

Report Prepared for The City of Calgary



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2.0 Executive Summary

Seventh Avenue is located near the geographic centre of downtown Calgary and has functioned for many years as the central east-west spine for transit service. Seventh Avenue is also one of the most prominent streets within the downtown. In 1981 it was dedicated to transit use.

Eleven single direction C-Train platforms currently exist along the Avenue, as well as several major mainline bus routes. The intensity of activity generated by the C-Train and bus services has resulted in the 7th Avenue stations and sidewalks becoming the most heavily used pedestrian component of the downtown.

The stations are heavily used and are rapidly reaching the end of their useful life with respect to their size and capacity, functionality, appearance, and ability to absorb further ridership growth, and there is a need to begin planning for the expansion of the C-Train platforms to accommodate four-car train operation within the next 10 to 15 years.

Seventh Avenue is one of the best-known streets in the downtown, but it is also one of the most disliked. Since it is one of the main streets experienced by many tourists and business-people who visit our city, it may well be negatively affecting Calgary's national and international image.

On the positive side, 7th Avenue is a well-known street and therefore, any steps that the City takes to make it appear safer, more interesting and vibrant, and more pedestrian friendly, will undoubtedly reap large dividends for the city's and downtown's image, and for the Avenue's economic and redevelopment prospects.

In October of 2002, Calgary Transit and Planning, development and assessment commissioned a team comprised of Graham Edmunds Cartier, Sturgess Architecture and Carlyle and Associates with support from Finn Transportation Consultants, Urban Systems, Read Jones Christoffersen and Costplan Management to work with them to develop a comprehensive urban design plan for 7th Avenue that includes replacement and extension of the existing platforms and complementary streetscape improvements.

This report is the result of that study and comprises a concept plan for the entire length of the 7th Avenue transit corridor, as well as a more detailed concept design for 2 blocks within the study area: the block between Centre Street and 1st Street SW (Block K) where a new westbound C-Train platform and associated streetscape improvements will be built; and the block bounded by 1st and 2nd Street W (Block J) where an existing station will be removed and streetscape improvements will be built.

The design team began by reviewing the functional requirements for 7th Avenue as a major transit and pedestrian corridor and the Downtown Planning Team's vision for revitalizing 7th Avenue. Arising from this review, the team developed the idea of a linear park connecting Fort Calgary to Millennium Park. This 'park' will connect existing parks, plazas and open spaces along 7th Avenue more directly and seamlessly with the street itself.

Where feasible, new stations will be amalgamated into dual direction stations, which will effectively function as recognizable 'places' along 7th Avenue, each designed as a unique fit to their immediate context, while clearly part of the collective whole.

Not only will physical barriers between these places and the street be removed, trees and vegetation will be 'pulled' into the street and along the Avenue, creating a canopy and defining a pedestrian realm.

The ground surface will become more uniform and contiguous, integrating and connecting the sidewalk with LRT platforms, parks, open spaces and, wherever possible, buildings. C-Train stations will become distinct places along the street, their ground surface much more a part of the ground itself, their canopies giving shelter to passengers and passers-by.

For all new station designs, the dominant canopy and shelter structures will be glass and steel. These materials will impart an overall feel of lightness and transparency, taking advantage of Calgary's predominantly blue, sunny skies, and balanced with warmer tones of coloured paving, and planting in non-station blocks. The proposed materials are also more durable and maintainable than existing station elements.

Consistent design of furniture, equipment, advertising displays, kiosks, transit infrastructure, pavement and other elements will impart a recognizable character to all the stations.

Place-specific elements will simultaneously lend an individual character and identity to each station.

Continuous tree-lined boulevards will bound the central trackway and the pedestrian realms, separating them physically but joining them together visually. These will define the pedestrian realm from the trackway.

Major parks and open spaces along 7th Avenue, including Century Gardens, the courthouses and Olympic Plaza will be literally and figuratively connected by the continuation of trees and other plantings along the avenue, 'anchored' by Fort Calgary to the east and Millennium Park to the west.

7 phases have been identified for implementing the project. The need to maintain transit operation has been balanced with the desire to address certain blocks earlier than others for aesthetic, functional and/or planning reasons. Phases do not necessarily correspond to years, and could be adjusted, within operational limitations.

The first phase of construction includes the removal of the 1st Street W station, and its replacement with a new station one block east. The new station location in front of existing Telus buildings will offer many advantages over the current station location, foremost being the potential to dramatically increase passenger capacity and improve street character through a sidewalk raised to platform level.

Design concepts have been developed to avoid potential conflicts with, and maintain access to existing utilities. Structural components of new stations will be constructed without deep foundations, with only a few exceptions. Tree trenches will be located away from existing utilities wherever possible, and where trees are planted in close proximity to utilities (as is the case in many cities) root guards will be used to protect them.

The potential for redevelopment along 7th Avenue has been identified through a discussion of the nature of currently underutilized sites and opportunities that these sites may present as vital components of a revitalized street.

Major downtown business, cultural and resident groups were consulted during the process of preparing this report, including the Calgary Downtown Association (CDA), The Building Owners and Managers Association of Calgary (BOMA), The Calgary Parks Foundation, The Calgary Cultural District Board, and the Community Associations of Eau Claire and West Downtown. In June, 2004, a two-day Public Open House was held in storefront space leased by Calgary Transit in the 200 block of 7th Avenue S.W. Public communication and presentation of the project goals and objectives will continue through the implementation stages, and will include direct engagement of adjacent building owners, managers and residents as required.

Given that the 7th Avenue LRT line exists within the downtown core and is a critical component of Calgary's transportation infrastructure, there are a large number of issues and factors that lend complexity to the implementation of changes, improvements and even maintenance work. Construction of the improvements envisioned in this report will be subject to significant challenges. These can be overcome by careful and thorough planning that identifies the proper sequence of work, and design decisions that adequately consider logistics of construction within a high-density urban site with an operational light rail system.



3.0 Study Context & Terms of Reference

3.1 Context

Seventh Avenue is located near the geographic centre of downtown Calgary and has functioned for many years as the central east-west spine for transit service. Seventh Avenue is also one of the most prominent streets within the downtown and includes a variety of key features, such as:

- public buildings (City Hall, the Law Courts, the Library, the Police Headquarters, the Convention Centre and the Science Centre);
- private offices (the Dome Tower, Amoco Canada, the Nova building);
- shopping centres (Eaton Centre, The Bay, Toronto Dominion Square and Scotia Centre);
- churches (the Cathedral Church of the Redeemer and Central United Church);
- hotels (the Hyatt Regency and the Sandman Inn); and
- plazas, parks, and open spaces (Olympic Plaza, Century Gardens, Millennium Park, the Courthouse Gardens, First Canadian Park, and Fort Calgary).

Figure 1 is a diagram of downtown Calgary indicating the 7th Avenue corridor in the context of landmarks, open spaces and pedestrian connections.

The 7th Avenue transit corridor extends over 14 blocks in downtown Calgary, from 4th Street E. to 10th Street W., and includes 11 single direction C-Train platforms. As well, several major mainline bus routes operate along 7th Avenue providing opportunities for residents in non-LRT service areas to access the C-Train system. The intensity of activity generated by the C-Train and bus services has resulted in the 7th Avenue stations and sidewalks becoming the most heavily used pedestrian component of the downtown.

The existing C-Train stations on 7th Avenue SW have been in place for 24 years and function as the major point of contact for transit customers who travel to work or to other activities in the downtown. The stations are heavily used and are rapidly reaching the end of their useful life with respect to their ability to handle current ridership and absorb future growth.

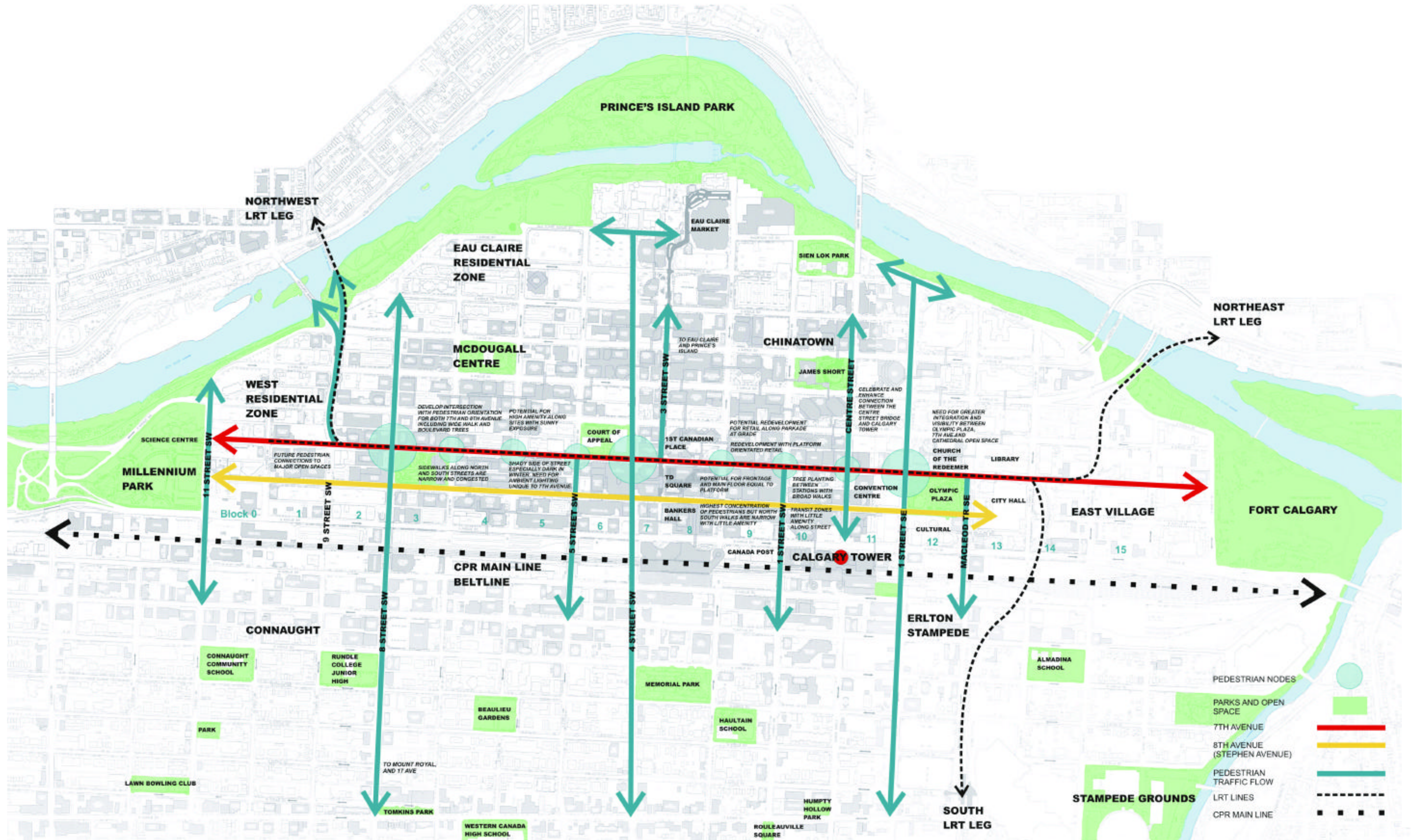


Figure 1, landmarks, pedestrian routes and open spaces in relation to the 7th Avenue corridor



Total weekly ridership at the 11 C-Train platforms on 7th Avenue currently exceeds 660,000 passengers and it is estimated that more than 500 million customers have passed through the stations since the inception of C-Train service. As a result of this heavy use, the appearance and condition of the platforms and other station elements have deteriorated significantly. Maintenance costs are rising and user perception of the quality of the pedestrian environment is falling. As well, the platforms are very congested during peak periods and there is a need to begin planning for the expansion of the C-Train platforms to accommodate four-car train operation within the next 10 to 15 years. In anticipation of this requirement, the new C-Train stations at Dalhousie, Shawnessy and Somerset/Bridlewood and all future C-Train platforms are being constructed to accommodate four-car train operation.

Replacement and expansion of the 7th Avenue stations will require several years to execute due to the scale and cost of the project and the requirement to maintain LRT service during all phases of the reconstruction program.

3.2 Terms of Reference

Calgary Transit, Planning, development and assessment, and the various downtown stakeholders (e.g., Calgary Downtown Association) have long recognized the need to replace the 7th Avenue Stations and undertake complementary streetscape improvements to transform 7th Avenue into a more attractive street for commuters, shoppers and visitors.

The need for 7th Avenue upgrading was also noted by the general public in surveys conducted by the Planning Policy group in 1994. Survey findings indicated respondents liked the convenience of the LRT but 18% specifically disliked the 7th Avenue environment. Additionally, of the 49% of respondents who felt unsafe downtown, 29% specifically identified 7th Avenue as the place where they felt most uncomfortable.

Figure 2 shows a number of examples of the existing condition of 7th Avenue.



Figure 2a, looking west near the 6th Street W Station (Block F).



Figure 2b, near the 4th Street W Station (Block G)

Seventh Avenue is one of the best-known streets in the downtown, but it is also the most disliked. Since it is also one of the main streets experienced by many tourists and business-people who visit our city, it may well be negatively affecting Calgary's national and international image.

On the positive side, 7th Avenue is a well-known street and therefore, any steps that The City takes to make it appear safer, more interesting and vibrant, and more pedestrian friendly, will undoubtedly reap large dividends for the city's and downtown's image, and for the Avenue's economic and redevelopment prospects.

Currently, 7th Avenue contains several large surface-parking sites, which have remained undeveloped. It is hoped that the urban design improvements envisaged by this proposal will provide the impetus for new residential and commercial developments. The addition of residents and transit customers shopping and dining in the new and existing restaurants would animate the Avenue from morning until night and ensure that it becomes a vibrant pedestrian area befitting its location within the heart of downtown Calgary.

In 2002 June, Calgary Transit issued a request for proposals to a select group of architectural firms with experience in LRT station design to undertake an urban design study for 7th Avenue. A team comprised of Graham-Edmunds/Sturgess Architecture and supporting consultants was subsequently selected to work with Calgary Transit and Planning Policy to develop a comprehensive urban design plan for 7th Avenue that includes replacement and extension of the existing platforms and complementary streetscape improvements.

This report is the result of that study and comprises a concept plan for the entire length of the 7th Avenue transit corridor, as well as a schematic design for a new westbound C-Train platform and associated streetscape improvements between Centre Street and 1st Street SW (Block K), and streetscape improvements in the 7th Avenue block bounded by 1st and 2nd Street W (Block J). Block K work will comprise Phase 1 of the project, in order to facilitate the removal of the existing station within Block J, which has been identified as a priority of both the City of Calgary and stakeholders.



Figure 2c, 3rd Street W Station (Block I)



Figure 2d, 2nd Street W Station (Block J)

4.0 Design

4.1 Design Principles and Vision

The design team began by reviewing the functional requirements for 7th Avenue as a major transit and pedestrian corridor and the Downtown Planning Team's vision for revitalizing 7th Avenue. Arising from this review, the team developed the idea of a linear park connecting Fort Calgary to Millennium Park. This 'park' will connect existing parks, plazas and open spaces along 7th Avenue more directly and seamlessly with the street itself. Not only will physical barriers between these places and the street be removed, trees and vegetation will be 'pulled' into the street and along the Avenue, creating a canopy and defining a pedestrian realm. The ground surface will become more uniform and contiguous, integrating and connecting the sidewalk with LRT platforms, parks, open spaces and, wherever possible, buildings. C-Train stations will become distinct places along the street, their ground surface much more a part of the ground itself, their canopies giving shelter to passengers and passersby.

Consolidation of the sidewalk and C-Train platform area will alleviate current overcrowding problems and provide sufficient transit capacity to accommodate anticipated ridership growth.

4.2 Station Locations and Configuration

In order to achieve many of the planning and urban design objectives for 7th Avenue, new station locations were given primary consideration, within the context of accommodating future transit operations.

For design and discussion purposes, the blocks have been assigned letter identifications from A (between 11th and 10th Streets West) to O (between 3rd and 4th Streets East).

Stations will be of two general types or configurations: single-side or double-sided ('twinned').



Figure 2e, existing sidewalk at 2nd Street W Station (Block J)



Figure 2f, looking east toward Olympic Plaza Station (Block L)

4.2.1 Centre Load Stations

During the early stages of the study, centre-load stations were given some consideration, but were ruled out because they would not satisfy many of the technical and operational requirements of the LRT system in the 7th Avenue context. These include cost and safety concerns surrounding the movement of tracks closer to the edge of the right-of-way, and the requirement to cross tracks to enter and exit stations. Centre-load stations were also ruled out for aesthetic reasons, mainly because they challenge the ability to make possible a pleasant sidewalk environment, and make it difficult to create a street space that feels like a single space.

4.2.2 Twinned Stations

Twinned stations offer the opportunity for distinctive, identifiable, even 'landmark' character. Twinned stations consist of two station platforms in a single block, serviced by trains running in both directions. Figure 3 shows a conceptual cross-section for a twinned station.

Such a configuration has several advantages. These include an increase in the number of blocks that do not have stations in them, thus offering the opportunity for enhanced landscaping that reinforces the 'linear park' concept. In contrast with landscaped blocks, twinned station blocks provide a stronger identity and the opportunity for a grander scale for particular stations. There then becomes a rhythm as one moves down the avenue, of station, then landscape, then station.

In order to facilitate two-way bus traffic past twinned stations, the tracks must be moved approximately 0.7m further apart than existing. This is currently seen as necessary only for the stations in Blocks D and I. Because the track along 7th Avenue is scheduled for replacement in the next 5 to 10 years, this could be coordinated with station construction.

4.2.3 Single-side Stations

Single-side stations will have a scale that is more modest than twinned stations, although this scale will be much more expansive than existing platforms along 7th Avenue, due mainly to the increase in length and use of glass canopies. Wherever possible, sidewalks will be raised to platform level, such as at the existing platform, completed in 2000, at the Convention Centre (Figure 4). Significant landscaping upgrades will be included in the area opposite such single side platforms.

Single-sided stations offer the ability to maintain 2-way bus service along the Avenue without resorting to the cost of relocating track.

