Green Line Urban Integration (GLUI) Volume 1



VISION FOR GREEN LINE

A TRANSIT SERVICE THAT IMPROVES MOBILITY CHOICES FOR CALGARIANS, CONNECTING PEOPLE AND PLACES, AND ENHANCING THE QUALITY OF LIFE IN THE CITY.

The Green Line is Calgary's next light rail transit (LRT) line, and one of the higher public transit infrastructure priorities for the city. The Green Line is designed to be both a transit system and a platform for development and city-shaping; it will provide efficient service and connections to destinations throughout The City, and areas where people can live affordably with access to amenities, services and sustainable mobility options. Major infrastructure projects such as the Green Line speak to big-picture sustainability and compliment visionary intiatives such as imagineCalgary.

Green Line, along with Red and Blue Lines, form the backbone of Calgary's transit system and ridership will continue to grow with its continued development. Green Line will introduce fast, frequent and reliable LRT service to tens of thousands of Calgarians, seamlessly integrating with the Red and Blue lines and expanding customer access to all of Calgary. It will add 46 kilometres of track to the existing 59-kilometre LRT system. End-to-end, it will connect communities between Keystone and Seton to downtown and various other destinations along the way.

At full build-out, Green Line will carry an estimated 240,000 trips per day (2076 horizon with full alignment to Keystone and Seton). Along its route, it will provide direct connections to the new South Health Campus, new recreation centres, major employment centres, the National Music Centre, the new Central Library, Stampede Park, and several business revitalization zones.

TT2017-0534 GREEN LINE LRT ALIGNMENT AND STATIONS: 160 Avenue N to Seton Att-2.pdf
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HOW TO USE THIS REPORT

As a complementary document to the functional planning study for the alignment and stations the Green Line LRT Urban Integration (GLUI), will be used to help inform the next generation of the Municipal Development Plan (MDP). The current MDP is envisioned to be updated as changes such as the Green Line LRT route alignment along Centre Street was not previously contemplated. This report will act as an interim measure to provide guiding principles to allow for both the advancement of design for the LRT as well as to inform planning activities such as Main Streets and future development applications applications that may come in. Approval of GLUI provides certainty and a communication tool for the communities along the corridor as well as provides support for the Transit Oriented Development implementation strategy.

Please note that locations portrayed in images are purposefully not labelled as this document illustrates the look and feel of urban integration as opposed to modelling of specific transit systems or stations.

GLUI AT A GLANCE

As a result of Green Line LRT connecting through various communities with varying contexts, The City identified the need to better illustrate how the physical Green Line LRT infrastructure would integrate into its environment. The outcome was the creation of GLUI which is to be used as a framework for integration during the design development and is intended to help visualize the guiding principles to communicate how the Green Line LRT will fit within the communities.

Lessons learned from other jurisdictions have described the importance of establishing the objectives and a need for more effectively communicating the intent of integration prior to a contract being issued. The interpretation of "integration" varies amongst stakeholders therefore GLUI becomes an aid to convey contract enforceable expectations for the look and feel of the corridor. The final version of GLUI will be a supplemental document used in conjunction with Request For Proposal (RFP) schedules to inform contractors bid designs. Contractor proposal extracts that are informed by the GLUI and are incorporated into the project agreement. This mechanism has been used successfully in other projects to articulate the look and feel of elements in a way that is difficult to convey using legal language alone.

GLUI VOLUMES

GLUI Volume I is a framework document establishing guiding principles, approach as well as the look and feel of the LRT environment. The complete set of GLUI volumes comprises a composite document that outlines urban integration from concept through to implementation.

GLUI is truly is the "Glue" that holds land-use and transportation considerations together, detailing treatment and transitions with a level of context sensitivity appropriate to the LRT environment.

It is important to note that any issues concerning operational parameters will be addressed elsewhere in other complimentary documents to be developed by The City.

This report will continue to evolve and communities will have the opportunity to provide input as to how the LRT will integrate. To start The City requires a set of guiding principles meeting the original intent of the current MDP, reflective of the concept of operations and providing aspirational goals for future MDP updates that ultimately will inform the detail design.



VOLUME I - THIS DOCUMENT

- Establishes the Urban Integration Framework for the Green Line.
- Describes the look and feel of different LRT environments along the corridor.



VOLUME II

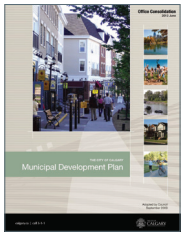
- Guideline document that details how to apply the Urban Integration Framework.
- This volume could be used for other Calgary Transit projects (not limited to Green Line).



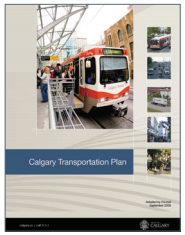
VOLUME III

- Contractual document used for Implementation Phase of Green Line.

SUPPORTIVE POLICY



Municipal Development Plan



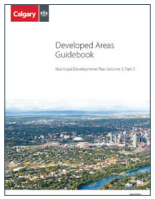
Calgary Transportation Plan



Calgary Transit - Route Ahead



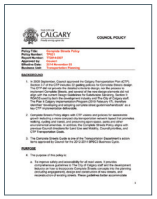
Centre City Urban Design Guidelines



Developed Areas Guidebook



New Communities Planning Guidebook



Complete Streets Guide


2 Green Line Urban Integration Volume – I | 13 June 2017 | Revision #3 | #351173-UD-REP-00-PG-ER0001

GREEN LINE URBAN INTEGRATION IS A NEW, COMPREHENSIVE WAY OF PLANNING FOR TRANSIT IN CALGARY GOING FORWARD



INTRODUCTION

WHAT IS GREEN LINE URBAN INTEGRATION?

Green Line Urban Integration (GLUI) is a comprehensive way of planning for transit in Calgary going forward. It integrates the major transportation and land use policy plans of the last decade into a vision for sustainable community development in The City. It is based on a set of foundational principles that will guide the investments made in the Green Line corridor so as to achieve its full potential. At its core, urban integration requires that primary transit infrastructure fit into and enhance every part of the community it touches. The Green Line LRT is expected to connect and interface a wide spectrum of origins and destinations, providing an attractive travel choice, stimulating economic development and physically shaping Calgary's form, in both existing and new communities.



Keystone Hills Conceptual Artist Rendering - Low floor, street-running LRT integrated with an Amenity Space/transit plaza in a mixed use, Major Activity Centre.

