DEFINING TYPOLOGIES

As a first consideration, the corridor alignment was mapped with the current, **MUNICIPAL DEVELOPMENT PLAN (MDP)**. The MDP helps define the urban structure land uses and community context when determining adjacent influences to corridor design. The Calgary Transportation Plan (CTP) street typologies were also noted.

TRANSIT ORIENTED DEVELOPMENT (TOD) can occur naturally without the certainty of transit, can be spurred as a result of transit being provided, and can also occur because approved plans are in place, providing the certainty of transit in the future. Also important is the understanding of the varying community contexts and what potential exists to successfully integrate the infrastructure into the **PUBLIC REALM.**

Some design features are mandated by safety codes while others can be deployed flexibly to optimize integration. Due to engineering and corridor constraints, **GRADE SEPARATED** segments were assumed as a pre-condition to typology mapping. It is important to note: no single LRT infrastructure element will be the determinant of adjacent development and successful or unsuccessful urban integration. Other influencing factors to be considered include identifying **INTERACTIONS WITH OTHER MODES** in the area, such as road crossings and freight rail lines.

In selecting a given typology we must also understand the impact on the operations of the LRT system; **RIDE TIME AND RELIABILITY**. Optimal integration balances urban design fit, operational reliability and LRT as a preferred choice of travel.

Finally we must be mindful of the **CAPITAL AND OPERATING BUDGET** constraints in order to strike a balance between appropriate enhancements within the context of the area. **CITY SHAPING** initiatives must be also be considered when integrating the LRT infrastructure so as to complement these significant investments.

What is known however is that integration is the collaboration of all aspects coming together with a common vision.

MDP LAND USE

TRANSIT ORIENTED DEVELOPMENT (TOD) POTENTIAL

PUBLIC REALM OPPORTUNITY

GRADE SEPARATION

INTERACTION WITH OTHER MODES

RIDE TIME AND RELIABILITY

CAPITAL AND OPERATING BUDGET

CITY-SHAPING: SIGNIFICANT INVESTMENTS IN CITY-OWNED/ OPERATED ASSETS

TYPOLOGY MAPPING ANALYSIS:

ON THIS SHEET WE ILLUSTRATE THE THOUGHT PROCESS THAT IS USED TO LINK EACH PORTION OF THE CORRIDOR TO A GIVEN TYPOLOGY.

EACH OF THE 8 CONSIDERATIONS IS REVIEWED AND KEY QUESTIONS ASKED FROM EACH OF THEM (SEE BELOW).

MDP LAND USE
Is the current land-use appropriate for a fully integrated Green Line?

+

INTERACTION WITH OTHER MODES
Is the Green Line adjacent to any other major transportation corridors in the area?

+

TRANSIT ORIENTED DEVELOPMENT (TOD) POTENTIAL
Are there any TOD's in the immediate area?

+

RIDE TIME AND RELIABILITY
How would each potential typology impact ride time?

+

PUBLIC REALM OPPORTUNITY
What is the current context, opportunities and enhancements required?

+

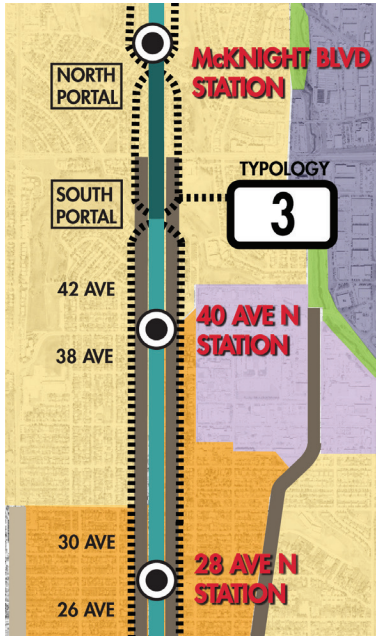
CAPITAL AND OPERATING BUDGET
Does the potential typology have any major impacts on capital budget or operating budget?

+

GRADE SEPARATION
Is the Green Line in a tunnel or a bridge through this area?

CITY-SHAPING: SIGNIFICANT INVESTMENTS IN CITY-OWNED/OPERATED ASSETS
How does the potential typology impact any City-Shaping initiatives?