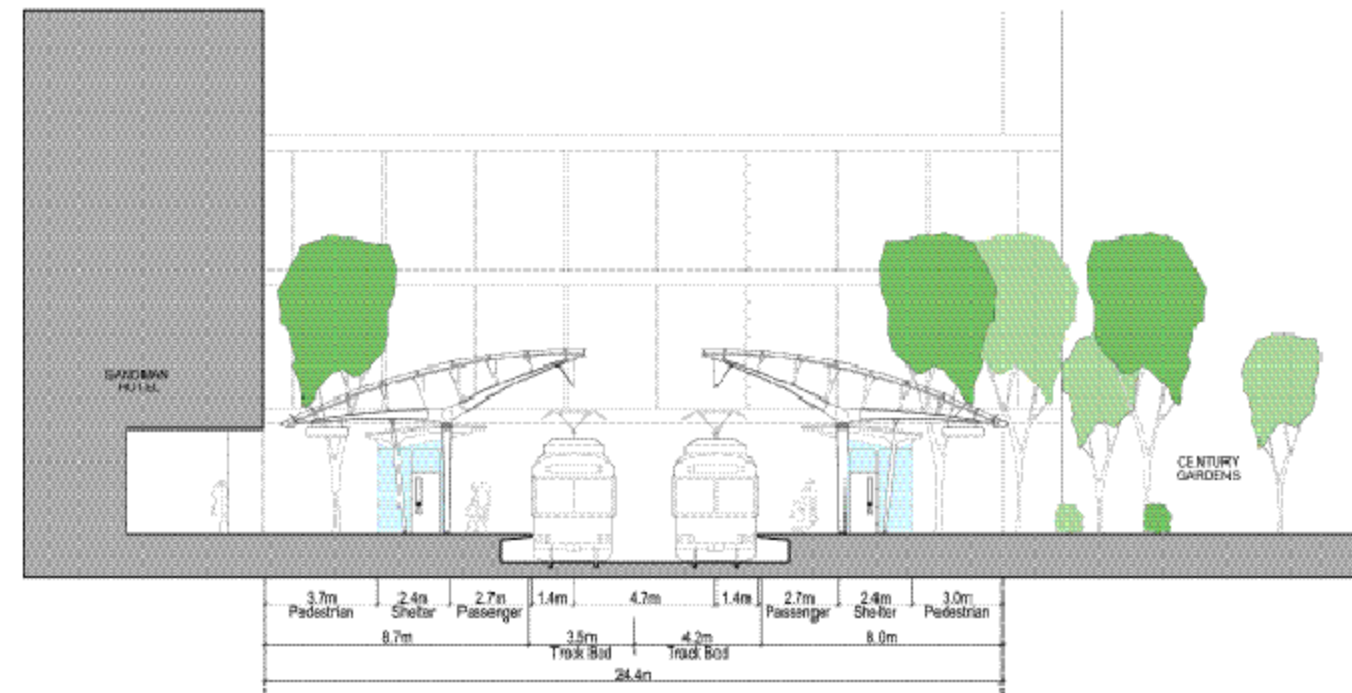


Figure 3, conceptual cross-section at a twinned station

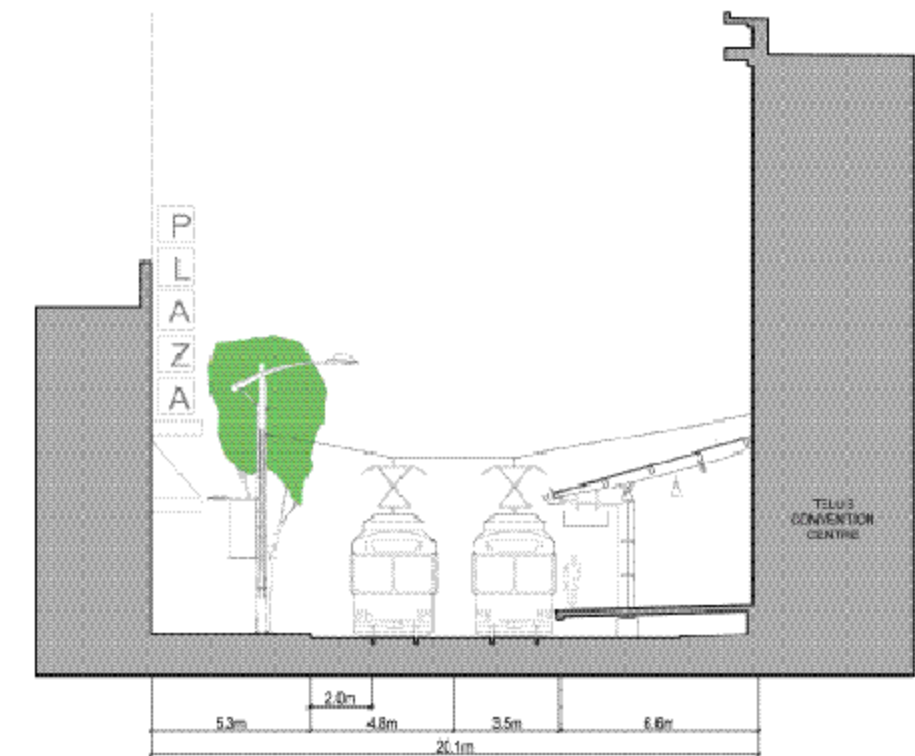


Figure 4, Centre Street Station Platform adjacent to the TELUS Convention Centre

4.2.4 Station Location Scenarios - Schemes 1 through 5

Originally, 6 station location and configuration schemes were considered. Schemes 1 and 3 were quickly eliminated. Figures 5, 6 and 7 diagram these schemes for comparative purposes.

4.2.4.1 Scheme 1

Scheme 1, representing the currently existing locations was eliminated because existing stations between 8th and 9th Streets West, and 3rd and 4th Streets East will not accommodate 4-car platforms. Scheme 1 represents the existing situation, and therefore currently meets Calgary Transit's operational requirements, while having well understood limitations. It therefore provided a benchmark for evaluating other schemes.

4.2.4.2 Scheme 2

In this scheme the station between 8th and 9th Streets West (Block C) is relocated one block east to accommodate the full length of a 4-car platform. This results in a 'twinned' station between 7th and 8th Streets West (Block D) where both inbound and outbound platforms are in the same block. Between 9th and 10th Streets West (Block B) the existing centre-loaded station is replaced with a side-loaded station located on the north side of the street. All other stations remain in their current locations.

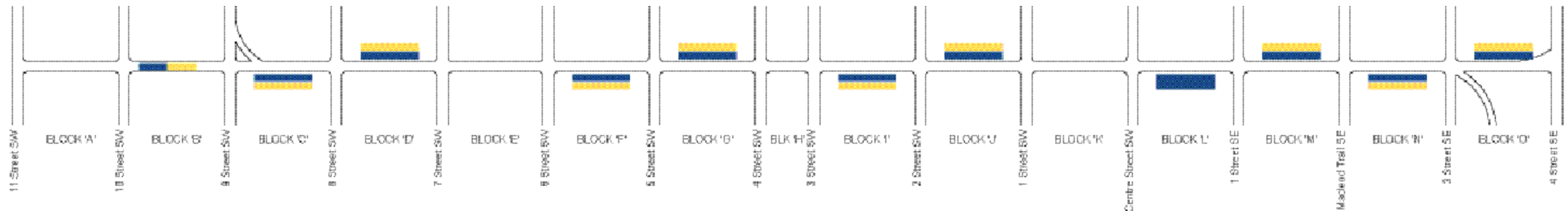


Figure 5a, scheme 1 showing the existing configuration and locations of stations along 7th Avenue

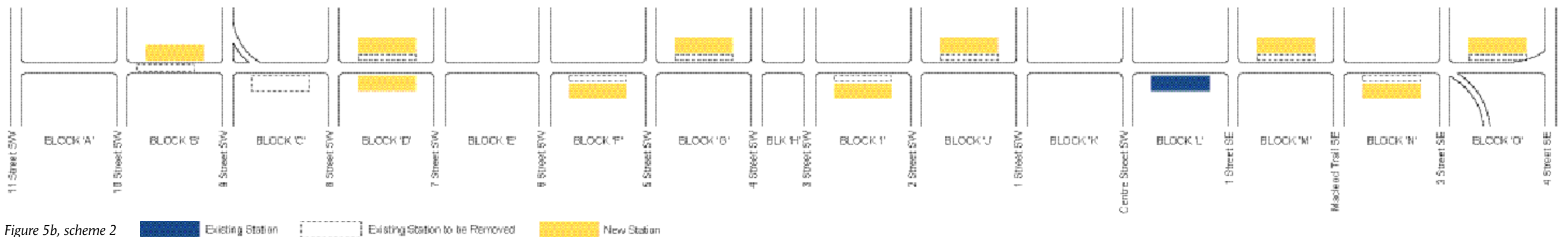


Figure 5b, scheme 2

Existing Station Existing Station to be Removed New Station



4.2.4.3 Scheme 2A

All stations are side-loaded in this scheme, with 3 new station locations and one new station configuration. A new station has been added in the block between 10th and 11th Streets West (Block A). The station in Block B is changed from a centre-load to a side-load, and a new station is added between 6th and 7th Streets (Block E). The station adjacent to the Bow Parkade (Block J) - a block with a particularly constricted and negative sidewalk condition - has been removed and replaced one block east, in Block K.

4.2.4.4 Scheme 3

An asymmetrical cross section characterizes this scheme, where all stations are side-load, but through a weave in the track, a generous platform width would be provided in addition to the full width of the sidewalk. This would enable the transition from grade to raised platform to be made with generous steps and ramps. The high cost of extensive track relocation was deemed unnecessary in this scheme, particularly since generous sidewalk spaces are possible in most blocks with a sidewalk that is raised to platform height.

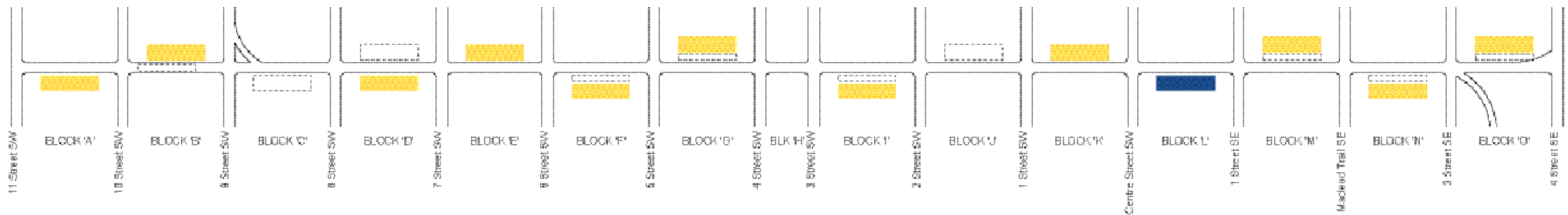


Figure 6a, scheme 2a

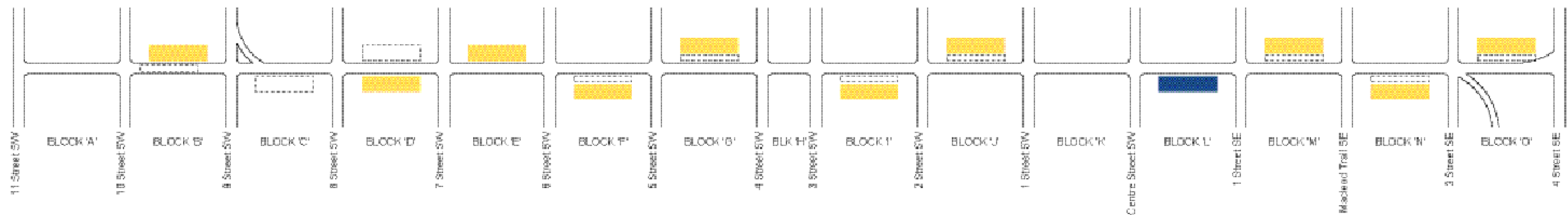


Figure 6b, scheme 3

Existing Station
 Existing Station to be Removed
 New Station



4.2.4.5 Scheme 4

Most stations have been relocated and/or reconfigured into 'twinning' configurations, in order to create a distinct sequence of station blocks and landscaped blocks. Exceptions to this are at Block K, where, as in Scheme 2A, a new side-load station is located to replace the one in the Bow Parkade block (Block J), and Block L, where the existing Convention Centre station, completed in 2000, is located.

4.2.4.6 Scheme 5

All stations in this scheme are twinned, and are located in Blocks B, D, F, I, K, M and O. This strengthens the sequence of distinct station blocks and landscaped blocks, and offers opportunities for integrating stations with parks and public spaces at key locations, such as Olympic Plaza. The scheme also adds to the total number of stations, while sacrificing the recently completed Convention Centre station - both aspects adding considerably to the potential costs of the project.

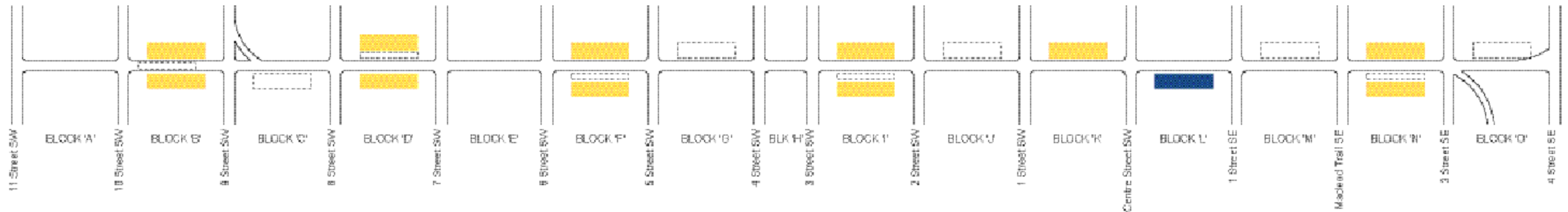


Figure 7a, scheme 4

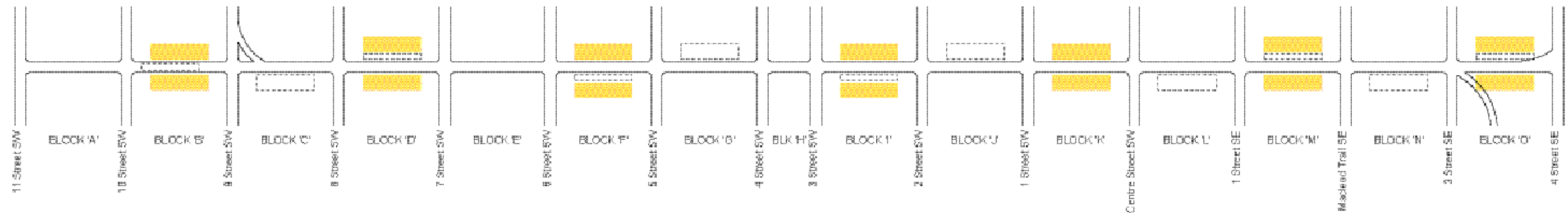


Figure 7b, scheme 5

Existing Station
 Existing Station to be Removed
 New Station



4.2.5 Recommended Scheme

Schemes 2 through 5 all meet some technical/operational and/or urban design objectives of the project. None of these options are wholly acceptable on both levels, however. The Recommended Scheme, as shown in Figure 8, achieves a balance of these objectives, with the possible exception of 1 operational criterion that, at the time of publication of this report remains subject to further functional and qualitative review.

There is some concern that the twinned station at Block D could cause up to a 90-second increase in travel time for trains entering and leaving the city core on the C-train's North West leg. To reduce the travel time, the twinned station at Block D could be eliminated by shifting the south platform east into Block E, as shown in Figure 8a. This could compromise the urban design objectives of creating a 'gateway' station for the North West leg, and weaken the sequence of station blocks and landscaped blocks. For these reasons, the final decision on station location and configuration will be made after further review.

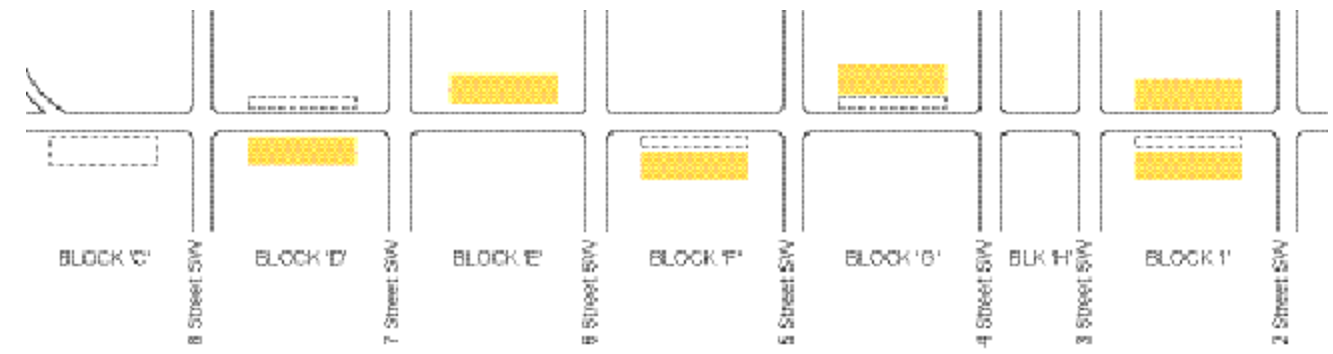


Figure 8a, alternative to recommended scheme to alleviate potentially increased train travel time over Recommended Scheme

Existing Station Existing Station to be Removed New Station

The recommended scheme marries urban design imperatives with Calgary Transit's operational objectives (Figure 9 - fold-out)

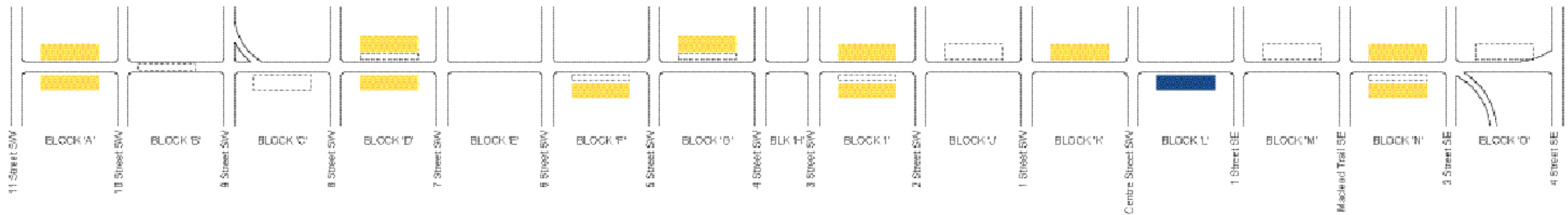


Figure 8, Recommended Scheme Existing Station Existing Station to be Removed New Station





Figure 9, Recommended scheme showing urban context from Millennium Park to the East Village



- At Block A, a twinned platform offers LRT service to Millennium Park, The Calgary Science Centre and the burgeoning west end residential community. As the downtown entry point for the future West extension of the LRT, it offers potential as a gateway station. Removal of the existing station in Block B allows for a new track crossover to be located far enough west that current conflicts with trains inbound from the Northwest leg can be avoided - a necessary requirement for meeting proposed headways of 90 seconds (Figure 10).