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URBAN INTEGRATION + PROJECT VISION







Examples: Various degrees of urban integration and transit oriented development with both high-floor and low-floor LRT in a variety of station and corridor contexts

WHY IS URBAN INTEGRATION IMPORTANT?

GLUI is the demonstration of Calgary's comprehensive smart growth policy developed over the last decade including land use, multimodal mobility, urban form, preservation, sustainable practices, growth management and public health. It will guide the design of transit infrastructure that fits, improves connectivity and access for all modes, leverages the investment to direct growth to underutilized and emerging areas of the city, and coordinates its planning with larger city-wide and regional initiatives to truly shape the city.

There are two key components to urban integration:

1. Integration of LRT into the network and its interface with other modes.
2. Integration of LRT within the fabric of the community.

It is an important to find a balance between how we physically integrate LRT infrastructure within the context of the corridor and how we integrate service requirements to ensure transit delivers passengers from where they are to where they want to go. It is equally important to provide an attractive environment as it is to provide an attractive service.
Another top priority for Green Line is successful integration of LRT and other modes, allowing a seamless transfer for the Transit customer. Efficient transit operations offering fast, frequent and reliable transit can occur within the envisioned corridor but attention to details will be required, hence why GLUI is being developed.

Integration of the Green Line will occur over a spectrum of urban contexts requiring a variety of LRT infrastructure typologies to describe the infrastructure and the surrounding environment in which it fits.

Physical infrastructure such as the Green Line's low floor LRT sidewalk height platforms, will address accessibility considerations and be able to serve and enhance a variety of urban contexts. Particularly, mixed modal and street environments embedded in the middle of urban neighbourhoods.



Example:
Low-floor side platform in an urban boulevard with ease of access and open sightlines to station platforms.



Example:
Low platform in a centre city context with integrated intersection, plaza and pedestrian public realm.

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GUIDING PRINCIPLES



Enhance connectivity between people and places, by making it easy to transfer between all modes of transportation .



Contribute positively to community development by enhancing the character and cohesion of the community through integrated design of the Green Line.



Provide transit stations that are clean, comfortable, well maintained and are sensitive to the surrounding built context and community vision.



Contribute to the vitality of businesses in the community by increasing accessibility and connectivity to Calgarians.



Enhance the environment by reducing greenhouse gases, reducing congestion, protecting natural areas and urban beautification.



Create a positive customer experience that ensures Green Line is safe, welcoming, convenient and easy to use.



Be accessible for people to get to, board and use. Be an affordable transportation choice.

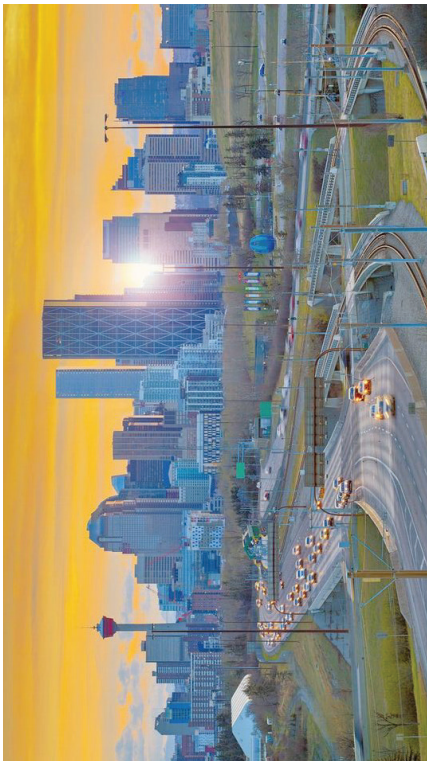


Contribute to complete streets principles including landscape, pedestrian and cycling systems that balance the needs of an efficient traffic management system.



Make the Green Line an attractive transit service that will become the preferred mobility choice for Calgarians living and working along the line.

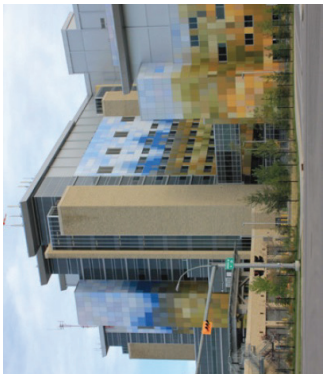
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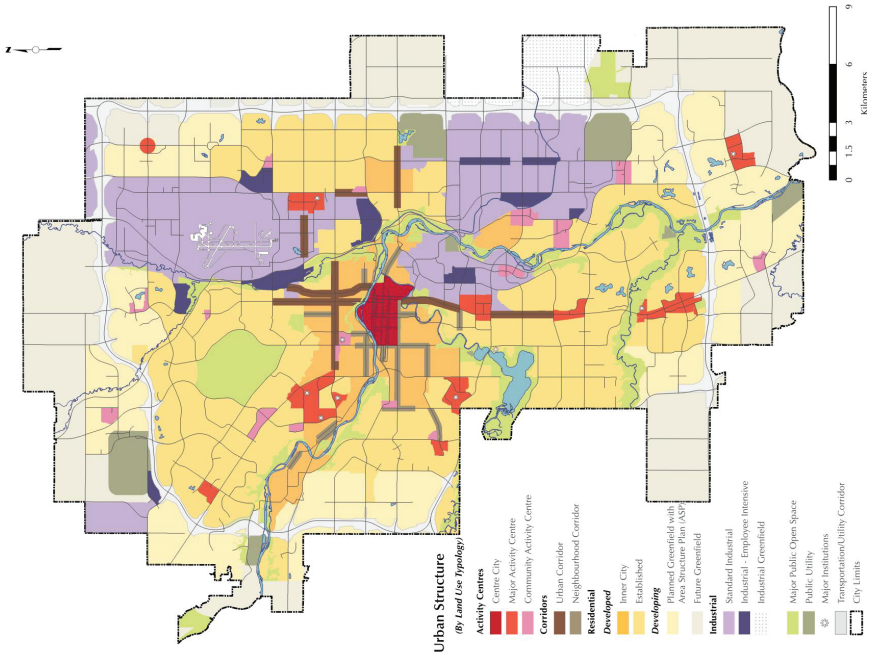
CENTRE CITY