RECOMMENDED LRT TYPOLOGIES MAPPING



BASED ON THE CULMULATIVE DATA GATHERED FROM AN EVALUATION OF THE 8 CONSIDERATIONS, A RECOMMENDED TYPOLOGY IS APPLIED TO EACH PORTION OF THE CORRIDOR. THESE CONSIDERATIONS ALSO HELP DETERMINE THE LIMITS UPON WHICH EACH TYPOLOGY APPLIES. THE TYPOLOGIES ARE PRESENTED IN THE FOLLOWING PAGES.

TYPOLOGY 1

OBJECTIVE

- To minimize interactions between the LRT and surrounding environment while still designing an aesthetically pleasing corridor

CONTEXT

- LRT in its own right-of-way
- At the side or median of major roads, adjacent to highways, freight rail/industrial, park/open space
- Can be located in suburban neighborhoods

CROSSINGS/ACCESS

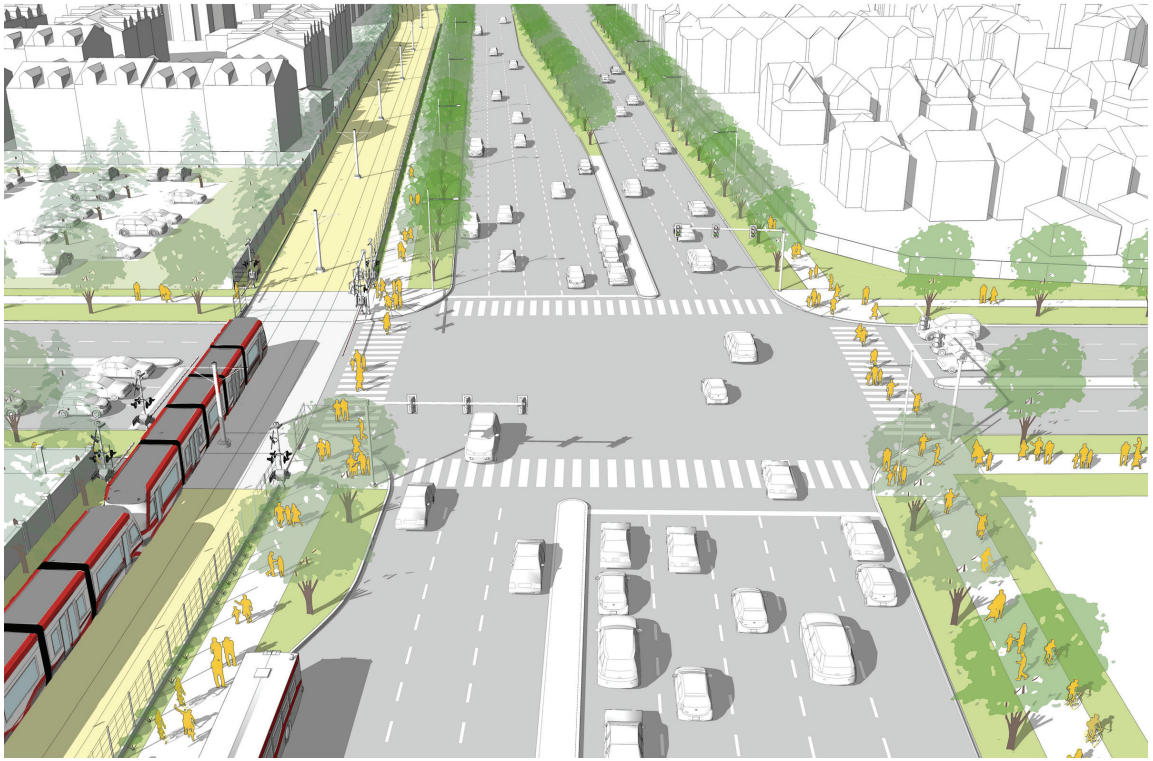
- Typically surface crossings for cars, pedestrians and cyclists controlled by gates.
- Some grade separations may be required
- LRT right-of-way typically fenced, although in certain instances, other means of physical separation may be used

URBAN INTEGRATION

- Transit plazas are included and can be enhanced community civic space
- Enhanced sidewalk public realm to encourage walking, civic life and attract TOD (where adjacent streets are present and appropriate for pedestrian mode)
- Surface treatment within the right-of-way, fencing style and height, landscaping determined by context sensitivity

EXAMPLE SEGMENT

- 52 Street SE



Enhanced design treatments in an exclusive, LRT right-of-way with an adjacent arterial

Median landscape and fencing enhancements for exclusive right-of-way LRT

Enhanced LRT design treatment in an exclusive right-of-way within an historic community centre