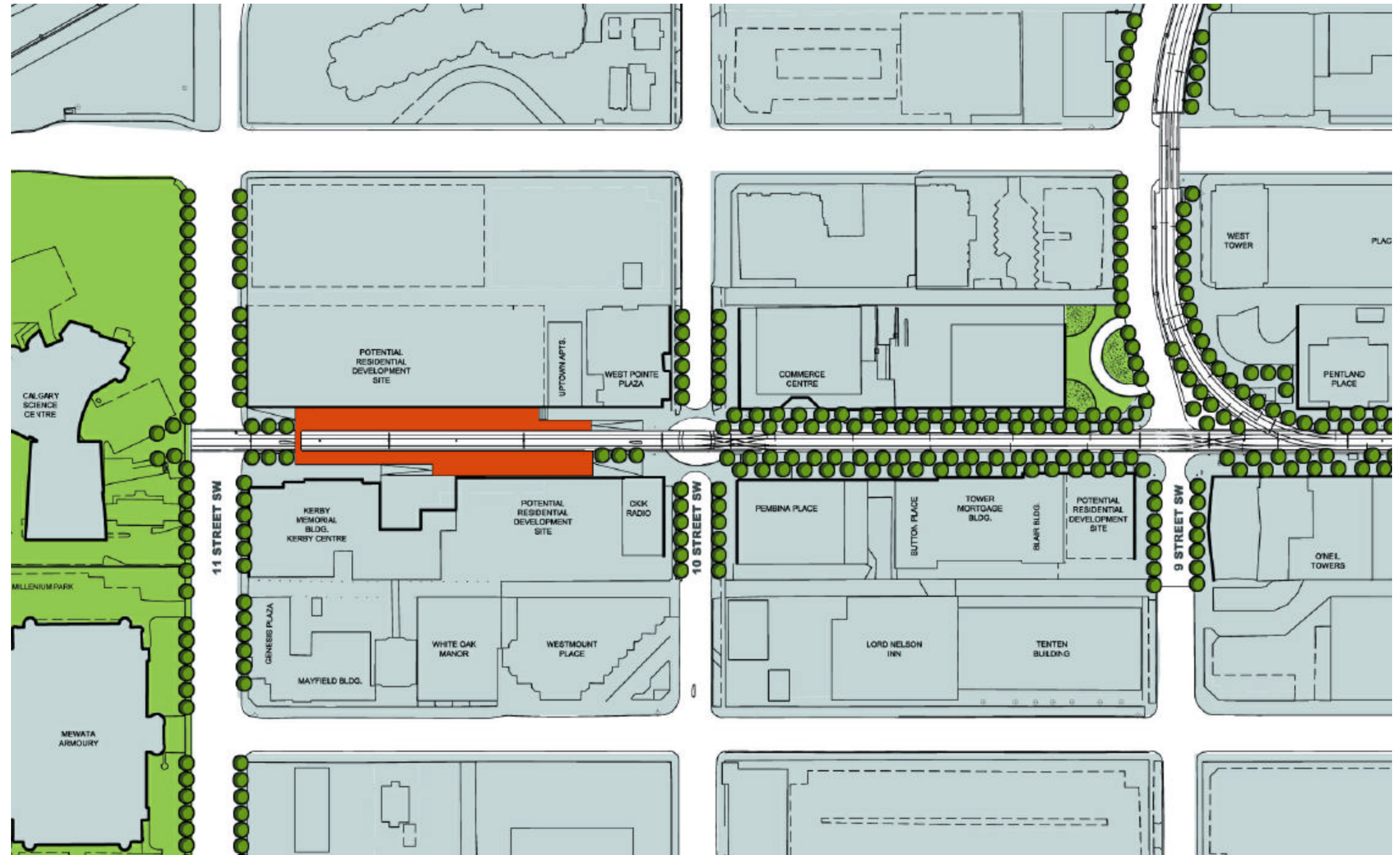


Figure 10, recommended scheme

Block A

Block B



At Block D, a twinned platform can act as the landmark station for trains entering the downtown core from the Northwest leg. Its location at Century Gardens offers the opportunity to integrate the park with the platform - grade can be manipulated to make park contiguous with platform. Trees and vegetation, perhaps even water, can become features of the station. Because of the park, this station will be the sunniest on the Avenue. On the north side of the street, the existing floor levels of adjacent buildings offer the opportunity to integrate the platform level with sidewalk and buildings, improving access in general and imparting a character that is at once spacious and sheltered (Figure 11). As noted above this configuration is subject to further review because of potential functional impacts.



Figure 11, recommended scheme

Block C

Block D



■ At Block F, the platform and sidewalk will likely be of varied height, to respond to different floor levels, entry conditions and building types along the street. The Crown Parkade is the dominant building in this block. It is one of the city's older parking structures, and presents an unattractive face of stacked car fronts to the street. Screening this building face would greatly improve the street environment. This could be achieved through landscaping and/or a public art installation (Figure 12).



Figure 12, recommended scheme

Block E

Block F



- At Block G, the existing Courthouse gardens can be integrated with the sidewalk and the platform. A mature row of amur cherry trees, the largest and finest trees on the Avenue, will become an integral part of the station design here (Figure 13). This station also presents an opportunity to integrate the design of the new Calgary Law Courts complex scheduled for completion in 2007.



Figure 13, recommended scheme

Block G

Block H

■ The twinned station at Block I is the centre of the downtown line, and will be its busiest. Here the opportunity for it to be the major landmark station is reinforced by its proximity to the hub of downtown shopping. A raised floor level currently existing within TD Square offers the potential for a raised sidewalk contiguous with platform and building, offering not only access and spaciousness, but window shopping, direct access to shops, and perhaps even on-platform retailing. Connections to Devonian gardens are also possible. Across the street, a transition must be made from platform level to the sidewalk and floor level of the BMO Building, however, the park/redevelopment site immediately east offers further potential for a raised walk (Figure 14).

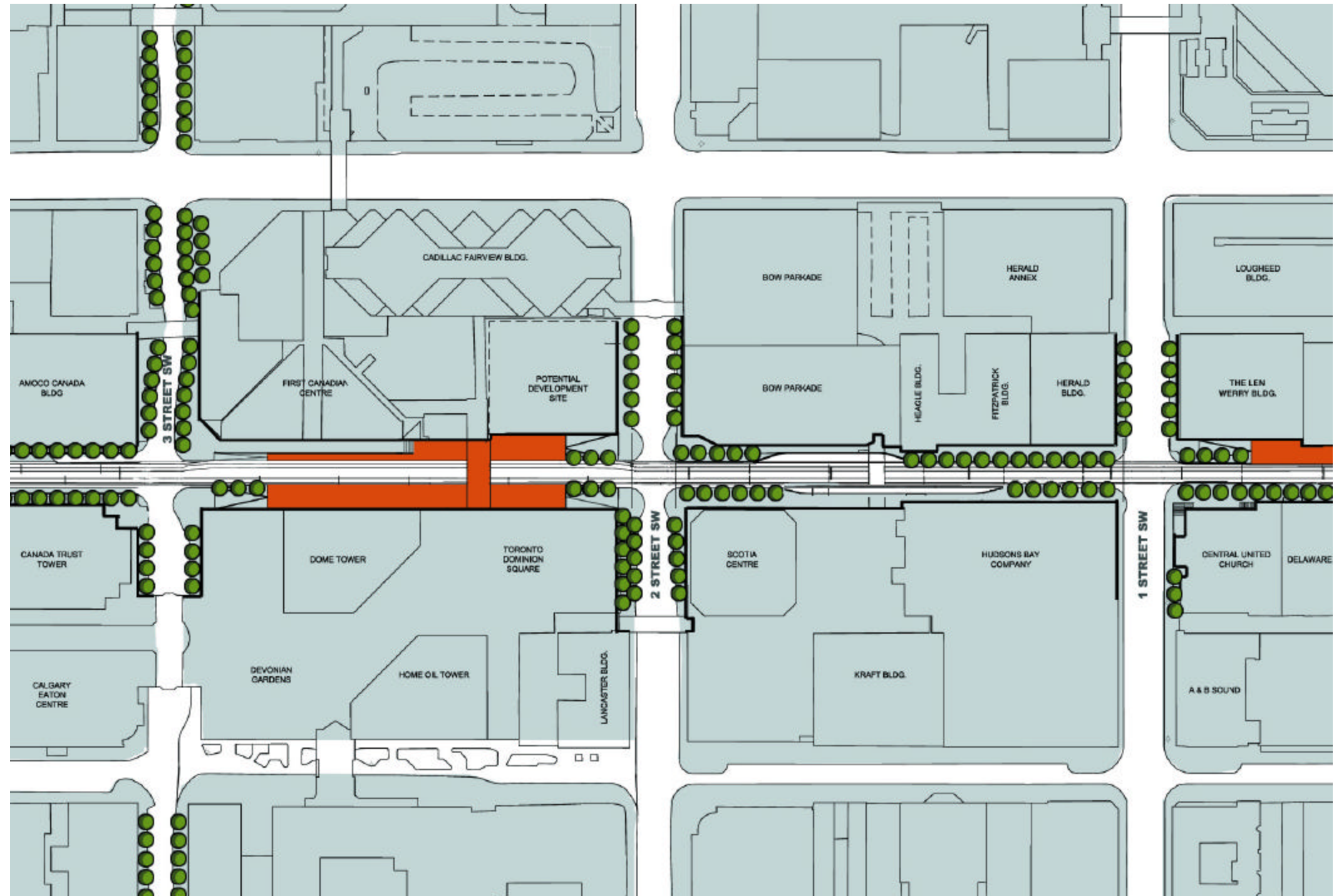


Figure 14, recommended scheme

Block I

Block J



- At Block K, a new station will replace the existing station in Block J. At Block J, the existing building faces, floor levels and some of their uses result in an unpleasant space on the street, particularly constricted and dark, when combined with the raised platform of the existing station. At Block K the opportunity exists for the grade to be raised to merge platform, sidewalk and building floor levels for most of the block, with a transition from platform level to existing grade towards the eastern end of the block (Figure 15).
- At Block L, the Centre Street (Convention Centre) Station will remain largely as-is, with the common platform and sidewalk level. Its length will be increased to serve 4-car trains (Figure 15).

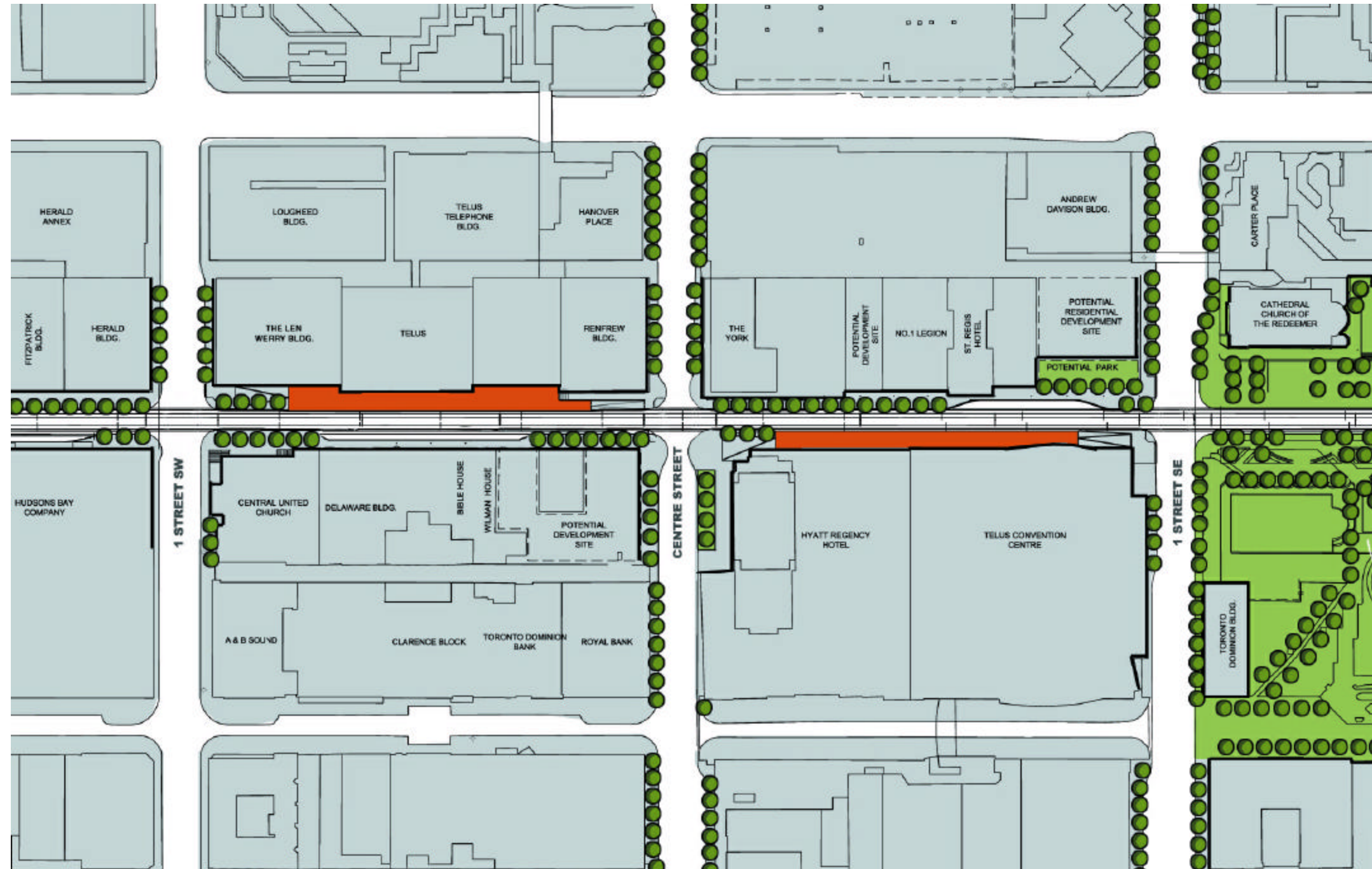


Figure 15, recommended scheme

Block K

Block L



- Block N is comprised of a twinned station in the City Hall/Central Library block. As the downtown entry point for both the South and Northeast legs, it too offers the potential to be a landmark (Figure 16).



Figure 16, recommended scheme

Block M

Block N



4.3 Typical Station Design

For all new station designs, the dominant structural materials will be glass and steel. Stainless steel or some other highly durable and vandal resistant material will be used from ground level to a minimum of 2.4m above ground. These materials are more durable and maintainable than existing station elements, will impart an overall feel of lightness and transparency, and take advantage of Calgary's predominantly blue, sunny skies. Figure 17 illustrates a concept of what a typical station may look like.



Figure 17, artist's rendering of a typical twinned station

Consistent design of furniture, equipment, advertising displays, kiosks, transit infrastructure, pavement, etc., will impart a recognizable character to all the stations. Elements of this type that are common also to the non-station blocks will reinforce this consistent character. Figure 18 illustrates concepts of what some of these elements may look like.

Place-specific elements will simultaneously lend an individual character and identity to each station. These could be simple variations on a theme, such as a larger or smaller canopy structure and/or form that is appropriate to the station's status within the system, or they could be wholly unique such as a site specific art installation that expresses a compelling idea, or a landscape design that takes particular advantage of a station's proximity to a park or open space. Figure 19 shows examples of station art from the Portland, Oregon LRT system.

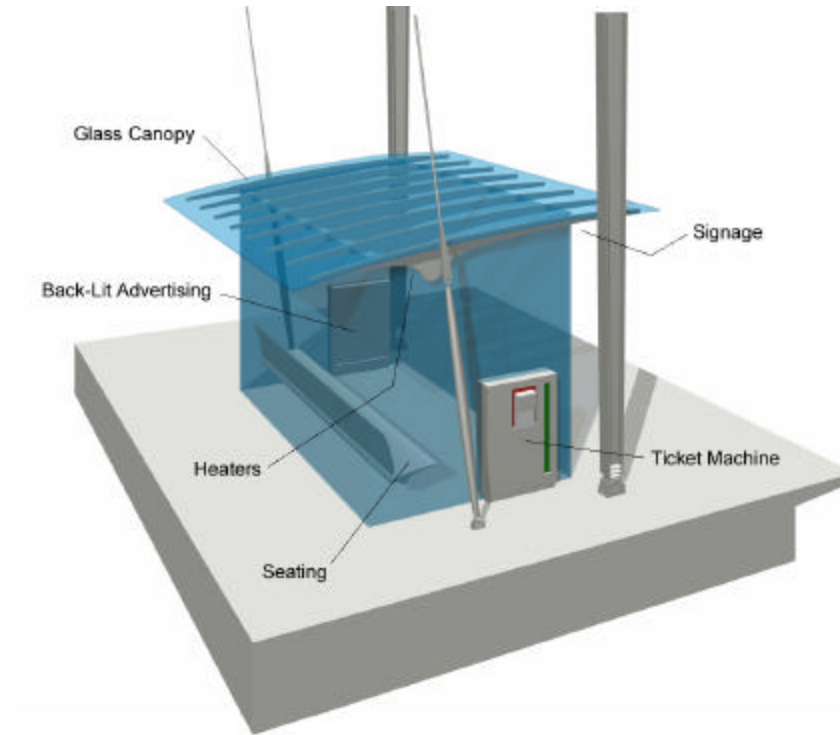


Figure 18a, Typical station platform shelter (concept)

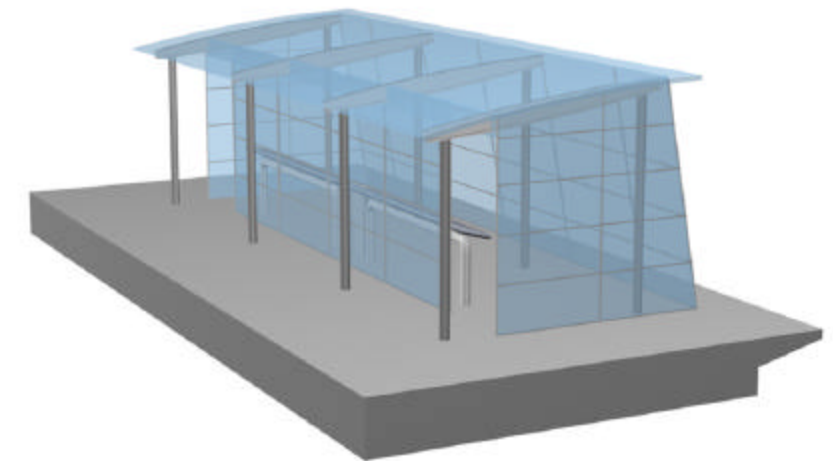


Figure 18b, Typical bus shelter concept



Figure 19a Examples of station art from the Portland, Oregon LRT System



Figure 19b



Figure 19c



Figure 19d

4.4 Non-station Blocks

The introduction of twinned stations has resulted in an increase in the number of non-station blocks from 3 to 7. Their enhanced landscaping will support the vision of a 'linear park' and include trees, planters, furniture and upgraded paving.

The overall approach is to develop a pedestrian friendly boulevard marked by generous areas to gather and stroll. This strategy confirms the street and sidewalk as indispensable urban settings integrated with the LRT.

Wherever possible, the sidewalk width is extended to the edge of the trackway, thus expanding the area available to pedestrians. Figure 20 indicates a conceptual cross-section of a landscaped block. This zone would, where required, accommodate bus lay-bys. Also within this extended width would be a trackside/curbside zone, approximately 1.8m wide, accommodating elements such as light poles, street tree planting, benches, bicycle racks, newspaper boxes, post boxes, bus shelters and litter receptacles. This strip would also be used to temporarily store snow. The paving of the zone would be distinctive from the principal walking surface. This will help to provide a visual cue of the distinction between the pedestrian zone and the trackway.

Additional measures may be necessary to distinguish or bound the two zones for reasons of pedestrian safety. These may include additional and obvious visual cues such as signage imbedded in pavement within or near the curb, and/or visual and tactile tile such as that currently used on LRT platform edges. In some instances physical barriers may be required to define and bound the trackway.

At street corners, where feasible, bulbs will extend into the north-south street to increase the area for pedestrians. Their radius will depend upon the locations where bus routes leave and arrive from 7th Avenue.



Figure 20, Conceptual cross-section of a typical landscaped block

4.4.1 Bus Service

Non-station blocks as well as the non-station side of single-side station blocks will accommodate bus service to 7th Avenue. Therefore, bus lay-bys, furniture, shelters and other infrastructure for bus service will be integrated into these blocks.

Bus lay-bys will have a depth of 3.0 m (refer to Figure 20). Furniture, trees, equipment and infrastructure as noted above will be carefully coordinated with bus dimensions. Furnishings including bus shelters will be in keeping with LRT station design.

Figures 9 through 16 illustrate the layout and extent of bus service zones currently envisaged for 7th Avenue. This includes a main bus service hub in Block H, between 3rd and 4th Streets West. Located in the heart of the 7th Avenue service zone, and directly adjacent to the main station at TD Square/BMO, this hub will be the major inter-modal transfer point in downtown Calgary.

4.4.2 Street Trees

Continuous tree lined boulevards will bound the centre trackway and the pedestrian realms, separating them physically but joining them together visually. They will help define the pedestrian realm from the trackway. A single row of trees will be placed along either side of street boulevards, with double rows along block faces of open space and potential redevelopment sites. Figure 21 illustrates a concept of what a typical landscaped block may look like.