COMMUNITY ACTIVITY CENTRE



MAJOR ACTIVITY CENTRE



MUNICIPAL DEVELOPMENT PLAN - URBAN STRUCTURE MAP



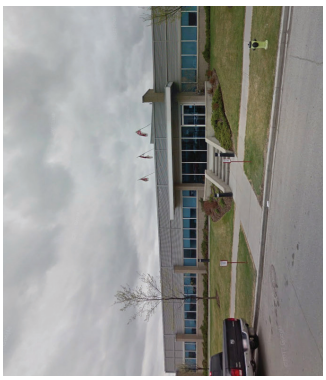
RESIDENTIAL DEVELOPED - Established



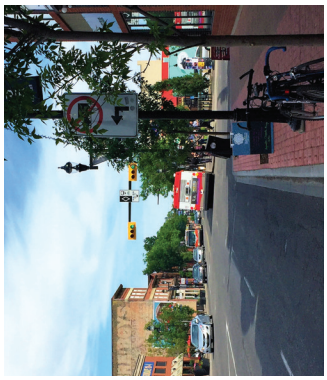
MAJOR PUBLIC OPEN SPACE



RESIDENTIAL DEVELOPED - Inner City



INDUSTRIAL - EMPLOYEE INTENSIVE



NEIGHBOURHOOD CORRIDOR



STANDARD INDUSTRIAL



URBAN CORRIDOR



RESIDENTIAL DEVELOPING - Planned Greenfield with Area Structure Plan

COMMUNITY CHARACTER ALONG THE LINE

The Green Line will have a distinct character at various points along the route, with the goal of striking a balance between efficient ride times and addressing the specific needs of each area. Understanding and defining the character of each area is important. Design elements, from track infrastructure and station design to streetscape and public art can be adjusted to preserve and strengthen the character of each individual community. There are 5 identified Character Areas along the Green Line corridor:

SUBURBAN

This character area can primarily be found in the far north and southeast segments of line, from Auburn Bay/Mahogany to Prestwick in the southeast and from just north of Beddington to North Pointe. These communities are typically residential with some mixed use areas with single family homes, apartments and town houses. The Green Line in these areas will be focused on providing much needed transit capacity and efficient and reliable ride times for commuters.

SUBURBAN/INDUSTRIAL

This character area is exclusive to the southeast, where there is a 14 km segment between the Highfield industrial area and Shepard (the site of the future maintenance facility). There is also a mix of residential development in these areas, combined with commercial/industrial uses such as a business park. These areas are adjacent to heavy rail lines, and will therefore have a protected right-of-way for the Green Line, allowing the train to travel at higher speeds, and provide service to a number of activity centres at South Hill, Quarry Park and Shepard.

ESTABLISHED NEIGHBOURHOOD

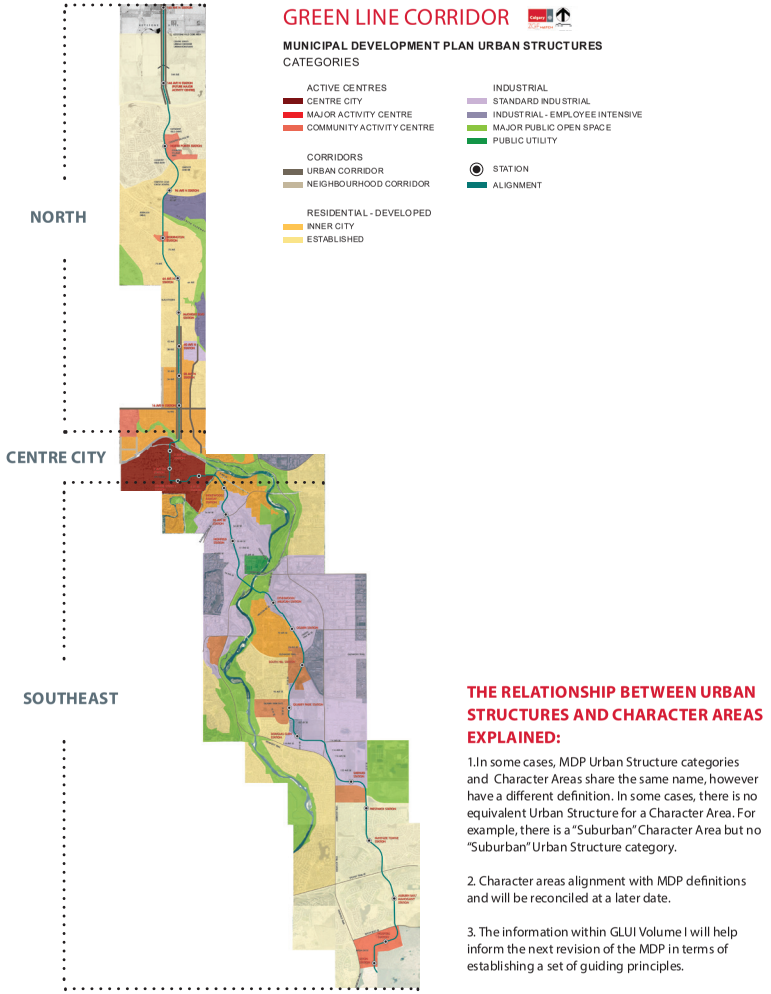
As the Green Line reaches the established communities along the northern segment of the line, it will provide connections to businesses and amenities that are primarily currently accessed by car. These neighbourhoods are planned similar to the block grid pattern found in the Centre City, however they are primarily residential use with some mixed use areas with medium density.

URBAN CORRIDOR

The Green Line will improve access and supplement an already existing network of pathways, bikeways and roads in this character area. In communities such as Inglewood/Ramsay, Crescent Heights and Tuxedo (16 Avenue & 28 Avenue N stations), the transit service will aim to complement and improve established communities by planting the seed for redevelopment, while respecting the character and history of the area. These areas are characterized by a compact built environment with rich mixed use that encourages people to walk and cycle.

CENTRE CITY

This area benefits from excellent public transit connections with short walkable blocks laid out in a grid pattern. They consist of high-rise residential buildings mixed with office buildings.The Green Line will intersect with the Red and Blue LRT lines in the Centre City, providing further connections to other areas of the city. The Centre City is the major activity centre in Calgary, and the primary destination for many transit customers. It will also provide residents of the Centre City with unprecedented access to other areas of the city, including the south Health Campus, and a number of community services.