Enhanced landscaping and fencing in a boulevard setting

Station public realm enhancements

Multiuse path, lighting and landscaping with a separated right-of-way LRT

Transit oriented development and bus terminus at a Typology 1 station

LRT crossing with enhanced public realm in an industrial area

Enhanced landscaping, fencing and lighting in an exclusive right-of-way with an adjacent arterial

LRT in an exclusive right-of-way in a mixed land use area

TYPOLOGY 2

OBJECTIVE

- To embrace design features that subtly separate the LRT and surrounding environment, while still providing an integrated look and feel

CONTEXT

- LRT operates on an exclusive trackway, adjacent to shared environment; aesthetics are critical as neighborhood faces the corridor
- In median or side of an urban street

CROSSINGS/ACCESS

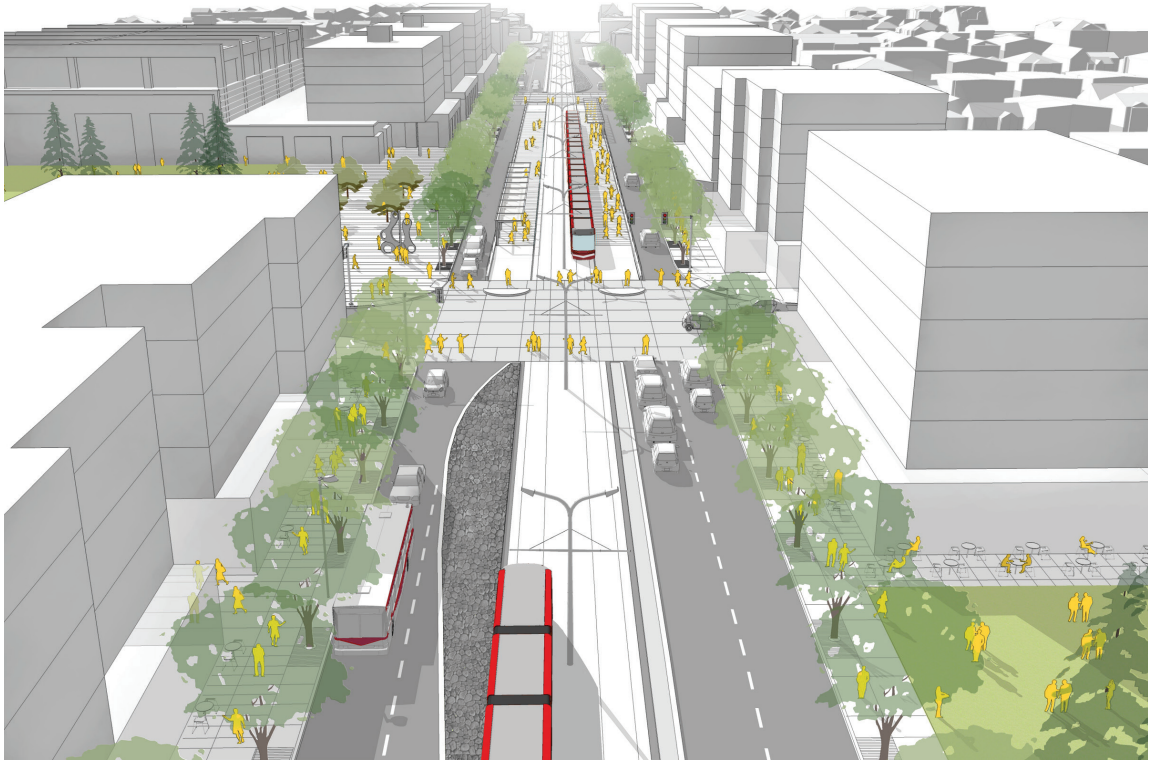
- Signalized vehicle, pedestrian and cyclist crossings at intersections; controlled pedestrian-only crossings between intersections
- Crossings may have crossing protection
- Increased pedestrian crossings at controlled intersections reflective of the existing community grid spacing and road network

URBAN INTEGRATION

- Transit plazas are included and can be enhanced community civic space
- Enhanced sidewalk public realm to encourage walking, civic life and attract TOD
- Track type, track protection, landscaping determined by context sensitivity

EXAMPLE SEGMENTS

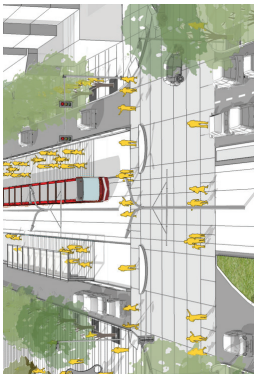
- Centre Street/20 Ave N to McKnight Boulevard – MDP Urban Corridor
- Centre Street/64 Ave N to Beddington Boulevard – MDP Residential – Developed/Established