Major parks and open spaces along 7th Avenue, including Century Gardens, the Court houses and Olympic Plaza will be literally and figuratively connected by the continuation of trees and other plantings along the avenue.



Figure 21, Artist's concept of a typical landscaped block

4.4.2.1 Tree spacing

Several precedents exist within Calgary's core, useful as examples for tree planting. At the Calgary Municipal Building, from 9th to 7th Avenues along MacLeod Trail, parallel rows of Elms at 4.5 m spacing provide the finest example of street trees in the city. Along the Stephen Avenue Mall, Ash trees at 8.0 m spacing provide far less of a feeling of a tree lined boulevard.

Along 7th Ave spacing will vary from 3.7m to 5.0m in coordination with other associated street elements. The objective is to plant trees closely enough to form a dense screen of trunks and foliage in order to sharply define and distinguish the pedestrian realm from the trackway, and ensure a strong park like character. Where space is available, double rows of trees could be used.

4.4.2.2 Tree species and plantings

A variety of tree species is being explored to select the species most appropriate to both the growing conditions and the overall concept. Species selection is based on observations of those trees doing well within the downtown given its unique and generally harsh growing conditions, as well as discussions with Urban Forestry.

Upright compact canopy species are proposed along with a pruning program in order to maintain acceptable clearances from the overhead catenary power system.

Tree species being considered include Fallgold Black Ash, Brandon Elm and Bur Oak.

4.4.2.3 Planting Trench

In order to promote healthy tree growth in the generally harsh downtown environment, The tree root environment is proposed as a continuous, irrigated trench to maximize the available soil. This practice is largely responsible for the vigor of the Brandon Elms at the Calgary Municipal Building. The past practice of placing trees in individual precast concrete boxes, while economical, has met with little success in keeping street trees alive in downtown Calgary, let alone promoting healthy growth. Figure 22 shows a cross-section of proposed tree trench designs.

The exact location of trees is to be coordinated with not only the catenary but also shallow utilities. Discussions have been initiated with the various utility agencies to identify potential issues and the feasibility of alternate means for the coexistence of the trees with this infrastructure (refer to section 5.2.3).

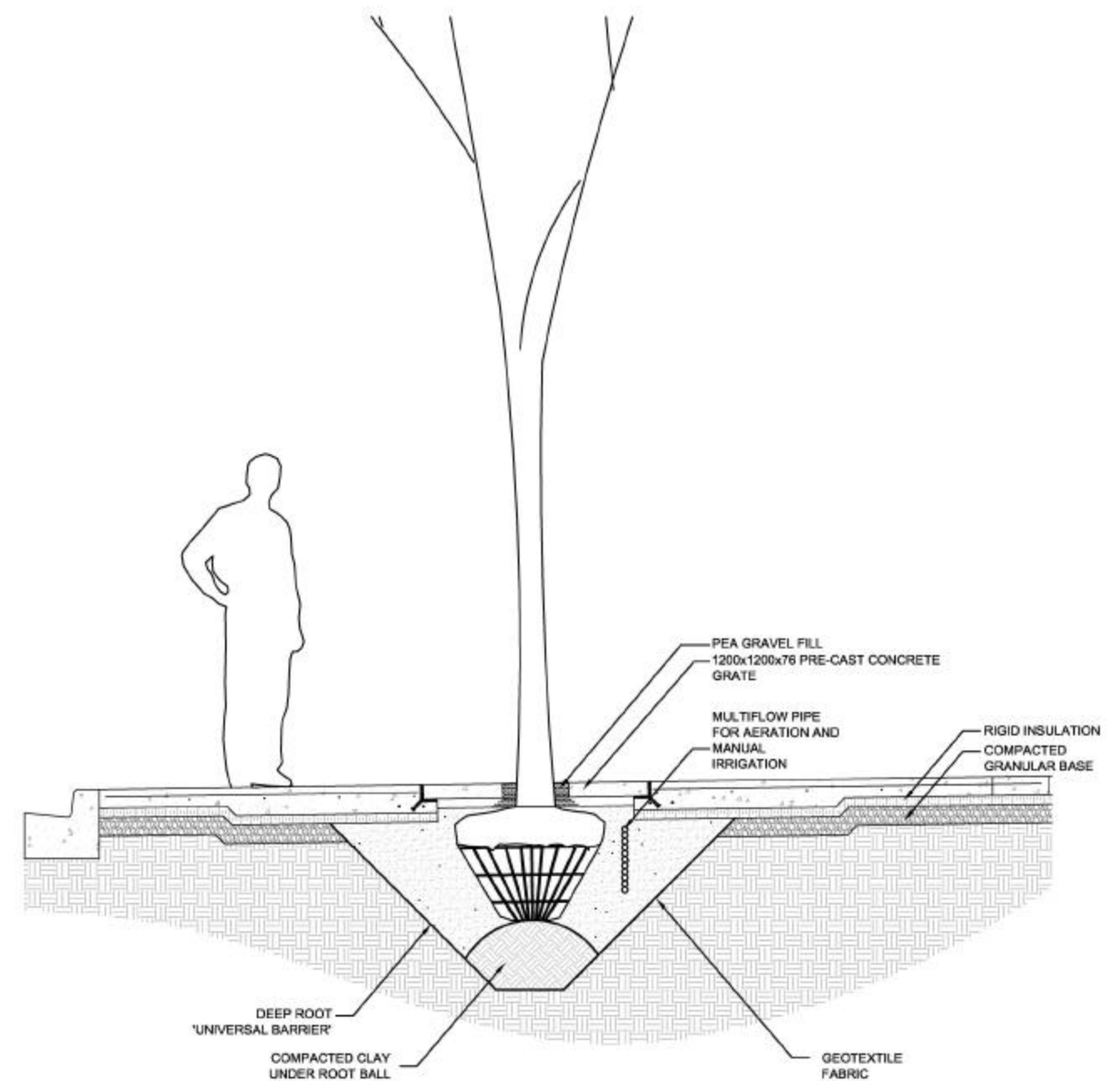


Figure 22, Proposed Tree Trench Design

4.4.3 Paving

An overall integrated paving system is proposed for the park/landscape blocks and will be coordinated with station platforms. The concept is to create a unified paving surface from block face to block face. The overall surface is to be characterized by a consistent material and colour, such as sandstone.

Refer to Figure 23 for representative paving patterns.

A distinction is to be made between the walks and track areas by a change in scale and finish. Walks are characterized with large-scale panels to emphasize the pedestrian and for ease of walking and maintenance, while small-scale paving is placed along the tracks. The curb is to be enhanced to act as a warning edge, offering a clear distinction from walk and track areas, through a shift in texture and finish. The bus laybys are to be finished in a manner similar to the walks. A number of paving surfaces are feasible, subject to further review.

Intersections extend the walk and trackway paving and highlight pedestrian crossings, the tracks, the intersection and its connection to north-south streets.

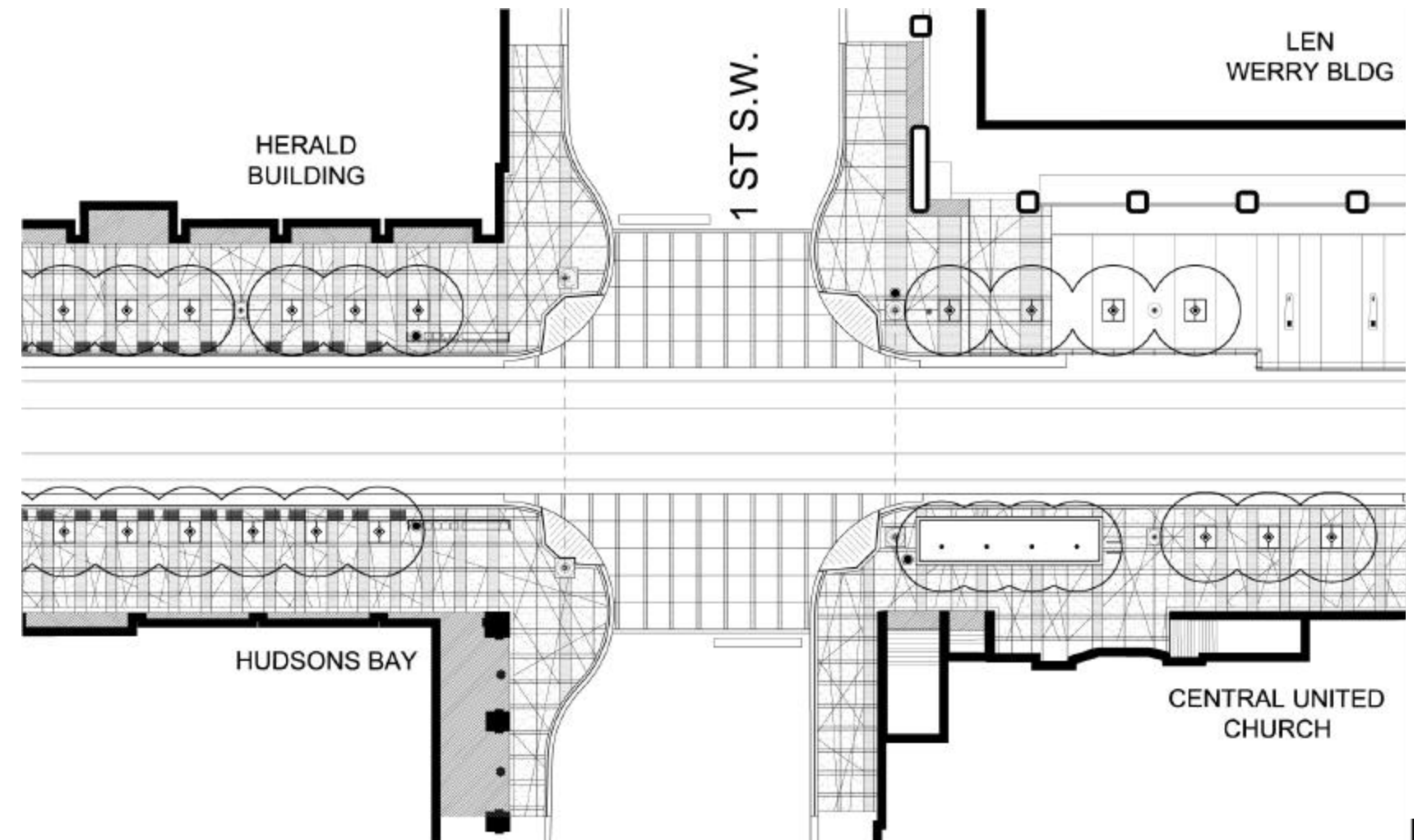


Figure 23, Representative Paving Patterns

4.4.4 Street Elements and Lighting

Furnishings, poles, kiosks and transit shelters will be coordinated with those in the stations.

In order to further coordinate the appearance of street elements, an integrated system of power, signals, lighting and signage poles will be designed. (Figures 24 - 26).

Currently there are separate poles for traction power and street lighting. Roadway signage is mounted on these poles with steel strapping or on smaller independent poles based on functional need and utility. Traffic signals are mounted on independent poles at intersections. Because different City departments install and maintain their own poles, they are not visually coordinated.

An integrated pole design that functions for more than one purpose will result in greater visual unity on the street and reduce the number of poles required. Placement of the poles in a single line assignment that is also common with other major elements such as trees, furniture and platform structures will further enhance a sense of order and unity on the street. Lighting the sidewalk and platform to a higher level than the trackway will help achieve the objective of emphasizing the pedestrian environment over the vehicular environment. This will be achieved by implementing a separate system of pedestrian scaled lighting on the integrated traction power/lighting pole along with the design of a smaller, complementary pole specifically to light the pedestrian zone.

At street corners, sidewalks will be edged and separated from the tracks by seating, edging and planting located to direct pedestrian movement. Street corner seating will be positioned with signal/lamp poles and other furnishings such as newspaper kiosks. Seating will be developed in coordination with that for the platforms and include frequent armrests.

Figures 25 to 27 illustrate examples of these types of elements from other locales, as well as concept designs for lighting and planter seating.



Figure 24, Pedestrian walkway lighting concept



Figure 25, Concept of combined street light with traction power pole

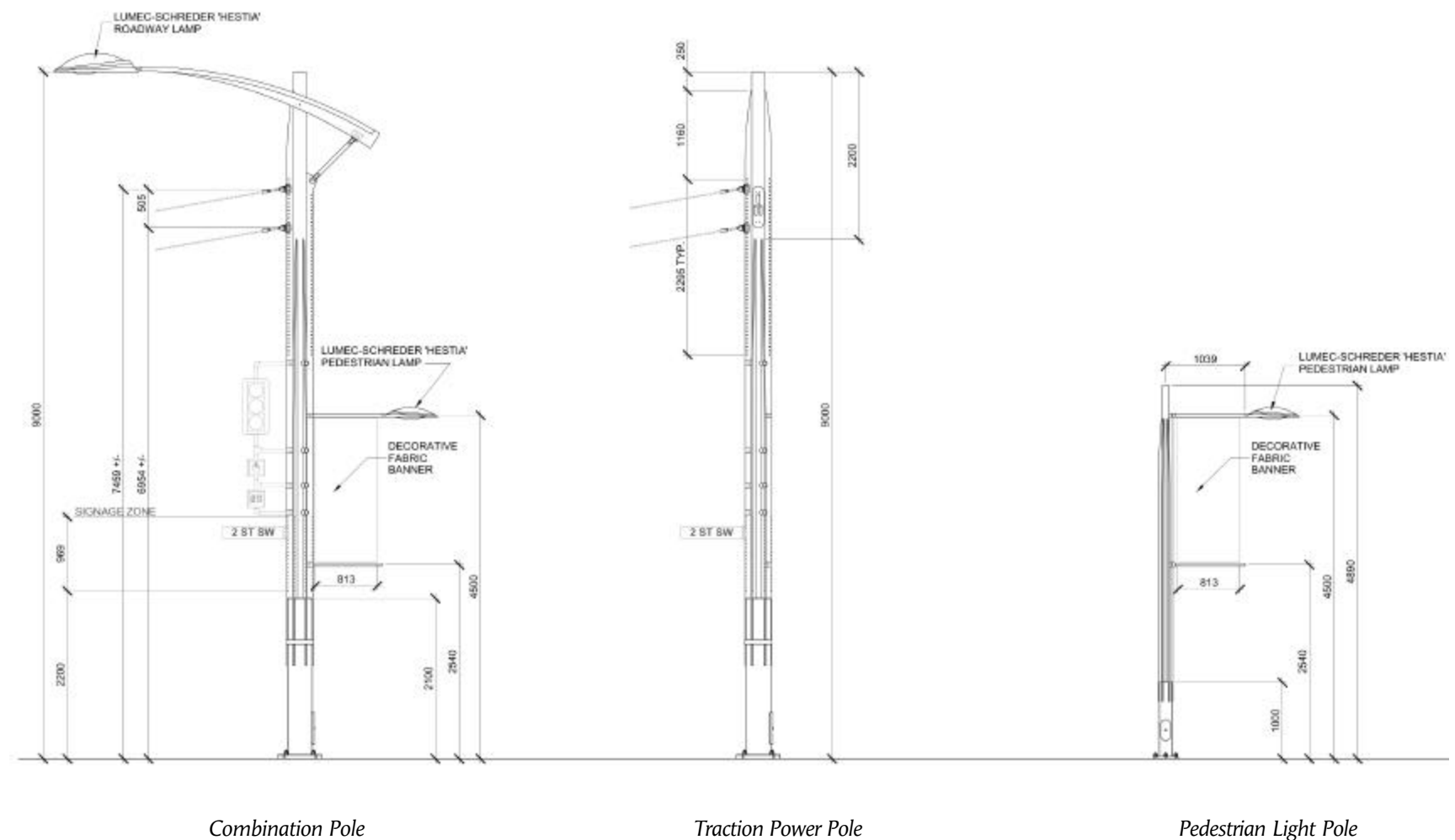


Figure 26, Details of integrated poles



5.0 Implementation Plan

5.1 Project Implementation

The implementation of the project has been organized into 7 phases. These are based upon the need to maintain transit operation throughout the upgrading period, along with the desire to address certain blocks earlier than others for aesthetic, functional and planning reasons. Phases outlined below do not necessarily correspond to years, and could be adjusted, within operational limitations, if warranted to take advantage of economies of scale, to allow for variation in available funds or construction costs from year to year, or for other logistical or fiscal reasons that may occur.

5.1.1 7-Year Implementation Plan

Figure 27 illustrates a proposed 7-phase implementation scenario:

- Phase 1 includes Block K, and the north side of Block L. This would result in a new side-load station for westbound trains to replace the existing station in Block J. Removal of the station in Block J is considered a priority of Calgary Transit, Planning and a number of project stakeholders. This phase of implementation is outlined in detail in Section 5.2.

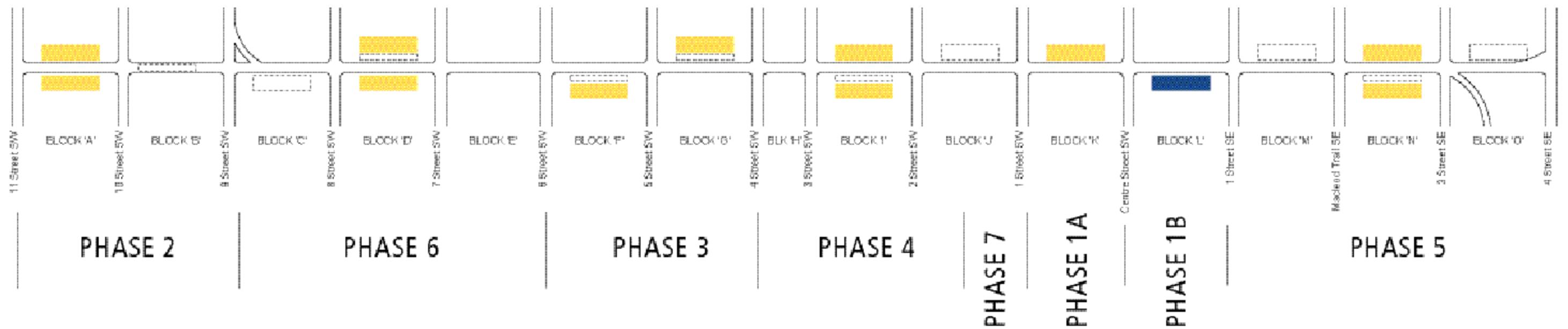


Figure 27, Proposed 7 Phase Implementation plan

Existing Station
 Existing Station to be Removed
 New Station



Phase 2 would involve construction of a new twinned station in Block A, one block west of the existing centre-load terminal station for the Northeast leg of the LRT. Removal of the centre-load station, and new paving and landscaping would cover Block B. A new station in Block A will facilitate better LRT service to Millennium Park, the burgeoning west end residential district, and will directly serve the Kerby Centre. Proposed expansion of seniors' facilities and services at the Kerby Centre offer the potential to integrate the station directly with new buildings. Figures 28 and 29 illustrate the existing condition in this block and the form that this new station may take.