THE RELATIONSHIP BETWEEN URBAN STRUCTURES AND CHARACTER AREAS EXPLAINED:

1.In some cases, MDP Urban Structure categories and Character Areas share the same name, however have a different definition. In some cases, there is no equivalent Urban Structure for a Character Area. For example, there is a "Suburban" Character Area but no "Suburban" Urban Structure category.

2. Character areas alignment with MDP definitions and will be reconciled at a later date.

3. The information within GLUI Volume I will help inform the next revision of the MDP in terms of establishing a set of guiding principles.

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URBAN CORRIDOR

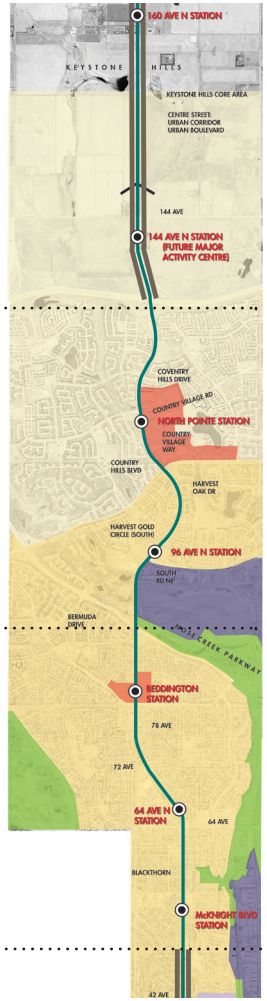
160 Avenue N and 144 Avenue N stations are in an Urban Corridor area north of Stoney Trail. This developing area is part of the Keystone Hills Core Plan, and is characterized by a high level of residential and employment intensification. The communities will contain mixed use development and walkable/bikeable 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.

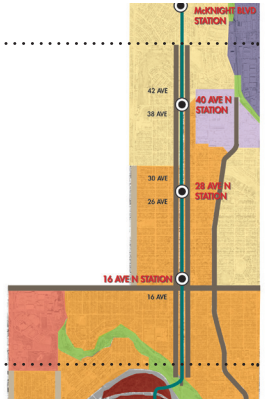
ESTABLISHED NEIGHBOURHOOD

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.



GREEN LINE CORRIDOR: NORTH

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

INDUSTRIAL
- STANDARD INDUSTRIAL
- INDUSTRIAL - EMPLOYEE INTENSIVE

- MAJOR PUBLIC OPEN SPACE
- PUBLIC UTILITY
- STATION
- ALIGNMENT

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GREEN LINE CORRIDOR:
CENTRE CITY
Calgary
ZGF
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
INDUSTRIAL
STANDARD INDUSTRIAL
INDUSTRIAL - EMPLOYEE INTENSIVE
MAJOR PUBLIC OPEN SPACE
PUBLIC UTILITY
STATION
ALIGNMENT
16 AVE N STATION
CENTRE STREET STATION
CALGARY TRAIL STATION
MACLEOD TRAIL STATION
INGLEWOOD / RAMSAY STATION
26 AVE SE STATION
9 AVE SE
26 AV SE
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 SW and 4 Street SE stations. This area is a major pedestrian and entertainment area and connects with the existing Blue and Red LRT Lines.

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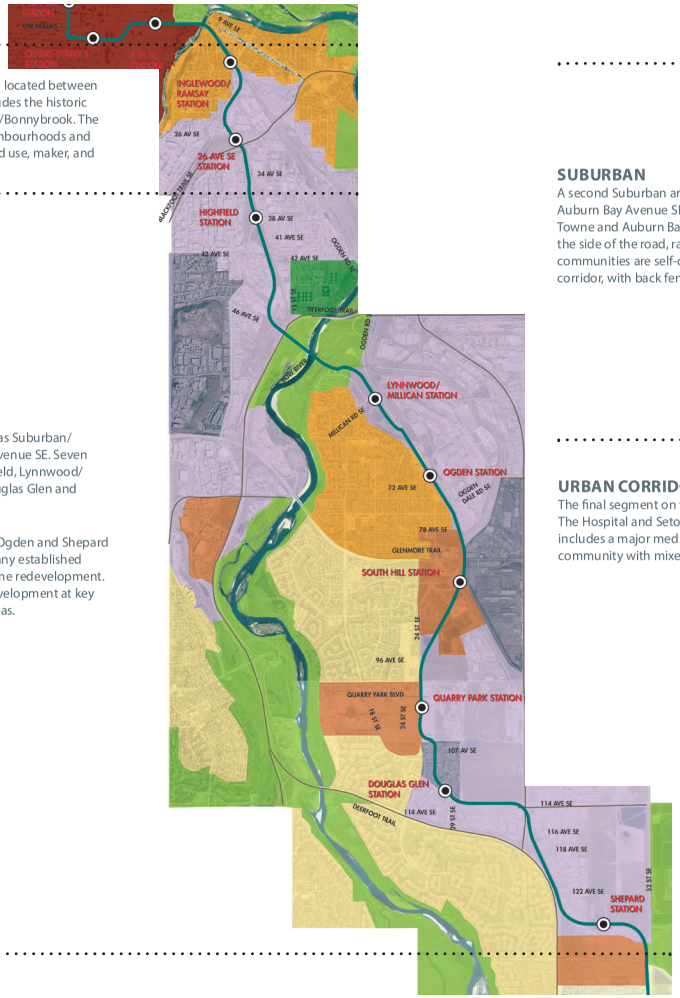
URBAN CORRIDOR

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: 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

INDUSTRIAL
- STANDARD INDUSTRIAL
- INDUSTRIAL - EMPLOYEE INTENSIVE

- MAJOR PUBLIC OPEN SPACE
- PUBLIC UTILITY
- STATION
- ALIGNMENT

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.

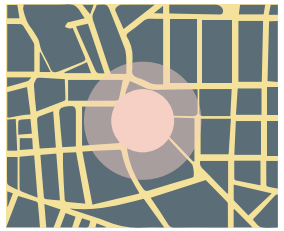
In selecting a given typology we must also understand the impact on the operations of the LRT system; **RIDE TIME AND RELIABILITY**. Optimal integration balances urban design fit, operational reliability and LRT as a preferred choice of travel.

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



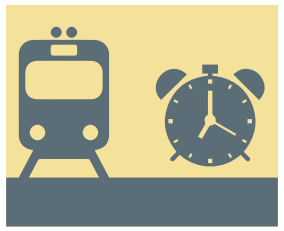
PUBLIC REALM OPPORTUNITY



GRADE SEPARATION



INTERACTION WITH OTHER MODES



RIDE TIME AND RELIABILITY



CAPITAL AND OPERATING BUDGET



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

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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?