Surface LRT fully integrated into a mixed modal, urban street at a station with major TOD and enhanced public realm

Station platforms in a low-floor system

LRT in a shared right-of-way with enhanced public realm



Enhanced intersection and sidewalk public realm in a street-running LRT

Low-floor platforms in street-running LRT

TOD and enhanced public realm in a street-running LRT

Stations and TOD in urban, street-running LRT

Low-floor platform, high transparency station and enhanced public realm in a street-running LRT

Low-floor platform in a boulevard with enhanced public realm and TOD

TYPOLOGY 3

OBJECTIVE

- To enhance visibility and integration of station entrances to the underground transit network

CONTEXT

- Station entrance in transit plaza
- In-street or off-street alignment; Downtown Calgary, urban and suburban neighborhoods

CROSSINGS/ACCESS

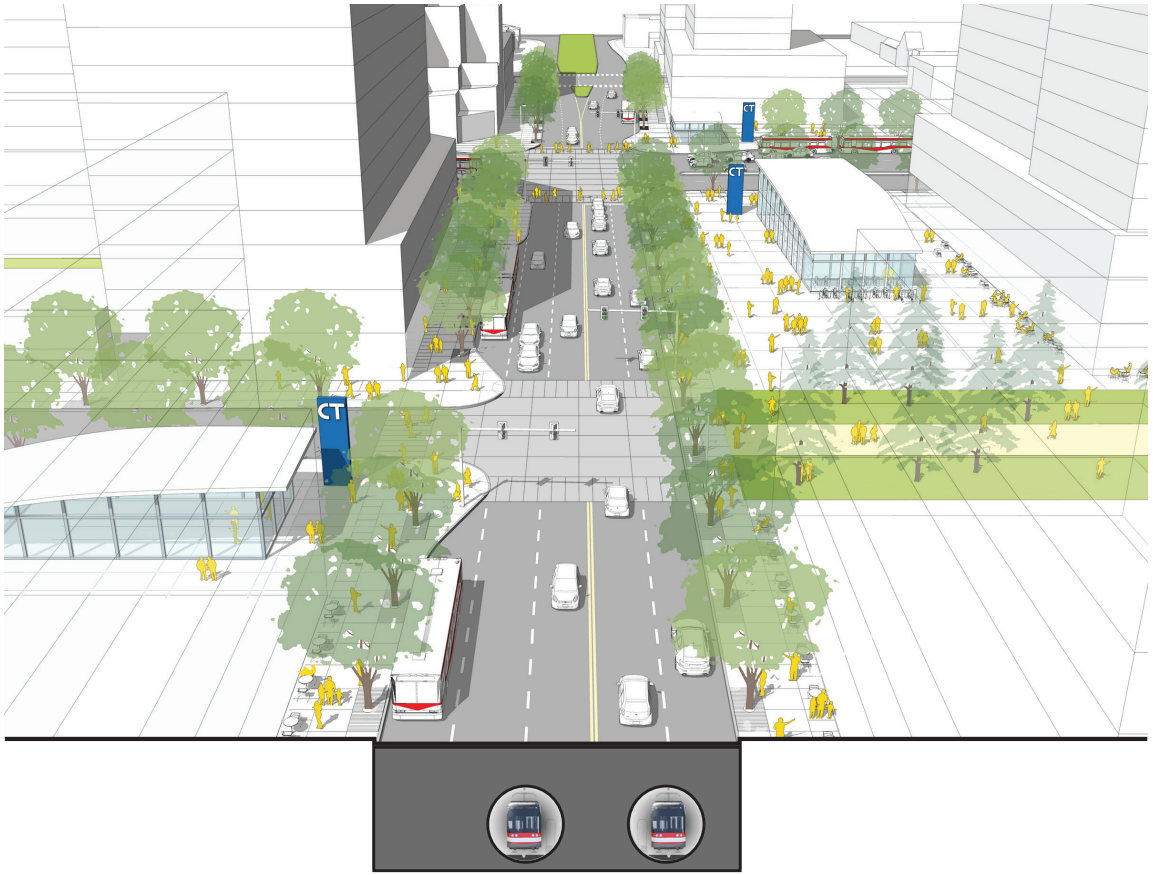
- Good street-level pedestrian, bicycle, bus access and wayfinding to station headhouses is critical