Figure 28, Existing street face in front of the Kerby Centre, Block A

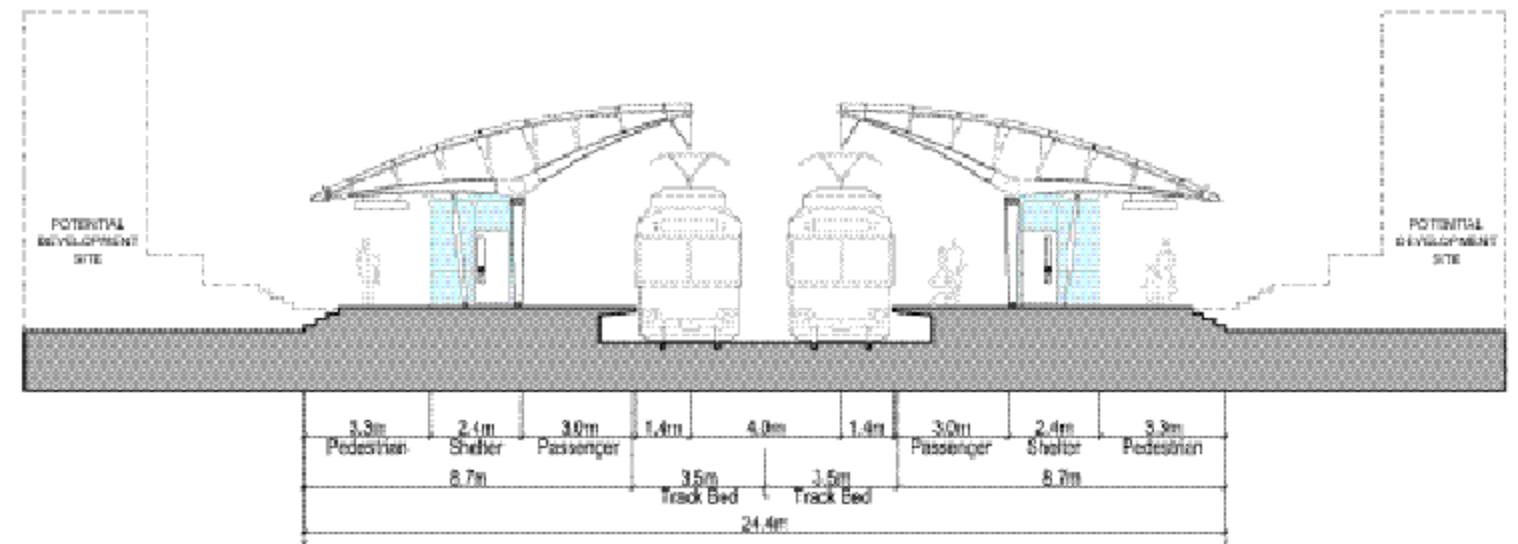


Figure 29, Cross section of station concept at Block A

- In Phase 3 the existing stations at the courthouses (westbound) and across from the John J. Bowlen Building (eastbound) would be replaced with new side-load stations, along with landscaping and paving upgrades in the trackbed and sidewalk areas across from platforms. Figure 30 and 31 illustrates a concept for this station, in cross-section.

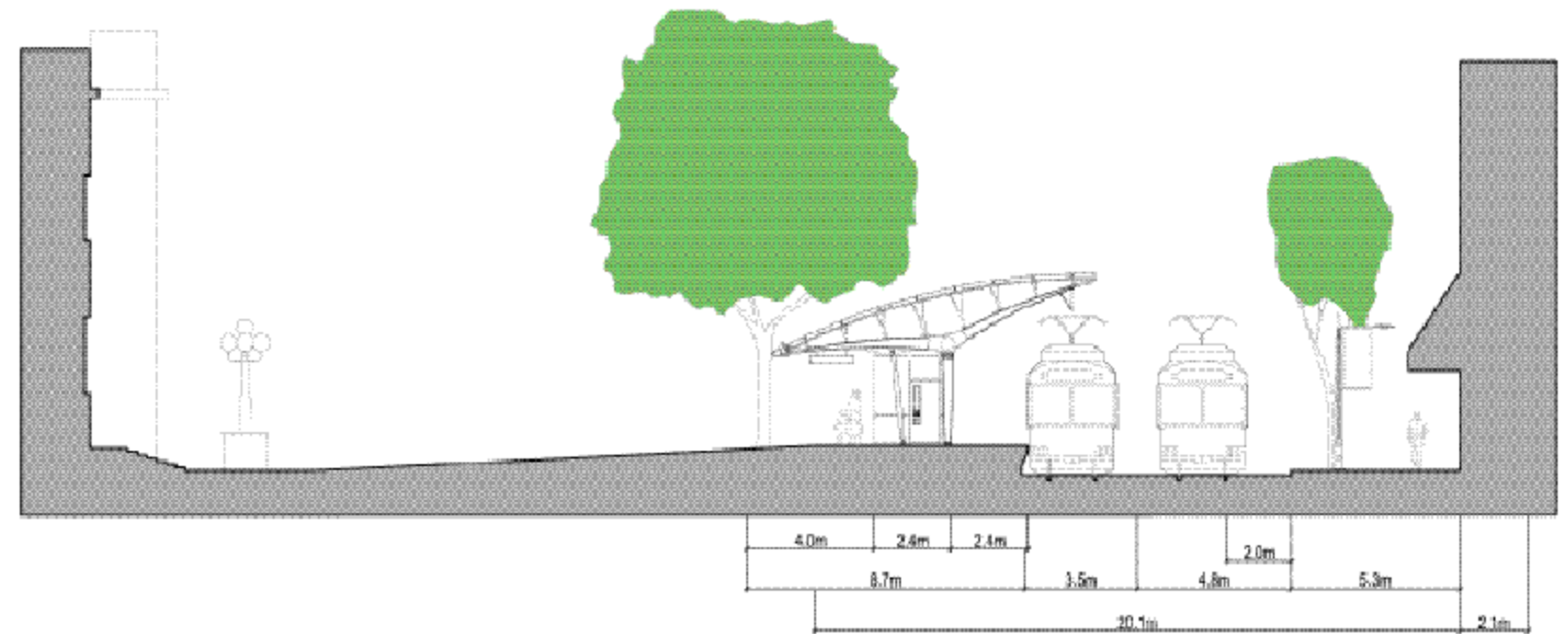


Figure 30, Cross-section of station concept at the Courthouse (Block 9)

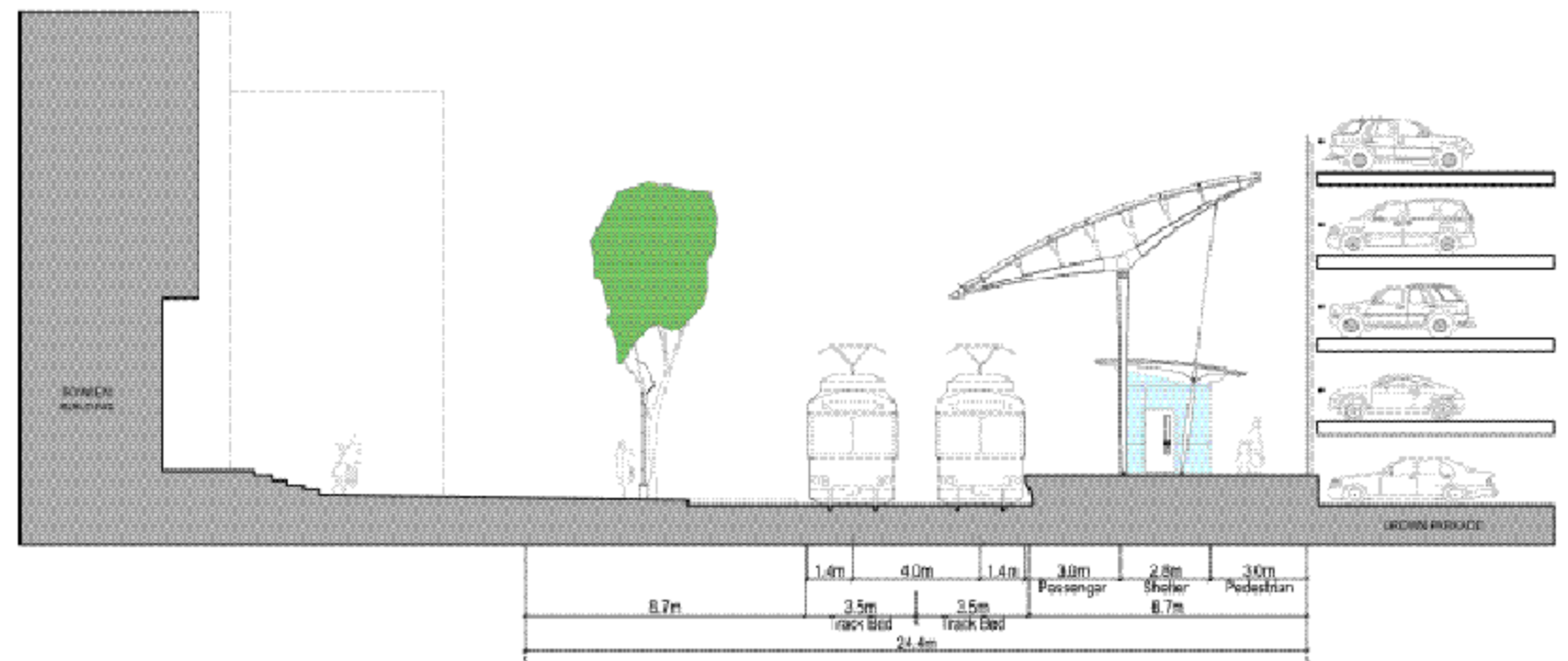


Figure 31, Cross-section of the station concept across from the Bowlen Building (Block F)

- Phase 4 would see the construction of the central landmark station at TD Square/BMO. Immediately west, in Block H, the main bus hub would be constructed, with attendant landscape and paving upgrades. Figure 32 illustrates a concept for this station, in cross-section.

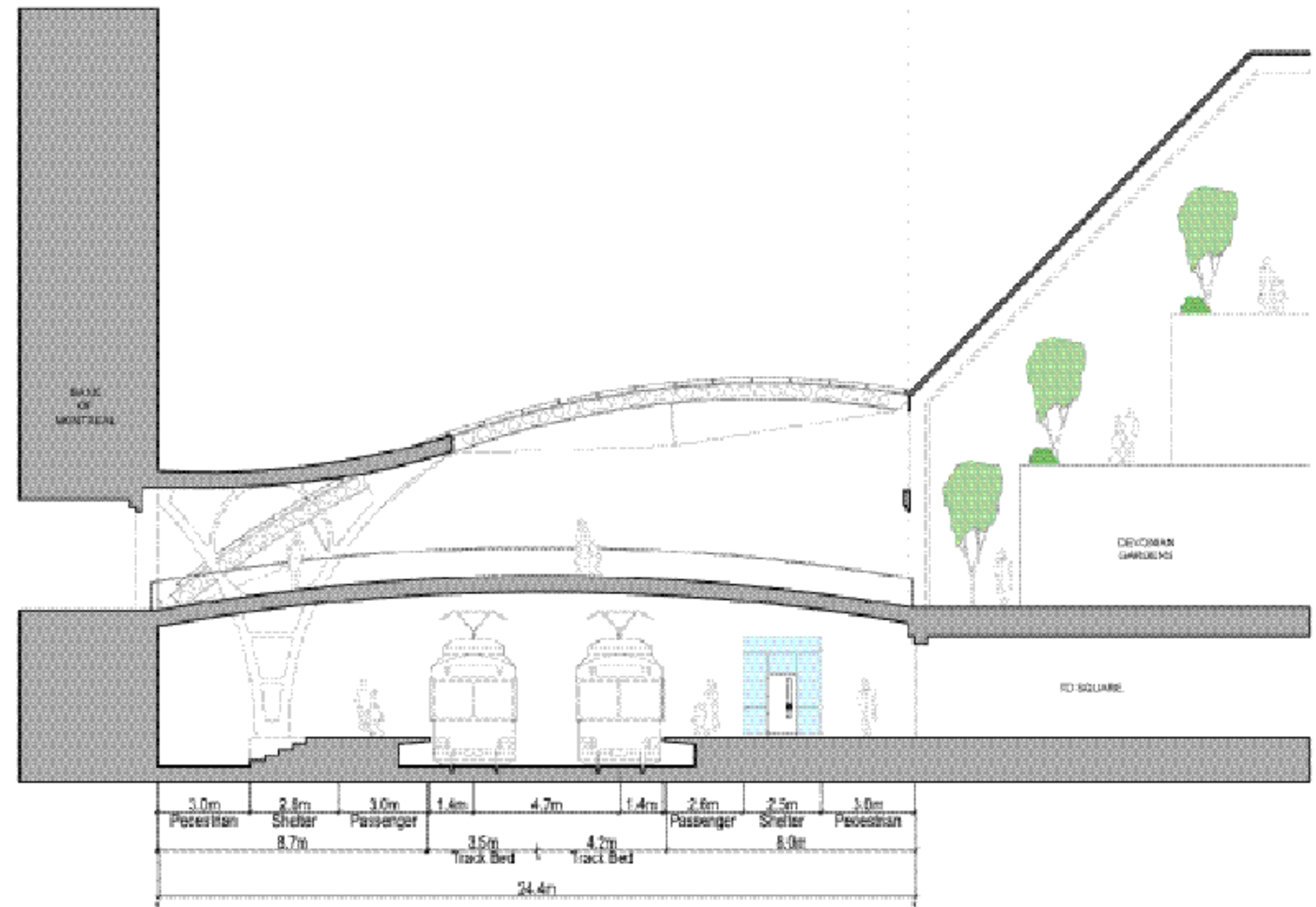


Figure 32, Cross-section of station concept at TD Square and Bank of Montreal (Block I)

- Phase 5 includes the removal of the 1st Street East Station (at the Cathedral Church of the Redeemer), as well as the 3rd Street East and City Hall Stations. These will be replaced by the construction of a new twinned 'gateway' station at City Hall, (Figure 33), while Blocks M and O will see landscaping, furnishing and paving upgrades.
- Phase 6 covers Blocks C, D and E, resulting in a new twinned station at Century Gardens and the Sandman Hotel; paving and landscape upgrades in Block E and the south side of Block C (Figure 34).
- Phase 7 covers Block J, completing 7th Avenue's pedestrian environment upgrades. Although the existing station in this block will be removed in Phase 1, logistical challenges with the Hudson's Bay Company Building and the Herald Building will require a coordinated initiative between the City, project designers and managers, and the buildings' owners. Both these historic buildings have functioning basements under the existing sidewalks, extending to approximately the curb face. While the basements can likely remain functional, careful planning and care amongst all parties during the design and construction phases will be required. For these reasons, finish work for Block J has been placed in this last phase.

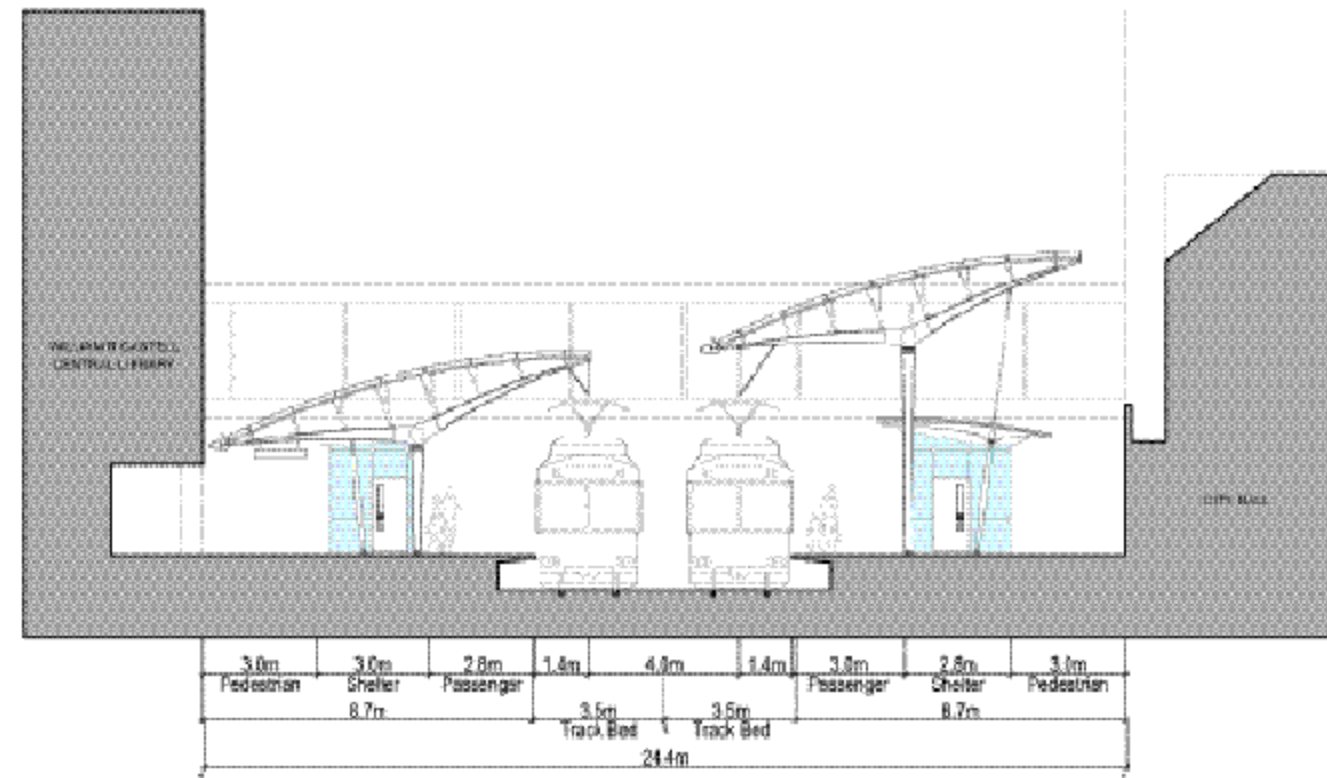


Figure 33, Cross-section of station concept at City Hall

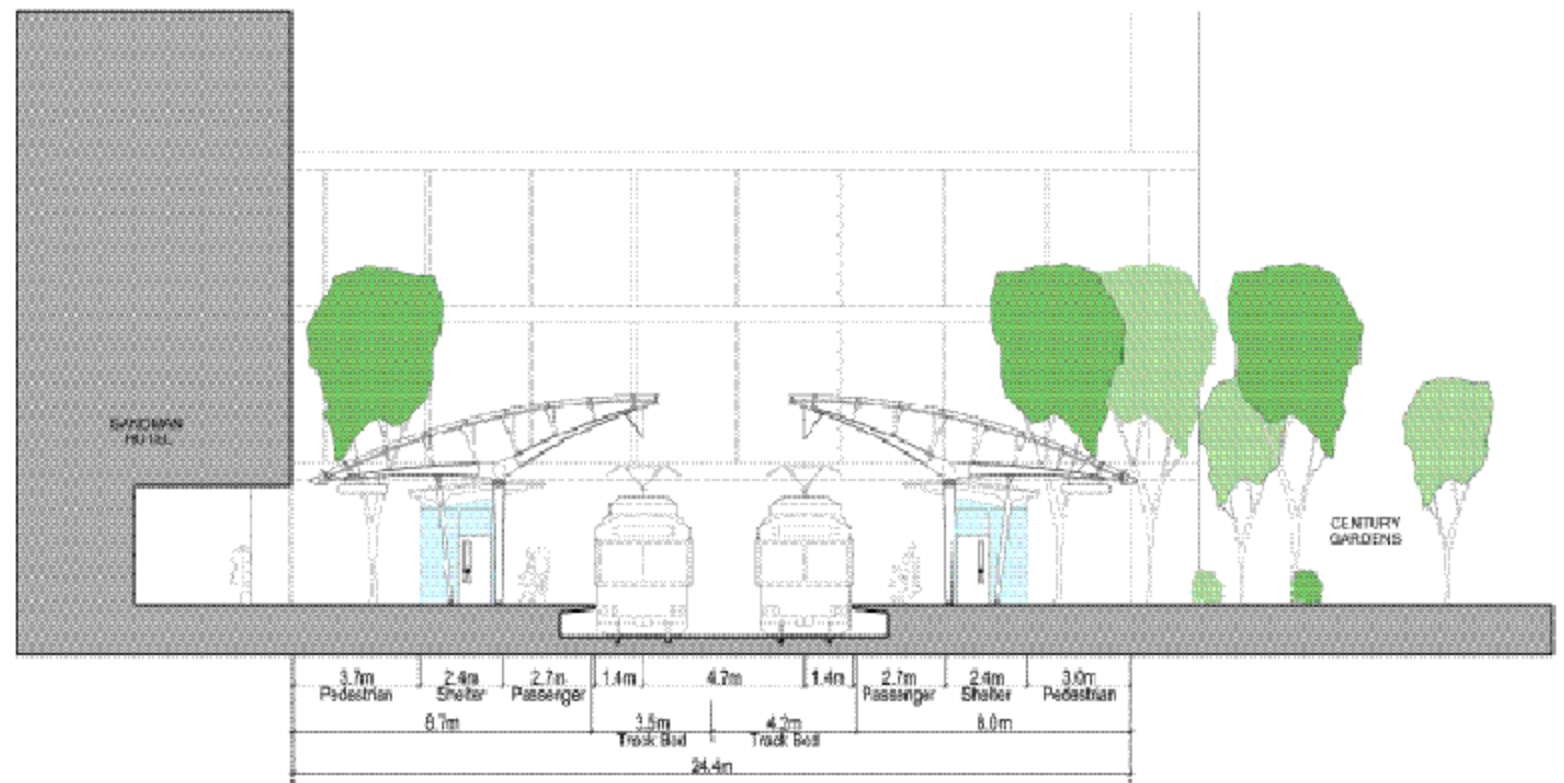


Figure 34, Cross-section of station concept at Century Gardens



5.2 Detailed Concept Development - Blocks J and K

This study includes more detailed development of concept design for two blocks: J and K. These 2 blocks were chosen because the removal of the existing station in Block J is considered a priority, and they offer the potential for a significant improvement to the street environment be made within the context of a relatively modest scale station project. For reasons noted above, the work envisioned for Block J, while initially slated for Phase 1 has been slated for a later phase. This is to allow the construction of the new station and removal of the old one to proceed on schedule. In order to remove this station, construction of its replacement in Block K is required.