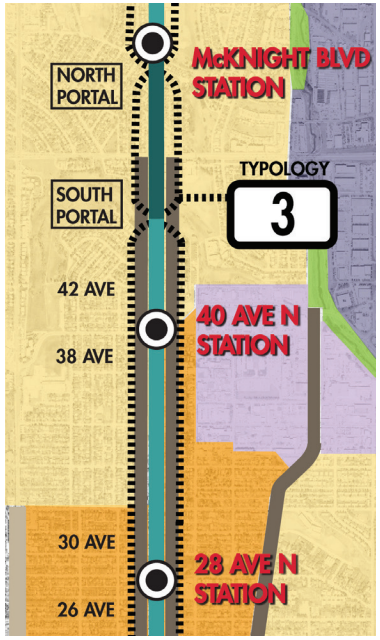
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GRADE SEPARATION
Is the Green Line in a tunnel or a bridge through this area?

+

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.

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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

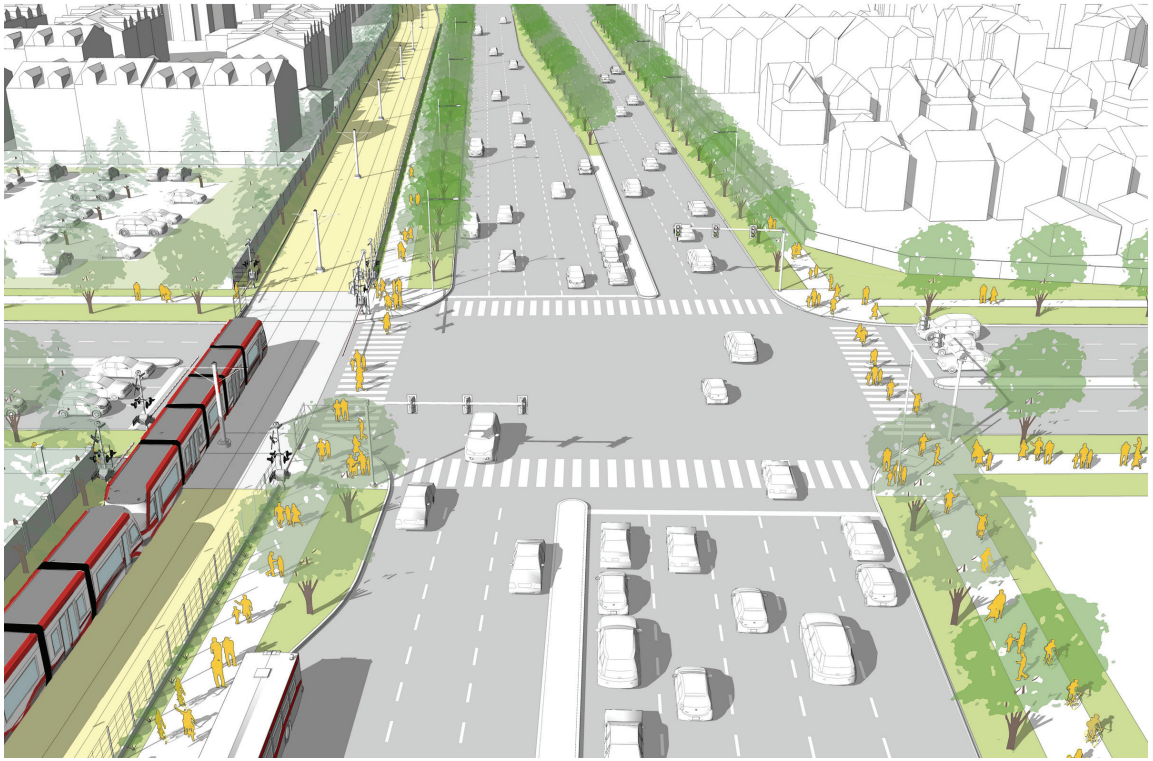
- Typically surface crossings for cars, pedestrians and cyclists controlled by gates.
- Some grade separations may be required
- LRT right-of-way typically fenced, although in certain instances, other means of physical separation may be used

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

TT2017-0534 GREEN LINE LRT ALIGNMENT AND STATIONS: 160 Avenue N to Seton Att-2.pdf
ISC: UNRESTRICTED



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

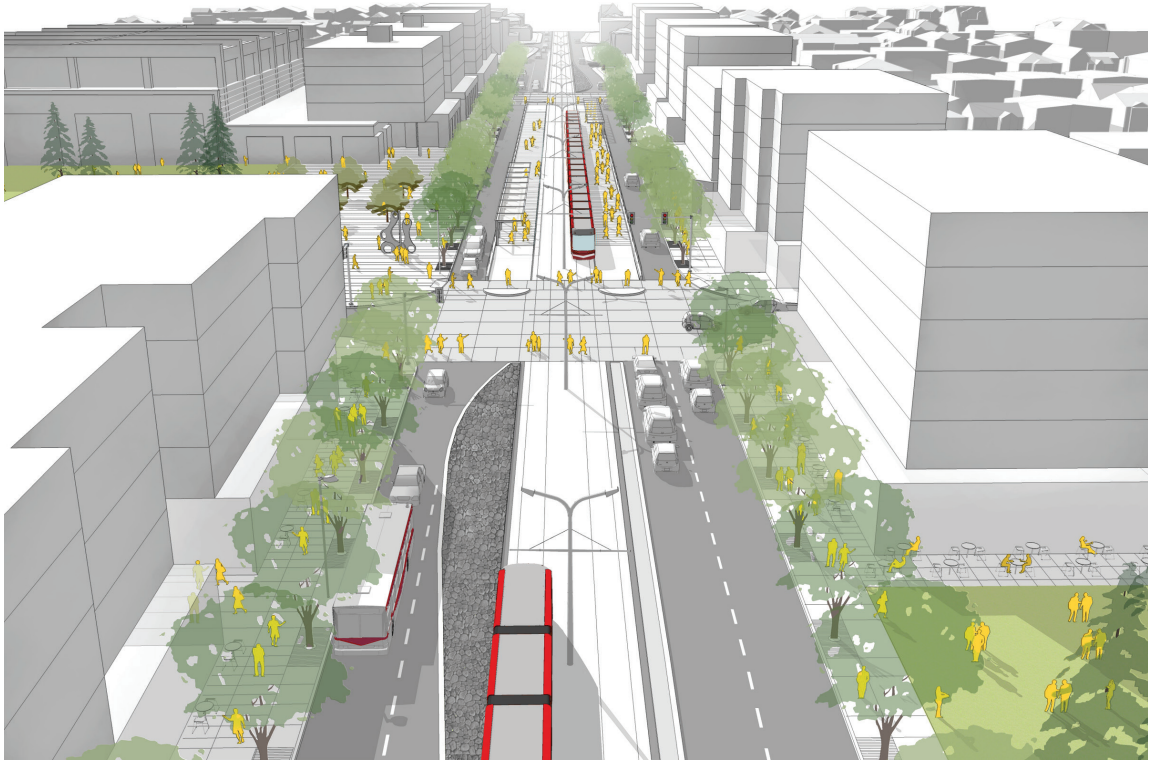
- Signalized vehicle, pedestrian and cyclist crossings at intersections; controlled pedestrian-only crossings between intersections
- Crossings may have crossing protection
- Increased pedestrian crossings at controlled intersections reflective of the existing community grid spacing and road network