URBAN INTEGRATION

- High quality headhouse architecture to support wayfinding and visibility
- Headhouse locations at natural crossroads, in a transit plaza
- Public realm landscape/streetscape of transit plaza and surface streets over tunnel alignment to enhance or fit within setting

EXAMPLE SEGMENT

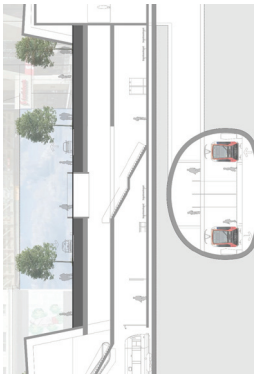
- Centre St N/16 Ave Station



A major inner city station with multiple headhouses and upgraded public realm in community plazas and streetscapes

Enhanced public pedestrian realm at the street surface over a tunnel alignment

Station headhouse incorporated into commercial/retail development; at-grade public realm enhancements at station block.

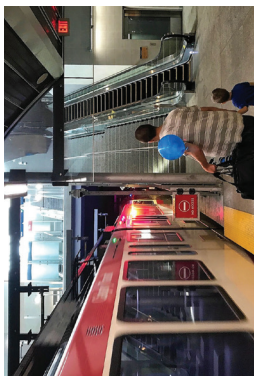


Concourse and platform at a major transfer station

Vertical circulation between concourse and platform levels

Inviting architecture, landscape and public realm at a station headhouse

Visibility from the station headhouse to the surrounding city neighbourhood



Natural daylight enhances the perception of safety

TYPOLOGY 4

OBJECTIVE

- To enhance integration and public realm under and around the elevated structure by designing an aesthetically pleasing corridor

CONTEXT

- LRT on guideway structure where grade separation is necessary

CROSSINGS/ACCESS

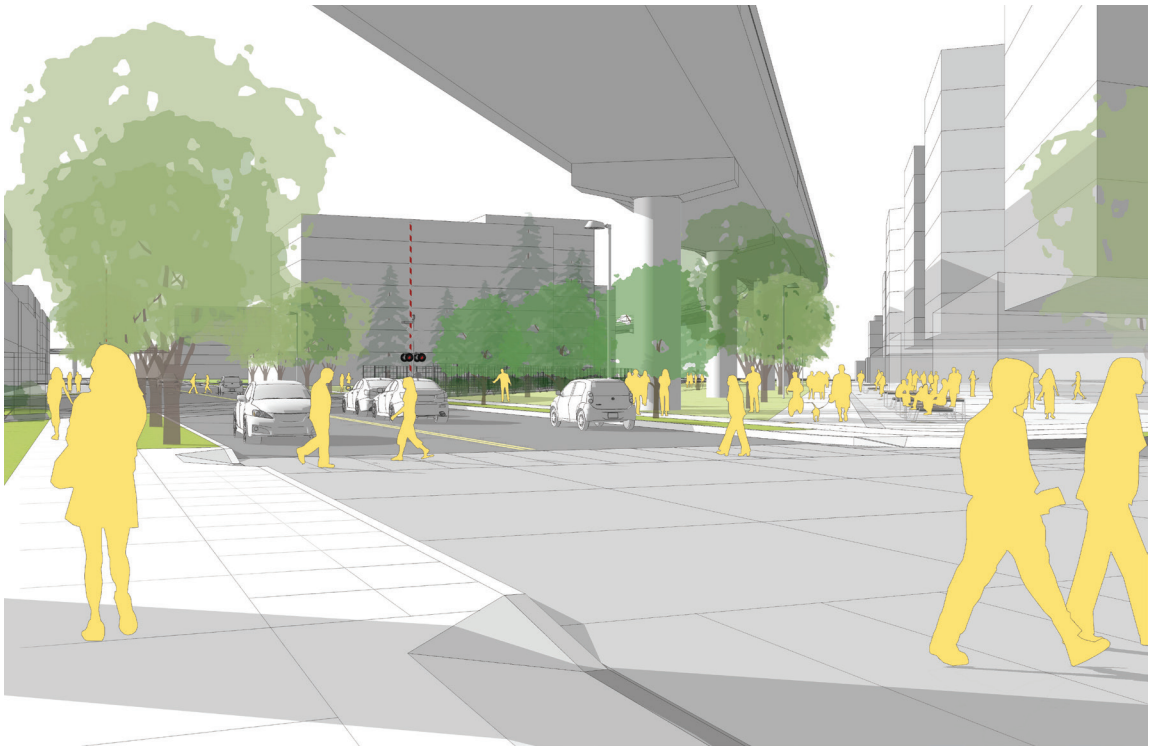
- Headhouse elevators/escalators/stairs from transit plaza to concourse and platforms
- Vehicle, pedestrian and bicyclist access at street level remains