5.2.1 Station Design

The new station will be a side-load station servicing westbound trains. Its location in front of existing Telus buildings offers many advantages over the current station location, foremost being the potential to dramatically increase passenger capacity and improve street character through a sidewalk raised to platform level.

5.2.1.1 Platform Layout

Figure 35 shows a plan view layout of the platform.

Beginning at 1st Street W, a shallow (1:20) slope across the full width of the sidewalk raises the pedestrian up to platform level. Because of the existing floor level of the adjacent building, in combination with a drop in the street elevation from west to east, the transition into the Len Werry Building will be modified.

Currently, the arcade in front of the building is stepped up from the street corner. This stepping increases by one in each successive bay westward. With the sloped sidewalk, this will change so that one steps up, then across, then down into the arcade to varying degrees along the building face. The net grade change from sidewalk to building will be reduced, yielding fewer steps and resulting in more direct access to the building, including barrier-free access.

Access to the Telus (Toll) Building, currently two steps up from the sidewalk, will be modified to include four steps down into the building and an integral barrier-free ramp. This change is considered reasonable given that the Telus building is part of the company's service infrastructure so the entry sees very light use.

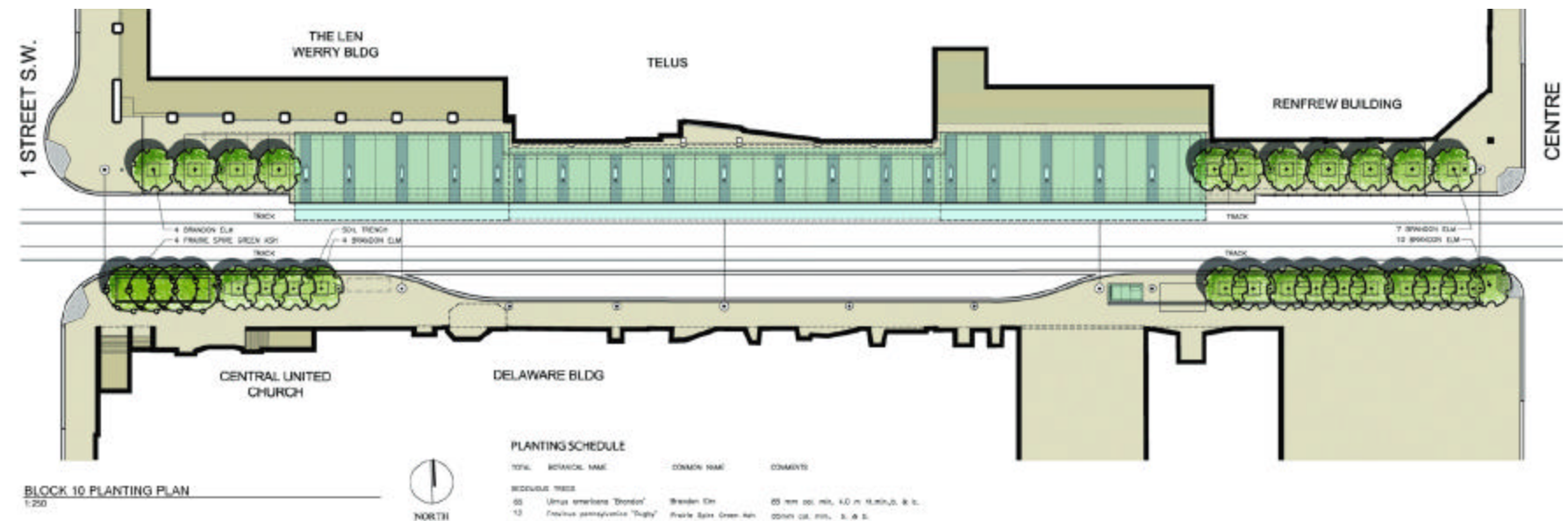


Figure 35, Plan of proposed station platform in Block K



Access to existing retail immediately west of the Telus Building will be greatly improved by the station platform. An existing raised floor level fronting a raised arcade will directly tie into the station platform. Figure 36 illustrates the existing raised arcade and storefronts.

At the east end of the block, existing at-grade retail has access maintained by a generous sidewalk. A shallow (1:20) ramp approximately 3m wide provides access to platform level, and is integrated with stairs that also make the transition from retail level to platform level.

5.2.1.2 Platform Construction

The platform will be constructed of precast concrete to City of Calgary 'High Performance Concrete' specifications, in order to meet Calgary Transit durability criteria. The precast walking surface will be visually integrated with surrounding sidewalks and streets through the use of colour, pattern and/or texture.

No deep foundations will be used, in order to avoid any potential conflicts with underground utilities. Platform foundations will consist of grade beams bearing on existing insulated concrete slab on grade. Where required the load bearing slab will be tied to the existing LRT trackbed slab to prevent differential movement of platform relative to train. Foundations will also be designed to carry canopy structural elements.

Where the platform level is brought up to building faces, minor modifications to building exteriors will be required. For the most part, in Block K these modifications will only involve tying into existing slabs on grade, and minor modifications to column cladding at exterior arcades. More extensive modifications will be required to a small portion of the exterior cladding of the Telus Building.

Furnishings and equipment such as benches, wayfinding signage, advertising signage, station identification signage, passenger shelters, ticket vending machines, waste receptacles, speakers, closed-circuit television cameras and benches will be included on the platforms. Some of these items (for example, wayfinding signage) will likely remain consistent with current Calgary Transit standards. Other items may be selected from currently manufactured furnishings and equipment available on the market. Other furnishings and equipment may be custom designed and manufactured specifically for the 7th Avenue corridor. In all cases the intent is to define a consistent, coordinated and identifiable image for 7th Avenue.



Figure 36, Existing Raised Arcade and Storefronts at the Len Wery Building

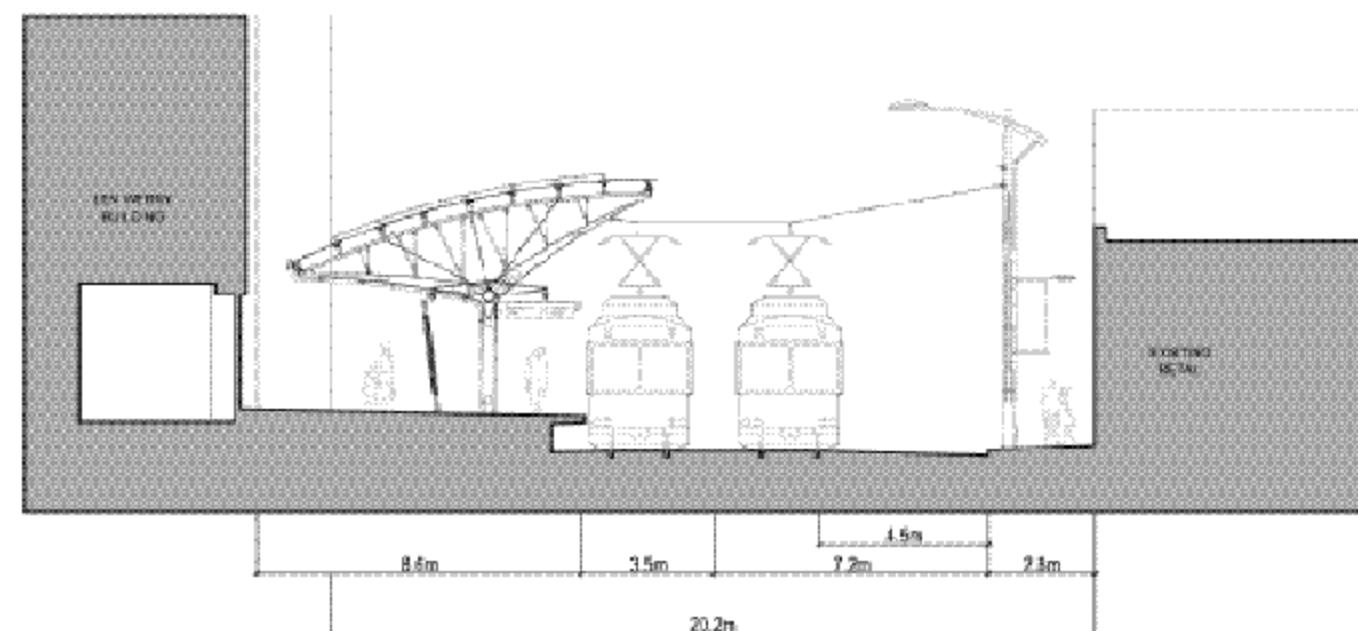


Figure 37, Cross-section of station concept at Block K

5.2.1.3 Canopy

Figure 38 and 39 illustrates the schematic canopy design. Canopy glazing will be supported on steel structure. Curved, cantilevered beams, spaced approximately 6m apart will be supported by primary and secondary steel columns. The columns will occupy and establish a zone approximately 3m wide running the length of the platform, into which will be placed most of the station's furniture and equipment. This will leave broad walks at platform and building edges to facilitate pedestrian and passenger movement. The curved, cantilevered beams will in turn support slender secondary and tertiary members to which panes of roof glazing will be attached.

Three different canopy forms will exist along the block, in response to the particulars of different adjacent buildings. These can be seen in figure 35 showing their scale and form in cross-section relative to adjacent building faces. The steel finish will be stainless, galvanized, or some other vandal resistant material or finish up to a minimum height of 2.4m.

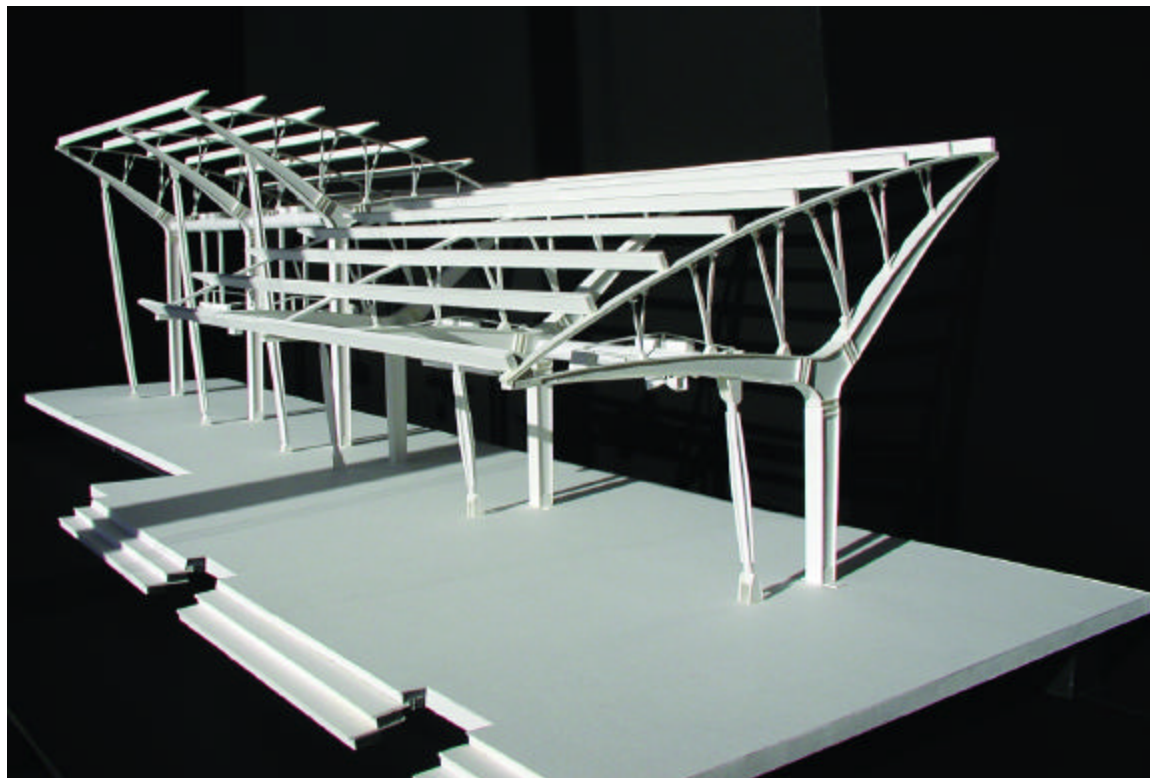


Figure 38, Concept model of canopy structure



Figure 39, Artist's concept of the new station in Block J, outside the Len Werry building.

5.2.2 Landscape

Figure 40 illustrates an artist's impression of the landscaping and pedestrian environment of Block J. Removal of the platform in Block J will dramatically improve the public space along the sidewalk, and will be the first step in revitalizing the retail uses in this block that have seen a decline in business and attendant increase in vacancy since the introduction of the C-Train system.

5.2.2.1 Planting

Blocks J and K, trees will typically be planted with grates at the sidewalk level.

5.2.2.2 Paving

Paving in Blocks J and K will be consistent with the concepts outlined in Section 4.4.3 and illustrated in Figure 23. Materials could be of a number of decorative types of patterned/textured and/or coloured cast-in-place slabs. Specific materials and details are subject to budget and maintenance considerations and are currently part of the process of estimating probable construction cost.

5.2.2.3 Bus Service

Bus service for three core routes (1, 7 and 9) is required in both Blocks J and K. This is accommodated on the north side of Block J with a 3-bus layby; on the south side of Block J by a 3-bus layby; and on the south side of Block K, by a 3-bus layby.



Figure 40, Artist's concept of landscaping in Block J

5.2.3 Utilities

Existing utilities within 7th Avenue are a major factor affecting surface features, and have been carefully considered in the design of components proposed in this report. All major deep and shallow services are located in the Avenue. In addition to these are LRT traction power, communications and signalization infrastructure. Because of their downtown context, some of these systems are also very large - for example, the Telus Communications duct bank is approximately 1.7m wide and 0.8m high in some locations.

Because of the need to keep the LRT system operational, and also because of the engineered nature of the bus and track slabs, routine or emergency maintenance or replacement of services is difficult and costly. Likewise, any major excavation, removal or relocation of underground services to accommodate new surface features would be prohibitive.

For these reasons, platform and canopy designs will be completed without the use of deep foundations, instead bearing on grade beams. These will be located to avoid conflicts with utility mains.

Excavation will be required to place tree trenches within the right-of-way, and these will be carefully located to avoid conflicts with existing services. The major potential conflict will be with the gas main on the south side of the street. After significant research into urban trees we have reached the conclusion that trees can be planted in irrigated trenches close to existing utilities. This is practiced in many cities and requires the use of a root barrier.

The major challenge to locating trees in close proximity to utilities has proven to be jurisdictional and policy based: access to utilities for maintenance or service requires the removal of a tree(s) for which the utility company is held physically and economically responsible. We have held discussions with the City of Calgary and major utility companies to determine if this policy could be changed for 7th Avenue, so the utility companies would be absolved of responsibility for trees within their line assignment. These discussions have been favourable.

Some of the deep utilities may be due for replacement in the next few years, and it may be prudent and cost effective for the City of Calgary and the utility companies to review each component and coordinate this work with the schedule and phasing of surface work. Further, where feasible, some utilities and infrastructure could be relocated to alignments within other rights-of-way to prevent the cost and inconvenience of working within the LRT corridor to maintain, upgrade or replace their systems.



6.0 Opportunities for New Development & Redevelopment

There are many sites along the 7th Avenue corridor that, based upon their current land use designations, are underutilized. The improved design of the stations and sidewalks and particularly the proposed alleés of trees (similar to those outside of the Municipal Building) will present opportunities for new development and redevelopment that is consistent with City of Calgary planning policies for the Downtown core. These policies are based on the objectives of increasing the number of people living downtown and locating higher density development near public transit. Intensive commercial office uses, along with complementary uses such as food and retail services will also remain as downtown land use policies.

In most cases, the opportunities identified following have not been discussed with the landowners. They merely present scenarios that are consistent with the vision for 7th Avenue presented in this report. They would, of course, be subject to verification by the land-owners' market analysis and development goals.

6.1 Sites

Sites have been identified and numbered, as indicated in the Figures.

6.1.1 Site #1 -

Owner: Alberta Housing Corporation

Approximate Site Area: 3762 m² (0.923 ac.)

Land Use Designation: Direct Control (DC 65Z82)

Summary Land Use Description: This DC land use is for a 410-unit senior citizen apartment development with associated recreational, administrative and convenience commercial uses on the first two floors only. The maximum building height is 22 storeys/61 metres. This land use is 'tied to plans', i.e., it is based on plans and renderings submitted to City Council at the time of approval, and must substantially conform to these for its development to be permitted.

Potential Uses: The approved use is very much in keeping with the vision for this part of 7th Avenue. An additional DC land use, 47Z92, approved in 1992 (10 years after this site- and plan-specific land use) establishes the area west of mid-block between 8th and 9th Streets, from 9th Avenue to the Bow River, as the 'West End District'. This area is designated for predominantly high density residential development with low to medium density commercial, including at-grade pedestrian amenities. In addition, locating seniors' facilities near the LRT line gives direct access to the public transit system to one of its largest user groups. Notwithstanding City Council's directive regarding substantial compliance, the City of Calgary should review some aspects of the currently approved plans and, if appropriate, encourage their revision to tie the development into the twinned station proposed in this block.