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

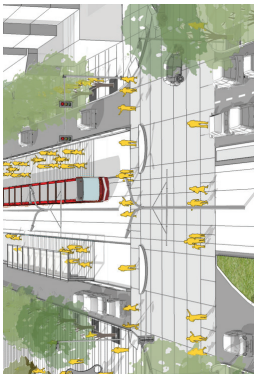
TT2017-0534 GREEN LINE LRT ALIGNMENT AND STATIONS: 160 Avenue N to Seton Att-2.pdf
ISC: UNRESTRICTED



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

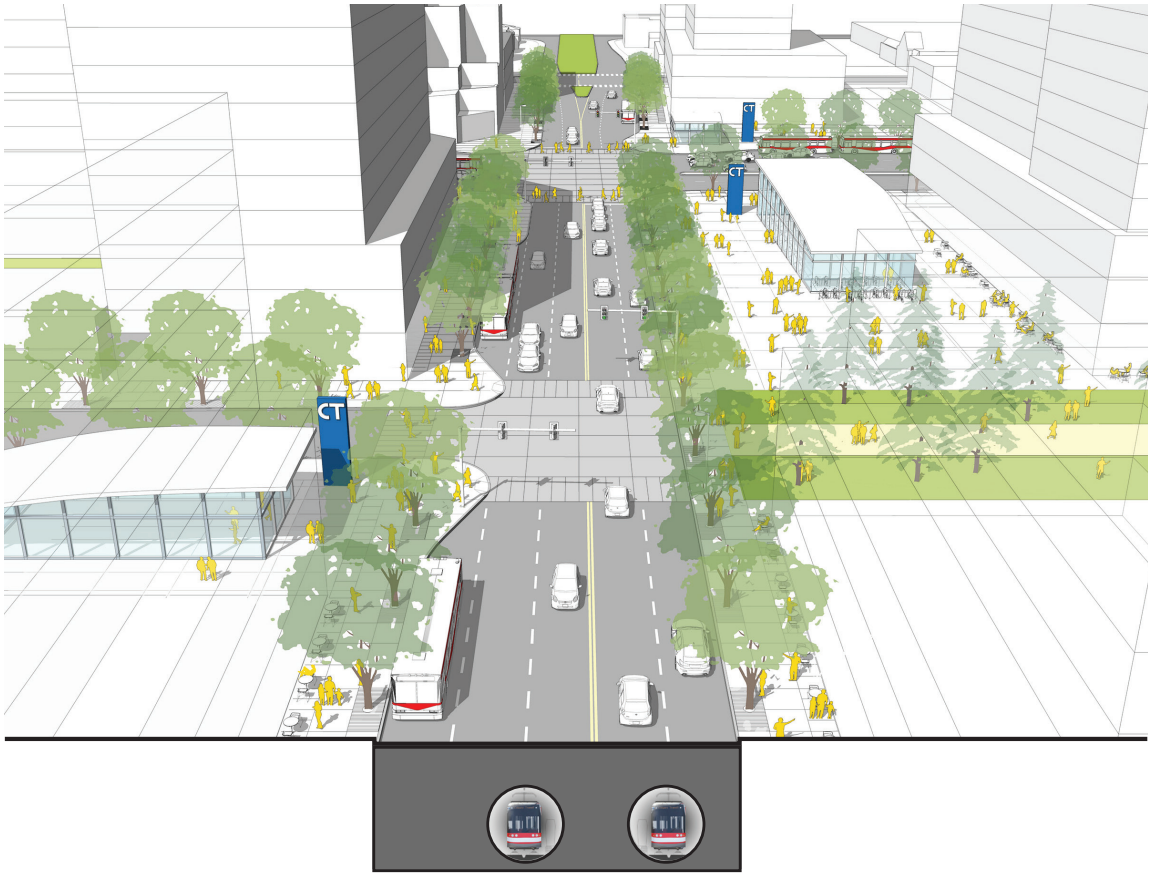
- Good street-level pedestrian, bicycle, bus access and wayfinding to station headhouses is critical

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

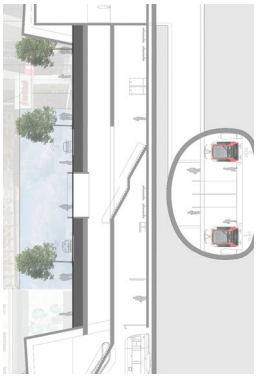
TT2017-0534 GREEN LINE LRT ALIGNMENT AND STATIONS: 160 Avenue N to Seton Att-2.pdf
ISC: UNRESTRICTED



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



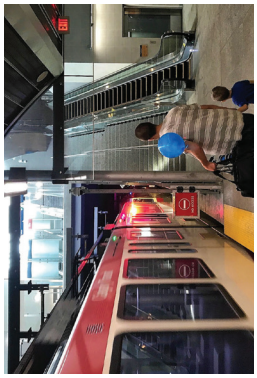
Vertical circulation between concourse and platform levels