URBAN INTEGRATION

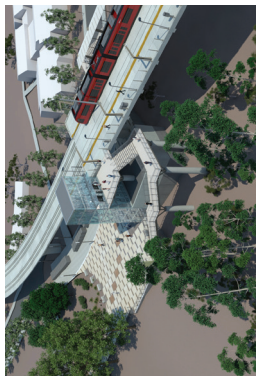
- Transit plazas are included and can be enhanced community space
- Aesthetics of guideway structures are critical
- Integrate at-grade space with existing and new development

EXAMPLE SEGMENT

- Along 11 Street SE between Inglewood/ Ramsay and 26 Ave SE stations



Potential for enhanced public realm at surface street level below an LRT elevated guideway



An elevated station headhouse elevator, stair structure in a landscaped campus setting

A filled guideway structure with public art mural treatments and a multiuse path in a redeveloped area

Enhanced pedestrian public realm under a rail guideway

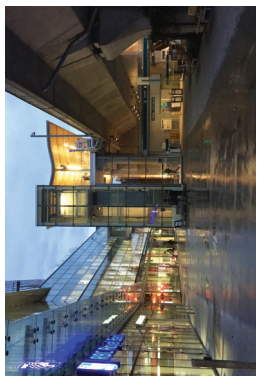
Enhanced public realm in a transit plaza at night

A filled guideway structure with enhanced architectural treatments and a multiuse path in a neighbourhood setting

A public, multiuse path sharing the underside of an elevated LRT guideway

An elevated station elevator structure in a landscaped public plaza

An elevated station headhouse in an enhanced public plaza



An elevated headhouse in a commercial public realm with an adjacent TOD

URBAN CORRIDOR

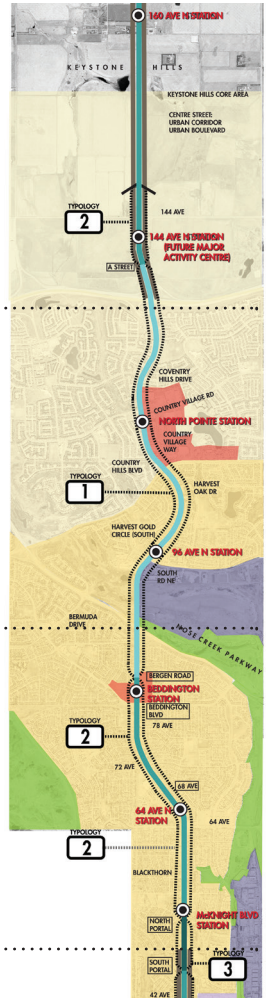
160 Avenue N and 144 Avenue N stations are in an Urban Corridor area north of Stoney Trail. This developing area is part of the Keystone Hills Core Plan, and is characterized by a high level of residential and employment intensification. The communities will contain mixed use development and walkable/bikeable amenities. Street patterns will be grid-like and buildings will front onto the Green Line alignment.

SUBURBAN

North Pointe and 96 Avenue N stations are in a Suburban area bounded by Stoney Trail at the north edge and Beddington Trail at the south edge. The Northern Hills communities have been planned with recreation centres, trails and amenities. Buildings back onto the transit corridor and there is limited access into adjacent communities.

ESTABLISHED NEIGHBOURHOOD

The communities between Beddington Trail and McKnight Boulevard are considered Established Neighbourhoods, and include the stations at Beddington Boulevard, 64 Avenue N and McKnight Boulevard. Green Line will travel through the mature neighbourhoods of Beddington Heights, Huntington Hills and Thorncliffe. Characteristics of the communities include low density commercial centres, wide boulevards with trees, service roads, and street-oriented houses and yards. There is high potential for intensification in these areas.