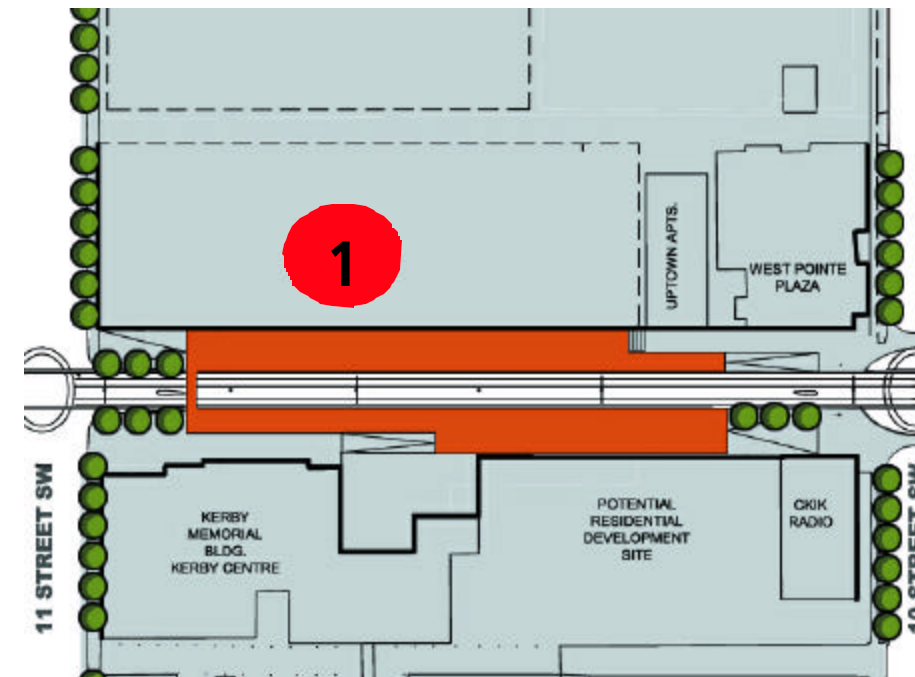


Figure 41, Site 1 located between 10th and 11th Streets West (Block A)

6.1.2 Site #1A -

Owner: 870169 Alberta Inc.

Approximate Site Area: 595 m² (0.147 ac.)

Land Use Designation: Direct Control (DC 37Z88)

Summary Land Use Description: This site, along with its land use is a remnant of a previous assembly of three sites. Each of the sites had a separate DC land use that were jointly tied to a single set of plans. This was for a comprehensively designed commercial building of up to 24 storeys/89 metres in height. The major site of the original 3 has a new land use and built project - a high rise residential tower. The smaller second site has a recently refurbished 5 storey apartment building on it. This leaves the subject site with an incongruous land use, given its 15.2 m (50 feet) of frontage.

Potential Uses: In order for the site to meet its development potential it would need to be consolidated with a larger site. Perhaps the best opportunity for this would be the Kerby site immediately adjacent to the west (Site #1). Uses compatible with City policies and LRT would certainly be possible if this site were to remain 'stand-alone', however achieving its full allowable density (under DC 47Z92, for example) would be unlikely.

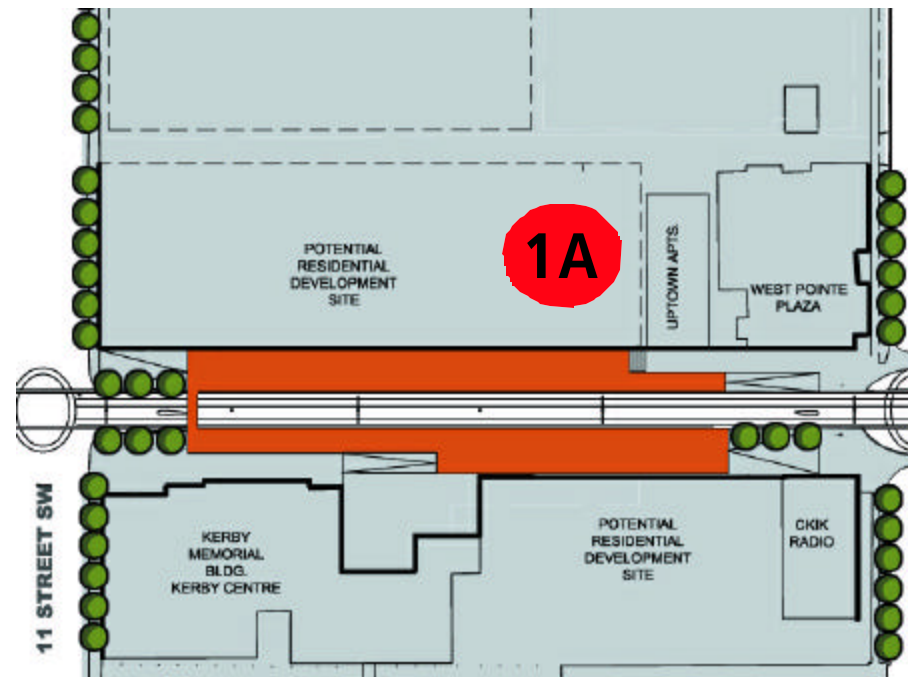


Figure 42, Site 1A located between 10th and 11th Streets (Block A)

6.1.3 Site #2 -

Owner: Midco Equities Inc.; 832333 Alberta Ltd.; Price Enterprises (1995) Ltd.

Approximate Site Area: 2975 m² (0.735 ac.)

Land Use Designation: Direct Control (DC 80Z89)

Summary Land Use Description: Commercial office development at a Floor Area Ratio (FAR) density of up to 12, with a maximum height of 26 storeys/97 metres. A pedestrian arcade is required along the 7th Avenue side of the building, as well as an outdoor plaza along the full 9th Street frontage. A +15 bridge over 7th Avenue must also be provided. Additional on-site and/or off-site improvements such as public art, indoor garden(s), adjacent right-of-way improvements and/or additional +15 amenities are required in order to achieve the full allowable density of 12 FAR.

Potential Uses: This land use, from 1989, in the west-end portion of the downtown core, should perhaps be re-visited to determine the appropriateness, extent and orientation of the open-air plaza, as well as the +15 connection and amenities. The urban environment may better be served at this location by some street-oriented commercial. The commercial office use remains appropriate, as would higher density residential in keeping with the emerging character of this part of downtown.

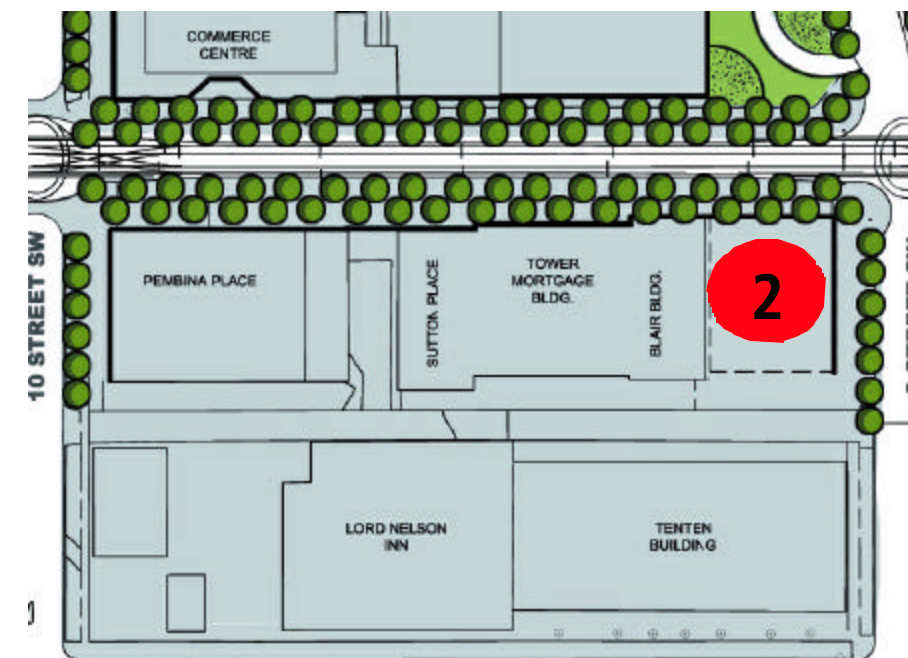


Figure 43, Site 2 on the Southwest corner of 9th Street and 7th Avenue (Block B)



6.1.4 Site #3 -

Owner: Western Securities Limited

Approximate Site Area: 1190m² (0.294 ac.)

Land Use Designation: CM-2

Summary Land Use Description: CM-2 is a generalized land use for the downtown core calling for predominantly commercial uses while allowing for a wide range of residential and institutional uses. The land use includes requirements for provision of at-grade and +15 amenities, preservation of heritage structures, and provide for continued development and evolution of the downtown retail district. These objectives are achieved through a comprehensive system of density bonuses. It may be desirable for the City of Calgary to modify the bonus program associated with this land use specifically for sites along the 7th Avenue corridor. For example, bonuses for provision of at-grade plazas and/or +15 bridges could be replaced with bonuses for directly connecting the +15 level to the street, for orientation of retail bays toward 7th Avenue, and, where applicable, direct connection of ground floor spaces to LRT station platforms.

Potential Uses: The site would be suitable for a small commercial office or residential tower with compatible restaurant, professional and/or retail uses at street level and on the lower floors. These lower floor uses would be consistent with the current use on site - a two-storey retail/professional strip type development - albeit with a more urban character oriented directly to the street, and without the existing at-grade Parking lot off 8th Street.

6.1.5 Site #4 -

Owner: 697604 Alberta Ltd.; Vinicio Angelo Pace

Approximate Site Area: 2081 m² (0.514 ac.)

Land Use Designation: CM-2

Summary Land Use Description: Refer to the description under Site #3 above.

Potential Uses: The direct adjacency of this site to Century Gardens would make it ideally suited to a small commercial office or residential tower. A residential use could benefit from proximity to the park, while providing passive security through visual connection with the park during non-business hours. Restaurant uses at the ground floor would sensitively address the park, and one need look no further than the Nexen (Nova) building also fronting the park for an example of how to positively make such a connection. The ground floor level should be integrated with the proposed station platform.



Figure 44, Site 3 on the Southwest corner of 8th Street and 7th Avenue (Block C)

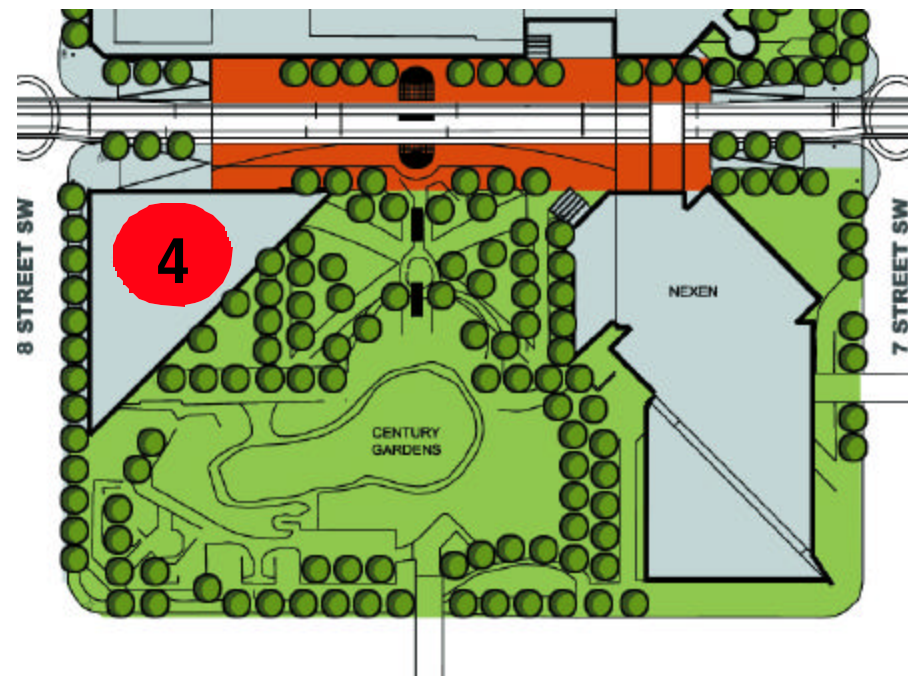


Figure 45, Site 4 on the Southeast corner of 8th Street and 7th Avenue (Block D)



6.1.6 Site #5 -

Owner: Second Real Properties Limited; The City of Calgary

Approximate Site Area: 2973 m² (0.735 ac.)

Land Use Designation: CM-2

Summary Land Use Description: Refer to the description under Site #3 above.

Potential Uses: This parcel is large enough to accommodate a medium-rise commercial tower. A possible lack of prominence associated with the parcel's mid-block location could easily be overcome by the improved street conditions that will result from the refurbishment of 7th Avenue. In this case, a mid-block plaza with good potential as a sun-catch could provide a very positive presence to the building and the street in this landscaped block.

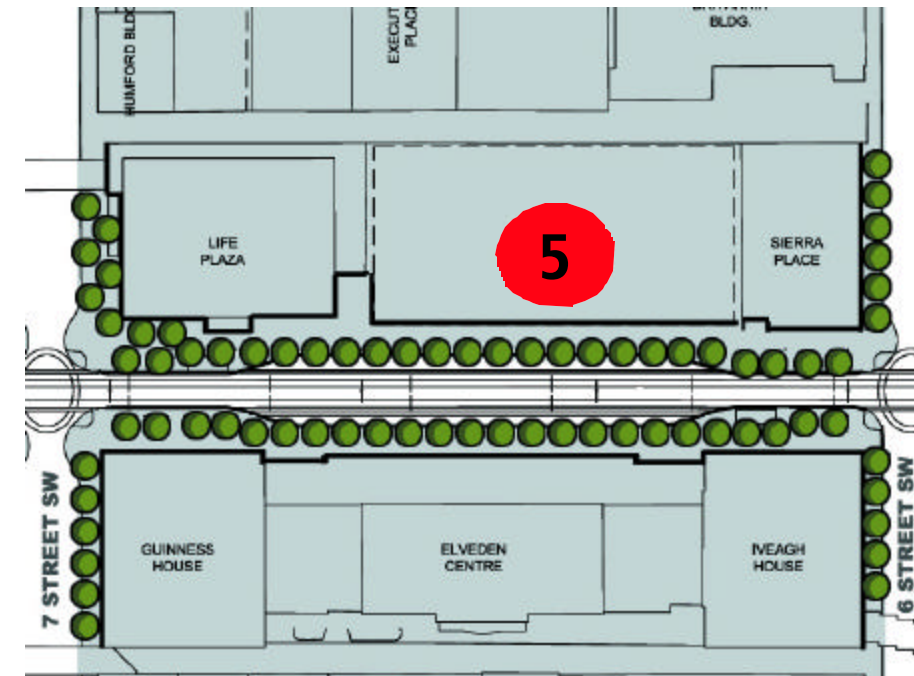


Figure 46, Site 5 mid-block between 6th and 7th Streets West (Block E).

6.1.7 Site #6 -

Owner: Bank of Montreal

Approximate Site Area: 3150 m² (0.775 ac.)

Land Use Designation: CM-2

Summary Land Use Description: Refer to the description under Site #3 above.

Potential Uses: This is the site for the second - larger - tower for First Canadian Place, the Bank of Montreal complex. An outdoor plaza/park area built on top of a capped parking structure and building foundations currently occupies the site. It is unlikely that the site's economics would permit less than a significant commercial tower development.

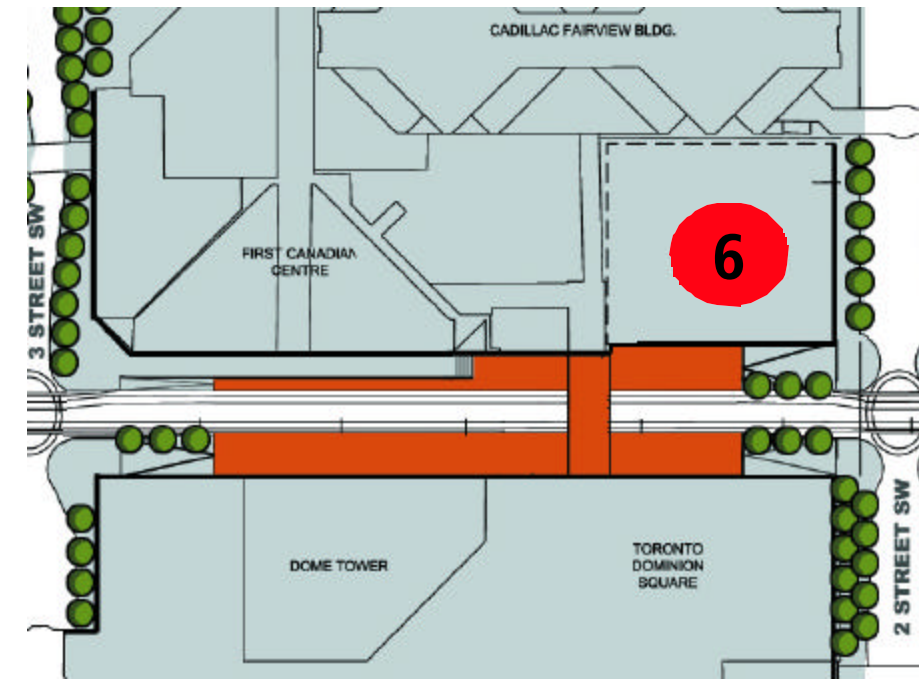


Figure 47, Site 6 adjacent to the BMO Building (Block 1)

6.1.8 Site #7 -

Owner: Shyam Mohamed and Maria Milagros Mohamed; Louson Investments Ltd.; 694106 Alberta Ltd.

Approximate Site Area: 2380 m² (0.588 ac.)

Land Use Designation: CM-2; DC26Z83

Summary Land Use Description: Refer to the description under Site #3 above.

Potential Uses: Approximately half of the 7th Avenue street frontage of this block is comprised of original retail built in the first half of the 20th century. This is a street-friendly, urban use that at present occupies the lower end of the market. The site is west of Centre Street, and as such has increased potential for commercial office types of uses. The scale and connection to the street that currently exists amongst the existing buildings should be encouraged for any future development on the 7th Avenue street face. Future development could also sensitively incorporate the existing church at the west end of the block.

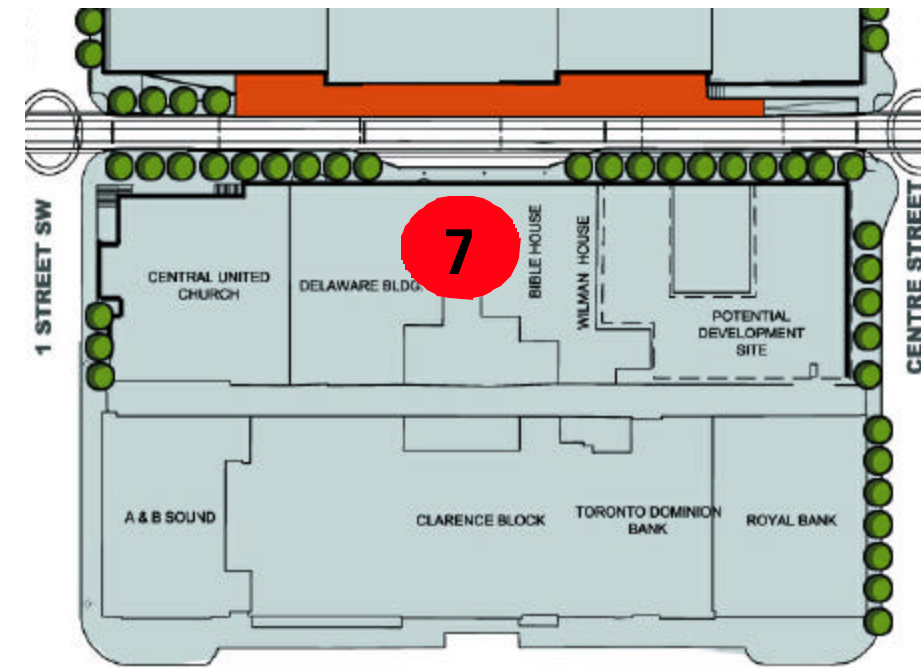


Figure 48, Site 7 on the south side of 7th Avenue between 1st Street West and Centre Street (Block K)

6.1.9 Site #8 -

Owner: Calhome Properties Ltd.