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

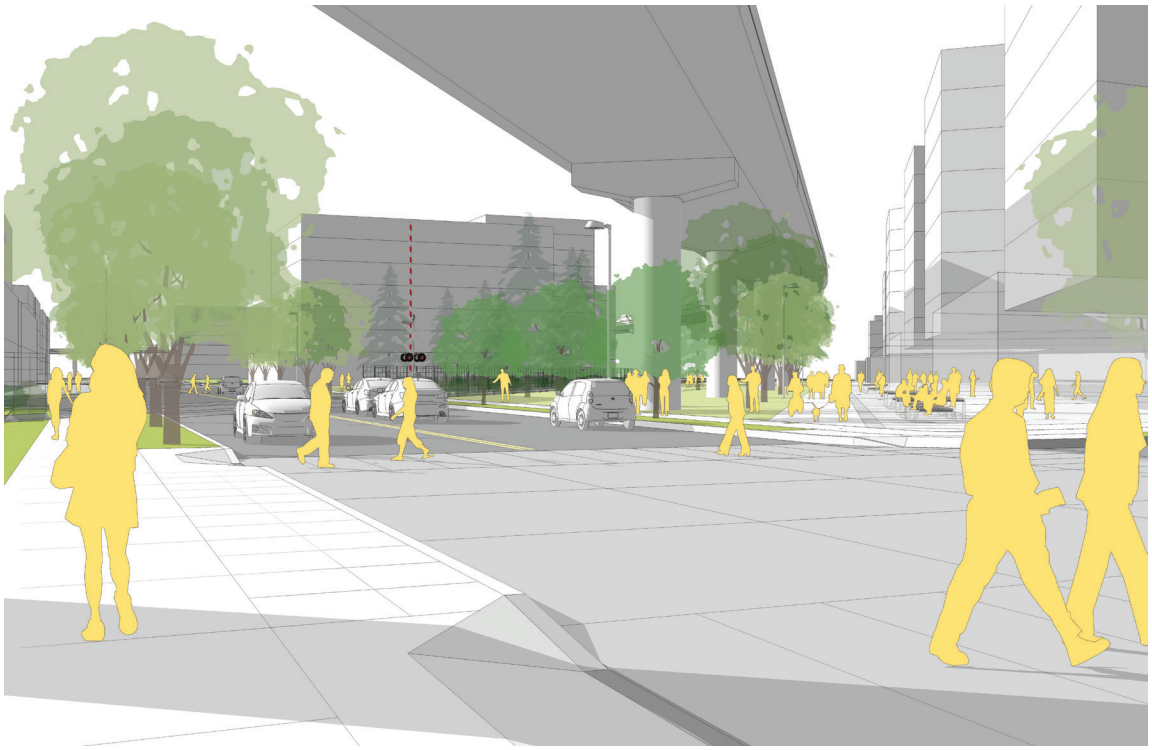
- Headhouse elevators/escalators/stairs from transit plaza to concourse and platforms
- Vehicle, pedestrian and bicyclist access at street level remains

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

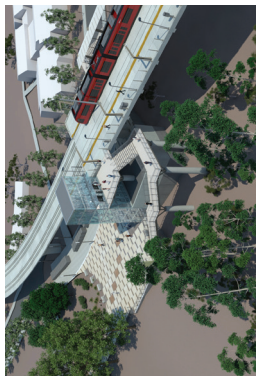
EXAMPLE SEGMENT

- 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

TT2017-0534 GREEN LINE LRT ALIGNMENT AND STATIONS: 160 Avenue N to Seton Att-2.pdf
ISC: UNRESTRICTED



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



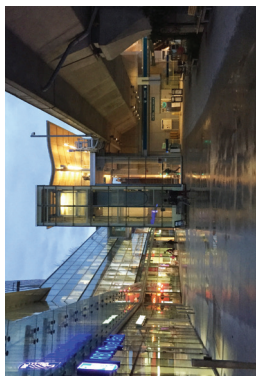
A public, multiuse path sharing the underside of an elevated LRT guideway



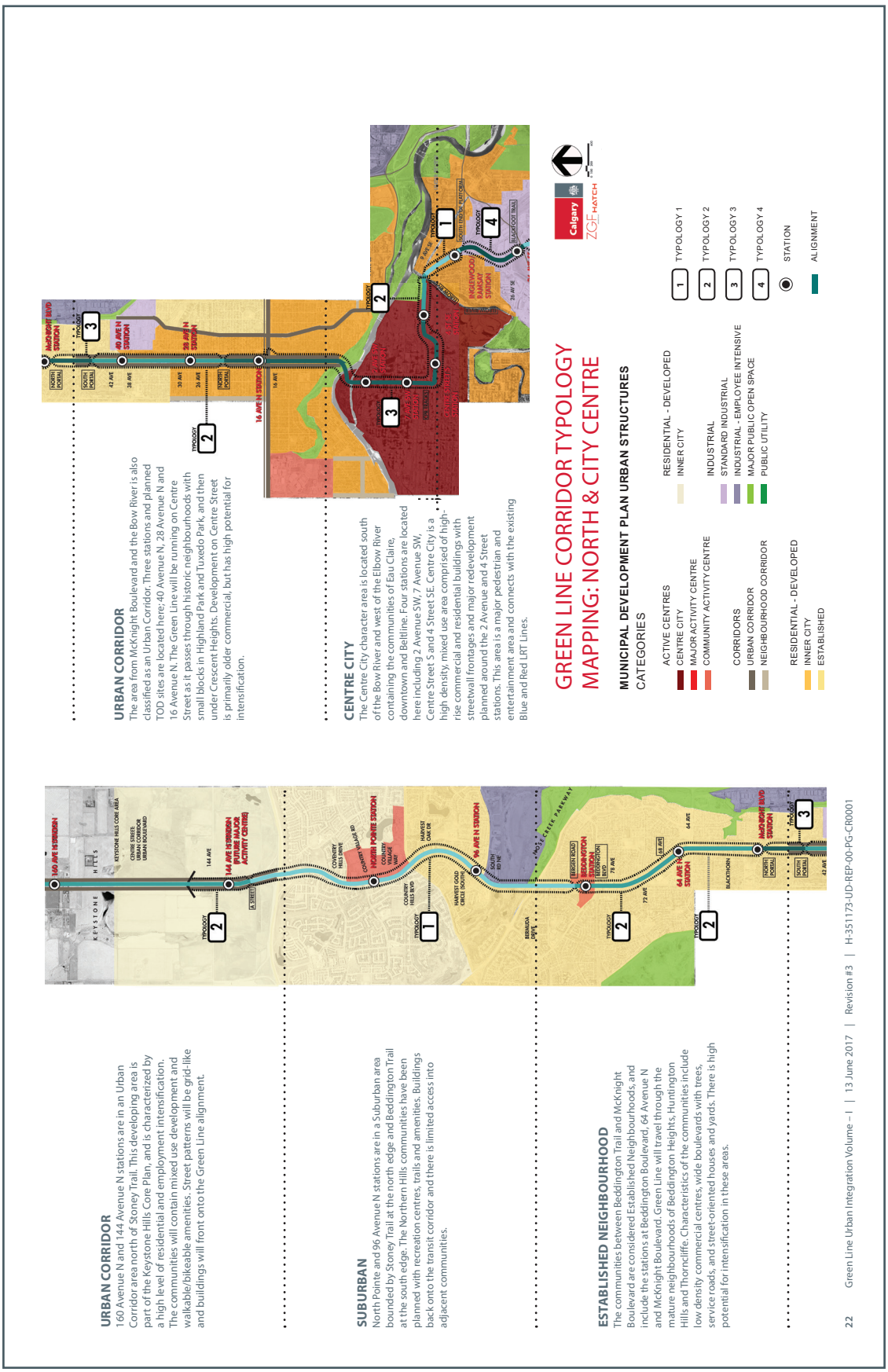
An elevated station elevator structure in a landscaped public plaza