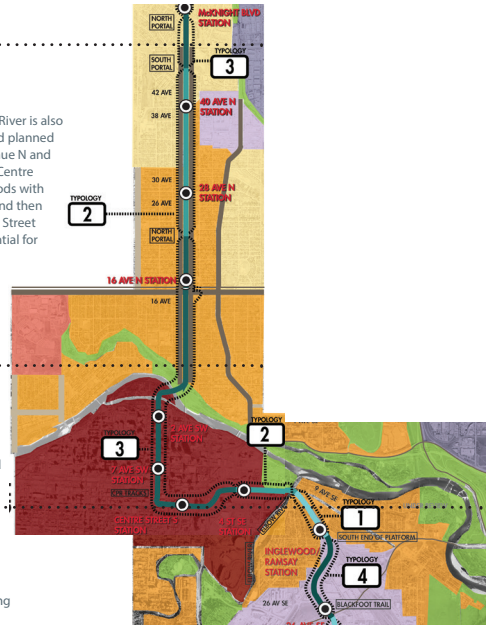


URBAN CORRIDOR

The area from McKnight Boulevard and the Bow River is also classified as an Urban Corridor. Three stations and planned TOD sites are located here; 40 Avenue N, 28 Avenue N and 16 Avenue N. The Green Line will be running on Centre Street as it passes through historic neighbourhoods with small blocks in Highland Park and Tuxedo Park, and then under Crescent Heights. Development on Centre Street is primarily older commercial, but has high potential for intensification.

CENTRE CITY

The Centre City character area is located south of the Bow River and west of the Elbow River containing the communities of Eau Claire, downtown and Beltline. Four stations are located here including 2 Avenue SW, 7 Avenue SW, Centre Street S and 4 Street SE. Centre City is a high density, mixed use area comprised of high-rise commercial and residential buildings with streetwall frontages and major redevelopment planned around the 2 Avenue and 4 Street stations. This area is a major pedestrian and entertainment area and connects with the existing Blue and Red LRT Lines.



GREEN LINE CORRIDOR TYPOLOGY MAPPING: NORTH & CITY CENTRE

MUNICIPAL DEVELOPMENT PLAN URBAN STRUCTURES
CATEGORIES

ACTIVE CENTRES
- CENTRE CITY
- MAJOR ACTIVITY CENTRE
- COMMUNITY ACTIVITY CENTRE

CORRIDORS
- URBAN CORRIDOR
- NEIGHBOURHOOD CORRIDOR

RESIDENTIAL - DEVELOPED
- INNER CITY
- ESTABLISHED

RESIDENTIAL - DEVELOPED
- INNER CITY

INDUSTRIAL
- STANDARD INDUSTRIAL
- INDUSTRIAL - EMPLOYEE INTENSIVE
- MAJOR PUBLIC OPEN SPACE
- PUBLIC UTILITY

- 1 TYPOLOGY 1
- 2 TYPOLOGY 2
- 3 TYPOLOGY 3
- 4 TYPOLOGY 4
- STATION
- ALIGNMENT

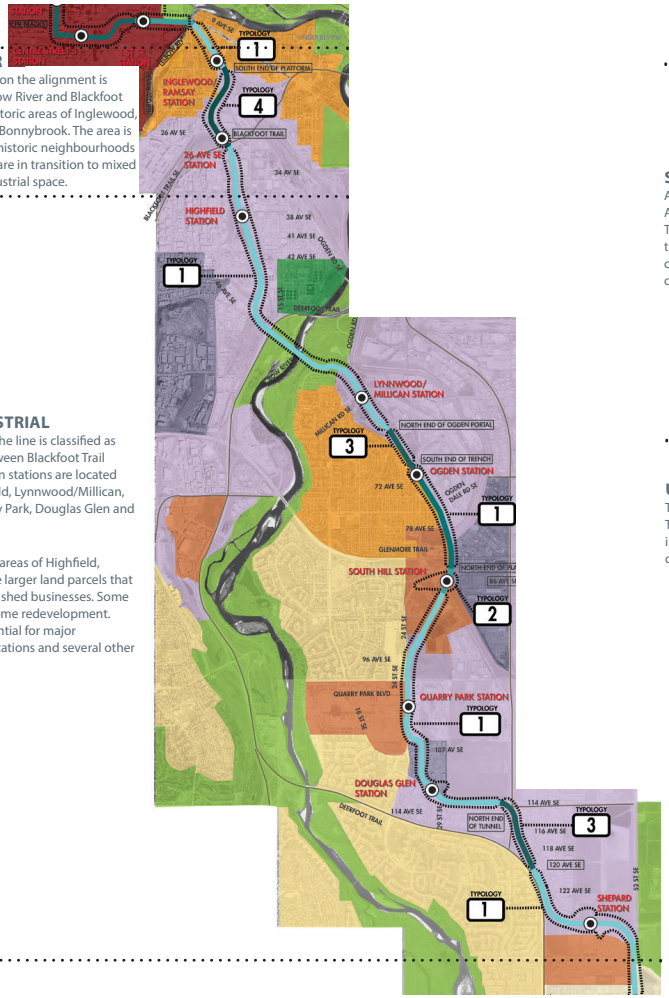
URBAN CORRIDOR

The third Urban Corridor on the alignment is located between the Elbow River and Blackfoot Trail. This includes the historic areas of Inglewood, Ramsay, Highfield, Alyth/Bonnybrook. The area is comprised of traditional historic neighbourhoods and industrial areas that are in transition to mixed use, maker, and light industrial space.