Approximate Site Area: 595 m² (0.147 ac.)

Land Use Designation: CM-2

Summary Land Use Description: Refer to the description under Site #3 above.

Potential Uses: This is a 50-foot wide remnant site between the York Hotel and the Royal Canadian Legion. As-is, the site would be suitable for a small (4 to 6 storey) mixed commercial or hotel use, however a larger site would need to be assembled for it to be developed to the full potential of the zoning. A consideration in the assembly of a larger site would include the heritage potential of adjacent buildings and their possible designation.

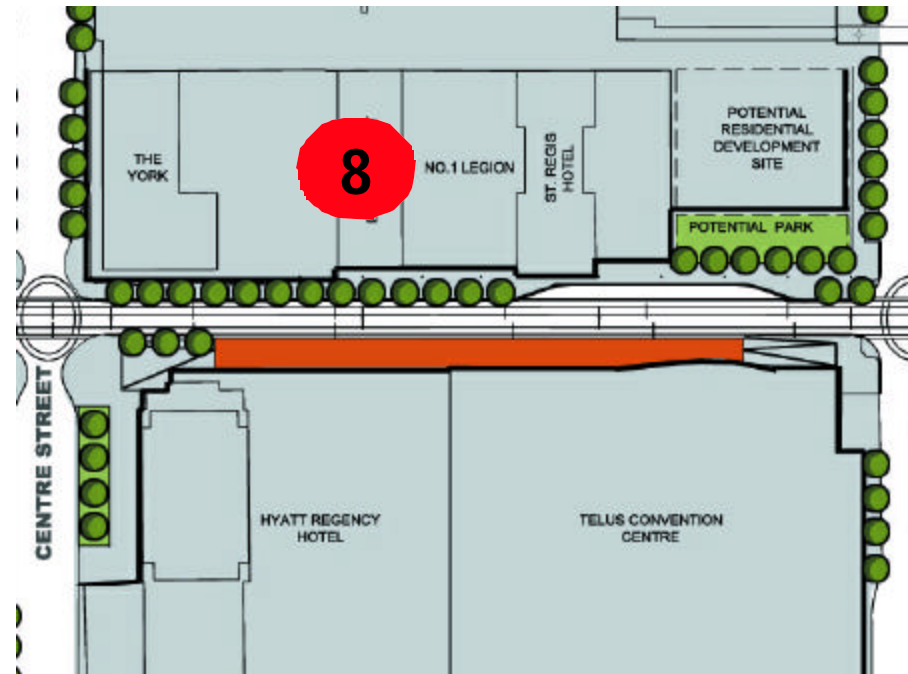


Figure 51, Site 8 mid block between Centre Street and 1st Street East (Block L)

6.1.10 Site #9 -

Owner: The City of Calgary

Approximate Site Area: 1485 m² (0.367 ac.)

Land Use Designation: CM-2

Summary Land Use Description: Refer to the description under Site #3 above.

Potential Uses: The site is currently occupied by a surface parking lot for the Calgary Police Service. Its proximity to the Convention Centre would make it an ideal hotel site, however, proximity to the Calgary Urban Project Society (CUPS) Community Health Centre, The Downtown branch of the Royal Canadian Legion and the Regis Plaza Hotel could limit market appeal until these uses relocate.

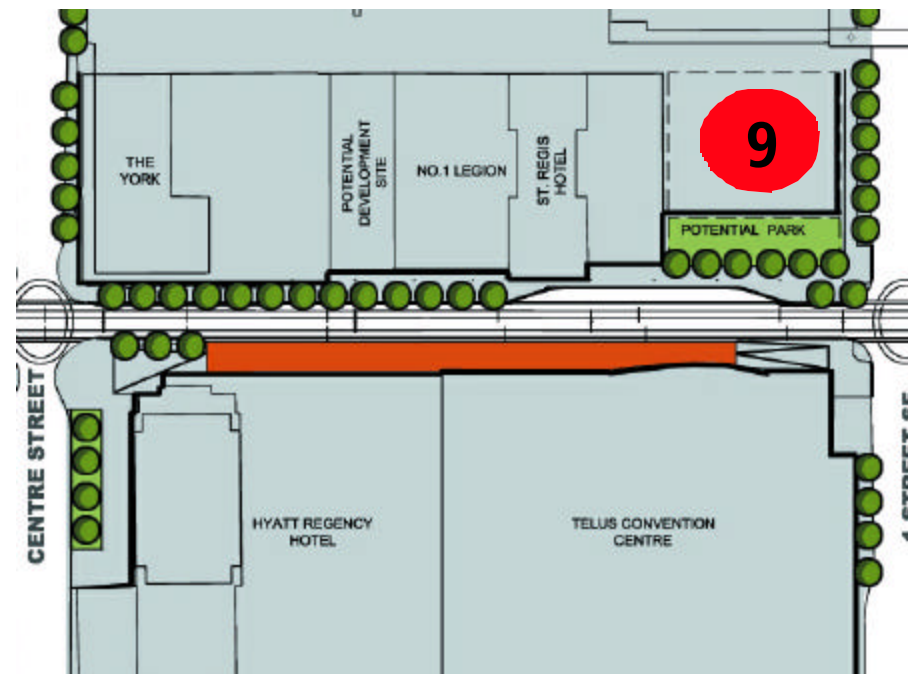


Figure 52, Site 9 on the Northeast corner of 1st Street East and 7th Avenue (Block L)

6.1.11 Site #10 -

Owner:

Approximate Site Area:

Land Use Designation: CM-2

Summary Land Use Description: Refer to the description under Site #3 above.

Potential Uses: This site is actually a +15 level outdoor plaza with direct access to 7th Avenue via a set of stairs. The stairs are closed to public access during specific periods. A lack of passive security associated with outdoor spaces such as these tend to make them a draw for abnormal users. The stair access from the street tends to feel threatening because it is dark and users cannot see their destination. The development opportunity here would be to reconfigure the space so direct physical and visual access from the street is possible, and the space is meaningfully connected to the +15 level of the adjoining building.

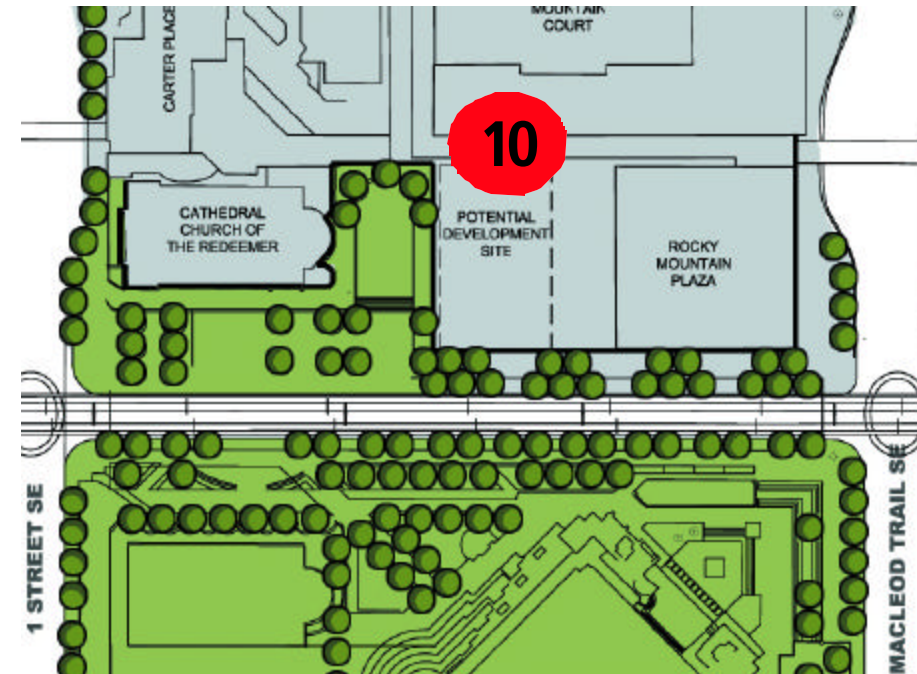


Figure 53, Site 10 at the +15 level, mid block between Macleod Trail and 1st Street East (Block M)

6.1.12 Site #11 -

Owner: The City of Calgary

Approximate Site Area: 4760 m² (1.175 ac.)

Land Use Designation: Direct Control (DC20Z2002)

Summary Land Use Description: This is a custom land use for the East Village, written specifically for transit-oriented, inner-city urban residential mixed use development. Live-work housing arrangements are permitted; street-oriented, ground floor restaurant, commercial and retail are required along 7th Avenue; townhouse type development at the ground floor (with direct entrances from the street) are given a density bonus incentive.

Potential Uses: This site is large enough to take full advantage of the zoning. It presents a real opportunity for viable commercial uses along 7th Avenue with high density residential above, particularly because - as opposed to 8th Avenue - its direct and contiguous connection with the rest of downtown, combined with Transit use, should eventually ensure a healthy volume of resident pedestrians.

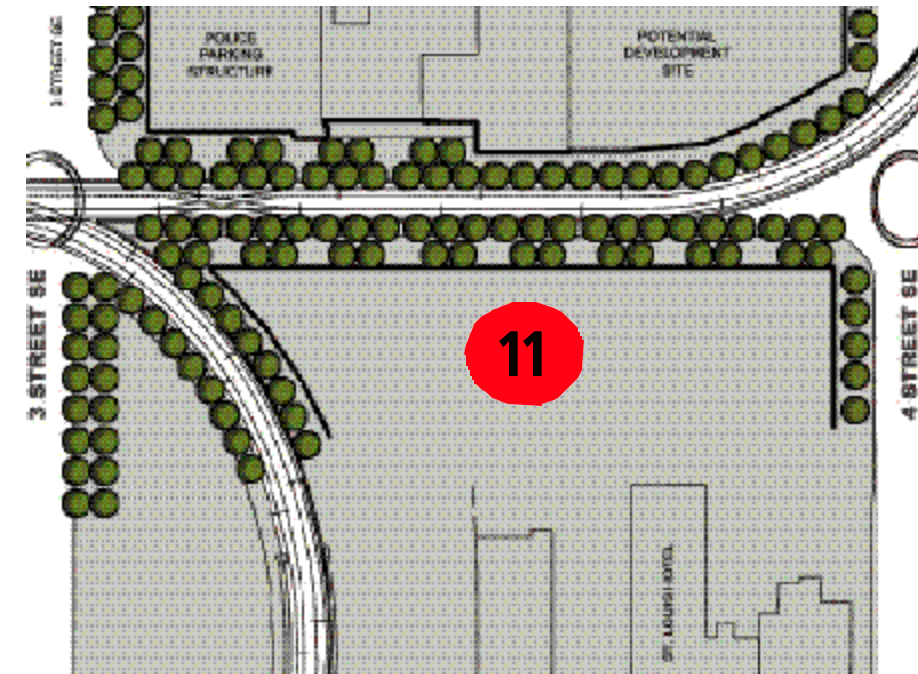


Figure 54, Site 11 on the South side of 7th Avenue between 3rd and 4th Streets East (Block O)

6.1.13 Site #12 -

Owner: 288167 Alberta Ltd.

Approximate Site Area: 1740 m² (0.430 ac.)

Land Use Designation: Direct Control (DC20Z2002)

Summary Land Use Description: Refer to the description under Site #12 above.

Potential Uses: This site presents a similar opportunity as Site #12, however its smaller size, proximity to the Calgary Police Parkade and irregular shape caused by the curve in the LRT alignment, would likely prove to be a market and/or technical challenge affecting its full potential.



Figure 55, Site 12 on the North side of 7th Avenue West of 4th Street East (Block O)

6.1.14 Site #13 -

Owner: the City of Calgary

Approximate Site Area: 1600 m² (0.396 ac.)

Land Use Designation: CM-2

Summary Land Use Description: Refer to the description under Site #3 above.

Potential Uses: This is a well-known potential redevelopment site that has seen a number of proposals in recent years, mainly for small hotel projects. The site's development potential may be challenged because the high standard to which it has been landscaped, along with its direct adjacency to Olympic Plaza, gives the impression that it is a public park - an issue that could mire any development approvals process with political dispute.

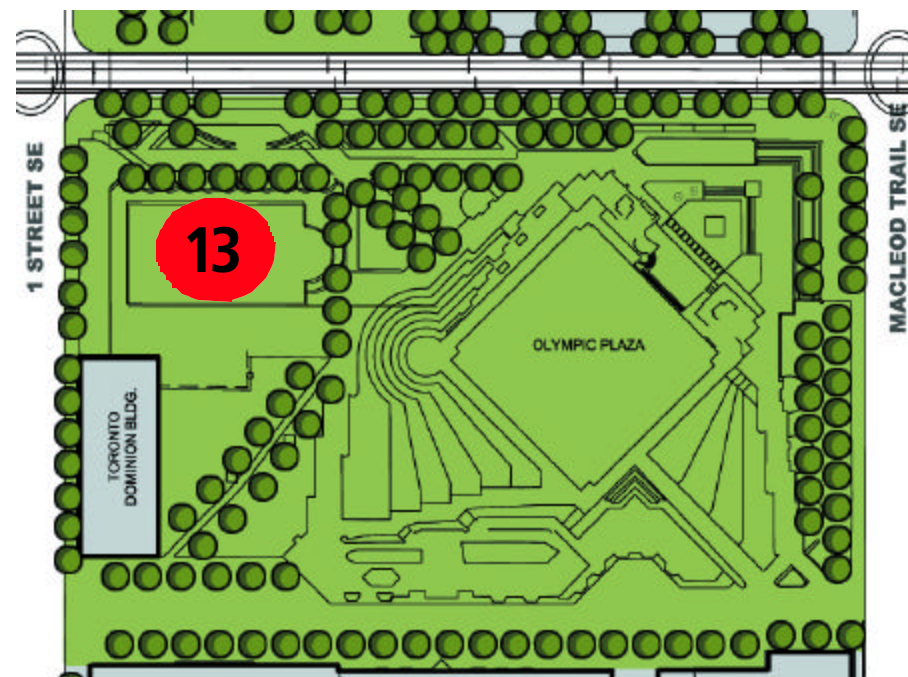


Figure 56, Site 13 on the South East corner of 1st Street East and 7th Avenue, adjacent to Olympic Plaza (Block M)

7.0 Stakeholder Review & Public Process

Many project stakeholders have been consulted during the preparation of this report. These include The Calgary Downtown Association (CDA), The Building Owners and Managers Association of Calgary (BOMA), The Calgary Parks Foundation, The Calgary Cultural District Board, and the Community Associations of Eau Claire and West Downtown. Input has been overwhelmingly supportive of the plan, with only minor criticism of some design details.

Information regarding the plan presented herein will be put on public display in prominent locations convenient to the public at large as well as users of the downtown LRT system subsequent to publication of this report. Such locations may include the atrium of the Calgary Municipal Building, major downtown shopping centers, the Calgary Transit Information and Sales Centre located on the north side of Block J, between 1st and 2nd Streets West, and possibly on advertising panels within trains and buses.

A public Open House was held June 29 and 30, 2004 in leased space adjacent the Calgary Transit Information and Sales Centre with formal presentations included on June 29. Display materials included a detailed model of the platform canopy; artist's concepts for both Block J & Block K; detailed concepts of Block K; specific information about the project overall; including budgets, etc.; and information on Transit Oriented Development. Notices were provided to the Calgary Downtown Association (CDA) and Building Owners' and Managers' Association (BOMA) for distribution to their contact lists; Transit advertising was provided on the Second Street W Station (adjacent to the Open House location); a media release was issued. Public response was again overwhelmingly positive.

As the detailed development of each phase progresses, individual landowners immediately adjacent the area of work will be actively engaged in the planning and design process.

8.0 Construction Logistics and Complexities

Given that the 7th Avenue LRT line exists within the downtown core and is a critical component of Calgary's transportation infrastructure, there are a large number of issues and factors that lend complexity to the implementation of changes, improvements and even maintenance work. Construction of the improvements envisioned in this report will be subject to significant challenges. These can be overcome by careful and thorough planning that identifies the proper sequence of work, and design decisions that adequately consider logistics of construction within a high-density urban site with an operational light rail system.

8.1 Required Upgrades to LRT Infrastructure

In addition to the surface and environmental improvements covered in this report, significant LRT infrastructure upgrades will be required to deal with ongoing maintenance imperatives, and particularly related to the increased power demands of running 4-car trains at 90-second headways.

Traction Power upgrades will require extensive work both above and below grade, and must be phased ahead of surface upgrades. This will require comprehensive planning and design that is independent of, yet closely coordinated with station and landscape design.

In addition to routine upgrade and replacement of LRT track and supporting slabs, the reconfiguration and relocation of stations will require significant track reconfiguration in some blocks, including new cross-over switches and new track alignments to allow buses to pass through twinned platform zones.

8.2 Upgrades to Non-LRT Infrastructure

It may be prudent to complete work that is part of ongoing maintenance and upgrades of existing facilities and infrastructure prior to, or concurrent with each phase of landscape and station upgrades. This would include utilities under the jurisdiction of the City of Calgary and other service providers. Work could include upgrades to existing utilities infrastructure, installation of new infrastructure or abandonment of existing infrastructure in favour of installation at other locations where ongoing maintenance and service would be simpler and less costly.

8.3 Integrated Components and Multiple Jurisdictions

Many of the components envisioned in the design are of a nature that is considered non-standard by the parties responsible for their control and upkeep. These include such items as the integrated traction power, street lighting, signage and traffic signals poles, and upgraded and/or unique paved surfaces. With respect to power poles, conceptual buy-in must be sought from all responsible parties, followed by detailed design, review and approval. Upgraded paving, furniture, etc., must be accompanied by a careful review of durability issues and an acknowledgement of additional ongoing maintenance and upkeep costs associated with them.

Other components require the relaxation of usual standards of clearance and proximity because of the extensive underground array of utilities and services. This includes the proximity of trees and light pole bases to such underground features as gas mains and telecommunications ducts. Other work could include upgrades to existing utilities infrastructure, installation of new infrastructure or abandonment of existing infrastructure in favour of installation at other locations where ongoing maintenance and service would be simpler and less costly.

Estimating the potential costs of these items is beyond the scope of this project. They are mentioned here because it is important to consider their potential influence on the remainder of the work to be done on 7th Avenue.

8.4 Integration with Adjacent Properties

Communication with and buy-in from adjacent property owners is critical to the success of the project. In most instances, the construction of station platforms immediately adjacent or connected to existing buildings will require modification of the buildings themselves. Maintaining the proper function and integrity of building envelopes will require careful review and detailing. Modification of some building entries will be required. In a few instances, building components that exist within the right-of-way (for example entry canopies and functioning basements) add complexity to the situation, and result in coordination and tie-in issues even in non-station blocks. Thorough communication and formal review processes will be required to ensure that the interests of building owners are satisfied, and opportunities to provide greatest mutual benefit to all parties are met.