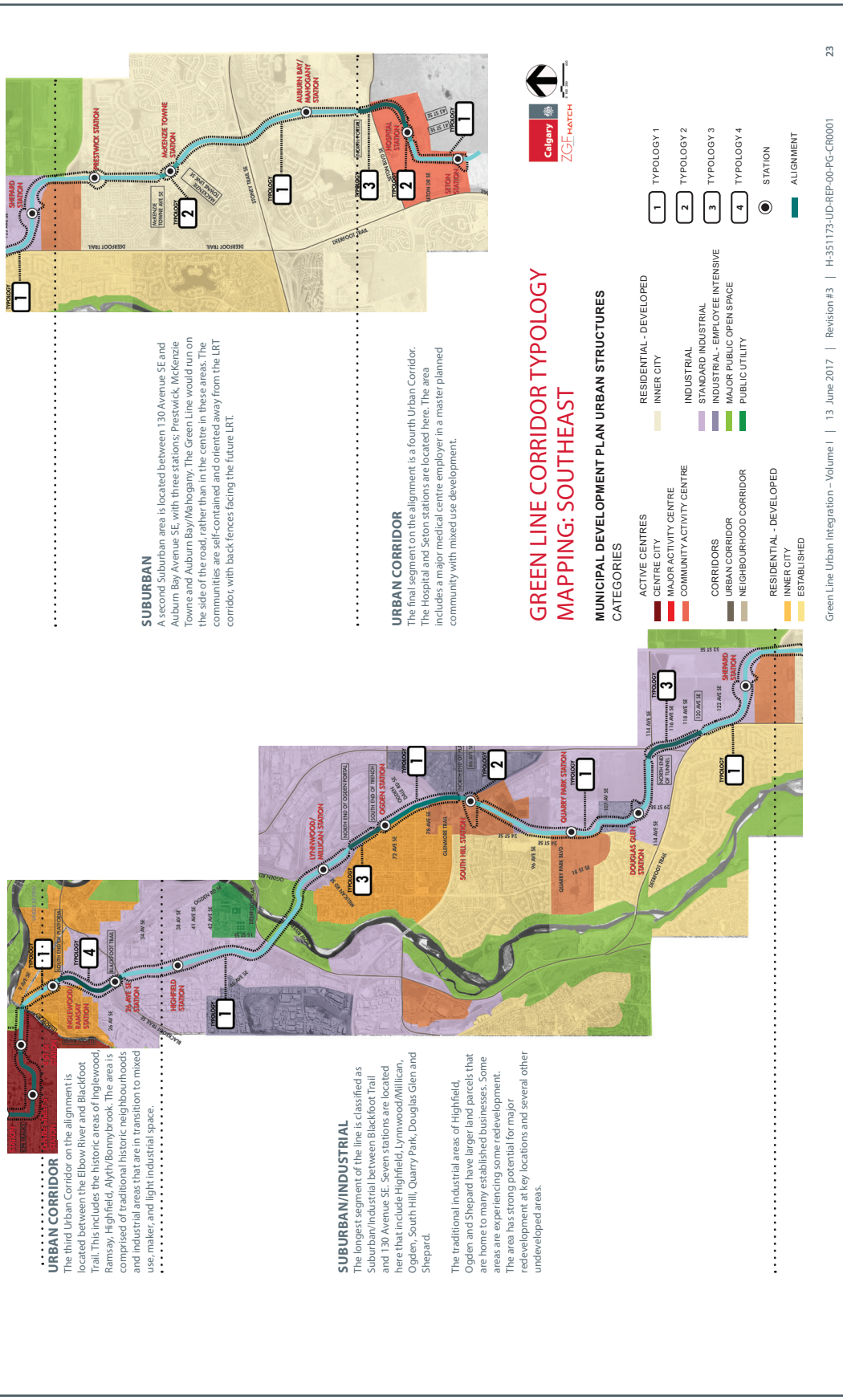


An elevated station headhouse in an enhanced public plaza



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


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
INDUSTRIAL
STANDARD INDUSTRIAL
INDUSTRIAL - EMPLOYEE INTENSIVE
MAJOR PUBLIC OPEN SPACE
PUBLIC UTILITY
RESIDENTIAL - DEVELOPED
INNER CITY
ESTABLISHED
TYPOLOGY 1
TYPOLOGY 2
TYPOLOGY 3
TYPOLOGY 4
STATION
ALIGNMENT
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.
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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
INDUSTRIAL
STANDARD INDUSTRIAL
INDUSTRIAL - EMPLOYEE INTENSIVE
MAJOR PUBLIC OPEN SPACE
PUBLIC UTILITY
RESIDENTIAL - DEVELOPED
INNER CITY
ESTABLISHED
TYPOLOGY 1
TYPOLOGY 2
TYPOLOGY 3
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, Lynwood/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 Urban Integration – Volume I | 13 June 2017 | Revision #3 | H-351173-UD-REP-00-PG-CR0001
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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.