SUBURBAN/INDUSTRIAL

The longest segment of the line is classified as Suburban/Industrial between Blackfoot Trail and 130 Avenue SE. Seven stations are located here that include Highfield, Lynnwood/Millican, Ogden, South Hill, Quarry Park, Douglas Glen and Shepard.

The traditional industrial areas of Highfield, Ogden and Shepard have larger land parcels that are home to many established businesses. Some areas are experiencing some redevelopment. The area has strong potential for major redevelopment at key locations and several other undeveloped areas.

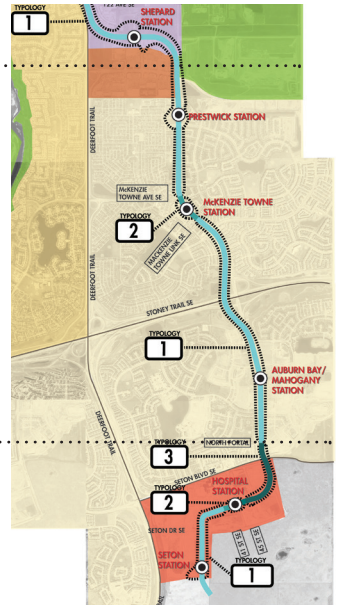


SUBURBAN

A second Suburban area is located between 130 Avenue SE and Auburn Bay Avenue SE, with three stations; Prestwick, McKenzie Towne and Auburn Bay/Mahogany. The Green Line would run on the side of the road, rather than in the centre in these areas. The communities are self-contained and oriented away from the LRT corridor, with back fences facing the future LRT.

URBAN CORRIDOR

The final segment on the alignment is a fourth Urban Corridor. The Hospital and Seton stations are located here. The area includes a major medical centre employer in a master planned community with mixed use development.



GREEN LINE CORRIDOR TYPOLOGY MAPPING: SOUTHEAST

MUNICIPAL DEVELOPMENT PLAN URBAN STRUCTURES
CATEGORIES

ACTIVE CENTRES
- CENTRE CITY
- MAJOR ACTIVITY CENTRE
- COMMUNITY ACTIVITY CENTRE

CORRIDORS
- URBAN CORRIDOR
- NEIGHBOURHOOD CORRIDOR

RESIDENTIAL - DEVELOPED
- INNER CITY
- ESTABLISHED

RESIDENTIAL - DEVELOPED
- INNER CITY

INDUSTRIAL
- STANDARD INDUSTRIAL
- INDUSTRIAL - EMPLOYEE INTENSIVE
- MAJOR PUBLIC OPEN SPACE
- PUBLIC UTILITY

- 1 TYPOLOGY 1
- 2 TYPOLOGY 2
- 3 TYPOLOGY 3
- 4 TYPOLOGY 4
- STATION
- ALIGNMENT

NEXT STEPS

GLUI describes an approach for the successful urban integration of future light rail transit corridors, illustrating how different LRT environments will look and feel to Calgarians. It is important to note that the foundational principles informing urban integration are derived from community consultation, and this document aspires to bring to life the vision Calgarians have for their future transportation network: enjoyable to use, sustainable, convenient—the first and best choice. Light rail has the potential to be truly city-shaping, to connect and leverage significant investments in city assets located along the length of the corridor when fully integrated into the urban context.

For GLUI to have the most impact, more detailed exploration is required to further define and explain its components. The intention of urban integration, as a multiple volume document, is that it will have life well beyond the Green Line corridor, remain relevant and be of use and reference to the City as future lines are planned and implemented within the network.

In future refinements of GLUI, principles and guidelines will be developed so as to serve:

- Administration as they assess transit design proposals, development proposals and related mobility projects; and,
- As a tool to assist design teams during the pursuit and procurement phases to ensure the design intent of the contract package is maintained through detailed design and construction.