supply as result of the new design for Centre Street N., the project team proposed that the recently approved amendments to the Calgary Parking Policy for Interface Areas be applied to the study boundary. This new policy introduces “Interface Areas” where paid on-street public parking and residential permit parking co-exist within the same area. Interface parking zones provide the opportunity for paid short-term parking that can be used to support both businesses and residents. A portion of surplus revenues from this paid parking would be shared with the Community Association as part of The City’s parking revenue reinvestment program. These funds could be used towards community improvement and placemaking projects.

To support existing businesses and encourage new businesses to move to the corridor, it was proposed the parking Interface Area should be applied to all Avenues between 7 Avenue N. and 13 Avenue N. as shown in purple on the figure below. Within these zones, the public would have access to two-hour paid parking while residential parking permit holders would still be permitted to park 24 hours a day, seven days a week. Interface zones also provide 15-minute loading zones to help with deliveries and quick services both for residents and businesses.

Residents who live within interface parking zones can apply for regular residential parking permits. Short-time visitors to these residences can park in the interface zone, with payment required within the regulated hours (typically Monday to Friday from 8 a.m. to 6 p.m.). Outside of the regulated hours

(typically weekday nights and weekends), visitors can park in interface zones without payment. Out-of-town visitors can apply for a permit through Calgary Parking Authority which allows up to two weeks of parking within the zone.

Public feedback & next steps

Through the winter 2021 engagement, The City received mixed feedback on the proposed parking interface zone. Some supported the interface parking as a means of supporting local businesses and requested that the interface zone be expanded an additional block to the east and west. Others expressed concern about the loss of parking in front of their homes and the policy's removal of short-term visitor parking, which would require short-term visitors to pay for parking when visiting a residential home (longer-term out of town visitors would still be able to apply for a visitor pass for visits up to 2 weeks).

The feedback was also mixed between the area's two key stakeholder groups – the Crescent Heights Community Association and Crescent Heights Village Business Improvement area, with different groups sharing different ideas to address short-term parking in the area. Given the mixed feedback received to date, additional work is required to understand the different community perspectives and to explore potential solutions to mitigate the removal of short-term parking opportunities. The City will continue engaging with the Crescent Heights Community Association, Crescent Heights Village Business Improvement Area, area businesses and residents before finalizing a recommendation.

Next Steps

Additional work is required to advance the planning and design of Centre Street North mobility network, LRT stations, streetscape master plan and business access, loading and parking design. Key next steps are described below.

Mobility Network

- Advance engineering reference concept design and technical performance requirements for Centre Street N.
- Refine pedestrian crosswalk design at side streets. Explore ways to improve pedestrian safety and shorten crosswalks widths.
- Review traffic patterns and traffic calming measures once major LRT construction activities along Centre Street N. are completed, but prior to opening day of Green Line.

LRT stations

- Advance engineering reference concept design and technical performance requirements for LRT stations.

Streetscape design

- Engage with adjacent property owners and businesses to explore streetscape design opportunities to improve the interface between public sidewalks and private property.
- Engage with the Business Improvement Area and Community Associations to identify potential gateway or community placemaking features that can be integrated into the streetscape design. Identify funding sources and implementation strategies.
- Explore additional opportunities to improve pedestrian safety and comfort at crosswalks.
- Advancing planning of streetscape design once the engineering design of the corridor has been completed. Continue engagement with key stakeholders on the aesthetic style and design of site furniture elements such as benches, pedestrian lighting, bike racks, concrete finishes and waste and recycling bins.
- Collaborate with The City's Planning & Development department to explore how public realm areas currently limited by existing conditions can be improved through future redevelopment.

Business access, loading & parking

- Short-term parking: Continue engaging with the Crescent Heights Communication Association, Crescent Heights Village Business Improvement Area, area businesses and residents on strategies to mitigate the loss of on-street public parking.
- Business loading: Engage Business Improvement Area, commercial property owners and businesses to determine preferred locations for loading zones on side streets and to identify and prioritize rear laneway improvements that are most required.
- Business access: Continue engaging with the Crescent Heights Communication Association, Crescent Heights Village Business Improvement Area, area businesses and residents on the proposed removal of traffic calming at 13 Avenue N. to provide vehicle access from northbound Centre Street N. to businesses located northwest of 12 Avenue N.